Response to Stakeholder Comments

Ameren Missouri – 2014 Integrated Resource Plan

Background

On October 1, 2014, Ameren Missouri filed its triennial Integrated Resource Plan (IRP) with the Missouri Public Service Commission (Commission). On or before March 2, 2015, the Commission Staff (Staff) and other stakeholders filed comments on Ameren Missouri's IRP filing, identifying certain alleged deficiencies and concerns in accordance with 4 CSR 240-22.080(7)&(8). Pursuant to 4 CSR 240-22.080(9), Ameren Missouri, Staff and other stakeholders worked together to craft a joint agreement on a plan to remedy the identified deficiencies and concerns. That joint agreement, filed concurrent with this response, identified remedies for many of the alleged deficiencies and concerns. Remedies include:

1. Additional direction from Ameren Missouri regarding the location of certain information in the IRP filing that may have been overlooked by stakeholders.
2. A supplemental filing to be made by Ameren Missouri to provide additional discussion regarding certain issues.
3. Follow-up discussions regarding certain issues.

The remedies for specific alleged deficiencies and concerns are listed in the joint agreement. Agreement could not be reached on remedies for certain alleged deficiencies and concerns. Stakeholders alleging deficiencies and/or concerns that remain unresolved are: Staff, Office of Public Counsel (OPC), Missouri Division of Energy (DE), Sierra Club (SC), Natural Resources Defense Council (NRDC) and Renew Missouri (RM). Ameren Missouri's response to those alleged deficiencies and concerns is provided in this report.

Response to Alleged Deficiencies and Concerns

DSM related issues are at the forefront of stakeholders' comments. It is Ameren Missouri's position that the better avenue to address the unresolved issues related to DSM is the Company's current MEEIA case as it will establish the 2016-2018 programs and what will actually be implemented. It is also important to note that during the development of its DSM Potential Study, Ameren Missouri conducted many meetings where all stakeholders were invited and had an opportunity to provide meaningful input and influence the results of the study. However, input from NRDC and Sierra Club was at most minimal, and this should be kept in mind when considering their comments filed in this case.

Issue Identifier: Staff Concern 1, DE Concern 10
Joint Filing Reference: Paragraph 7.x.
Stakeholder Report Reference: Staff Comments – Page 15, DE Comments – Page 5
IRP Rule Reference: None

Description: Incremental annual energy savings expected from Ameren Missouri's realistic achievable potential ("RAP") portfolio for the MEEIA Cycle 2 (2016 – 2018) may be vastly underestimated, since the kWh and kWh per $ savings are less than half the actual achieved levels of kWh and of kWh per $ during Ameren Missouri's pre-MEEIA programs (2009 – 2011) and MEEIA Cycle 1 programs to date (2013 – 2014)

Suggested Remedy: Staff has suggested, and both Ameren Missouri and DE have agreed, that this concern shall be resolved as part of Ameren Missouri's current MEEIA case (EO-2015-0055).

Issue Identifier: Staff Concern 2, DE Concern 10
Joint Filing Reference: Paragraph 7.y.
Stakeholder Report Reference: Staff Comments – Page 15, DE Comments – Page 5
IRP Rule Reference: None

Description: Incremental and cumulative annual energy savings expected from Ameren Missouri's RAP portfolio during the long-term planning horizon may be vastly underestimated, since the Ameren Missouri savings are approximately one-half the incremental and cumulative annual energy savings of the IRP RAP portfolios of Kansas City Power & Light Company and KCP&L Greater Missouri Operations Company.

Suggested Remedy: Staff has suggested, and both Ameren Missouri and DE have agreed, that this concern shall be resolved as part of Ameren Missouri's current MEEIA case (EO-2015-0055).

Issue Identifier: OPC Concern 1
Joint Filing Reference: Paragraph 7.z.
Stakeholder Report Reference: OPC Comments – Page 1
IRP Rule Reference: 4 CSR 240-22.050(2)

Description: Adjustments made to Ameren Missouri's potential study results using YouGov market research may be inappropriate.

Suggested Remedy: Both Ameren Missouri and OPC have agreed that this concern shall be resolved as part of Ameren Missouri's current MEEIA case (EO-2015-0055).

Issue Identifier: NRDC Concern 1
Joint Filing Reference: Paragraph 7.g.
Stakeholder Report Reference: NRDC Comments – Page 2-6
IRP Rule Reference: None

Description: Energy efficiency savings potential is significantly lower than the amount available in other jurisdictions and based on other potential studies.

Response: In the Company's current MEEIA case EO-2015-0055, specifically in the surrebuttal testimony of Richard A. Voytas (MEEIA Testimony) attached to this document as Attachment A, Ameren Missouri has provided extensive analysis that shows on a normalized basis Ameren Missouri DSM Potential Study yielded similar, and in some cases higher, energy efficiency savings than the studies cited by NRDC. NRDC has not done any gap analysis between other jurisdictions or other potential studies and Ameren Missouri's potential study and therefore has not provided any meaningful comparison for evaluation of Ameren Missouri's DSM portfolios.

Issue Identifier: NRDC Concern 2
Joint Filing Reference: Paragraph 7.h.
Stakeholder Report Reference: NRDC Comments – Page 6
IRP Rule Reference: None

Description: The maximum take rates in Ameren Missouri's DSM potential study are lower than what is currently being achieved.

Response: As explained in the MEEIA Testimony, contrary to NRDC allegation, the Ameren Missouri take rates actually being achieved are lower than what was estimated in the DSM Potential study. The most poignant example is the Residential HVAC program where the DSM potential study predicted a 36% take rate and the actual take rate is 28% - which reflects aggressive incentives and an $882,000 per year marketing budget for this one program.

Issue Identifier: NRDC Concern 3
Joint Filing Reference: Paragraph 7.i.
Stakeholder Report Reference: NRDC Comments – Page 7
IRP Rule Reference: None

Description: Reductions to measure-level potential to reflect program potential are inappropriate.

Response: The MEEIA Testimony provides extensive explanation on why the program potential is lower than the measure level potential. These factors include:

- Interactive effects between measures cause total energy savings from multiple measures to be less than the sum of savings from individual measures and these effects vary by program
- Not all measures are suitable for utility programs, i.e., consumer electronics

- Federal and state mandates to aggressively pursue energy efficiency improvements in federal and state office buildings
- The addition of program and portfolio costs make marginally cost effective measures, when screened as cost effective at the measure level, cost ineffective at the program and portfolio levels.

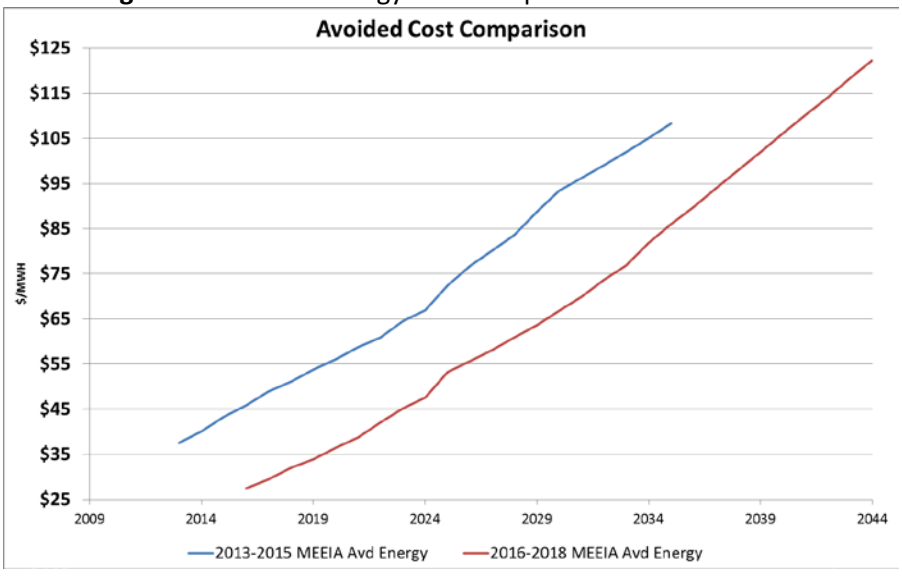
Issue Identifier: NRDC Concern 4
Joint Filing Reference: Paragraph 7.j.
Stakeholder Report Reference: NRDC Comments – Page 7-10
IRP Rule Reference: None

Description: Downward adjustments to program potential due to EM&V, avoided costs, and codes and standards are inappropriate.

Response: The MEEIA Testimony provides extensive explanation on why the adjustments to program potential are appropriate. These factors include:

- EISA legislation and the ensuing increase in mandated higher efficiency levels for lighting make CFLs cost ineffective for MEEIA 2016-2018
- EM&V analyses reduced the Residential Appliance Recycling load reductions for a refrigerator from 1400 kWh per unit, which was assumed in the DSM Potential study, to 1000 kWh per unit from 2013 EM&V to a projected 700 kWh per unit for MEEIA 2016-2018
- EM&V impact analyses showed that HVAC equipment savings were 80% of the levels used in the DSM Potential study.
- EM&V showed that most occupancy sensors, programmable thermostats, smart power strips, among many other measures are no longer cost effective
- EM&V showed that the interactive effects for the Residential New Homes program where such that individual measure realization rates were less than 50% and NTG < 30%
- Reduction in avoided energy costs between the Company's 2011 and 2014 IRPs can be seen in the figure below

Figure 1: Avoided Energy Cost Comparison



Issue Identifier: NRDC Concern 5
Joint Filing Reference: Paragraph 7.k.
Stakeholder Report Reference: NRDC Comments – Page 10
IRP Rule Reference: None

Description: Ameren Missouri's risk assumptions for the maximum achievable potential (MAP) DSM portfolio are inappropriate, and Ameren Missouri has included a higher cost realistic achievable potential (RAP) DSM portfolio in its preferred resource plan.

Response: These issues are also discussed in detail in the Company's surrebuttal testimonies in EO-2015-0055. The definition of MAP in the IRP rules indicates that it "is considered the hypothetical upper boundary of achievable demand-side savings potential, because it presumes conditions that are ideal"; therefore, it is only natural that it would entail greater risk than that for the RAP portfolio, which assumes expected program participation and realistic implementation conditions. As shown in the MEEIA Testimony, other studies also assign higher risk to MAP level portfolios than RAP level portfolios.

Ameren Missouri's selection of RAP DSM in its preferred plan is appropriate even though RAP results in higher total cost (PVRR) than MAP DSM. Minimizing PVRR is the primary selection criterion for selecting a preferred resource plan, but it is not the only criterion. Ameren Missouri's management identified several planning objectives and performance measures that were used to evaluate the alternative resource plans and select the preferred resource plan to best balance these objectives. These measures included levelized rates and maximum single-year increase (also required performance measures in the Commission's resource planning rule), and these measures showed adverse rate impacts on customers for MAP relative to RAP. Also, the annual PVRR results showed that the RAP energy efficiency plan costs customers less than the MAP plan through 2025, and the cumulative cost advantage of RAP energy efficiency continues until 2034. All of the analysis results suggested that it would be a much better approach to start with RAP level energy efficiency programs instead of starting out with MAP energy efficiency and subjecting customers to higher rate and cost impacts with a great deal of uncertainty as to the benefit. These considerations have been explained in the IRP filing and in surrebuttal testimony in the Company's current MEEIA case.

Issue Identifier: NRDC Concern 9
Joint Filing Reference: Paragraph 7.o.
Stakeholder Report Reference: NRDC Comments – Page 13
IRP Rule Reference: None

Description: Ameren Missouri's program designs could be improved to capture greater savings.

Response: As explained in the MEEIA Testimony, Ameren Missouri's program designs are highly flexible and include multiple delivery channels, i.e., upstream, midstream and downstream where appropriate to capture all cost-effective savings. The reasons behind why NRDC's recommendations on program designs are not appropriate are addressed in the IRP filing and/or the MEEIA Testimony. It should also

be noted that Ameren Missouri will continue to assess and develop expertise in LED street lighting and share its evaluation report with the Staff or any other interested parties.

Issue Identifier: SC Concern 3
Joint Filing Reference: Paragraph 7.q.
Stakeholder Report Reference: SC Comments – Page 11
IRP Rule Reference: None

Description: Ameren Missouri doesn't pursue the highest levels of cost-effective energy savings from demand-side resources.

Response: Ameren Missouri has explained in the IRP and in the MEEIA Testimony why the RAP and MAP level portfolio adjustments are appropriate. Additionally, Ameren Missouri has proven from its implementation of MEEIA 2013-2015 energy efficiency programs that it does pursue the highest levels of energy efficiency savings at the lowest possible costs.

Issue Identifier: OPC Deficiency 4
Joint Filing Reference: Paragraph 7.a.
Stakeholder Report Reference: OPC Comments – Page 5
IRP Rule Reference: 4 CSR 240-22.050(3)(F)

Description: OPC asserts that Ameren Missouri has not included any suggestions or analysis on the feasibility of delivering statewide marketing and outreach programs, joint programs with natural gas utilities, upstream market transformation programs, and other activities.

Response: Ameren Missouri has appropriately evaluated, described and documented the feasibility of statewide marketing and outreach programs, joint programs with natural gas utilities and upstream market transformation programs as described in its IRP filing on pages 14-15 of Chapter 8 – Demand-Side Resources. The Company has specifically indicated that it actively coordinates its efforts on its own electric and gas energy efficiency programs and has been working with Laclede Gas regarding program coordination since at least 2009. Ameren Missouri uses all three common methodologies to deliver its DSM programs – upstream, midstream and downstream – based on market conditions and in collaboration with the implementation teams, trade allies, and customers.

Issue Identifier: DE Concern 1
Joint Filing Reference: Paragraph 7.b.
Stakeholder Report Reference: DE Comments – Page 1
IRP Rule Reference: None

Description: DE suggests that Ameren Missouri should consider how a revised supplementary service rider would impact combined heat and power (CHP) potential.

Response: Ameren Missouri evaluated CHP potential as part of its DSM potential study and has documented its findings in Chapter 8 of its IRP filing on pages 66-70. Standby rates were not included in the analysis of Ameren Missouri system wide CHP potential. However, standby rates were included in high level case studies at two industrial sites. The Company notes that customer rate structures may impact the extent of benefits realized by the customer and therefore impact their willingness to participate. This does not address the issue of whether CHP is cost effective as a resource, which is determined based on total avoided cost benefits. Ameren Missouri's potential study found CHP to be only marginally cost effective. The Company will continue to evaluate the potential for CHP and distributed generation in future potential studies and will consider rate structure implications as appropriate.

Issue Identifier: DE Concern 2
Joint Filing Reference: Paragraph 7.c.
Stakeholder Report Reference: DE Comments – Page 2
IRP Rule Reference: None

Description: DE suggests that a more detailed description of the Company's basis for the 10% benefits adder applied for purposes of the societal cost test (SCT) should be provided.

Response: Ameren Missouri applied a 10% benefits adder for purposes of the SCT to mirror the benefits adders applied in adjacent states such as Iowa and Illinois. Because it is not a calculated number, there is no additional analytical basis for the 10% value.

Issue Identifier: DE Concern 3
Joint Filing Reference: Paragraph 7.d.
Stakeholder Report Reference: DE Comments – Page 2
IRP Rule Reference: None

Description: DE asserts that the costs and benefits of low-income and educational programs should be excluded from a computation of the overall cost effectiveness test for DSM portfolios because such programs are not required to be cost effective.

Response: Ameren Missouri is fully aware that low-income and educational programs are not required to be cost effective. Consistent with that, Ameren Missouri has not included a requirement that such programs be cost effective to be included in the Company's planned DSM portfolio. However, it is useful to examine the overall cost effectiveness of the Company's entire portfolio to ensure that the overall benefits to all customers sufficiently justify the costs. In fact, 4 CSR-3.164(2)(B) requires that low income programs be included in the portfolio cost effectiveness tests. Inclusion of the costs and benefits of such programs in an overall portfolio cost effectiveness analysis is by no means intended to preclude consideration of such programs. In fact, Ameren Missouri has included in its 2016-2018 MEEIA program plan submitted to the Commission for approval low-income programs that do not pass the total resource cost (TRC) test; Table 1 below illustrates the TRC estimates for this plan. Clearly, low

income and educational programs that are included in the Company's proposed MEEIA 2016-2018 plan are not cost effective, and including them in the total portfolio TRC calculation makes almost no difference in the portfolio TRC results.

Table 1 : TRC for Low Income Programs and for Total Portfolio

TRC	**Low Income Programs**	**Without Low Income Prog**	**With Low Income Prog**
MEEIA 2 Plan	0.79	1.56	1.53

Issue Identifier: NRDC Concern 6
Joint Filing Reference: Paragraph 7.l.
Stakeholder Report Reference: NRDC Comments – Page 11
IRP Rule Reference: None

Description: NRDC asserts that Ameren Missouri's cost and savings assumptions for the Mid DSM portfolio are in appropriate.

Response: Ameren Missouri's analysis of a Mid DSM portfolio can provide only limited, if any insight, because without separate primary market research to support an estimate of potential, such as is available for RAP and MAP, some degree of interpolation is required. While Ameren Missouri acknowledges that the cost-per-kWh saved to achieve MAP potential is higher than that for RAP potential, how that metric behaves between the two is not at all clear without additional research. As a result, the available approach is to perform a linear interpolation as Ameren Missouri has done. This is not to say that there is not additional cost-effective potential between RAP and MAP at less than the cost implied by the linear interpolation. Indeed, as Ameren Missouri continues to evaluate program performance and conduct additional market research, we expect to identify additional cost effective savings opportunities over time. That said, a more painstaking effort to specifically identify precise levels of savings opportunities between RAP and MAP and the precise costs required to achieve such levels of savings can be nothing more than an academic exercise. It is for these reasons that the Mid DSM portfolio was not evaluated as part of alternative resource plans, but rather as a separate analysis to determine what, if any, additional insights could be gained.

Issue Identifier: NRDC Concern 7
Joint Filing Reference: Paragraph 7.m.
Stakeholder Report Reference: NRDC Comments – Page 12
IRP Rule Reference: 4 CSR 240-22.050(4)

Description: NRDC asserts that the Company's IRP filing did not include demand-side rate resources analyzed by the Brattle Group.

Response: Ameren Missouri included a full discussion of demand-side rate options in Chapter 8 of its IRP filing, on pages 71-77. Importantly, while the potential savings resulting from implementation of demand-side rates may be significant, serious rate design issues will have to be addressed prior to such

implementation. The Company noted in particular, on page 77 of Chapter 8, that, "Ameren Missouri considers the 2013 demand-side rates analysis the beginning of a broader discussion with stakeholders and the Commission around the complex issue of rate design where there is the potential to have customers who are winners and losers relative to the status quo. Consequently, no rate design potential impacts have been assumed in the 2014 Ameren Missouri IRP filing."

Issue Identifier: NRDC Concern 8
Joint Filing Reference: Paragraph 7.n.
Stakeholder Report Reference: NRDC Comments – Page 12
IRP Rule Reference: None

Description: NRDC asserts that the Company's IRP filing did not include a comprehensive treatment of targeted DSM.

Response: Ameren Missouri included a full discussion of targeted DSM in Chapter 8 of its IRP filing, on pages 64-66. Such targeted DSM opportunities can only be identified and evaluated when specific infrastructure projects and associated cost estimates are identified. As examples of the kinds of projects for which targeted DSM should be considered, the Company identified two substation upgrade projects and concluded that there is no opportunity for cost-effective savings. As also indicated on page 66 in Chapter 8, "Ameren Missouri Energy Delivery engineers will continue to use the targeted DSM methodology outlined above to assess cost effective targeted DSM opportunities in future budget cycles."

Issue Identifier: DE Concern 4
Joint Filing Reference: Paragraph 7.e.
Stakeholder Report Reference: DE Comments – Page 3
IRP Rule Reference: None

Description: DE requests that Ameren Missouri provide a discussion of renewable energy standard (RES) requirements and how existing renewable resources contribute to meeting them.

Response: Ameren Missouri has fully described and presented its assumptions and plans for compliance with the RES. Ameren Missouri discusses the RES portfolio requirements in its IRP filing on page 17 of Chapter 2 – Planning Environment. Ameren Missouri's existing renewable resources are described in detail on pages 7-10 of Chapter 6 – Existing Supply Side Resources. Ameren Missouri's analysis of compliance with the RES portfolio requirements is discussed on pages 5-7 of Chapter 9 – Integrated Resource Plan and Risk Analysis. Workpapers included with the Company's IRP filing include the specific detailed model used to evaluate compliance with the RES. This model includes detailed assumptions for the year-by-year individual renewable energy contribution of each existing and future eligible renewable energy resource as well as banking of renewable energy credits (RECs). The model demonstrates the impact of the 1% rate impact limitation included in the Commission's RES rules. All of this documentation is, and has been since early October, fully available for review and discovery by DE. DE

specifically cites Staff comments on Ameren Missouri's draft IRP chapters in its discussion of its concern. Ameren Missouri included specific discussions of the comments provided by Staff and other stakeholders on the draft IRP chapters. This particular issue is addressed on page 6 in Chapter 11 – Stakeholder Process. Staff has not indicated any remaining concerns with Ameren Missouri's treatment and discussion of RES compliance or renewable energy resources. Without any specifics, it really is unclear what additional information DE might need.

Issue Identifier: DE Concern 9
Joint Filing Reference: Paragraph 7.f.
Stakeholder Report Reference: DE Comments – Page 5
IRP Rule Reference: None

Description: DE requests that Ameren Missouri provide information regarding the current rate of customer solar installation rates relative to the Company's assumption of a 5 MW per year pace of future customer solar generation additions.

Response: Ameren Missouri's assumption regarding future additions of customer-owned solar generation reflects a longer-term steady state expectation for installations absent the availability of solar rebates. As the Commission and others are aware, Missouri utilities experienced a surge in applications for rebates for customer-owned solar generation systems in 2013. As a result, Ameren Missouri and other utilities petitioned the Commission to cease payment of solar rebates due to the 1% rate impact limitation included in the RES statute and the Commission's RES rule. Ameren Missouri reached a settlement with the parties to the case, establishing a fixed pool of solar rebate funds. As provided for in the stipulation and agreement signed by the parties to that case, once the fixed amount of solar rebate funds was exhausted, no further rebates would be paid. The table below shows the number of net metering applications processed by Ameren Missouri by month starting in 2007.

Table 2: Net Metering Applications

Ameren Missouri
Approved Net Metering Applications
Customer Solar Installations

	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Jan		1	0	2	5	74	57	29	4	
Feb		1	5	4	8	29	50	7	3	
Mar		0	3	45	23	41	76	9	2	
Apr		0	2	4	17	33	85	19		
May		1	0	6	38	76	125	9		
Jun		2	1	6	9	78	135	26		
Jul		2	1	5	7	97	204	5		
Aug		0	2	78	18	65	233	14		
Sep		0	1	14	21	36	219	5		
Oct		1	3	11	18	74	488	12		
Nov		3	3	6	28	60	485	7		
Dec		2	2	6	23	47	1465	9		
Total	1	13	23	187	215	710	3622	151	9	4931

For 2014, solar net metering applications totaled 151, similar in magnitude to the 187 applications processed in 2010. At an average system size of 11 kW, 151 applications equates to about 1.7 MW. Customer solar installations are likely to rise over time as distributed solar becomes more competitive with utility retail rates. On this basis, Ameren Missouri believes the 5 MW per year assumption to be reasonable. Ameren Missouri included evaluation of a much higher level of distributed solar generation penetration in Chapter 9 of its IRP filing to test the robustness of its preferred resource plan and to estimate the impacts on customer costs.

Issue Identifier: SC Deficiency 1
Joint Filing Reference: Paragraph 7.p.
Stakeholder Report Reference: Sierra Club Comments – Page 5
IRP Rule Reference: None

Description: Sierra club asserts that Ameren Missouri's treatment of future carbon regulations is deficient because it is internally inconsistent and effectively assumes an 85% chance of a carbon cost of $0 for its coal-fired generators.

Response: Ameren Missouri's consideration of future regulation of greenhouse gases (GHG) is appropriate. This particular issue was raised by Sierra Club in Ameren Missouri's recent rate case (ER-2014-0258) and again by Sierra Club in Ameren Missouri's current MEEIA case (EO-2015-0055). In both of these cases, Ameren Missouri has filed extensive testimony demonstrating the appropriateness of the GHG regulation assumptions it has included in its IRP analysis. Rather than repeat all of those specific points at length here, they are included by reference and summarized as follows:

- Assumptions for future GHG regulations were developed in consultation with subject matter experts in environmental regulation and policy at executive management levels. These experts assessed the future possibilities for GHG regulation and established assumptions representing the range of possibilities in terms of combinations of coal generation retirements and, in some cases, an explicit price on CO_2 emissions.
- The range of coal retirements reflected in Ameren Missouri's assumptions during the 20-year planning horizon is 80-120 GW, with a central assumption of 100 GW being the most probable.
- The central assumption for retirements is very similar to the results of analysis by NERA Economic Consulting (97 GW), the Bipartisan Policy Center (~90 GW), and consultants for the U.S. Environmental Protection Agency (EPA) (~100 GW).
- Ameren Missouri included specific coal plant retirement assumptions in its modeling of the GHG (and other environmental regulation) policy scenarios, including plants owned by utilities in Missouri that have since announced plans to retire those very plants.
- The total retirements assumed represents approximately one-third of total U.S. coal-fired generation of over 300 GW.

- Ameren Missouri has included retirement of one-third of its own coal-fired generation as part of its preferred resource plan (and every alternative resource plan evaluated), therefore establishing a highly consistent set of assumptions for both Ameren Missouri and the industry at large.
- Retirement of coal generation, and when necessary replacement by less carbon-intensive forms of generation (e.g., renewables, gas, nuclear) results in the realization of the primary costs imposed by GHG regulations – the lost production from coal-fired generation and the cost of replacement generation.
- It is not necessary, and would in fact be a double-count of compliance costs, to additionally impose a price on CO_2 emissions when a mechanism establishing an explicit price on CO_2 emissions (such as through a carbon tax or cap-and-trade system) is not in place.
- Ameren Missouri assumed a combined 85% probability of GHG regulation that does not include an explicit price on CO_2 emissions.
- The EPA's proposed Clean Power Plan (CPP) represents just the kind of regulation contemplated in Ameren Missouri's assumptions regarding GHG regulation without an explicit price on CO_2 emissions. The proposed regulation imposes neither a carbon tax mechanism nor a cap-and-trade mechanism.
- Ameren Missouri assumed the inclusion of an explicit price on CO_2 emissions for the remaining 15% probability in its GHG/environmental regulation scenarios.
- Under those scenarios that include an explicit price on CO_2 emissions, Ameren Missouri assumed a range of CO_2 prices based on price forecasts developed by Synapse Energy Economics and included in their 2013 published report, 2013 Carbon Dioxide Price Forecast. The report was co-authored by Ezra Hausman, PhD, who was employed by Synapse at that time. Dr. Hausman is also the author of Sierra Club's comments on Ameren Missouri's 2014 IRP.
- Based on the informed judgment of Ameren Missouri's executive subject matter experts, the CO_2 prices under Ameren Missouri's assumptions begin in 2025 rather than in 2020 as presented in the 2013 Synapse report. This is based on the subject matter experts' assessment of the policy environment expected during the 20-year IRP planning horizon.
- Synapse released a new report on CO_2 prices in March 2015. The price forecasts in the updated report are very similar to those presented in the 2013 report.

In short, Ameren Missouri's treatment of future GHG regulations is appropriate, is consistent with third-party analyses of GHG policy impacts, and is fully consistent with the Company's planned actions regarding its coal-fired generation fleet as represented in its preferred resource plan. Any differing opinions regarding future carbon regulations are just opinions and not a justification for finding a deficiency.

Issue Identifier: RM Deficiency 1
Joint Filing Reference: Paragraph 7.r.
Stakeholder Report Reference: Renew Missouri Comments – Page 1
IRP Rule Reference: 4 CSR 240-22.100(5)

Description: Renew Missouri alleges that Ameren Missouri has not properly calculated the 1% rate impact limitation required by the Commission's RES rules and therefore has inappropriately constrained its future additions of renewable energy resources.

Response: Ameren Missouri has appropriately evaluated the effects of the 1% rate impact limitation in the Commission's RES rules as part of its analysis of RES compliance in the IRP. The Company has used a detailed model, included in its workpapers filed with the IRP, to evaluate the RES portfolio requirements and the constraints imposed by the 1% retail rate impact limitation. In case ET-2014-0085, in which Ameren Missouri sought suspension of solar rebates due to the 1% limitation, the Company and other parties to the case, including Renew Missouri, signed a stipulation and agreement resolving that case. In paragraph 7.b. of the stipulation and agreement, the parties agreed as follows:

> While this Agreement resolves the aggregate amount of solar rebates paid between July 31, 2012 until the specified amount is paid the Agreement has not resolved the method that will be utilized in the future to calculate the one percent (1%) cap in the retail rate impact in future RES compliance filings. ***The Signatories agree to work to resolve this issue in a rulemaking to implement the provisions of HB 142. Ameren Missouri, however, represents that it will utilize the Staff's methodology in future RES compliance filings until the RES rule is changed.*** Provided, however, other Signatories reserve the right to assert any position related to Ameren Missouri's use of the Staff's methodology in future RES compliance filings, and to propose alternative methodologies. {emphasis added}

Staff conducted workshops in early 2014 to incorporate the provisions of HB 142 into the RES rules and to make any other appropriate modifications to the rule. Staff submitted a proposed revised rule to the Secretary of State and that proposed rule will be considered by the Commission, but changes have not yet taken effect. Ameren Missouri has employed what was referred to as "Staff's methodology" (itself a representation of the calculation specified by 4 CSR 240-20.100(5)) in the above referenced paragraph in conducting its analysis of RES compliance for the IRP. While the paragraph above also preserves the right of Renew Missouri and any other party to take any position they choose regarding the 1% calculation, Renew Missouri has offered no proposed alternative methodology to illustrate how it believes the 1% calculation should be performed. Renew Missouri simply states its unsupported opinion that the Company's calculation is wrong. In doing so, Renew Missouri mischaracterizes the requirements for the calculation by stating that the RES rule requires a comparison of renewable resource additions to additions of the same amount of non-renewable resources. This is simply not true.

The RES rule requires a comparison of two portfolios, a non-renewable portfolio and a RES-compliant portfolio. Both start with the Company's existing portfolio excluding existing renewable resources. The

non-renewable portfolio then includes any additional resources necessary to meet load and reserve margin requirements. The RES-compliant portfolio first includes the addition of renewable resources sufficient to meet the RES portfolio requirements then any additional resources necessary to meet load and reserve margin requirements. The cost of the two portfolios is compared to determine whether the RES-compliant portfolio results in greater than a 1% average increase in rate revenues over a ten-year period. If the ten-year average rate impact exceeds 1%, then the amount of renewable resources must be scaled back to result in exactly a 1% increase. Because the vast majority of scalable renewable resources (i.e., wind and solar) are in effect discounted for capacity reserve margin purposes, there is little or no difference between the non-renewable and RES-compliant portfolios in the amount of non-renewable resources needed to meet load and reserve margin requirements. Therefore, and contrary to Renew Missouri's assertions, the calculation of the 1% rate impact limitation can essentially be simplified into the concept of a RES compliance "budget" that is equal to 1% of the ten-year average revenue requirement for the non-renewable portfolio. This is how Ameren Missouri has presented the calculation in its model used for evaluating RES compliance for its IRP analysis, which again is included in the workpapers filed with the IRP and to which all parties to the case have access.

In short, Ameren Missouri has appropriately accounted for the 1% rate impact limitation in the RES rules, following the Staff's methodology.

Issue Identifier: RM Deficiency 2
Joint Filing Reference: Paragraph 7.s.
Stakeholder Report Reference: Renew Missouri Comments – Page 2
IRP Rule Reference: None

Description: Renew Missouri alleges that Ameren Missouri has not sufficiently considered purchasing RECs from customer with distributed generation.

Response: Ameren Missouri has appropriately included RECs from customer-owned distributed solar generation in its analysis of RES compliance in the IRP. Following the effective date of HB-142 in August 2013, Ameren Missouri was entitled to solar RECs (S-RECs) from customer-owned solar generation systems for which a solar rebate was paid under the RES statute. All such S-RECs are included in the RES compliance model mentioned previously in this report. Also included in the model are any S-RECs previously purchased from customers through Ameren Missouri's standard offer contract. Contrary to Renew Missouri's assertion, Ameren Missouri has not assumed 614 MW of solar generation on its system as part of its core IRP analysis. Renew Missouri has misinterpreted a special sensitivity case that Ameren Missouri evaluated to test the impacts on its preferred resource plan of a much larger than expected penetration of customer-owned solar generation. As stated in response to DE Concern 9, Ameren Missouri assumed a 5 MW annual increase in customer-owned solar generation as part of its based load forecast assumptions. Renew Missouri insists that Ameren Missouri is also required to continue to pay solar rebates and thus benefit from S-RECs surrendered by rebate recipients. The presumption that Ameren Missouri must continue to pay solar rebates is utterly false, and is addressed later in this report in response to Renew Missouri Deficiency 4. In summary, Ameren Missouri has fully

accounted for S-RECs to which it is entitled either through the payment of solar rebates or purchases through a standard offer contract.

Issue Identifier: RM Deficiency 3
Joint Filing Reference: Paragraph 7.t.
Stakeholder Report Reference: Renew Missouri Comments – Page 2
IRP Rule Reference: 4 CSR 240-22.060(3)(A)

Description: Renew Missouri alleges that Ameren Missouri's IRP is deficient because the Company's preferred resource plan does not demonstrate compliance with the EPA's proposed CPP.

Response: Ameren Missouri has appropriately evaluated the implications of the proposed CPP. EPA released its proposed rule regarding GHG emissions from existing generators in early June 2014. At that time, Ameren Missouri was completing its core IRP analysis on which the Company's management relied to select the preferred resource plan. Because of the timing of the proposed rule, Ameren Missouri was able to perform additional analysis of the implications of complying with the proposed CPP and included that analysis and discussion in its IRP filing. However, it must be remembered that the CPP was, and at this time still is, only a proposed rule. The final rule, expected sometime in summer 2015, will almost certainly be subject to legal challenges, as even the proposed rule already has been. What the final rule will be and whether and when it will ultimately be enforced is still in doubt. In any case, Ameren Missouri will continue to consider and evaluate its options and plans for compliance with whatever the final rule may be. At the time of its filing in October 2014, Ameren Missouri's IRP reflected the best possible analysis of CPP compliance that could reasonably be expected.

Issue Identifier: RM Deficiency 4
Joint Filing Reference: Paragraph 7.u.
Stakeholder Report Reference: Renew Missouri Comments – Page 3
IRP Rule Reference: 4 CSR 240-22.010(2)(A), 4 CSR 240-22.060(3)(A)1

Description: Renew Missouri alleges that Ameren Missouri has not properly analyzed compliance with the Missouri RES because the Company is required to continue paying solar rebates.

Response: Ameren Missouri has appropriately analyzed compliance with the Missouri RES. Renew Missouri's assertion is related to the erroneous basis on which it alleges the Company has not correctly evaluated the 1% rate impact limitation. A complete refutation of this position is included in this report in the Company's response to Renew Missouri Deficiency 1. It is also noteworthy that the payment of solar rebates by Ameren Missouri is subject to a stipulation and agreement approved by the Commission in Case ET-2014-0085 and signed by Renew Missouri. That stipulation and agreement established a fixed pool of dollars available for solar rebates, which once exhausted would result in the end of solar rebate payments by Ameren Missouri. The Company has faithfully abided by the terms of the stipulation and agreement. For Renew Missouri to act as though it does not exist, let alone act like they did not themselves sign it, is disingenuous at best.

Issue Identifier: RM Deficiency 5
Joint Filing Reference: Paragraph 7.v.
Stakeholder Report Reference: Renew Missouri Comments – Page 3
IRP Rule Reference: 4 CSR 240-22.040(1)

Description: Renew Missouri alleges that Ameren Missouri has not appropriately evaluated distributed generation as a supply-side option.

Response: Ameren Missouri has evaluated several distributed technologies as supply-side options, including distributed solar generation. Chapter 6 of the IRP describes the Company's consideration of new supply-side resources. As described on page 2 of Chapter 6, the Company relied on an evaluation of a "universe" of potential supply-side resources conducted by Black and Veatch. This universe of options included fuel cells and reciprocating engines, two technologies potentially suitable for distributed generation applications. Both passed a fatal flaw screening, as described in Chapter 6 – Appendix A. However, both technologies were screened from further consideration as part of the preliminary screening analysis described in Chapter 6 – Appendix B. As a result, neither technology was included for consideration to be included in alternative resource plans. Separately, renewable technologies suitable for distributed generation applications were evaluated – utility scale solar generation (i.e., non-customer-owned) and landfill gas generation. Ameren Missouri has operational facilities of both kinds, solar and landfill gas that serve as examples of distributed generation. They are relatively small compared to other utility generators and are not directly connected to the bulk transmission system. Both technologies passed screening, were evaluated as part of alternative resource plans, and are included in Ameren Missouri's preferred resource plan. To the extent Renew Missouri is referring specifically to customer-owned distributed solar generation, that may or may not be appropriate for consideration as a supply-side resource, but Ameren Missouri has clearly evaluated a range of distributed generation technologies as supply-side resource options. The company also included assumed levels of customer-installed solar generation as part of its load forecast, as discussed elsewhere in this report, and as described in Chapter 3 of the Company's IRP filing.

Issue Identifier: RM Deficiency 6
Joint Filing Reference: Paragraph 7.w.
Stakeholder Report Reference: Renew Missouri Comments – Page 4
IRP Rule Reference: 4 CSR 240-22.060(3)(A)5

Description: Renew Missouri alleges that Ameren Missouri has not provided sufficient support for the 400 MW of wind the company included in its preferred resource plan.

Response: Ameren Missouri has sufficiently explained the inclusion of 400 MW of wind in its preferred resource plan. Ameren Missouri's planning objectives are set forth beginning on page 12 of Chapter 9 of the IRP filing. One objective, Environmental/Renewable/Resource Diversity, is described on page 13. The description reads in part, "Ameren Missouri seeks to transition its generation portfolio to one that is cleaner and more diverse in a responsible fashion. To test various options for advancing this transition,

alternative resource plans were developed to include MAP or RAP energy efficiency, renewables in addition to those required for RES compliance, new gas-fired generation, new nuclear generation, storage resources, and additional coal retirements." The Balanced Portfolio described in Chapter 9 and included in the preferred resource plan as noted in Chapter 10 reflects additional renewable generation beyond that required for RES compliance precisely to help satisfy this objective. The Company also evaluated an alternative resource plan that relies only on renewable resources to meet future demand, as described on page 17 of Chapter 9 and shown as Plan L at the bottom of page 15. The Company also evaluated the inclusion of an additional 150 MW of wind in its preferred plan, resulting in a total of 550 MW of wind generation. This additional wind resulted in an increase in PVRR of $102 million as shown in Chapter 10, page 16. Renew Missouri's continued assertion that demonstration of compliance with the EPA's proposed CPP must be reflected in the Company's preferred resource plan is fully refuted in this report in response to Renew Missouri Deficiency 3. In short, Ameren Missouri has included a portfolio of renewable resource additions that both satisfies the requirements of the Missouri RES and supports its objectives for reliance on cleaner sources of energy while balancing customer costs and other considerations.