Response to Stakeholder Comments

Ameren Missouri – 2017 Integrated Resource Plan

Background

On September 25, 2017, Ameren Missouri filed its triennial Integrated Resource Plan (IRP) with the Missouri Public Service Commission (Commission). On or before February 28, 2018, 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. Clarification of certain points where stakeholders misinterpreted Ameren Missouri analysis.
2. A commitment by Ameren Missouri to provide its draft load analysis report at a stakeholder meeting for the next triennial compliance filing.
3. Working to identify opportunities to provide affordable/renewable energy opportunities to low-income/minority communities.
4. Seeking stakeholder input on solar and wind resource assumptions.
5. Further evaluating storage options and distributed energy resources.
6. A meeting with stakeholders for the Company's next triennial IRP filing where stakeholders will have an opportunity to define an additional DSM portfolio (in addition to RAP and MAP).
7. A number of items to improve the way the Company's next DSM market potential study is conducted.
8. A commitment to request Commission approval for the relevant changes in its approved MEEIA Cycle 3 plan to reflect new information included in the 2020 IRP and underlying DSM potential study if the Commission approves a 6-year MEEIA Cycle 3 plan.
9. Working with interested stakeholders to develop an agreeable cost effectiveness model of CHP that reflects using CHP as a load management and/or demand response resource under MEEIA.

The remedies for specific alleged deficiencies and concerns are listed in the Joint Filing. Agreement could not be reached on remedies for certain alleged deficiencies and concerns. Stakeholders alleging deficiencies and/or concerns that remain unresolved are: Missouri Division of Energy (DE), Sierra Club and Renew Missouri Advocates (Renew Missouri). Ameren Missouri's response to those unresolved alleged deficiencies and concerns is provided in this report.

EXHIBIT A

<u>Response to Unresolved Alleged Deficiencies and Concerns</u>

Issue Identifier: DE Deficiency 2
Joint Filing Reference: Paragraph 20
Stakeholder Report Reference: DE Comments – Page 4
IRP Rule Reference: None

Description: DE alleges that there is room for additional DSM expenditures to pursue all cost-effective demand-side resources since the DSM Market Potential Study identifies the overall portfolio TRC as 2.04. Additionally, low-income and educational programs do not have to be cost-effective and should not be included in the portfolio TRC calculations.

Response: The allegation of having room for additional DSM expenditures 'to pursue all cost-effective demand-side resources' seems to stem from a misconception DE has on how the portfolios are constructed. Potential is based on economic screening and best estimates of market acceptance based on incentive levels and other factors (i.e. RAP vs. MAP). Those estimates have an inherent TRC based on the accompanying analysis and inputs. The different DSM portfolios are then passed onto the integration analysis to be compared against other resource options. The fact that a DSM portfolio compares favorably to other resource options would not mean it is prudent to go back and add non-cost effective measures until that DSM portfolio has a TRC of 1.0 or until it matches the economic picture of the next best resource option. It would also make no sense to go back and assume different take rates or incentive levels to impact cost effectiveness because those assumptions are already built into the different portfolios.

For the low income potential estimates, Ameren Missouri applied a measure screen of 0.5 on the TRC, but there were a very limited number of measures that were screened and many of those were at lower levels of efficiency compared to a similar measure. Examples of measures screened include: 1) moving from T12s to T8s because we expected to only offer LED conversions, 2) elimination of refrigerator coil cleaning brushes, 3) removal of air sealing at 30% while air sealing 50% was kept and 4) removal of insulation upgrades from R19 to R49 but kept upgrades from R11 to R49. Inclusion of low-income and educational programs in the overall portfolio TRC calculation is not intended to preclude consideration of such programs.

Issue Identifier: Renew Missouri Concern 2
Joint Filing Reference: Paragraph 55
Stakeholder Report Reference: Renew Missouri Comments – Page 2
IRP Rule Reference: 4 CSR 240-22.040(2)(B)

Description: Renew Missouri is concerned that Ameren Missouri underestimates the pace of adoption of distributed resources such as solar PV and battery storage. Renew Missouri is concerned the Company has not properly considered how adoption of such distributed resources will affect overall customer demand or displace the need for future generation.

Response: Renew Missouri's assertion on Page 4 of its comments; "Ameren Missouri's planned natural gas and coal additions (Chapter 6) likely do not consider…" seems to be a misreading of Chapter 6 of the 2017 IRP. The Company basically evaluates a universe of supply-side options for further consideration in its alternative resource plans in Chapter 6 as the Commission's resource planning rule requires. Ameren Missouri is not planning to add any natural gas or coal resources to its generation portfolio; the only supply-side resource additions in the Company's preferred plan are wind and solar resources. Furthermore, Ameren Missouri has included varying degrees of solar PV adoption by its customers in its low, base, and high load forecast scenarios. Ameren Missouri will continue to closely watch how the markets evolve and evaluate both solar PV and storage options as part of its on-going planning process. Ameren Missouri is open to hearing perspectives and information Renew Missouri or other stakeholders can share in this area prior to its 2019 annual update.

Issue Identifier: Sierra Club Deficiency 1
Joint Filing Reference: Paragraph 56
Stakeholder Report Reference: Sierra Club Comments – Page 1
IRP Rule Reference: 4 CSR 240-22.040(2)(B)

Description: Sierra Club alleges that Ameren Missouri inadequately considers likelihood of increasingly stringent environmental regulations.

Response: Ameren Missouri has appropriately considered probable environmental costs in its 2017 IRP.

The Company has considered the probable outcome of regulations currently in process as discussed in detail in Chapter 5 of its 2017 IRP and as summarized in Table 5.1 in that chapter. The Company has also considered the potential for future modifications to emission limits. For example, the Company discussed on page 10 of Chapter 5 its consideration of a further 20% reduction in emission allowance allocations for both SO2 and NOx. Under such a scenario, we expect that no additional controls would be needed. Likewise, the Company explains on page 11 of Chapter 5 that its mercury emissions are substantially below the existing limits and that its facilities would be able to continue to comply without the installation of additional control technology in the unlikely event of reduced limits. The Company shows charts of expected emissions for every alternative resource plan in Chapter 9, Appendix A. These charts generally show that all emissions are expected to decline steadily and significantly throughout the 20-year planning horizon and beyond. The IRP includes assumptions for the installation of wastewater treatment facilities at each of the coal-fired energy centers other than Meramec, for which retirement is planned by the end of 2022 (2017 IRP, Chapter 5, page 20). Regarding solid waste disposal, the Company assumed closure of all existing ash ponds and conversion to dry ash handling (2017 IRP, Chapter 5, pages 20-21).

In summary, the Company has appropriately assessed what it believes to be the probable future requirements of environmental regulations during the planning horizon as required by 4 CSR 240-22.040(2)(B). Sierra Club may hold different opinions or expectations, but such differences do not constitute a deficiency on the part of the Company with respect to its consideration of probable environmental costs in its 2017 IRP. It should be noted that the Company presented its assumptions regarding probable environmental costs to stakeholders in April 2017, and stakeholders are afforded 30 days from that point to make comments regarding potential deficiencies. Sierra Club provided no comments.

Issue Identifier: Sierra Club Deficiency 2
Joint Filing Reference: Paragraph 57
Stakeholder Report Reference: Sierra Club Comments – Page 2
IRP Rule Reference: 4 CSR 240-22.040(2)(B)

Description: Sierra Club alleges that Ameren Missouri's treatment of future carbon regulations is deficient because it assumes carbon prices so unreasonably low even in the "high" case, and with no carbon price before 2025.

Response: With the trends in coal retirements and renewable additions continuing as stated by Sierra Club in their comments, the need for CO2 allowances in a carbon regulated world would be less than if these trends were not materializing. This situation would create downward pressure on CO2 allowance prices. In a presentation made by NRDC to the Missouri Public Service Commission, they projected CO2 prices of less than $5/ton in the middle 2020s under a Clean Power Plan regulation. The EPA is currently considering a repeal and possible replacement of the Clean Power Plan. All of this activity will take time to implement. Thus the timing around the middle 2020s is reasonable and appropriate. Under the assumption of a possible new Administration beginning in 2021 that would impose a more stringent CO2 regulation, it would take several years to develop the new regulation and several more years to put the regulation into effect. Thus a middle 2020s start date on CO2 pricing is a reasonable if not aggressive assumption. In short, Ameren Missouri appropriately considered future carbon regulations. Sierra Club may have a differing opinion, but that does not in itself constitute a deficiency.

Issue Identifier: SC Deficiency 3
Joint Filing Reference: Paragraph 58
Stakeholder Report Reference: Sierra Club Comments – Page 2
IRP Rule Reference: None

Description: Sierra Club alleges that Ameren Missouri inadequately considered economic challenges for its coal units; namely low natural gas prices, competition from renewables, low or negative load growth and Ameren Missouri's high capacity position in excess of reliability requirements.

Response: Ameren Missouri has thoroughly considered key assumptions that affect the economics of its coal-fired units. The Company employed a robust range of scenarios for interdependent market variables, as outlined in Chapter 2 of its IRP filing (2017 IRP, Chapter 2, page 21, Figure 2.7). These variables include natural gas prices, load growth, and future resource retirements and replacements across the broader electric power markets in the Eastern Interconnect. For natural gas prices, we included several scenarios in which natural gas prices are only $2.50/MMBtu for the entire 20-year planning horizon (2017 IRP, Chapter 2, page 10, Table 2.5 and Figure 2.3). We have also included several scenarios reflecting annualized net load <u>reductions</u> across the Eastern Interconnect of 1.36% per year (2017 IRP, Chapter 2, page 6). Our scenarios reflect varying levels of future coal retirements across the Eastern Interconnect, along with replacement generation when needed, including natural gas-fired resources and renewable resources (2017 IRP, Chapter 2, page 19, Figure 2.6). For context, our middle scenario for retirements reflects a reduction in coal capacity of 51%, while Ameren Missouri coal plant retirements amount to a 54% reduction within the planning horizon in our preferred plan. The various scenarios defined by combinations of these assumptions were modeled to determine associated future power prices (2017 IRP, Chapter 2, page 22, Figure 2.8). The resultant scenarios and associated power prices were then used in the preparation of the Company's risk analysis as outlined in Chapter 9 of its IRP filing. These assumptions were presented to stakeholders in April 2017 in accordance with the requirements of 4 CSR 240-22.080(5)(A). Stakeholders had an opportunity to comment on these and other analysis assumptions within 30 days in accordance with 4 CSR 240-22.080(5)(B). Sierra Club provided no comments at all.

Regarding the consideration of Ameren Missouri's capacity position, this is only a relevant consideration with respect to the economics of the existing coal-fired units in that the cost of replacement capacity may need to be considered. Ameren Missouri's capacity position is such that even retirement of all four units at Labadie Energy Center would not require the addition of new conventional generation (e.g., natural gas combined cycle) until 2034. That means that the costs of retiring coal-fired units earlier is actually <u>lower</u> than it would be if the Company's capacity position were such that replacement capacity would be needed concurrent with such retirements. While Sierra Club might view capacity length as a reason that a particular unit or units are "not needed," these assets continue to provide economic benefits to customers and optionality for the Company in meeting its long-term resource obligations. Ameren Missouri's 2017 IRP included several alternative resource plans that help to illustrate just this point. These alternative plans include two plans with all four Labadie units retired in 2024 and one plan with both Rush Island units retired in 2024 (see Table 9.4 on page 10 of Chapter 9 of the 2017 IRP). The results of the analysis of these plans, which accounted for the range of scenarios described previously, demonstrate that such early retirements would result in an increase in costs to customers of $1 Billion to $1.4 Billion (2017 IRP, Chapter 9, page 23, Figure 9.9). Clearly, the preferred plan is not "only marginally preferable" as Sierra Club states.

Sierra Club's assertion that Ameren Missouri has not adequately considered all relevant factors affecting the economics of continued operation of its coal-fired fleet is without merit and should be dismissed.

Issue Identifier: SC Deficiency 4
Joint Filing Reference: Paragraph 59
Stakeholder Report Reference: Sierra Club Comments – Page 2
IRP Rule Reference: 4 CSR 240- 22.010(2)(A), 4 CSR 240-22.060(3)(A)1, 2 and 5

Description: Sierra Club alleges that Ameren Missouri inadequately considers renewables since other than RES only portfolio, there is no wind addition after 700MW and Ameren Missouri is unwilling to add solar, and is relying on 2013 information for solar costs.

Response: Sierra Club makes allegations without fully understanding Ameren Missouri's IRP filing. The table below, included in Chapter 9, shows the renewable resources that would be needed for RES compliance. As seen on the table, 36MW of wind would be needed for RES compliance. Ameren Missouri evaluated 100MW of solar, which is in excess of the compliance requirements, in most of its alternative resource plans including Plan R, which was selected as the Company's preferred plan. Therefore, the Company has selected a preferred plan that includes more solar generation than would be needed for RES compliance under current law.

Table 9.2 Alternative Resource Plans - Renewable Portfolios

Renewable Additions		Nameplate Capacity (MW)																			
		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
RES Compliance	Wind	0	0	0	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Solar	0	0	0	0	25	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0
RES Plus	Wind	0	0	0	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Solar	0	0	0	0	25	0	0	25	0	50	0	0	0	0	0	0	0	0	0	0

In addition, Plan K-No DSM-Wind&SC includes 2,000MW of additional wind.

Furthermore, Ameren Missouri has stated on page 2 of the Executive Summary of its 2017 IRP filing that "the potential exists to add even more wind generation in the coming years as a result of improving technology and economics, as well as renewable energy initiatives with large customers." The Executive Summary also states on page 3 that, "Ameren Missouri will continue to explore renewable investments beyond the IRP that are in the long-term best interest of customers…"

Sierra Club's allegation that, "Ameren Missouri is relying on 2013 information for solar costs." is not accurate. Ameren Missouri updated the 2013 solar cost assumption in 2016 with its subject matter experts as it was preparing the draft reports for the 2017 IRP filing. The overnight capital cost for solar from the 2013 study was $3,777/kW in 2013 dollars, which equates to $4,008/kW in 2016 dollars. The solar cost for 2016 used in Ameren Missouri's 2017 IRP is $1,863/kW, which clearly accounts for a sharp decline in solar costs, contrary to Sierra Club's allegation. This updated data point ($1,863/kW AC) was used as the 2016 cost, and a declining cost curve was used for future costs of solar resources. It should also be noted that Ameren Missouri's cost assumption certainly falls on the lower side of the range mentioned in Sierra Club consultant Ezra Hausman's report (page 13), taken from a Lawrence Berkeley National Laboratory, shown below.[1]

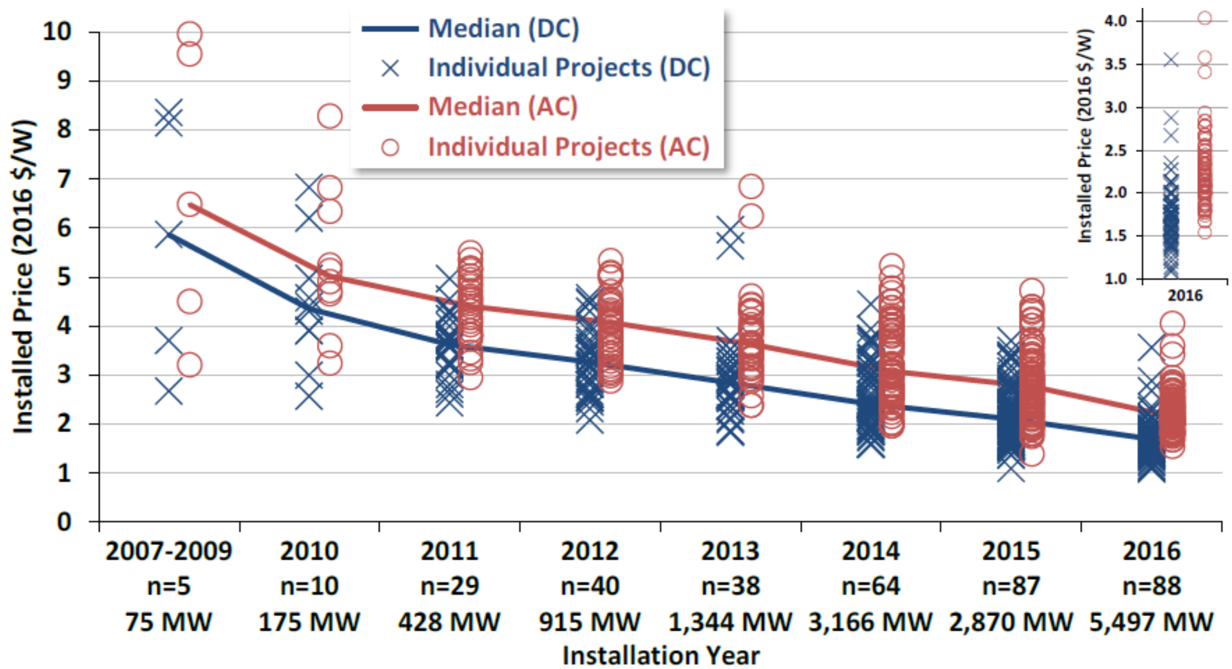

Figure 8. Installed Price of Utility-Scale PV and CPV Projects by Installation Year

Sierra Club's allegation that Ameren Missouri inadequately considers renewables is without merit and should be dismissed.

[1] Mark Bolinger et al., Lawrence Berkeley National Laboratory, Utility-Scale Solar 2016: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States (Sep. 2017) https://emp.lbl.gov/sites/default/files/utility-scale_solar_2016_report.pdf

Issue Identifier: SC Deficiency 5
Joint Filing Reference: Paragraph 60
Stakeholder Report Reference: Sierra Club Comments – Page 2
IRP Rule Reference: 4 CSR 240-22.040(2)(B)

Description: Sierra Club alleges that the IRP is deficient because Ameren Missouri has not mentioned the findings of of the Eastern District of Missouri and has not evaluated remedy costs.

Response: At the time of the filing of the 2017 IRP, the referenced case was active. It would be inappropriate for Ameren Missouri to comment on this active case in its IRP.

Issue Identifier: SC Deficiency 6
Joint Filing Reference: Paragraph 61
Stakeholder Report Reference: Sierra Club Comments – Page 3
IRP Rule Reference: 4 CSR 240-22.040(2)(B)

Description: According to Sierra Club, **"**Ameren has consistently excluded broader public from participating in the IRP process and requires participants to sign draconian confidentiality agreements." Sierra Club asks the Commission to improve public involvement in utilities' long range planning including considering the implementation of one or more public hearings.

Response: Ameren Missouri provided for participation in its stakeholder meeting in accordance with the Commission's rules. The rules set forth the process for providing input for Ameren Missouri's IRP. 4 CSR 240-22.080(5) requires that Ameren Missouri "shall convene a stakeholder group to provide the opportunity for public input into the electric utility resource planning in a timely manner that may affect the outcome of the utility resource planning efforts." "Stakeholder group" is defined in 4 CSR 240-22.020(26) as Staff, Public Counsel and any entity granted intervention in the utility's prior Chapter 22 proceedings. Ameren Missouri's last IRP proceeding involved Staff, OPC and eleven parties – all of which were invited to participate in the stakeholder meeting for its current IRP filing. Ameren Missouri does not believe there is a need to include more individuals/groups in its stakeholder process, for a couple of reasons. First, as is discussed in the next paragraph, there are concerns over the treatment of confidential information. Second, the interests of the public were well represented by the participants in the meeting. There were groups which represent all of Ameren Missouri's rate classes, there were multiple environmental groups and state agencies represented. An assertion that broader participation would be beneficial is merely that, an assertion.

Ameren Missouri believes that certain information within its IRP filing is confidential. At the time of the stakeholder meeting, the draft chapters were confidential. Unfortunately, the Commission's rules cannot provide the Company with protection at that stage of the process. The Purpose Clause of the Commission's confidential information rule, 4 CSR 240-2.135, explicitly states that it contains the "…procedures for handling confidential information in cases before the Commission." (Emphasis added.) At the time of the stakeholder meeting, held on April 19, 2017, there was no Commission case pending for Ameren Missouri's IRP filing, thus the Commission's confidentiality rules were not applicable to information conveyed in the meeting. Accordingly, the Company asked non-attorney, non-state participants (state agency participants are subject to state laws that requires them to maintain the confidentiality of information) to sign a confidentiality agreement and used a form Ameren Missouri had negotiated with MIEC several years ago and has used ever since without objection from other parties, until this meeting. The Sierra Club's objection to the form came about too late for the issue to be resolved prior to the stakeholder meeting, which was unfortunate timing and, Ameren Missouri acknowledges, was due in part to the distribution of the form not being made early enough prior to the meeting. It is worth noting that legal counsel for the Sierra Club was able to participate in the stakeholder meeting. For multiple reasons, however, Ameren Missouri did not feel it could waive its request that non-attorneys sign the confidentiality agreement. Ameren Missouri believes its actions were appropriate and, in fact, required into order to protect the confidentiality of its information.