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Witness: Philip Mosenthal
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BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In re: Union Electric Company's	)	
2011 Utility Resource Filing pursuant	)	**Case No. EO-2011-0271**
To 4 CSR 240 – Chapter 22.	)	

REBUTTAL TESTIMONY OF PHILIP MOSENTHAL

ON BEHALF OF

NRDC, SIERRA CLUB, RENEW MISSOURI
MID-MISSOURI PEACEWORKS, AND
GREAT RIVERS ENVIRONMENTAL LAW CENTER

OCTOBER 28, 2011

Q. Please state your name and business address.

A. Philip H. Mosenthal, Optimal Energy, Inc., 14 School Street, Bristol, VT 05443.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the Natural Resources Defense Council (NRDC), Sierra Club, Renew Missouri, Mid-Missouri Peaceworks, and Great Rivers Environmental Law Center.

Q. By whom are you employed and in what capacity?

A. I am the founding partner in Optimal Energy, Inc., ("Optimal Energy") a consultancy specializing in energy efficiency and utility planning. Optimal Energy advises numerous parties including utilities, non-utility program administrators, government, and environmental groups.

Q. Please provide a summary of your qualifications and experience.

A. I have 28 years of experience in all aspects of energy efficiency, including facility energy management, policy development and research, integrated resource planning, cost-benefit analysis, and efficiency and renewable program design, implementation and evaluation. I have developed numerous utility efficiency plans, and designed and evaluated utility and non-utility residential, commercial and industrial energy efficiency programs throughout North America, Europe and China.

I have also completed or directed numerous studies of efficiency potential and economics in many locations, including China, Colorado, Kansas, Maine, Massachusetts, Michigan, New England, New Jersey, New York, Quebec, Texas, and Vermont. These studies ranged from high level assessments to extremely detailed, bottom-up assessments evaluating thousands of measures among numerous market segments. Recent examples of the latter are analyses of electric and natural gas efficiency and renewable potential along with the development of suggested programs for New York State, on behalf of the New York State Energy Research and Development Authority (NYSERDA).

I am currently a lead advisor for business energy services in Rhode Island and Massachusetts on behalf of the Energy Efficiency Resource Management Council and the Energy Efficiency Advisory Council, respectively, overseeing and advising on utility program administrator's plans, program designs, implementation and performance.

I have been actively engaged in the Illinois Stakeholder Advisory Group (SAG) since its inception, representing the People of Illinois on behalf of the Illinois Office of the Attorney General. In this capacity, I have worked closely with Ameren Illinois on program planning, design, and evaluation issues. As a result, I am very familiar with the plans and efforts of Ameren UE's counterparts in Illinois, where Ameren is pursuing much more aggressive DSM goals than those proposed in Missouri.

Prior to co-founding Optimal Energy in 1996, I was the Chief Consultant for the Mid-Atlantic Region for XENERGY, INC. (now KEMA). I have a B.A. in Architecture and an M.S. in Energy Management and Policy, both from the University of Pennsylvania.

Q. **Have you previously testified before this Commission?**

A. No.

Q. **Please summarize your Rebuttal Testimony.**

A: I will demonstrate that, notwithstanding their response, Ameren's IRP is fundamentally flawed and fails to satisfy the state's IRP rules in that the Company: (1) failed to evaluate demand-side resources on an "equivalent basis" with supply side resources, (2) failed to minimize present value worth of revenue requirements (PVRR) or justify the alternative selection criteria that the Company used, and (3) ignored the existing regulatory framework for energy efficiency. In its response to initial comments from the organizations on whose behalf I am appearing, Ameren declines to address the identified inadequacies, and instead sets forth an interpretation of the planning rules that renders the rules meaningless.

Q. **What information did you review as part of your analysis?**

A: I reviewed Ameren's *Response to Comments of Parties,* filed on August 22, 2011.

Q: **Does Ameren's response address your concern that Ameren failed to consider DSM on an equivalent basis with supply-side resources?**

A: No. In fact, it further makes clear that Ameren failed to meet this requirement. I have documented several critical ways in which this is the case. First Ameren relies on a potential study that is riddled with unsubstantiated assumptions all of which conspire to underestimate the potential for cost-effective savings. The study begins with a false

premise that maximum achievable potential (MAP) is not achievable. Then, to create a "realistic" achievable scenario, the company assumes an unrealistically slow ramp-up of customer awareness, employs "budget constraints" that preclude an apples-to-apples comparison of DSM and supply-side options, and ignores standard industry practice by using a 1-year payback period to estimate participation rates for the purpose of determining MAP. In addition, the study uses different payback timeframes for purposes of participation levels than those used for purposes of incentive levels, and assumes that no more than 70% of respondents will participate regardless of actual survey results. I performed a detailed critique of the potential study methodology in Attachment 1 to the initial comments of the groups for which I am testifying.

Another way in which Ameren fails to meet the equivalency test is that it uses predetermined timing and amounts of energy efficiency for capacity planning purposes (Plan at 9-4). In other words, DSM resources are only considered for analysis after the supply-side resources were determined and a need for capacity was established. To have treated DSM on an equivalent basis with supply-side resources, the company would have had to allow DSM to compete on cost, rather than be constrained by already determined supply-side resources. Finally, Ameren makes clear in its response that DSM never was given a chance to effectively compete as a resource because of inappropriate constraints imposed by the Company related to perceived regulatory concerns.

Additional examples of Ameren's failure to consider supply and demand side resources on an equivalent basis are described in NRDC's initial comments.

Ameren's response does little to address or rebut these deficiencies. In fact, the answers confirm the assertion that DSM was relegated to a lower status. For example, Ameren states that it included all DSM resources, but RAP represented for DSM resources more than are needed even with Meramec retirement, so Ameren constrained DSM resources based on the "need" for power. On page 11 of its response, Ameren makes it clear that they first assumed all existing supply side resources would be used, except for Meramec's potential retirement in 2016. In other words, they assume any plants already built have to be used, and do not let them compete on a cost basis with DSM.

> The development of alternative resource plans is driven by capacity needs throughout the planning horizon. As demand grows, the Company's existing resources can no longer meet those capacity needs and it must therefore add new resources. The alternative resource plans are a build-up of resources that include existing plant capabilities, cost-effective upgrades to existing plants, and new renewable resources required to meet legal renewable energy requirements. *An energy efficiency portfolio was added next. If there were still capacity needs after those additions, new demand response resources were added. Depending on the timing of the resource needs, demand response programs would begin as early as 2016 or as late as 2030...Ameren Missouri did not add additional demand response or supply-side resources with the intent to exceed capacity needs and reduce revenue requirements, if possible.*[Empahsis added][1]

Ameren's statement confirms that the company did not even attempt to model the lowest PVRR. Rather, Ameren simply looked at choices of PVRR after assuming all existing supply-side resources were fully utilized. This fundamentally prevents DSM

[1] Ameren Response Comments, p. 11.

from competing with supply as a resource, despite overwhelming evidence that DSM typically costs only a fraction of the cost of traditional electric supply.

Q: Does Ameren's response address your concern that Ameren's selection criteria failed to prioritize minimization of PVRR, and failed to adequately justify the use of alternative criteria?

A: No. I contend that Ameren biased its analysis from the start, and by adopting a very complicated and poorly defined set of selection criteria wholly unrelated to the commission's planning rules, they end up with a "preferred plan" that increases PVRR, when the primary goal of the IRP is to minimize PVRR.

While Ameren denies this throughout its response, they also effectively admit this is the case. Specifically, in response to virtually every specific criticism of its scoring and scenario selection approach, Ameren answers that the individual criticism is irrelevant because the preferred plan would still have been selected. While this may be true when each is viewed in isolation, it is only true because Ameren's assumptions and approach were chosen to force the outcome of dramatically limiting DSM in its plan. The criticisms in aggregate are clearly significant enough that addressing them would lead to a very different outcome.

In fact, Ameren explicitly articulates a position that is fundamentally contradictory to the IRP rules and intent of treating DSM as an equivalent resource:

> OPC implies that meeting demand and reserve requirements with resources through alternative resource plans [those designed by Ameren that limit DSM to a secondary resource after all existing supply is considered] is not enough and that as long as resources will result in a reduction in PVRR they should be added to the Company's portfolio.

> *Following such a philosophy in a way that is consistent with equivalent treatment of both supply- and demand-side resources would mean* that the Company should invest not only in more DSM than it needs, but also in generating plant assets that aren't required for meeting native load and reserve requirements, so long as they are expected to reduce PVRR.[Emphasis Added][2]

Moreover, Ameren goes even further to make clear that no other outcomes could have prevailed because they were trumped by regulatory concerns. For example, when NRDC criticized the scoring criteria for regulating minimization of PVRR to substantially less the half of the weighting, Ameren argues that it would have made no difference, and admits that it had already decided against aggressive DSM because of its concerns about cost recovery and lost revenues. The Company states in its Response comments at page 95, "It should be noted that using the 'at least 50%' interpretations would not result in selection of a different alternative resource plan as the DSM cost recovery decision factor constitutes a constraint on minimizing PVRR in the eyes of the company's decision makers." This amounts to an admission that only the preferred plan could prevail because Ameren's view of the impossibility of achieving a satisfactory DSM cost recovery framework fundamentally eliminated all other options from contention. Similar statements are found throughout the response, including on pages 13, 19-20 and 97.

Ameren states on page 14 of its response that regulatory treatment is the "central issue" limiting consideration of DSM resources. This strongly suggests that, rather than treating the IRP as an honest analytic exercise in determining the lowest PVRR

[2] Ameren Response Comments, p. 30

opportunities for its ratepayers, Ameren has effectively elevated its shareholders to higher status than ratepayers as a stakeholder in the IRP. Amazingly, Ameren even goes further to assert that "the phrase, 'in a manner that serves the public interest,' must be interpreted to include members of the public who, directly or indirectly, invest in the securities of the utility company with the promise of a fair return on their investment."[3] This definition of "public interest" fundamentally turns traditional utility regulatory practice on its head.

I contend that the Missouri rules set out a clear role for the IRP to be an objective analysis of options that minimize PVRR, and Ameren admits that this was not how it conducted its IRP. For this reason alone the commission should reject Ameren's IRP.

Q: Does Ameren's response adequately address your concern that the company has ignored the existing regulatory framework for energy efficiency?

A: No. The 2009 Missouri Energy Efficiency Investment Act (MEEIA) sets a statutory goal for electric utilities of "achieving all cost-effective demand-side savings." The Commission has adopted rules to implement MEEIA including two critical components designed to enable utilities to meet the "all cost-effective" goal: First, the Commission will evaluate utility efficiency plans' adequacy toward achieving the goal of all cost-effective savings using the combination of market potential studies and targets reflecting the savings captured by leading utilities in the region and across the nation. Second, those rules invite Ameren to propose cost recovery, lost revenue recovery and performance incentives that would allow Ameren to more closely align its shareholders' interests with the customers' interest in efficiency.

[3] Ameren Response Comments, p. 19

Ameren did not even consider a scenario that meets or exceeds the minimum goals articulated in the DSM Rules. In other words, Ameren started out arbitrarily constraining DSM to such an extent that an aggressive DSM scenario that met the minimum requirements starting in July 2011 was not even allowed to be analyzed. The DSM rules at 4 CSR 240-20.094(3)(A)3 require that any DSM plan is "included in the electric utility's preferred plan or have been analyzed through the integration process required by 4 CSR 240-22.060 to determine the impact of the demand-side programs and program plans on the net present value of revenue requirements of the electric utility." Were Ameren to fully fund, implement and support an aggressive DSM program, like those in Iowa and Illinois, it could address its forecasted annual average growth of approximately 1.0 percent in electricity load over the planning horizon without adding additional supply-side resources (unless capacity is retired, and perhaps even with retirements). But the company contends that it is unable to implement an aggressive portfolio of energy efficiency programs due to its false perception about the state's regulatory framework.

The Company's primary concern centers on the opportunity to recover lost revenues and earn stockholder incentives. Without these opportunities, the company asserts that a DSM-only plan creates so many risks for stockholders that it would be imprudent to pursue maximum achievable potential energy efficiency resources. In order to make this assertion, however, the Company deviates widely from the objectives of 4 CSR 240-22.010 and rather focuses on what resource mix it had already decided it preferred.

Q: Did Ameren consider a scenario that captures all cost-effective energy efficiency?

A: No. Several parties raised concerns in their comments about the analysis of the Maximum Achievable Potential Portfolio (MAP) and showed that it unduly constrains the potential estimate. These comments included that MAP does not represent "maximum achievable" because Ameren constrained the penetration rates by assuming no lower than a one year payback for any efficiency measures (as opposed to a typical 100 percent of incremental cost incentive provided by the utility), and assumes relatively low awareness and interest in DSM from customers. Other comments also criticized Ameren for not seriously considering a 2 percent per year DSM scenario as Ameren agreed to perform under a stipulation with DNR.

Regarding the 2% scenario, Ameren's response is that it did indeed analyze it, but it also makes clear that the scenario was never taken seriously as a resource option because they had already chosen the preferred plan prior to conducting the analysis. Ameren's dismissiveness of the scenario is shown by its statement that, "While Ameren Missouri management had already selected the preferred resource plan…Ameren Missouri agreed to perform an integrated analysis of the 2% per year savings case." (Response at 31). This admission is surprising, as it makes clear Ameren's result-driven approach and unwillingness to take potential DSM resources seriously. Ameren also argues that the 2 percent scenario is not achievable. I disagree and believe a proper maximum achievable potential analysis would find it achievable and cost-effective. Even if sustaining this level of effort over 20 years were not achievable, clearly pursuing 2 percent per year during the next few years' DSM planning period (as opposed to the entire IRP 20-year period) is achievable through more aggressive pursuit of time-

discretionary retrofit opportunities. I also note that other leading utilities are already cost-effectively capturing these levels of savings elsewhere, and in fact Ameren Illinois is currently ramping up to these levels consistent with Illinois Statute.

Parties also criticized Ameren's unsubstantiated claim that MAP is not "realistic" and not a possible actual choice for Ameren. Again, Ameren simply repeats its circular and flawed logic that MAP is "not realistic" because the Realistic Achievable Potential Portfolio (RAP) is defined as "realistic."[4] They support this by claiming that MAP simply represents a hypothetical ultimate upper bound of potential assuming everything is perfect in terms of delivery of programs, unconstrained financial incentives, and full awareness and interest by customers[5]

Clearly, simply naming RAP as the "realistic" option is not sufficient to eliminate MAP as "unrealistic." More concerning is Ameren's contradictory position that on one hand MAP represents a hypothetical and not real achievable upper bound because it assumes a perfect world with the best possible customer interest and up-take, while at the same time admitting that it clearly constrained MAP to penetrations only assuming much less than optimal program designs, customer awareness and interest, and constrained financial incentives that would reduce participation.[6] For example, by limiting potential utility rebates under MAP, the portfolio cannot possibly be defined as the hypothetical upper bound. Quite simply, the fact that MAP represents roughly only a quarter of the achievements other jurisdictions are currently already capturing in DSM in leading areas

[4] See, for example, Ameren Response Comments, p. 12.
[5] See Ameren Response Comments, p. 12.
[6] See, for example, Ameren Response Comments, pp. 30-32 and 35-40.

(including Ameren in Illinois) shows Ameren did not seriously assess the maximum achievable potential, nor ever take MAP seriously as a real resource.

Another example of how the MAP and RAP analyses are flawed is that the estimates made by the analyses are projected out 20 years, but do not include emerging technologies despite the fact that Ameren does consider things such emerging supply-side strategies as carbon capture and sequestration. Ameren responds that it did include emerging technologies. However, they simply state this and then use as examples efficiency technologies that are all commercially available and cost-effective now, and promoted by many existing DSM programs. In fact, some of their examples have been mainstays of many DSM programs for years. In other words, Ameren could not even identify a single actual emerging technology that it analyzed.[7]

Q: Please summarize your testimony.

A: My testimony shows that Ameren's Response Comments simply continue the arguments they have already made with little new evidence or reason for me to reconsider our original concerns. Rather, they confirm that:

1. Ameren relegated DSM as a second class resource, and did not allow it to compete on an equivalent basis with supply;
2. Ameren dramatically underestimated DSM potential, and then defined away even their relatively low estimate of MAP as simply not realistic. Further, their own definitions create contradictions and result in completely flawed logic. And;

[7] Ameren Response Comments, p. 36, Ameren cites LED lamps, heat pump water heaters, gravity film heat exchangers, ground coupled heat pumps, variable frequency motor drives, and smart strip plug controller as "emerging" measures it analyzed.

3. Ameren admits that it started the IRP process with a desired outcome based on inappropriate regulatory concerns and therefore did not engage in a good faith effort to understand and analyze the options available to determine a least cost solution to providing energy services, as required by the IRP rules.

Q: Does this conclude your testimony?

A: Yes.