April 6, 2020

Via Email

Hande Berk
Matt Michels
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cc: Ameren Stakeholder Group

Re: Sierra Club's Initial Comments on Ameren Missouri's 2020 Integrated Resource Planning Process.

Dear Ms. Berk and Mr. Michels:

On behalf of Sierra Club and our 12,000 Missouri members, including thousands who are Ameren Missouri electric customers, we submit these comments regarding the development of Ameren Missouri's 2020 IRP. [1] Ameren's 2020 IRP will have tremendous consequences for the health and well-being of Missourians. At the end of the IRP process, Sierra Club urges Ameren to select a preferred resource portfolio that minimizes pollution and relies significantly on renewable generation and demand-side resources, and which includes no new carbon-emitting resources. Consistent with the need to address Ameren's climate risk and the climate crisis, we urge you to plan for the retirement of all eight of your coal-burning units by 2030.[2] We submit the following comments in the interest of informing Ameren's analysis. Our comments are based on what Ameren has done in its last IRP, what it has stated it might do in the 2020 IRP, and other issues that affect the economics of Ameren's resource portfolio.

[1] Comments prepared with assistance from Tyler Comings at the Applied Economics Clinic (AEC).

[2] *See* "Report of the Intergovernmental Panel on Climate Change (IPCC) on the Impacts of Global Warming of 1.50C above pre-Industrial Levels", United Nations Intergovernmental Panel on Climate Change (2018) (demonstrating that humans must limit global warming to 1.50C by the end of this century to avoid irreversible and catastrophic impacts, which means carbon dioxide emissions need to decline by about 45 percent by 2030 on a global basis and reach net zero in 2050), *available at:* https://www.ipcc.ch/sr15/.

I. Introduction

A recent report by Morgan Stanley, "The Second Wave of Clean Energy — Part II: Who Can Ride the Wave?" underscores why Ameren should prioritize a rapid coal-to-clean transition.[3] Ameren is one of the top utilities covered by the report that would benefit from this transition:

> "We compared the costs of operating each coal plant against our state-by-state forecasts of renewables costs across 13 stocks and identified [47,000 MW] of coal capacity that will become more expensive than renewables by 2024," Morgan Stanley analysts wrote in a recent research report. "We estimate this represents a capex opportunity of [$64 billion] and earnings accretion for the stocks we cover of up to 14% in 2025."
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> "We think that the economics make sense that the utilities in general should be pursuing this just because it seems to benefit everybody," Morgan Stanley analyst Stephen Byrd said in a Feb. 11 phone interview. "It benefits shareholders, customers, and the planet."
>
> The research firm said it has identified $2.9 billion in untapped renewables investment opportunity that could allow Ameren, which it upgraded to "overweight," to grow its earnings "at the high end" of the St. Louis-headquartered utility's 6% to 8% earnings growth target.
>
> Morgan Stanley noted its capital expenditure opportunity forecast includes the customer savings created by replacing coal plants with cheaper renewable resources, "where each dollar of savings translates into [$7 to $8] of capex opportunity."

Our comments below focus on the future of Ameren's coal-burning plants. First, we discuss why Ameren needs to conduct a rigorous economic assessment of its existing coal units, especially given significant market pressures and regulatory compliance costs that undermine the viability of continued operation of these units. Second, we discuss steps that Ameren should take in evaluating replacement resources for its energy and capacity requirements.

II. Ameren needs to perform a rigorous economic assessment of its coal units.

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, environmental compliance costs, and, especially for Ameren, flat or declining electric energy demand. 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. We suggest several steps that Ameren should include in such an evaluation.

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[3] Sweeney, Darren, S&P Global: Market Intelligence, *Morgan Stanley: $64B capex upside for utilities replacing coal with renewables* (Feb. 18, 2020), *available at:* https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/morgan-stanley-64b-capex-upside-for-utilities-replacing-coal-with-renewables-56987725.

A. The Company should conduct economic optimization of existing coal units.

Ameren has stated that its upcoming 2020 IRP will include "plans reflecting alternative retirement dates for existing coal-fired resources."[4] The Commission has also ordered Ameren to compare the continued operation of its coal units—accounting for all future costs—to their replacement.[5] We agree and hope that the Company's modeling will rigorously examine the economic retirement of existing units. Specifically, the Company should incrementally test a series of retirement years moving forward from 2020, 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 limited.

B. All else equal, existing units should not be preferred over new resources.

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 significant 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.

C. Ameren should address regulatory compliance costs of its coal fleet.

Ameren notes that it is "reviewing/fine tuning" its outlook for environmental compliance for the 2020 IRP.[6] The Commission requires Ameren to analyze compliance costs with "existing, pending, or potential environmental standards, including until they have been finally withdrawn or replaced."[7] We agree and hope that the Company will take a sober and realistic view of environmental compliance costs in developing its plan. In the past, the Company has ignored the risk that its Rush Island and Labadie plants would face significant costs from court-mandated sulfur dioxide (SO_2) reductions.

Given the magnitude of compliance costs for Labadie and Rush Island, rigorous economic modeling should be conducted to evaluate these decisions. As you know, the U.S. District Court, Eastern District of Missouri has found that Ameren violated the New Source Review program of the Clean Air Act. As a result, the Company is required 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

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[4] Ameren Missouri 2019 IRP Update at 12.

[5] Missouri Public Service Commission, Revised Order Establishing Special Contemporary Resource Planning Issues at 7.

[6] Ameren Missouri 2020 IRP Stakeholder Meeting #1, slide 8.

[7] Missouri Public Service Commission, Revised Order Establishing Special Contemporary Resource Planning Issues at 6.

30-day rolling average) by 2024, and install dry sorbent injection (DSI) at the Labadie plant by 2022 to reduce SO_2 emissions in order to compensate for excess SO_2 emissions at Rush Island.[8] Accordingly, Ameren's forthcoming IRP modeling must account for the capital and operating costs associated with these controls.

D. Ameren should not underestimate carbon price risk or future requirements under the Clean Air Act.

Another risk to the continued operation of coal units is the cost of emitting carbon dioxide (CO_2). In its 2019 IRP update, the Company modeled three coal retirement scenarios, one with no carbon price and two with a low carbon price of $3.11 in real 2016 dollars, starting in 2025.[9] These 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 base case is assuming a carbon price of $15 per metric ton in 2028 escalating at 5 percent annually thereafter.[10]
- 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.[11]
- Duke Energy Indiana, a subsidiary of Duke Energy, models a base case price of $5 per ton and a higher carbon price scenario that starts at $10 per ton; both begin in 2025 and escalate by $3 annually until 2037.[12]

The outcome of the Clean Power Plan and subsequent changes to that plan are still subject to litigation and there is the potential for further carbon regulation in the medium to long-term. Other utilities are planning for this significant risk. Ameren should model a higher carbon price in its base case and include at least one other scenario with a higher price than in the base case.

In addition to carbon prices, the Ameren coal fleet generally lacks the suite of modern pollution controls that have become standard in recent coal-burning power plant construction, like FGD

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[8] 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).

[9] Ameren 2019 IRP Update at 26.

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

[11] 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.

[12] Duke Energy Indiana, 2018 Integrated Resource Plan, at 5, *available at:* https://www.duke-energy.com/_/media/pdfs/for-your-home/indiana-irp/duke-energy-indiana-public-2018-irp.pdf?la=en.

scrubbers for SO_2 control, selective catalytic reduction (SCR) units for nitrogen oxide control, and baghouses for particulates. There is a strong risk to Ameren that a future federal administration could move forward with 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, including low gas prices, decreasing renewables prices, and declining energy demand in Missouri.

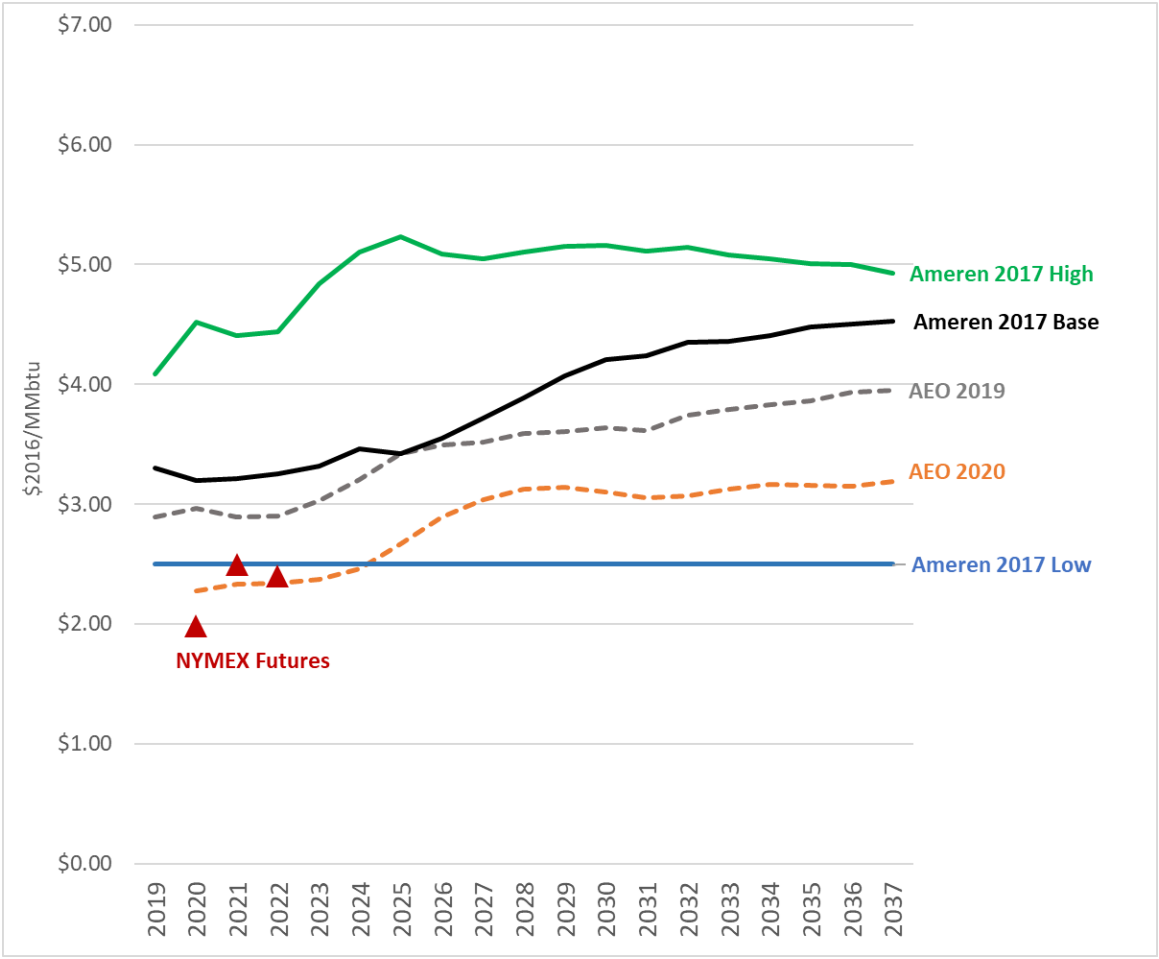
E. The Company should not overestimate natural gas prices.

Natural gas prices are a key input into electric system modeling. Coal-burning units' economics rely on natural gas prices because those prices heavily influence electricity prices, and natural gas generators compete with coal generators in the MISO energy market. A higher natural gas price would favor increased coal operation because coal generation would: 1) collect more revenues with higher electricity prices, and 2) operate more frequently because natural gas generation would be relatively more expensive than coal. Thus, an overestimate of natural gas prices would introduce a bias towards continued coal operation.

In its 2019 IRP Update, Ameren showed that it had overestimated natural gas prices in its 2017 IRP when comparing the assumptions in its last IRP to more up-to-date forecasts from the Energy Information Administration (EIA) 2019 Annual Energy Outlook (AEO).[13] We have updated this comparison to show the recently released 2020 AEO forecast—shown in Figure 1. This figure shows that forecasts from other sources have decreased significantly and are closer to Ameren's previous low gas forecast.

[13] Ameren Missouri 2019 Update, Figure 3.6.

Figure 1: Ameren 2017 IRP, EIA 2019 and 2020 Natural Gas Price Forecasts ($2016/MMBtu)



Source: Ameren Missouri 2017 IRP, Table 2.5 and EIA Annual Energy Outlook (2019 and 2020 reference case), NYMEX futures (May 2020 through December 2022, annual average). Prices adjusted to $2016 to match Ameren's Figure 3.6 in its 2019 IRP Update.

Although it is reasonable for Ameren to model a range of natural gas prices, the Company has been overestimating actual natural gas prices, and using high price forecasts in its base case, which would unreasonably favor coal generation in a way that does not match reality. The Company's base case Henry Hub gas price for 2019 was projected at $3.53 per MMBtu whereas the actual price for 2019 was $2.57 per MMBtu: this represents an overestimate of 37 percent.[14] As shown in Figure 1, the actual gas price in 2019 was quite close to Ameren's low gas price forecast, and the latest EIA forecast and market futures prices are both below Ameren's low gas prices in the near-

[14] Ameren 2017 IRP, Table 2.5. Adjusted Ameren's price to $2019 using 2.3% inflation rate for comparison to actual 2019 prices—which are the Henry Hub Spot Prices reported by EIA. *Available at:* https://www.eia.gov/dnav/ng/hist/rngwhhdM.htm.

term.[15] Ameren should assume continually low gas prices going forward given its past overestimates of gas prices and the universal trend of declining natural gas price forecasts.

F. Ameren should not overestimate capacity prices.

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 remain 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.[16] Yet in its last IRP, Ameren predicted skyrocketing capacity prices that would exceed the current CONE, i.e., the levelized cost of building a new combustion turbine.[17] We hope that Ameren will avoid the fallacy that capacity prices will sharply increase as there is no evidence to support such a finding. Such an overestimate of capacity prices makes maintaining excessive capacity appear attractive when, in fact, the reality of low capacity prices makes purchasing capacity more attractive.

G. Ameren should address dispatch practices of its coal units.

Ameren is "self-committing" its coal units—that is, not submitting them to MISO for economic dispatch—in almost every hour they are available.[18] Research has shown that self-commitment costs retail customers more than economic dispatch.[19] As you know, the Missouri Public Service Commission opened a docket to explore this issue. But the Commission discussed the lack of data

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[15] EIA. Annual Energy Outlook, *available at:* https://www.eia.gov/outlooks/aeo/data/browser/; NYMEX Henry Hub Futures. (Apr. 2, 2020), *available at:* https://www.cmegroup.com/trading/energy/natural-gas/natural-gas_quotes_settlements_futures.html#tradeDate=04%2F02%2F2020

[16] MISO PRA results for 2015/2016 through 2019/2020 delivery years. *Available at:* https://cdn.misoenergy.org/2015-2016%20PRA%20Results87078.pdf; 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.

[17] Direct Testimony of Avi Allison (Revenue Requirement), Before the Missouri PSC, On Behalf of Sierra Club at 19-20 (Dec. 4, 2010).

[18] *Id.* at 3.

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

and resources available to Staff in that docket, further directing Ameren to "address these issues in its IRP since only it possesses the necessary bid formulation and production cost data."[20]

We agree that Ameren should address its dispatch practices in its upcoming IRP, and we recommend that the Company include: 1) detail on how it makes dispatch decisions currently; 2) an analysis of self-commitment versus economic dispatch to show the cost impacts of dispatch practice on customers; and 3) hourly data on energy prices, dispatch status, MISO bids, economic minimum/maximum, and actual generation.

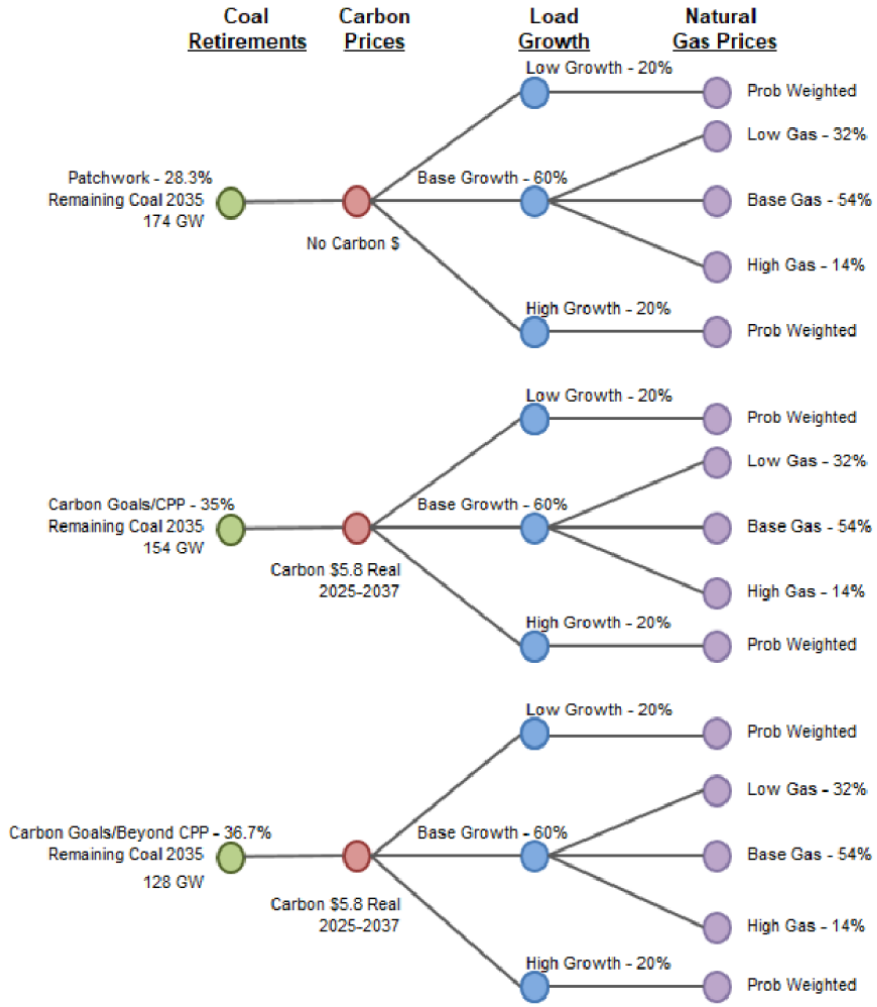
H. The amount of coal generation on the system should be influenced by load and market prices.

Ameren has used a scenario decision tree in past IRPs, and it appears that it will continue to do this.[21] Previously, the Company did the following: 1) set three scenarios of coal retirements, each corresponding to a carbon price; 2) tested scenarios of load growth (low, base and high); and 3) tested levels of natural gas prices (low, base and high). This chain of events is shown in Ameren's "scenario tree" shown below:

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

[21] Ameren Missouri 2020 IRP Stakeholder Meeting #1, slide 11.

Figure 2: Ameren's "Scenario Tree"



Source: Ameren Missouri 2020 IRP Stakeholder Meeting #1, slide 11 (copy of figure)

As mentioned above, Ameren is using a low carbon price compared to other utilities and should at least test a higher one. Apart from that, the process shown above is problematic because the amount of coal generation on the system is pre-determined by the carbon price set by Ameren. This level of coal, set by Ameren, is then set in stone no matter what the load or natural gas prices are in subsequent steps. This is backwards logic because, in reality, coal retirement decisions are heavily influenced by load growth and prices for MISO energy (which are themselves largely influenced by natural gas and renewables prices). We have all seen this impact in recent years: low load growth and low gas price have led to significant coal unit retirements across the U.S. Ameren uses a scenario with a high amount of coal generation (called "patchwork" above) and then tests that high level of coal under a low load and low gas future—but that amount of coal would not exist in such a future. We recommend that Ameren abandon this flawed methodology in its upcoming IRP.

I. Ameren should consider the health impacts of continuing to operate its coal-burning units in selection of its preferred portfolio.

An externality caused by generating electricity is negative health impacts. And while many forms of generating electricity can have negative impacts on the public, coal indisputably has the greatest magnitude of negative health impacts per unit of generation. To comply with the Missouri IRP rules—which require consideration of "[e]nvironmental impacts" including "air emissions"[22]—we encourage Ameren to include quantified consideration of the health impacts of each portfolio.

In the selection of a preferred portfolio, Ameren can and should incorporate a range of public health costs into its assessments. Ameren's customers and other Missourians bear the consequences of the ongoing decision to remain reliant on its coal plants, which, beyond burdening customer bills, pollute air and waterways and negatively impact public health. In evaluating these harms, the first step is to quantify the actual public health impacts. Fortunately, there are numerous resources available to aid in this assessment.

Ameren should evaluate the cost that various air pollutants, including, but not limited to, sulfur dioxide (SO_2), nitrous oxide (NO_x), particulate matter (PM), and mercury, have on public health. Coal combustion is one of the main sources of these air pollutants, exposure to which contributes to increased instances of asthma attacks, respiratory infections, hospital admissions, missed school days and work days, and a variety of other health problems.[23] Currently, Ameren's coal-burning plants are among the top annual SO_2 emitters in the country according to EPA, with Labadie ranking third and Rush Island ranking eleventh in 2018.[24] The table below illustrates the total annual 2018 emissions of SO_2 and NOx for each of Ameren's coal plants:

Facility Name	SO_2 (tons)[25]	NO_x (tons)[26]
Labadie	33,705.2	7,138.3
Rush Island	18,483.5	3,202.9
Sioux	2,276.2	2,276.2
Meramec	3,346.0	1,261.7

As discussed, air pollution contributes significantly to increased morbidity and mortality, and modeling can be used to translate air pollution into social cost estimates. One such modeling software is EPA's Environmental Benefits Mapping and Analysis Program - Community Edition (BenMAP-CE), which enables users to estimate health impacts and economic value of changes in air quality and helps analyze the benefits that discrete air pollution reductions can have on human

[22] 4 CSR 240-22.040(1)(K).

[23] *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).

[24] Top Emitters Report generated using EPA's Air Market Program Data, *available at:* https://ampd.epa.gov//ampd/.

[25] 2018 SO_2 emissions in tons according to EPA's Air Markets Program Data.

[26] 2018 NOx emissions in tons according to EPA's Air Markets Program Data.

health and the economy.[27] The BenMAP-CE program has been used to assess fossil fuel electricity health impacts and health-related benefits of attaining the reductions in a variety of air pollutants, including ozone and $PM_{2.5}$.[28]

Another tool, the Estimating Air pollution Social Impact Using Regression (EASIUR) model created by the Civil and Environmental Engineering Lab at Carnegie Mellon University, was developed as an easy-to-use tool to estimate the public health cost of emissions in the United States.[29] EASIUR can calculate the location-based marginal-social costs ($/metric ton) for $PM_{2.5}$, SO_2, and NO_x. The social costs of pollution for St. Louis, MO, surrounded by all four of Ameren's coal-burning plants, are displayed in the table below ($/metric ton) for the summer season, which show generally that health impacts related to particulates are especially concerning and therefore worthy of serious consideration in this IRP.

	$PM_{2.5}$	SO_2	NO_x
Ground Level	$295,000/ton	$25,400/ton	$5,080/ton

In addition to considering the public health costs from continuing to burn coal, Ameren should consider in this IRP the air quality and public health benefits of investments in replacement resources, including energy efficiency and renewable energy. EPA has developed a set of values for stakeholders to use to monetize the benefits from these investments and models are consistently updated to reflect the public health impacts caused by energy efficiency and renewable energy.[30] For example, Ameren can learn from experience in PJM about the avoided negative health impacts from new offshore wind in the MidAtlantic.[31] Here, models were used to distill the health and climate impacts from specific wind project sites, and the study gave insight into how to assess the positive public health impacts of various renewable resources.

To aid stakeholders in the process, EPA has developed two main quantification tools: the AVoided Emissions and geneRation Tool (AVERT) and the CO-Benefits Risk Assessment

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[27] BenMAP-CE, *available at:* https://www.epa.gov/benmap.

[28] EPA, BenMAP-CE Applications: Articles and Presentations, *available at:* https://www.epa.gov/benmap/benmap-ce-applications-articles-and-presentations#analyses.

[29] Jinhyok Heo, Peter J. Adams, H. Gao, "Public Health Costs of Primary PM2.5 and Inorganic PM2.5 Precursor Emissions in the United States," Environmental Science & Technology, 50 (11), 6061–6070, 2016, *available at:* https://www.sciencedirect.com/science/article/pii/S0160412017303586?via%3Dihub; EASIUR Online Tool *available at:* https://barney.ce.cmu.edu/~jinhyok/easiur/.

[30] EPA, State and Local Energy and Environmental Program, "Public Health Benefits per kWh of Energy Efficiency and Renewable Energy in the United States: A Technical Report" (July 2019), *available at:* https://www.epa.gov/sites/production/files/2019-07/documents/bpk-report-final-508.pdf.

[31] Buonocore, Jonathan, *et al.*, "Health and climate benefits of offshore wind facilities in the Mid-Atlantic United States," 2016 Environ. Res. Lett. 11 (July 14, 2016), *available at:* https://iopscience.iop.org/article/10.1088/1748-9326/11/7/074019/pdf.

(COBRA) Health Impacts Screening and Mapping Tool.[32] AVERT can be used to model the displacement of emissions at power plants by energy efficiency and renewable energy, while COBRA can be used to quantify and monetize resulting air quality and health impacts. For example, building 1,000 MW of utility-scale solar and 1,000 MW of wind generation in Ameren's service territory results in a regional reduction of 4,841 tons of SO_2, 3,282 tons of NO_x, and 225 tons of $PM_{2.5}$.[33] COBRA includes a simplified air quality model to convert air pollution changes to air quality impacts. It translates the estimated air quality changes to health impacts based on the methods, health benefit assumptions, and economic values EPA uses for its own health impact analyses.[34] When Ameren considers building renewable energy to replace its coal burning plants it should assesses the public health benefits through uses of models like AVERT and COBRA.

Lastly, the Company should consider the environmental justice implications associated with its ultimate selection of its preferred portfolio 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. EJSCREEN[35] is EPA's environmental justice screening and mapping tool that combines environmental and demographic indicators based on nationally consistent data and allows utilities to do just that. When run for a particular power plant, EJScreen demonstrates the relative environmental justice concerns for designated areas by "EJ Indexes," making significant data explicit, especially when reviewing communities that surround facilities and their racial composition, per capita income, and other demographic indicators in relation to various air, water, and waste environmental indicators. Ameren should take care to consider the distinct communities whose health is impacted by the continued operation of Ameren's coal-burning units.

In sum, we encourage the use of concrete methods to include the analyses of public health impacts in Ameren's portfolio selection process.

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[32] EPA, AVERT, *available at:* https://www.epa.gov/statelocalenergy/avoided-emissions-and-generation-tool-avert; EPA, COBRA, *available at:* https://www.epa.gov/statelocalenergy/co-benefits-risk-assessment-cobra-health-impacts-screening-and-mapping-tool.

[33] Calculated on April 5, 2020 using AVERT Web Addition for the Upper Midwest Region, which includes eastern Missouri, *available at:* https://www.epa.gov/statelocalenergy/avert-web-edition.

[34] *See* www.epa.gov/statelocalenergy/co-benefits-risk-assessmentcobra-health-impacts-screening-and-mapping-tool.

[35] *Available at:* https://www.epa.gov/ejscreen.

III. Ameren needs to consider all resource types, use reasonable costs for future resources, and issue an all-source RFP to test the market.

Ameren should actively pursue all resource types, allowing new resources to compete on a level playing field with existing resources in order to develop a low-cost, low-risk plan. Reasonable sources for new resource costs are Lazard's Cost of Storage and Cost of Energy reports, as well as the National Renewable Energy Laboratory (NREL) Annual Technology Baseline (ATB). If using the NREL 2019 ATB, the low end of costs for solar and battery storage installations should be considered. (As of this writing, the 2020 NREL ATB is not yet available, but we encourage Ameren to rely on the most up-to-date data available.)

The Company claims it is not considering "purchased power," which we assume refers to power purchase agreements (PPAs) or other bilateral contracts and purchases.[36] But not considering PPAs would be a mistake. Evergy Missouri West and Evergy Metro recently announced inclusion of an all-source request for proposal (RFP) in the upcoming triennial IRP for those utilities.

Further, many utilities, including Northern Indiana Public Service Company (NIPSCO), Public Service New Mexico (PNM), and Xcel Energy in Colorado have recently issued RFPs and received low-cost PPAs in response. All three of these utilities are planning to replace coal units with competitive resources, which they: 1) actively sought out and 2) determined that new resources would be lower-cost by modeling them alongside their existing coal units. Ameren should not foreclose the possibility of a lower-cost plan by ignoring the wide market of resources available through a competitive solicitation.

Ameren should commit to issuing all-source request for proposals to seek replacement energy and capacity for coal generation in delivery years 2022, 2023, and 2024. Ameren should use the bids received from such RFPs to inform its modeling in the 2021 and 2022 IRP updates and to procure from if Ameren determines that the bids received are advantageous to its customers. Ameren should learn from the experience of Indiana utility NIPSCO, including by selecting an independent consultant to conduct such all-source RFP on its behalf. Based on the NIPSCO experience, we recommend the following key design elements of an RFP:

Key Design Elements of the All-Source RFP:

i. Technology
   a. All energy and capacity solutions regardless of technology
ii. Size
   a. Minimum total need of 12,500,000 (MWh)[37] for the portfolio
   b. Minimum total need of 1,800 megawatts ("MW")[38] for the portfolio

[36] Ameren Missouri 2020 IRP Stakeholder Meeting #1 at slide 14.

[37] This estimate represents the total output of Rush Island and half of the output in Labadie in 2019. Ameren should procure replacement energy in line with its expected need for energy in the 2020s.

[38] This capacity figure represents roughly the capacity of Rush Island and the two oldest Labadie units. Ameren should procure replacement capacity and energy in line with its expected needs in the 2020s.

c. Allows smaller resources to offer their solution as a piece of the total need
    i. Minimum size of generation bids of 5 MW
    ii. Minimum size of DR bids of 1 MW
d. Also encourages larger resources to offer their solution for consideration

iii. Ownership Arrangements
a. Seeking bids for asset purchases (new or existing), build/transfer projects and purchase power agreements
b. Resource must qualify as MISO internal generation (not pseudo-tied) or load (demand response)

iv. Duration
a. Requesting delivery beginning June 1, 2022 but will evaluate deliveries before and after
b. Minimum contractual term and/or estimated useful life of 5 years (except for demand response, which should be 1 year)

v. Deliverability
a. Must have firm transmission delivery to MISO Zone 5
b. Must meet N-1-1 reliability criteria or show cost estimate to achieve that quality

vi. Participants & Pre-Qualification
a. Marketed RFP to broad bidder audience and Bidder Conference Platts Megawatt Daily, North American Energy Marketers Association (NAEMA)
b. Require credit-worthy counterparties to ensure ability to fulfill resource obligation

We encourage Ameren to issue an all-source RFP this year as part of the process of seeking the most advantageous means of replacing its existing coal-burning generation. As with NIPSCO's RFP, the process should also allow for extensive stakeholder involvement in developing the RFP and reviewing bids. A transparent, robust RFP process will foster low-cost, low-risk resource planning for subsequent IRP updates. In the meantime, for this upcoming IRP, Ameren should assume replacement costs that are commensurate with competitive procurement outcome in anticipation of conducting such a process in the near future.

IV. Ameren Must Consider Municipal and Corporate Clean Energy Goals.

The Commission has required Ameren to "analyze and develop as candidate resource options the satisfaction of municipal and corporate renewable energy goals."[39] On October 27, 2017, the St. Louis Board of Aldermen unanimously adopted Resolution 124 which "calls for the City to commit to transition to 100 percent clean energy in the form of wind and solar and energy efficiency measures within the electricity sector by 2035." On November 18, 2019, St. Louis Board of

[39] Missouri Public Service Commission, Revised Order Establishing Special Contemporary Resource Planning Issues at 6.

Aldermen President Lewis Reed presented a report to the Board of Aldermen's Legislation Committee that had been developed and adopted by the city's Clean Energy Advisory Board providing recommendations for how the City should meet its clean energy goal called for in Resolution 124.[40]

In addition, mayors from the following cities and towns in, or partially in, Ameren's service territory have joined Sierra Club's Mayors for Clean Energy pledge, committing to working with their communities to realize a vision of 100% renewable energy:

1) Chesterfield
2) Columbia (partially in Ameren service territory)
3) Dellwood
4) Florissant
5) Hazelwood
6) Kirkwood (partially in Ameren service territory)
7) Maplewood
8) Pine Lawn
9) Rock Hill
10) St. Louis
11) University City
12) Wentzville

Lastly, there are multiple corporations that have made 100% clean energy pledges (e.g., RE 100[41]) and that have facilities located in Ameren's service territory. These include:

1) Bank of America
2) AB InBev
3) IKEA Group
4) Microsoft
5) Nestle Purina
6) Procter & Gamble
7) SAP
8) Starbucks
9) UBS
10) Wells Fargo

We do not intend this list to be exhaustive of the climate goals for corporations that do business in your service territory. And we trust that Ameren's outreach for its Green Tariff and through other means has identified other corporate customers with clean energy goals. We ask that Ameren recognizes all the climate goals of cities, towns, and businesses within your service territory and seek to achieve them.

[40] Information on the Board of Aldermen's actions is available online at: https://www.stlouis-mo.gov/clean-energy/.

[41] RE100 is a global corporate leadership initiative bringing together businesses committed to 100% renewable electricity.

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If you have any questions or would otherwise like to discuss this comment letter, please do not hesitate to contact us. Thank you for your consideration.

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