BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a Ameren Missouri's 2020 Utility Resource Filing Pursuant to 20 CSR 4240 – Chapter 22	))))	File No. EO-2021-0021

SIERRA CLUB'S COMMENTS ON AMEREN MISSOURI'S 2020 INTEGRATED RESOURCE PLAN

****REDACTED VERSION****

Pursuant to 4 CSR 240-22.080, Sierra Club respectfully submits these comments on the 2020 Triennial Integrated Resource Plan filed by Union Electric Company ("Ameren" or the "Company"). Sierra Club respectfully requests that the Company agree to prepare, or the Commission order the Company to prepare, a revised triennial IRP filing that corrects the deficiencies identified herein, and that the Commission order the Company to conduct one or more public hearings to provide the opportunity for public input required by 4 CSR 240-22.080(5).

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BACKGROUND

A. Summary of Ameren's Methodology and Results

Key aspects of the 2020 IRP include that Ameren pre-determined retirement dates for its existing coal-fired resources, bias in favor of gas for marginal capacity need, and fixed renewable resource buildouts.[1] The Company evaluated 28 alternative resource plans over the 30-year analysis period from 2021 through 2050. The Company claims its plans were intended to develop "different combinations of demand-side and supply-side resource options," to meet planning objectives (e.g. "portfolio transition"), and answer key questions (e.g. "Is early retirement of Rush Island Energy Center cost effective?").[2] Ultimately, the Company chose its Plan V as the preferred plan—which, heavily relying on fossil fuel generation, includes retiring the Sioux coal plant in 2028, two units of the Labadie coal plant in 2036, the Rush Island coal plant in 2039, the remaining two units of Labadie in 2042, and building a new natural gas combined cycle ("NGCC") in 2043.

1. Ameren Pre-determined Coal Retirement Dates.

All of the Company's plans assumed that the Meramec coal plant would retire in 2022. Other coal plants were tested for varying retirement dates:[3]

- The Sioux plant was considered for early retirement in 2028 (with 2033 as a base assumption);
- The Rush Island plant was considered for early retirement in **[redacted]**, 2028, and 2039 (with 2045 as a base assumption);
- Labadie units 1 and 2 were considered for early retirement in 2028 and 2036 (with 2042 as a base assumption);

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[1] Ameren 2020 IRP, Chapter 9, p.4.

[2] Ameren 2020 IRP, Chapter 9, p.9-11.

[3] Ameren 2020 IRP, Chapter 4, Table 4.4; Ameren 2020 IRP, Chapter 9, p.4.

- Labadie units 3 and 4 were considered for early retirement in 2028 (with 2036 as a base assumption).

While Ameren tested alternative retirement dates, most of the options (** ** of the 28) included only one coal retirement ** **—that is, only one retirement in the next ** **. The Company's outlook on its pending NSR litigation is ** ** . Of the 28 plans, Ameren included only four that addressed the NSR litigation, which could necessitate ** **.[4] The four plans include:[5]

- **;**
- **;**
- **;**
- **.**

Notably, none of the plans intended to address the NSR litigation assumed that the ** **. Ameren currently has a significant oversupply of capacity, which is anticipated to continue until 2037 given the current schedule of coal retirements.[6]

[4] Ameren 2020 IRP, Chapter 9, p.14 (HC).

[5] *Id*.

[6] Ameren 2020 IRP, Chapter 9, Figure 9.2.

2. Ameren Treated a Natural Gas Combined Cycle ("NGCC") As the Marginal Resource.

Almost every plan modeled by Ameren included a new NGCC when there was a capacity need. For each plan, after accounting for the fixed coal retirement dates and fixed renewable expansion plans (described below), any capacity need was fulfilled after screening for new resources using a forecast of the levelized cost of energy ("LCOE"). The Company's comparison of LCOE focused on solar PV, wind, and NGCCs, with the Company concluding that an NGCC was going to be the "marginal source" for new generation through 2050—even though it was not the lowest-cost resource in that analysis.[7] As a result, ** ** of the 28 plans evaluated by Ameren included a new NGCC installation.

3. Ameren Hard-Coded Renewable Buildout, Which Prevented Renewables from Competing Against Ameren's Existing Resources.

Of the 28 plans, ** ** of them include the same amount of renewable additions: 2,700 MW of new solar and 2,700 MW of wind—referred to as the "Renewable Expansion" portfolio.[8] ** ** plan includes a higher amount of renewable additions (** **) by incorporating the "Renewable Expansion Plus" portfolio—4,000 MW of solar and 3,900 MW of wind.

4. Plans With "Early" Retirement of Rush Island and Sioux Were Typically Lower-Cost.

Ameren's resource plans with early retirement of Sioux and/or Rush Island tended to cost less than other resource plans—** ** included "early"

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[7] Ameren 2020 IRP, Chapter 6, p.14.

[8] Ameren 2020 IRP, Chapter 9, p.7.

retirement of Sioux and/or Rush Island—as shown below in Figure 1 from lowest to highest cost.[9] In developing the cost of the 28 plans, the Company modeled each plan under nine combinations of future carbon costs (zero, mid, and high) and gas prices (low, reference, and high). The selection of the preferred plan also incorporated other metrics including: customer satisfaction, portfolio transition, financial/regulatory, and economic development.[10] Ameren's preferred plan, Plan V, **[redacted]**[11] The Company's preferred plan retires Meramec in 2022, Sioux in 2028, Labadie units 3-4 in 2036, Rush Island in 2039, and Labadie units 1 and 2 in 2042.

[9] HC_PVRR 09-14-20.xlsx, "RevReq" tab (HC).

[10] Ameren 2020 IRP, Chapter 10, p. 4.

[11] Ameren 2020 IRP, Chapter 10, p.11(HC).

Figure 1: Ameren IRP Plans, Ranked from Lowest to Highest Cost HIGHLY CONFIDENTIAL ($mil PVRR)[12]

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[12] "HC_PVRR 09-14-20", RevReq tab; "HC_Alternative Plans", Plans tab.

I. Deficiency 1: Ameren Did Not Optimize Plans on An Economic Basis, And Its Analysis Was Biased Towards Longer Coal Operation, Which Led to Creation of Inadequate ARPs.

A core deficiency of Ameren's IRP is its failure to optimize plans based on economics, and its reliance instead on hard-coded retirement dates and resource selections. While Ameren tested alternative retirement dates, most of the options (** ** of the 28) included only one coal retirement ** **—that is, only one retirement in the next ** **. In constructing its plans without optimization, Ameren's IRP failed to create "a set of alternative plans based on substantively different mixes of supply-side resources and demand-side resources and variations in the timing of resource acquisition to assess their relative performance under expected future conditions as well as their robustness under a broad range of future conditions."[13] This failure to rely on optimization and to study coal retirements under a reasonable range of assumptions also fails to meet the IRP's fundamental policy of goal of minimization of long run utility costs.[14]

[13] 20 CSR 4240-22.060(3).

[14] 20 CSR 22.010(2)(B).

As with other utilities across the United States, Ameren's coal fleet is facing increasing economic competition from decreasing costs of renewable energy, continued low natural gas prices, and environmental compliance costs. In the face of these current realities, Ameren needs to make a reasonable and rigorous assessment of the future of its coal units in order to ensure that Ameren's customers are provided with low-cost, low-risk energy. A guiding principle for the IRP should be the selection of generation resources (including demand-side options) that are in the best interest of electric customers, regardless of ownership. Ameren, like other utilities, has leeway in how modeling is conducted—including development and selection of scenarios and input assumptions. At the same time, it must take care not to include biases in favor of any particular resources.

A true economic assessment must include reasonable assumptions and methodology and allow for existing and new resources to compete with one another on equal footing, all with an eye to the consumer's requirements. The Company has instead hard-coded retirement dates (which are already optimistic) as opposed to conducting economic optimization that allows new resources to compete with existing ones. It has also overestimated the costs of new renewables and battery hybrid resources, which offer better economic value that existing coal and new gas.

A. Ameren's System Is Massively Overbuilt, And It Plans to Continue on That Path.

Ameren is well-positioned to retire uneconomic coal units earlier than currently planned, in part, because it has significant headroom. The Company currently has a capacity surplus of over 1,500 MW, or approximately 17 percent above the resources needed to meet their load and reserves.[15] Even if no new resources were added and planned baseline coal retirements were to

[15] Ameren 2020 IRP Chapter 9 Appendix, Table 9A.2 and Chapter 9, Figure 9.2.

occur (including Meramec in 2022, Sioux in 2033, two Labadie units in 2036, two remaining Labadie units in 2042, and Rush Island in 2045), Ameren still does not anticipate a capacity need until 2037.[16] Ameren's preferred plan (Plan V) which retires Sioux in 2028 and Rush Island in 2039, does not add a large resource until 2043; the plan also maintains an annual capacity surplus ranging between 1,257 and 2,234 MWs from 2021 through 2039. With this level of surplus, Ameren could retire the 1,187 MW Rush Island plant, for example, as early as technically feasible and still maintain excess capacity through 2039.

Maintaining high coal capacity presents additional risks to the economics of coal. The value of capacity is an important driver of the economics of coal units. As a member of MISO, Ameren can purchase needed capacity at the annual auction (i.e., below its MISO reserve requirement) or sell excess capacity (i.e., above its MISO reserve requirement) in MISO Zone 5. The cost of capacity at this auction could determine whether it is favorable to buy capacity to meet a utility's requirement (if one thought the price would remain low) or keep a surplus of capacity to sell (if one thought the price would go high). The clearing price of capacity in MISO Zone 5 has historically been quite low—about 7 percent of the cost of new entry ("CONE"), on average, in the past five auctions.[17] Such price levels should make retiring uneconomic units more attractive in the short-term, where purchases can fulfill a short-term capacity need if low-cost, steel-in-the-ground resources are not immediately available.

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[16] *Id*.

[17] MISO PRA results for 2016/2017 through 2020/2021 delivery years. *Available at:*
https://cdn.misoenergy.org/2016-2017%20PRA%20Results87167.pdf;
https://cdn.misoenergy.org/2017-2018%20Planning%20Resource%20Adequacy%20Results87196.pdf;
https://cdn.misoenergy.org/2018-19%20PRA%20Results173180.pdf;
https://cdn.misoenergy.org/20190412_PRA_Results_Posting336165.pdf;
https://cdn.misoenergy.org/2020-2021%20PRA%20Results442333.pdf.

B. Ameren Ran Hard-Coded Plans Rather Than Economic Optimization.

Ameren's 2020 IRP includes an assessment of hard-coded plans with pre-determined retirement dates and renewable energy buildouts, instead of optimizing each plan based on future outlook using capacity expansion modeling. The Commission has previously ordered Ameren to compare the continued operation of its coal units—accounting for all future costs—to their replacement.[18] Although Ameren's 2020 IRP has, on a superficial level, followed the Commission's order, the Company's modeling has failed to rigorously examine the economic retirement of existing units. The Company should incrementally test a series of retirement years moving forward from 2022 or 2023, rather than only testing a few selected, fixed dates for retirement. If only conducting the latter, it would be unclear whether the year chosen was optimal for electric customers because the decision set was too limited. The same is true for renewable energy buildouts: If the Company did not prescribe when renewable energy resources (e.g., solar and wind) will be added to its portfolio, then the model would be able to freely choose renewable energy additions on an economic basis.

Ameren's resource plans should also adjust the amount of coal-fired and renewable energy resources on the system with the natural gas and carbon price scenarios that it uses in its sensitivity analysis, as well as the load growth sensitivities that it uses in its risk analysis. The Company has constructed a scenario probability tree for its 2020 IRP that shows how these scenarios are constructed:

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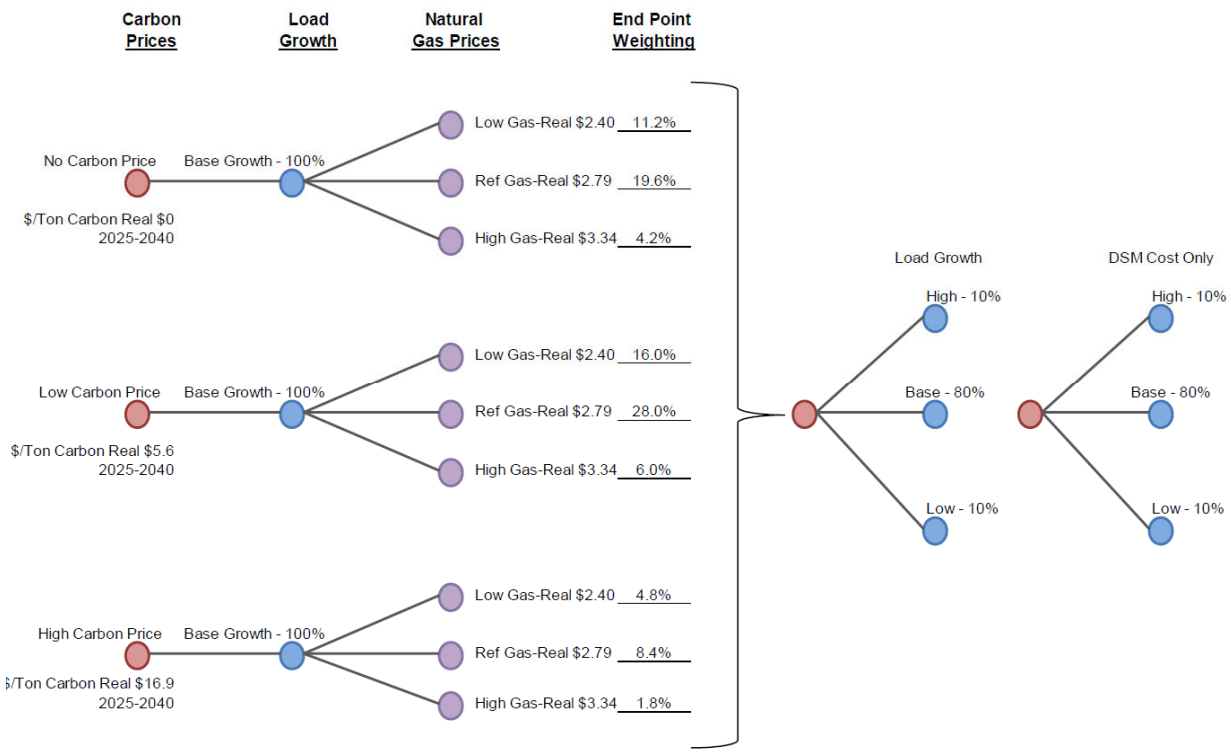
[18] Revised Order Establishing Special Contemporary Resource Planning Issues, File No. EO-2020-0047, at Issue O (issued Dec. 3, 2019), ("Analyze and document on a unit-by-unit basis the net present value revenue requirement of the relative economics of continuing to operate each Ameren Missouri coal-fired generating unit versus retiring and replacing each such unit in light of all of the environmental, capital, fuel, and O&M expenses needed to keep each such unit operating as compared to the cost of other demand-side and supply side resources.").

Figure 2: Ameren's 2020 IRP Probability Tree[19]



This decision-tree process is problematic because the amount of coal generation and renewable energy additions on the system are pre-determined by the carbon price set by Ameren. This level of coal-fired and renewable energy resources is then set-in-stone no matter what the load or gas prices are in subsequent steps. This is backwards logic because, in reality, coal retirement decisions and renewable energy additions are heavily influenced by load growth and prices for MISO energy (which are themselves largely influenced by gas prices). This impact has been apparent in recent years: low load growth and low gas price have led to significant coal unit retirements across the United States. Thus, Ameren's retirements and capacity buildout should be dynamic with these key market factors.

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[19] Copy of figure from Ameren Missouri 2020 IRP, Chapter 9, p.26.

C. Ameren's Coal Retirement Assumptions Are Unrealistic.

Further, Ameren's IRP does not adequately account for the economic risks to its coal fleet—particularly regarding the Rush Island and Labadie units. Of the 28 plans, only ** [redacted] ** assume that the Rush Island plant retires before 2039; ** [redacted] ** of the plans assume the plant will run for another 25 years. Only ** [redacted] ** of the 28 plans assume that the Labadie units fully retire before 2042. None of these coal units should be sheltered from the increasing competition from new resources—particularly solar and storage—and the potential for substantial environmental compliance costs resulting from NSR litigation and other environmental requirements.

To remedy this deficiency, Ameren should update its approach to modeling by removing its hard-coded, pre-determined coal retirements and resource additions, and allow new supply-side and demand-side resources to compete against its existing resources in every year of the 2020s starting with 2022.

II. Deficiency 2: Ameren Does Not Adequately Address the Substantial Costs That Could Result from NSR Litigation and Other Environmental Regulations.

The U.S. coal fleet is facing mounting costs to comply with federal environmental regulations designed to protect human health and the environment. Ameren is not immune from these environmental compliance obligations. In fact, as discussed in more detail below, the Rush Island and Labadie plants—some of the only large uncontrolled coal plants left in the United States—face significant costs from court-mandated sulfur dioxide (SO_2) reductions or pollution reductions required under the Regional Haze Rule. Yet, Ameren's 2020 IRP fails to adequately disclose or address those risks. As such, Ameren's IRP fails to address the "fundamental objective … that the utility [consider] . . . . [r]isks associated with new or more stringent legal

mandates that may be imposed at some point within the planning horizon."[20] Furthermore, Ameren has also failed to sufficiently address two related special issues, namely the requirement to model "scenarios related to environmental upgrades to the Rush Island and Labadie coal-fired plants as mandated by the federal courts"[21] and the requirement to "[a]nalyze and document the future [environmental] capital and operating costs faced by each Ameren Missouri coal-fired generating unit[.]"[22]

Ameren has a long history of ignoring or downplaying environmental compliance risks at its Rush Island and Labadie plants—two of the largest uncontrolled plants in the country. Unfortunately, the current 2020 IRP continues that trend. Specifically, in September 2019, the U.S. District Court for the Eastern District of Missouri issued a detailed, 161-page opinion concluding that Ameren violated the Clean Air Act in numerous respects, and requiring the Company to install wet flue gas desulfurization ("FGD") at Rush Island, achieve an emissions rate of at or below 0.05 lb/MMBtu of SO_2 at that plant (on a 30-day rolling average) by 2024, and install dry sorbent injection ("DSI") at the Labadie plant by 2022 to remedy the excess SO_2 emissions that resulted from the Company's violations of the law.[23] Although Ameren has appealed that decision, as it stands, those emission controls are required under a federal court

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[20] 20 CSR 4240-22.010(C).

[21] Revised Order Establishing Special Contemporary Resource Planning Issues, File No. EO-2020-0047, at Issue D (issued Dec. 3, 2019) ("Model scenarios related to environmental upgrades to the Rush Island and Labadie coal-fired plants as mandated by the federal courts.").

[22] Revised Order Establishing Special Contemporary Resource Planning Issues, File No. EO-2020-0047, at Issue M (issued Dec. 3, 2019).

[23] U.S. District Court, Eastern District of Missouri. Memorandum Opinion and Order. Case No. 4:11-cv-00077-RWS, Docket No. 1122, September 30, 2019, p.14; and U.S. District Court, Eastern District of Missouri. Judgment. Case No. 4:11-cv-00077-RWS, Docket No. 1122 (Sept. 30, 2019).

order by a date certain.[24] Despite this, of the 28 plans modeled in the IRP, only ** ** contemplate additional SO_2 emission controls, and only ** ** include early retirement as a result of litigation of SO_2 emissions.

As shown in Figure 1, ** **. However, all other plans ** **, implicitly assuming that Ameren would face ** **. Given that the Rush Island and Labadie controls are currently required by a federal court order and the magnitude of compliance costs, Ameren was required to evaluate more plans that included the costs of complying with the court's order or retiring the units.[25] Ameren expects FGD at Rush Island to have an upfront capital cost of between ** ** and cost nearly ** ** per year to operate.[26] The Company expects that DSI at Labadie to have an upfront capital cost of between ** ** and cost ** ** per year to operate.[27] The portfolio cost difference between including or excluding these costs is massive:

- If the FGD were required at Rush Island ** **
- If the DSI were required at Labadie ** ** Both plans assume Rush Island ** **.

Neither plant is economically justifiable if SO_2 controls are installed in the near-term. Rush Island would likely ** ** Yet, Ameren

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[24] Court orders are legal mandates, 20 CSR 4240-22.020(28), and must therefore be considered as probable environmental costs under 20 CSR 4240-22.040(2)(B) and 20 CSR 4240-22.060(4)(B)(8).

[25] 20 CSR 4240-22.060(3)(C)(2).

[26] "FGD-DSI Costs" CONF.

[27] "FGD-DSI Costs" CONF.

inexplicably assumes that if DSI were required at Labadie that the units ** **. Despite Ameren's finding that operating the Labadie units with DSI controls would cost ratepayers an additional ** **, the Company did not contemplate a future where the Labadie units were ** **.

Ameren unreasonably downplays the economic risk of compliance with the district court's order requiring the installation of FGD and DSI at Rush Island and Labadie, respectively. Indeed, by assuming compliance with the court's order in only ** ** of its 28 modeled plans, the Company appears to assume that it is more likely than not that the Eighth Circuit Court of Appeals vacates the district court's order in its entirety and that the district court will decide not to impose *any* alternative emission reductions to remedy the Company's violations of the Clean Air Act. That overly optimistic assumption is not only speculative, but it fails to comply with the Commission's mandate to properly evaluate and fully disclose the risks and actual costs associated with new or more stringent legal mandates that may be imposed at some point within the planning horizon.[28] As a result, neither the Commission nor Ameren's customers are presented with a realistic picture of the economic risks associated with the Company's continued reliance on Rush Island and Labadie.

In addition to downplaying the risk of the NSR litigation, Ameren also appears to assume ** ** outside of the NSR case. Even if Ameren prevails in its appeal and the Eighth Circuit Court of Appeals vacates the district court's order requiring FGD and DSI at Rush Island and Labadie with instructions to dismiss EPA's case, there are additional reasons to believe that future SO_2 controls would be required at these plants. Assuming the Biden

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[28] *See, e.g.*, 20 CSR 4240-22.060(3)(C).

Administration or a Missouri citizen does not file a new NSR lawsuit against these uncontrolled power plants, the most likely regulation to come into play is the Clean Air Act's Regional Haze Rule, which requires the State of Missouri to adopt emission limitations to ensure "reasonable progress" towards natural visibility in certain national parks and wilderness areas by 2064.[29]

Relevant to Ameren's fleet, the Regional Haze Rule requires Missouri (or, where the state fails to do so, EPA) to evaluate whether pollution controls or emission reductions are cost effective and should be required to ensure reasonable progress toward the national visibility goal.[30] Given the magnitude of sulfur dioxide and nitrogen oxide emissions from each of Ameren's fleet, each of the Company's coal-burning electric generating units ("EGU") could be subject to additional controls. Notably, Missouri must revise its regional haze state implementation plan every ten years and must reevaluate cost-effective controls for all sources, including the oldest and dirtiest sources of haze-causing pollutants, like Labadie and Rush Island which should have been subject to source-specific "best available retrofit technology" ("BART") in the first planning period.[31] Although Labadie and Rush Island avoided source-specific BART controls in the first regional haze planning period due to Missouri's reliance on the Cross-State Air Pollution Rule, the state (and EPA) must reevaluate each of those units in

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[29] 42 U.S.C. § 7491(b)(2); *see generally* 40 C.F.R. § 51.308(d).

[30] 42 U.S.C. § 7491(b)(2); 40 C.F.R. § 51.308(d)(1)(iii)(iv) and (3)(iv). In evaluating whether emission reductions are required, states must consider four factors: (1) the costs of compliance, (2) the time necessary for compliance, (3) the energy and non-air quality environmental impacts of compliance, and (4) the remaining useful life of any potentially affected sources. 42 U.S.C. § 7491(g)(1); 40 C.F.R. § 51.308(d)(1)(i)(A), (d)(3).

[31] *Id.*; 40 C.F.R. § 51.308(d), (e). In the first regional haze planning period, states were required to impose BART—i.e., "the *best system of continuous emission reduction* for each [haze-causing] pollutant"—for each major emission source, like the Labadie and Rush Island units, which were all put into operation between 1962 and 1977, and reasonably contribute to visibility impairment in one or more Class I areas. 40 C.F.R. § 51.301 (emphasis added).

the regional haze plans due in 2021.[32] If additional controls are cost-effective and will improve visibility in affected national parks and wilderness areas, compliance is typically required within five years.[33] With that timeline in mind, and given the magnitude of emissions from Ameren's aging coal fleet and the cost-effective pollution reduction technologies typically installed at similarly-situated sources,[34] it is unreasonable for Ameren to refuse to evaluate the potential costs associated with compliance with the Regional Haze Rule.

To remedy this deficiency, at a minimum, Ameren should include revised ARPs that assume **[redacted].**

III. Deficiency 3: Ameren Failed to Study Prospects for Securitization to Benefit Customers.

Ameren has also failed to study the prospects for securitization, which could ensure that any coal retirements resulting from a truly optimized IRP analysis would result in an economic benefit to customers. As a special contemporary issue, Ameren was directed to:

> Analyze and document the prospects for using securitization to advance the retirement of coal generation assets, and channel the savings into more economical investments such as demand-side management, building wind and solar generation, and storage.[35]

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[32] *See generally* 40 C.F.R. § 51.308(d); *see also* EPA Guidance on Regional Haze State Implementation Plans for the Second Implementation Period at 25 (Aug. 2019).

[33] 42 U.S.C. § 7491(g)(4).

[34] EPA and other states have consistently recognized that FGD or DSI control technologies are cost effective and commonly used in the industry, especially for units like Rush Island and Labadie, all of which were constructed in the 1970s. *See, e.g.*, 40 C.F.R. pt. 51, App. Y § (IV)(E)(4) (EPA's presumptive best available retrofit technology requires a 95% reduction in sulfur dioxide emissions, typically achieved by the installation of FGD technology).

[35] Revised Order Establishing Special Contemporary Resource Planning Issues, File No. EO-2020-0047, at Issue G (issued Dec. 3, 2019).

Ameren indisputably did not do any such analysis. In one paragraph of text, Ameren discusses the concept of securitization in vague terms only, but other than acknowledging that the prospects to save customers are "good" and that the "devil is in the details,"[36] Ameren offers no details and no analysis or quantification of the benefits this financial mechanism could provide. Compliance with the Commission's order to evaluate securitization is not a mere "box-checking" exercise. Instead, as the Commission recognized, it is necessary and prudent to evaluate "lower cost, long-term financing" that will facilitate the retirement of marginal resources and "save customers money, some of which can be used as new capital."[37] Indeed, securitization could mitigate the potential rate impacts associated with retiring Ameren's increasingly uneconomic coal fleet, which, as discussed, faces numerous impending environmental compliance risks as a result of the Company's violations of the Clean Air Act and Ameren's refusal to adopt cost-effective pollution control measures that are in use throughout the industry. And as the legislatures in Kansas and Colorado have recently concluded, securitization of uneconomic coal assets can result in significant ratepayer benefits while also reducing pollution and creating new jobs associated with the development of clean, replacement generation. Because Ameren failed to comply with the Commission's explicit directive to evaluate securitization, the Commission should reject the current IRP. To remedy this deficiency, Ameren should put some of the "details" into an analysis about how earlier retirement of coal units, combined with securitization, could be used to benefit customers.

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[36] Ameren 2020 IRP, Chapter 11, pages 12-13.

[37] Revised Order Establishing Special Contemporary Resource Planning Issues, File No. EO-2020-0047, at Issue G (issued Dec. 3, 2019).

IV. Deficiency 4: Solar PV And Solar-Battery Hybrids Are More Economic Than Ameren's Existing Coal Units, And Ameren's Failure to Allow Optimized Buildout of Solar Therefore Resulted in An IRP That Fails to Minimize Long-Run Costs.

The construction of Ameren's ARPs did not allow new solar to compete against its existing resources. Ameren also relied on out-of-date data for solar costs, including a need to update its solar estimates to include the recent extension of federal tax credits. The failure to adequately assess solar costs combined with the lack of optimized solar resource additions resulted in an IRP that fails to adequately address the minimization of long run utility costs[38] and that does not adequately address a diverse range of supply side resources.[39]

** ** of Ameren's ARPs include the same amount of renewable energy installations, and ** ** of the 28 plans include battery storage and ** ** of the plans included hybrid resources, even though standalone and hybrid storage projects are becoming a prominent replacement option for utilities across the United States. Ameren did not provide unit or plant specific **[redacted]**.[40] Thus, we could not assess the economics of an individual unit or plant in the IRP modeling itself. However, using Ameren's levelized cost of energy ("LCOE") screening analysis as a basis, we estimate that solar PV and solar-battery hybrids would provide better economic value than existing coal for two select installation years: 2024 and 2028, which **[redacted].** The levelized net revenue (market value minus costs) for these resources are shown below in Figure and Figure using Ameren's own energy revenue projections and applying its low and

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[38] 20 CSR 22.010(2)(B).

[39] 20 CSR 22.040(4).

[40] SIERRA-SC_01_HC-Answer.

high capacity price forecasts as a low and high bound, respectively.[41] The differences in levelized net revenues show the sensitivity of resources to the value of capacity but also that solar and hybrid resources are better able to withstand a low capacity value and still maintain positive net revenues. The existing coal units are more vulnerable to this factor—showing a ** [redacted] ** value under a low capacity value.

Figure 3: Levelized Net Revenue from Select Resources with High Capacity Value CONFIDENTIAL (cents per kWh)

* [redacted] **

[41] "SIERRA-SC_01-Att-SC 001 Attach Capacity Price 2020 IRP for CONE begining in 2029"; "LCOE Fossil-Renewables-Nuke_Confidential"; "LCOE Coal_Confidential"—note: ** [redacted] **

Figure 4: Levelized Net Revenue from Select Resources with Low Capacity Value CONFIDENTIAL (cents per kWh)

Following Ameren's LCOE analysis, we also estimated the projected energy and capacity value of new and existing resources—using Company's own energy and capacity price forecasts. We were able to replicate Ameren's LCOE for new and existing resources, but these results were for 2019. We developed levelized costs and revenues for new solar, solar-battery hybrids, and NGCCs for future installation years through 2046, and for the Labadie and Rush Island plants for 2024 and 2028 for purposes of comparison.[42] We also modeled the costs of Rush Island with FGD and Labadie with DSI, ** **. Notably, the 2024 and 2028 levelized costs only included the operations and maintenance ("O&M") associated with these controls because the capital costs were assumed to already be spent (or sunk) in those

[42] Fuel and emissions costs projected by Ameren were unchanged; but for later year installations of NGCCs, we extended the emissions and fuel costs to apply the latest percentage growth projected by Ameren. For coal units, we excluded capital costs that were spent prior to the modeled year (2024 or 2028) following Ameren's methodology (*see* "LCOE Coal_Confidential", Total CapEx tab).

years. Thus, these estimates were not intended to take the place of an evaluation of the economics of a decision to install those controls—which is **[redacted]**.

We updated the solar PV and battery cost assumptions to account for more up-to-date capital cost and tax credit information. Ameren projected solar capital costs ($/kW) using the annual decline in costs reported in the NREL 2019 Annual Technology Baseline ("ATB"),[43] but now the 2020 ATB is available. After substituting the updated NREL data, the costs of solar and solar-battery hybrids were substantially lower than what is being assume in the IRP—as shown in Figure and Figure below.

[43] SIERRA-SC_05-Att-SC 05 Attach Wind-Solar-Battery PrjCost; "Wind-Solar Cost Curve ATB 2019"; https://atb.nrel.gov/electricity/2020/data.php.

Figure 5: Solar PV Capital Costs (nominal $kW, unsubsidized)[44]

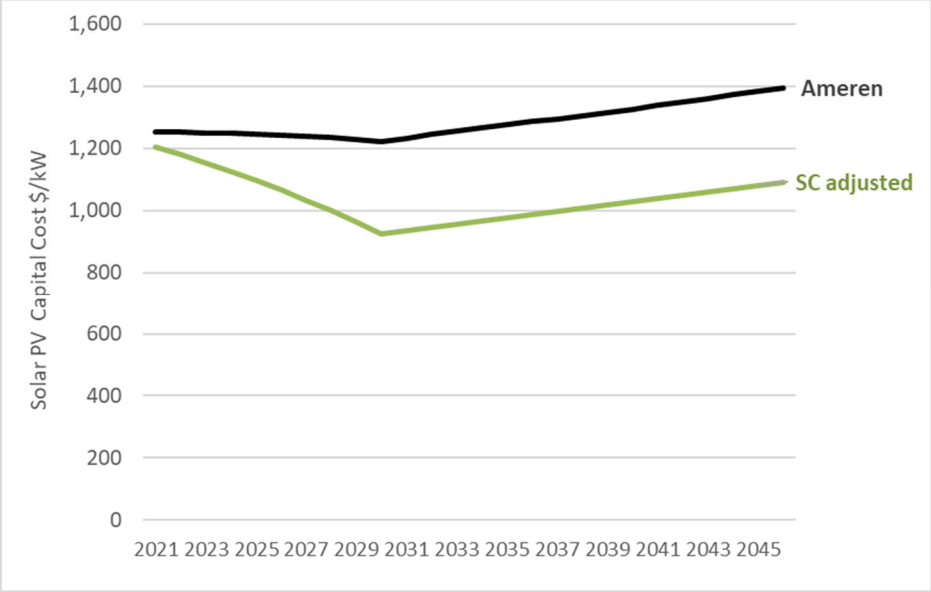
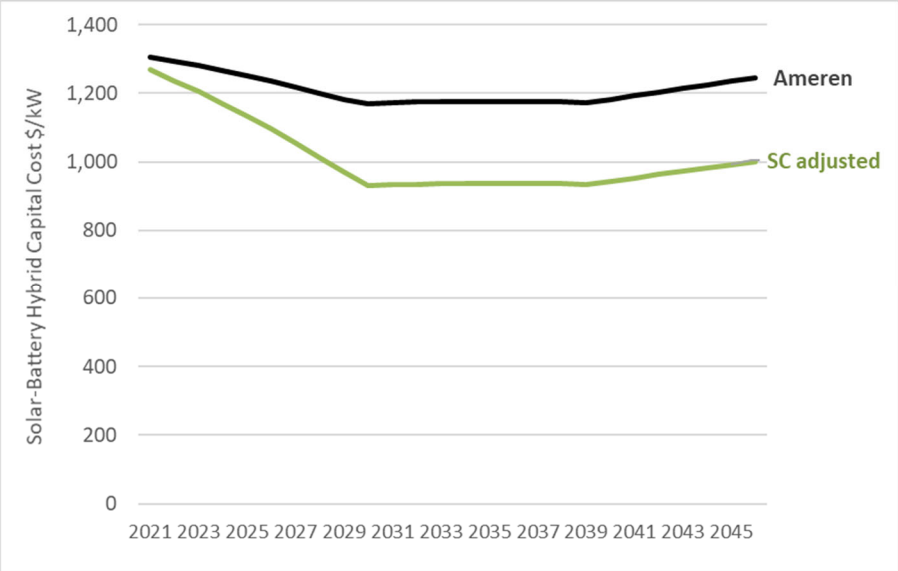


Figure 6: Solar-Battery Hybrid Capital Costs (nominal $kW, unsubsidized)



[44] SIERRA-SC_05-Att-SC 05 Attach Wind-Solar-Battery PrjCost; "Wind-Solar Cost Curve ATB 2019"; https://atb.nrel.gov/electricity/2020/data.php. Ameren's battery standalone costs were not adjusted. Ameren's assumed ratio of 4:1 for solar to battery capacity was also unchanged.

Ameren had assumed that the Federal Investment Tax Credit ("ITC") for solar PV would decrease to 10 percent for projects installed after 2023.[45] But since the IRP modeling was done, a higher ITC was extended for solar PV and solar-battery hybrid resources installed before 2026.[46] Projects that are in place before 2026 and started construction by 2022 can receive a 26 percent ITC; those that start construction by 2023 can receive a 22 percent ITC. To be conservative, we assumed that projects installed in 2025 would receive the 22 percent ITC, even though the 26 percent could be available to some projects.

Our analysis shows that solar and solar-battery hybrid resources need to be seriously considered for replacement of existing coal units—especially in light of recently extended tax credits. Ameren's IRP, however, unreasonably limited the opportunities for ratepayers to benefit from these more competitive options. To remedy this deficiency, Ameren should, at a minimum, update its modeling to include the most current data, including the current tax credits. Ameren should also allow new solar (and other new supply- and demand-side resources) to compete against its existing resources in every year of the 2020s starting with 2022, instead of hard-coding pre-determined outcomes.

V. Deficiency 5: Ameren's Reliance on An Inadequately Constructed Jobs Metric Made Selection of ARPs Unjustified.

The Commission's rules require Ameren to fully "describe and document" the economic impacts of its alternative resource plans.[47] The Commission's rules also require an un-biased

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[45] "ITC-PTC".

[46] We applied the ITC US DOE, Guide to the Federal Investment Tax Credit for Solar Photovoltaics, available at: https://www.energy.gov/sites/prod/files/2021/02/f82/Guide%20to%20the%20Federal%20Investment%20Tax%20Credit%20for%20Commercial%20Solar%20PV%20-%202021.pdf.

[47] 20 CSR 4240-22.060(3), (6).

use of non-cost factors that are used to select a preferred ARP, as otherwise there is no logical basis to assure that an IRP achieves the fundamental policy of minimization of long run utility costs, to the extent non-cost factors are being used as determinative.[48] To that end, Ameren estimated the economic impacts of all 28 plans, including estimates of the construction and operations jobs for each resource type. Ameren significantly overstated the projected job impacts per MW and O&M for new gas construction, and significantly underestimated the job benefits associated with new solar installation and maintenance.

Specifically, the Company assumes approximately three construction jobs per MW of new gas capacity and 0.14 long-term (or O&M) jobs per MW.[49] However, we found that the impacts are typically closer to 0.7 jobs per MW for construction and 0.03 to 0.05 jobs per MW for the long-term.[50] This would mean that the Company is overestimating the jobs from gas by a factor of four. In response to discovery requests for support for Ameren's job estimates for all resource types, the Company provided no documentation or analysis supporting its job projections associated with new gas construction and maintenance.[51] Conversely, the Company assumes jobs per MW for solar PV that are too low: one job per MW for these installations. In

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[48] 20 CSR 4240-22.010(2)(B).

[49] "Job Summary – FINAL".

[50] *See* Wagman, D. 3 August, 2017. "Automation is Engineering the Jobs Out of Power Plants." IEEE Spectrum. Available at: https://spectrum.ieee.org/energywise/energy/fossil-fuels/automation-is-engineering-the-jobs-out-of-power-plants; Gas to Power Journal. 30 May 2019. "Groundbreaking takes place for Ohio CCGT project." Available at: https://gastopowerjournal.com/item/9744-groundbreaking-takes-place-for-ohio-ccgt-project; and Power Engineering. 22 September, 2020. "Black & Veatch in JV to build 900-MW CCGT power plant in Canada." Available at: https://www.power-eng.com/gas/new-projects-gas/black-veatch-in-jv-to-build-900-mw-ccgt-power-plant-in-canada/.

[51] SIERRA-SC_2_5-Answer.

contrast, the National Solar Job Census has previously reported between 2.42 and 3.3 jobs per MW for utility-scale solar installations.[52] Ameren's justification for solar PV jobs is based on the projected jobs for one solar farm,[53] as opposed to the Census which compiles comprehensive data on actual solar installations in the United States. Thus, Ameren is likely undercounting solar installation jobs by a factor of three.

In short, Ameren's estimates for jobs created by new gas plants are unreasonably high and its solar job estimates are unreasonable low. Both estimates are inadequately documented. The Company's overly optimistic job estimates for new gas generation and its underestimation of renewable energy job impacts serves only to skew the analysis to Ameren's preferred outcome—the construction of new highly polluting gas generation to replace its marginal coal resources. Ameren's jobs analysis fails to present an objective or fully documented evaluation of the economic impacts of its alternative resource plans, and therefore fails to comply with the Commission's rules. To remedy this deficiency, Ameren should document and correct its jobs estimates and re-apply this metric in its scorecard before it selects a preferred ARP.

VI. Deficiency 6: Ameren Failed to Address Municipal Clean Energy Goals.

Ameren entirely failed to address the Commission's directive to develop candidate resource options that would satisfy St. Louis's and other communities' goals of achieving 100% non-fossil fuel energy by 2035. The Commission has required Ameren to "[a]nalyze and develop as candidate resource options the satisfaction of municipal and corporate renewable

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[52] *See* 2019 National Solar Jobs Census, p.23. Available at: https://www.thesolarfoundation.org/national/; and 2017 National Solar Jobs Census, p. 26. Available at: https://mdvseia.org/wp-content/uploads/2018/03/SolarJobsCensus2017.pdf

[53] SIERRA-SC_2_5-Answer; *see also* Lucerne Valley Solar Project, *available at:* http://webservices.itcs.umich.edu/drupal/recd/?q=node/64.

energy goals, particularly the plan of the St. Louis Board of Aldermen to have the City's electricity sector be met entirely by efficiency and renewable resources by 2035, which, when enacted into law by ordinance, may become a legal mandate within the meaning of 20 CSR 4240-22.060(3)(A)."[54] In response, Ameren simply states that it "has included in its preferred resource plan resources for renewable subscription programs to support customers and communities seeking to satisfy their clean energy goals."[55]

Only two plans, (Plan V and Plan W), include renewable subscription in addition to renewable expansion,[56] however, Ameren explains that the original subscription plan, Renewable Choice, was never implemented.[57] By early 2021, Ameren was supposed to file a new subscription plan in a separate case but has neglected to do so, and any description or documentation of this new renewable subscription plan is absent from Ameren's preferred ARP. We cannot disentangle it from Renewables Expansion generally, and renewable subscription, being funded differently from other resource options, merits being assessed as a candidate resource option in itself.[58]

Though Ameren's preferred plan includes the addition of some new wind and solar generation,[59] the Company is well-positioned to rapidly increase investments in wind and solar and could easily meet municipal and corporate clean energy goals many times over. Ameren's

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[54] Revised Order Establishing Special Contemporary Resource Planning Issues, File No. EO-2020-0047, at Issue K (issued Dec. 3, 2019); *See also* 20 CSR 4240-22.080(4)(C).

[55] Ameren 2020 IRP, Chapter 11, p. 8.

[56] Ameren 2020 IRP, Chapter 10, p. 5.

[57] Ameren 2020 IRP, Chapter 6, p. 12.

[58] 20 CSR 4240-222.040(1).

[59] Ameren 2020 IRP, Chapter 10, p. 29.

preferred plan relies heavily on the continued burning of fossil fuels well past 2035, and the Company's own goal does not aim to achieve net-zero CO_2 emissions until 2050.[60] Consequently, we view the Commission's requirement to consider these goals as a bare minimum for renewables deployment and one that should be addressed by Ameren's preferred plan. To remedy this deficiency, Ameren should develop some candidate ARPs that would achieve 100% clean energy by 2035.

VII. Deficiency 7: Ameren Failed to Evaluate the Public Health Impacts of its ARPs.

Ameren failed to evaluate public health impacts of resource plans. As discussed throughout the stakeholder engagement process and in Sierra Club's Initial Stakeholder Comments, electricity generation through the burning of fossil fuels, especially coal, has undeniable negative impacts on public health. Compliance with Missouri IRP Rules requires consideration of pollutants, including air emissions,[61] and the "fundamental objective" of the IRP process is "to provide the public with energy services that are safe . . . and in a manner that serves the public interest,"[62] thus Ameren should document the quantified health impacts of each portfolio in its IRP. Ameren should document the public health cost that various air pollutants—sulfur dioxide, nitrogen oxide, particulate matter, and mercury—have on public health, which include increased instances of asthma attacks, respiratory infections, hospital

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[60] *Id.*

[61] 20 CSR 4240-22.060(4)(B)(7).

[62] 20 CSR 4240-22.010(2).

admissions, missed school and work days, and a variety of other health problems.[63] Air pollution contributes significantly to increased morbidity and mortality, and existing modeling tools can be used to translate air pollution into social cost estimates. Moreover, Missourians continue to face an unprecedented time during the COVID-19 pandemic. As the pandemic persists, data reveal that COVID-19 is impacting Black, Indigenous, Latinx, and people of color most.[64] It is well known that these are the very same communities that also disproportionately bear the brunt of air pollution,[65] and the Center for Disease Control and Prevention warns that people with asthma, respiratory diseases, and various other health problems, many of which are exacerbated by air pollution and coal combustion, might be at an increased risk for severe illness from COVID-19.

Ameren should consider the environmental justice implications associated with its ultimate selection of its preferred plan because the communities that are harmed most by persisting reliance on coal-burning power plants are the communities who should benefit the greatest from reduced emissions, coal retirements, and investments in renewable energy. Ameren cannot simultaneously claim to be acting in the best interests of its customers if the Company

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[63] *See, e.g.,* EPA, Sulfur Dioxide Basics, available at: https://www.epa.gov/so2-pollution/sulfur-dioxide-basics (summarizing public health harms from SO_2); *see also* EPA, Ground-level Ozone Basics, available at: https://www.epa.gov/ground-level-ozone-pollution/ground-level-ozone-basics#effects (summarizing public health harms from ozone).

[64] The COVID Tracking Project, The COVID Racial Data Tracker, available at: https://covidtracking.com/race.

[65] Holden, Emily, *Air pollution remains worst in US communities of color despite progress*, The Guardian (July 30, 2020), available at: https://www.theguardian.com/environment/2020/jul/30/air-pollution-worst-us-communities-of-color-study; Colmer, J., et. al., *Disparities in PM2.5 air pollution in the United States*, Science Vol 369, Issue 6503 (July 31, 2020), available at: https://science.sciencemag.org/content/369/6503/575.

does not evaluate how resource plans directly impact them. Ameren's IRP inadequately prioritizes these issues, and the Company should take care to consider the distinct communities whose health is affected by the continued operation of Ameren's coal plants. To remedy this deficiency, Ameren should document the public health impacts of its ARPs and if two ARPs are very close in cost, for example, it should consider relying on public health as a determinative factor in ranking its resource plans.

VIII. Deficiency 8: Ameren Failed to Document and Analyze the Operational and Commitment Designations for its Coal Units.

Special contemporary issue N requires Ameren to "[a]nalyze and document the criteria by which units are assigned various operational designations (e.g. "must run") for use in all Company economic modeling and resource planning." In its resource plan, Ameren provides the following description of its unit-commitment assumptions for the purposes of modeling:

> RTSim simulates hourly chronological dispatch of all system generating units, including unit commitment logic that is consistent with the operational characteristics and constraints of system resources. The model plans are based on a capacity planning spreadsheet, which was used to determine the timing of new resources. The RTSim model contains all unit operating variables required to simulate the units. These variables include, but are not limited to, heat rates, fuel costs, variable operation and maintenance costs, emission rates, emission allowance costs, scheduled maintenance outages, and full and partial forced outage rates. The generation fleet is dispatched competitively against market prices.

That single, purely qualitative description is not consistent with the Commission's order, or Commission Staff's previous observations. As Staff has recognized, Ameren's reporting of its self-commitment practices has historically been inconsistent and inadequate.[66] Ameren's IRP is

[66] Staff Report, In the Matter of an Investigation of Missouri Jurisdictional Generator Self-Commitments into SPP and MISO Day-Ahead Energy Markets, File No. EW-2019-0370 (Aug. 23, 2019).

no different. Indeed, the Company failed to describe, with specificity, how the model assumes that its fossil units are committed into the market (e.g., "self" or "market" commitment), and fails to disclose the underlying data assumptions, including Locational Marginal Price and production cost data, necessary to evaluate whether the Company's market commitment and dispatch assumptions are reasonable. As a result, the burden largely falls (once again) on Staff, intervenors, and the Commission to develop the basic data needed to test those assumptions.

As Sierra Club's previous analysis demonstrates, Ameren routinely "self-commits" its coal units to operate regardless of market prices—that is, not submitting them to MISO for economic commitment.[67] Research has shown that self-commitment costs retail customers more than economic commitment.[68] In light of those potential impacts, the Commission opened a docket but lacked the data and resources necessary to fully evaluate the issue. The Commission further directed Ameren to "address these issues in its IRP since only it possesses the necessary bid formulation and production cost data."[69]

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[67] Revenue Requirement Direct Testimony of Avi Allison on Behalf of Sierra Club, File No. ER-2019-0335, p. 26-38 (Dec. 4, 2019).

[68] Fisher, Jeremy et al, "Playing with Other People's Money: How Non-Economic Coal Operation Distort Energy Markets," Sierra Club (Oct. 2019).

[69] Missouri Public Service Commission, Revised Order Establishing Special Contemporary Resource Planning Issues, p.5.

Despite that directive, Ameren has failed to provide the information necessary to assess its commitment assumptions. To address this deficiency, Ameren should revise its IRP to include: 1) detail on how it makes commitment and dispatch decisions currently; 2) an analysis of self-commitment versus economic commitment to show the cost impacts of self-scheduling practices on customers; and 3) hourly data on historical energy prices, dispatch status, MISO bid prices, and economic minimum/maximum data for each coal unit.

IX. Deficiency 9: Ameren's Choice of Combined Cycle Gas as the Default Resource Was Not Justified.

As discussed, almost all of the plans modeled in the IRP added new NGCC which was effectively treated as the default replacement option. Ameren claimed that an NGCC was going to be the "marginal source" for new generation through 2050—citing the Energy Information Administration ("EIA").[70] However, Ameren's outlook is outdated as is the source it used to justify this decision. The Company cited to the 2019 Annual Energy Outlook ("AEO") from the EIA which projected slightly more gas than renewable capacity would be installed from 2021 through 2050.[71] However, the latest 2021 AEO projects substantially more new renewable installations compared to gas. This swing in the EIA's outlook is shown below in Figure (which shows new renewable capacity) and Figure (which shows new gas capacity).

[70] Ameren 2020 IRP, Chapter 6, p.14.

[71] https://www.eia.gov/todayinenergy/detail.php?id=38612.

Figure 7: EIA New Renewable Capacity Projections (2019 AEO vs. 2021 AEO)[72]

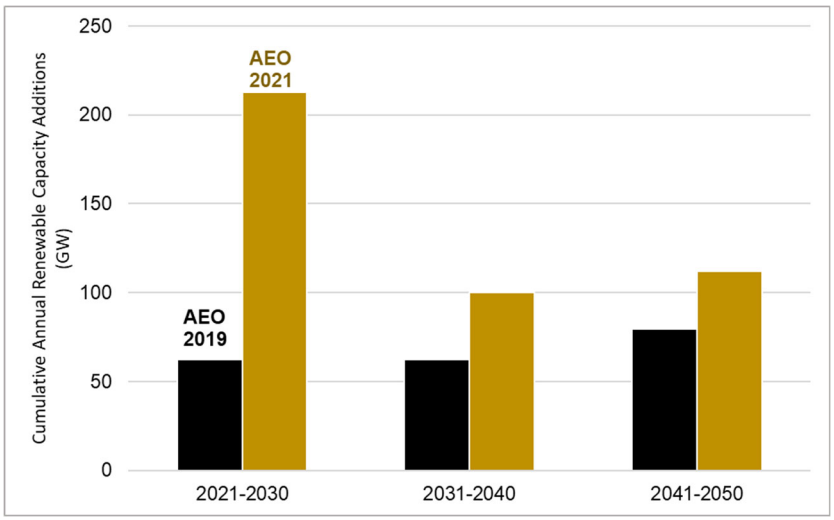
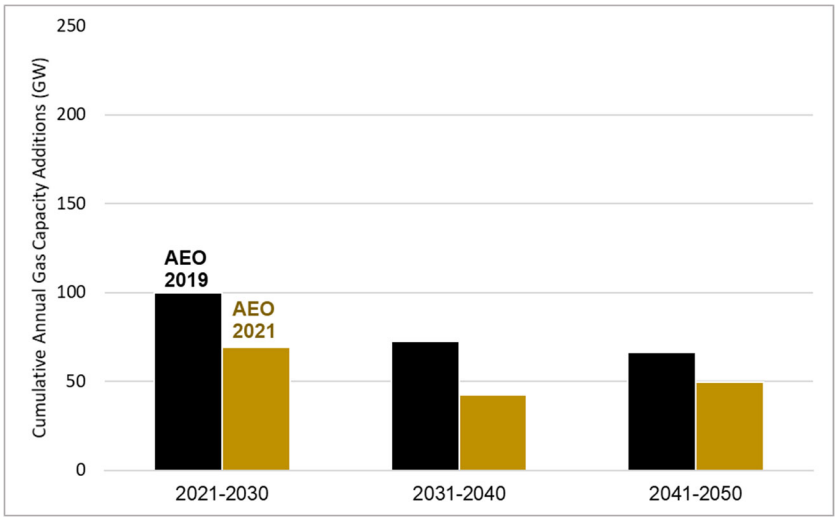


Figure 8: EIA New Natural Gas Capacity Projections (2019 AEO vs. 2021 AEO)[73]



Clearly, renewables are closer to being a "marginal resource" than natural gas. The EIA now expects that new renewable capacity will be more than double new gas capacity over the

[72] https://www.eia.gov/todayinenergy/detail.php?id=38612.

[73] https://www.eia.gov/todayinenergy/detail.php?id=38612.

same period—and more than double the renewable capacity that it projected in 2019.[74] Moreover, working again from Ameren's LCOE analysis, we also estimated the Company's new NGCC replacement plant in 2024 and 2028. We used both the Company's assumed ** [redacted] ** capacity factor and a lower-bound operating level of ** [redacted] ** to account for the risk that the plant will not be as competitive.[75] The results in Figure (with a high capacity value) and Figure (with a low capacity value) show that a new NGCC is at best a ** [redacted] ** investment but mostly would be expected to produce a negative net revenue.

Figure 9: Levelized Net Revenue from Select Resources with High Capacity Value CONFIDENTIAL (cents per kWh)

[74] https://www.eia.gov/outlooks/aeo/data/browser/#/?id=9-AEO2021&cases=ref2021&sourcekey=0.

[75] "LCOE Fossil-Renewables-Nuke_Confidential".

Figure 10: Levelized Net Revenue from Select Resources with Low Capacity Value CONFIDENTIAL (cents per kWh)

Ameren's own LCOE analysis ** **[76] Despite this, the Company maintained the outdated notion that gas was the default option at the expense of more economic replacement options. To remedy this deficiency, Ameren should reject the use of combined cycle gas as the automatic default resource in its updated IRP filing.

X. Deficiency 10: Ameren Has Underestimated Carbon Price Risk.

Another risk to the continued operation of coal units is the cost of emitting carbon dioxide (CO_2). In the 2020 IRP, the Company modeled three coal retirement scenarios, one with no carbon price ("low"), a "mid" carbon price starting at $1.25 in 2025, and a "high" carbon

[76] "LCOE Fossil-Renewables-Nuke Confidential". * **

price that only starts at $3.57 in 2025.[77] These prices do not capture a reasonable amount of carbon price risk. Some of the largest utilities in the country are assuming higher carbon prices in their resource planning, including:

- Southwestern Electric Power Company ("SWEPCO"), a subsidiary of American Electric Power ("AEP"), in its most recent base case is assuming a carbon price of $15 per metric ton in 2028 escalating at 5 percent annually thereafter.[78]
- Pacificorp, a subsidiary of Berkshire Hathaway, models three carbon price forecasts the lowest of which starts at $10 per ton in 2025, escalating at 12 annually thereafter.[79]
- Duke Energy Carolinas, a subsidiary of Duke Energy, models a base case price of $5 per ton in 2025 that escalates at $5 per year; and a high carbon price scenario that starts at $5 per ton in 2025 and escalates by $7 annually.[80]

There is the likely to be further carbon regulation in the medium and long-term. Other utilities are planning for this significant risk. Ameren should model a higher carbon price to account for this substantial risk as under its preferred plan (Plan V), the Company's fleet is still expected to emit nearly ** [redacted] ** tons of CO_2 in 2030.[81]

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[77] Ameren 2020 IRP, Chapter 2, p. 18.

[78] SWEPCO, 2019 Draft Integrated Resource Plan, p. ES-2, *available at:* http://lpscstar.louisiana.gov/Star/ViewFile.aspx?Id=6b4ee5b8-8afb-4672-808f-be00ccd5a90a.

[79] Pacificorp, 2019 Integrated Resource Plan, at 180, *available at:* https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019_IRP_Volume_I.pdf.

[80] Duke Energy Carolinas, Integrated Resource Plan, at 153, *available at:* https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=9752b166-f870-4b0c-8469-8f791405d95c.

[81] "HC_Emissions-Generation 09-14-20".

In addition to carbon and sulfur dioxide (discussed previously) there is the strong risk that the Company's fleet will require additional environmental compliance costs, such as selective catalytic reduction units for nitrogen oxide control or baghouses for particulates. The current federal administration could move forward with tightening of Clean Air Act regulations that would require emissions reductions from coal plants commensurate with those modern controls. This is a risk solely borne by coal-burning power stations, as opposed to renewable sources or other thermal generation, and the economic risks of those potential future regulations should be assessed by Ameren in combination with all the other known risks. To remedy this deficiency, should model a higher carbon price.

XI. Deficiency 11: Ameren's IRP Modeling Lacks Transparency.

Ameren's IRP modeling suffers from a fundamental lack of transparency and documentation of key data about its existing generation. The IRP rules require that a utility "describe and document" the factors that are critical to the selection of resource plans.[82] Moreover, Ameren was required to "analyze and document on a unit-by-unit basis the net present value revenue requirement of the relative economics of continuing to operate each . . . coal-fired generating unit . . . in light of all the environmental, capital, fuel, and O&M expenses needed" to continue operations compared to retiring and replacing each unit with other resources.[83] Indeed, the stakeholder engagement process is designed to encourage transparency and the free flow of information between the Company, the Commission, and other stakeholder participants. All of the assumptions should be spelled out and presented as early and as clearly

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[82] 20 CSR 4240-22.060(5)(C).

[83] Revised Order Establishing Special Contemporary Resource Planning Issues, File No. EO-2020-0047, at Issue O (issued Dec. 3, 2019).

as possible. Unfortunately, Ameren has refused to provide or explain many of the key assumptions that will inform the development of the Company's IRP.

When asked for the data on its existing generation, for example, the Company stated that it was unable to provide **[redacted]**[85] These data are indisputably critical to the net present value of the remaining generation units. Ameren's failure to produce the data prevents parties and the Commission itself from closely examining the economics of these units or plants, individually.

Also, in discovery the Company could not **[redacted]** O&M for its generation units.[86] This is problematic because **[redacted]**—along with fuel costs, **[redacted]**—which can then be directly compared to the amount of energy revenue that the unit produced on the MISO market. Such a comparison shows how the unit or plant fares on an energy-only basis. Without **[redacted]** and other key unit or plant-specific data, it is impossible to comprehensively evaluate the economics of the units. Ameren should provide all of this data before revising its IRP to allow a proper assessment of the net present value of retaining its existing generation. To remedy this deficiency, Ameren should provide all the data that is has so-far failed to provide for its existing generation units.

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[84] SC 01 HC; SC 2.8 HC.

[85] *See* Revised Order Establishing Special Contemporary Resource Planning Issues, File No. EO-2020-0047 (issued Dec. 3, 2019); *see also* 20 CSR 4240-22.040(2)(B), 22.060(4)(C)(1), 22.060(5)(C).

[86] SIERRA-SC_04_C-Answer.

CONCLUSION

Sierra Club respectfully requests that the Company agree to prepare, or the Commission order the Company to prepare, a revised triennial IRP filing that corrects the deficiencies identified herein, and that the Commission order the Company to conduct one or more public hearings to provide the opportunity for public input required by 4 CSR 240-22.080(5).

Dated: March 31, 2021

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was served electronically on this 31st day of March, 2021 to counsel for the parties of record as set out on the official Service List maintained by the Data Center of the Missouri Public Service Commission for this case.

/s/ Tony Mendoza

Tony Mendoza