BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Determination of Special Contemporary Resource Planning Issues to be Addressed by Ameren Missouri in its Next Triennial Compliance Filing or Next Annual Report.	)))))	File No. EO-2020-0047

AMEREN MISSOURI'S REQUEST FOR REHEARING

COMES NOW Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "Company") and, pursuant to 20 CSR 4240-22.080(4)(B), submits to the Missouri Public Service Commission ("Commission") the following request:

1. 20 CSR 4240-22.080(4) requires Missouri's electric utility companies to consider and analyze "special contemporary issues" in their Integrated Resource Plan ("IRP") triennial compliance filings and in their annual IRP update reports.

2. The Missouri Public Service Commission ("Commission") issued an order on October 30, 2019, setting forth a list special contemporary issues for Ameren Missouri to address in its next triennial filing.

3. In paragraph M (9) of the October 30th order, the Commission required Ameren Missouri to study two methods of compliance with the Coal Combustion Waste rules, specifically removal and cap-and-cover.

4. The Commission should rehear and withdraw this requirement as its order presumed that a decision on this question is still to be made. In actuality, the decision has been made. Ameren Missouri has decided to use the cap-and-cover method to comply with this environmental requirement. Ameren Missouri recognizes that it failed to include this information in its initial response to the filings of other parties and apologizes for the oversight.

5. As part of the decision making process, Ameren Missouri underwent a multi-month process that included four public meetings in order to obtain input from the public. The comments and questions received during this time were then addressed in a document titled "Response to Community Comments on Ameren Missouri Corrective Measures, Assessments for Rush Island, Labadie, Sioux and Meramec Energy Centers." This document is Attachment A to this pleading. Then, in August of 2019, Ameren Missouri announced its selection of cap-and-cover method. Attachment B is the announcement, which is titled "Remedy Selection Report - 40 CFR § 257.97, Rush Island, Labadie, Sioux and Meramec CCR Basins." This document was also sent to various media outlets.

6. Consistent with the new facts set forth above, Ameren Missouri asks the Missouri Public Service Commission to rehearing the question of whether the Company should be ordered to study compliance methods with the Coal Combustion Waste rule as the decision has already been made and further study is not needed.

WHEREFORE, Ameren Missouri requests the Missouri Public Service Commission rehear the question of studying methodologies of compliance with the Coal Combustion Waste rule and determine that the Company should not be required to complete further study on this matter.

Respectfully Submitted,

UNION ELECTRIC COMPANY
D/B/A AMEREN MISSOURI

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CERTIFICATE OF SERVICE

I do hereby certify that a true and correct copy of the foregoing document has been hand-delivered, transmitted by e-mail or mailed, First Class, postage prepaid, this 8th day of November, 2019, to counsel for all parties on the Commission's service list in this case.

/s/ Wendy K. Tatro
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2020 IRP Special Contemporary Issues
Ameren Missouri Comments

Introduction

The Commission's rules governing electric utility resource planning include consideration of special contemporary issues as ordered by the Commission. The rule characterizes special contemporary issues generally as, "evolving regulatory, economic, financial, environmental, energy, technical, or customer issues," that utilities must adequately address in their resource planning.

It is of paramount importance to consider what is likely to be most impactful to a utility's resource decisions, especially in the near-term when real resource commitments are being made – customer demand-side programs are being approved and implemented, bids for new renewable resources are being solicited, and new generation projects are being permitted, engineered and constructed. This ensures that the limited time, resources and focus of the utility are directed to the most important questions. While it is tempting to pursue every question that might impact resource decisions at some time in some way, low-value pursuits inevitably become distractions from what is most important. It is also important that the Commission not duplicate or override the requirements of its own rules in assigning special contemporary issues and create the potential for confusion with regard to required analyses. In that light, Ameren Missouri provides below its recommended prioritization of suggested special contemporary issues, as well as one issue suggested by the Company for the Commission's consideration.

Highest Priority Issues

Ameren Missouri believes the following issues to be of greatest importance and urgency for inclusion in its 2020 IRP analysis and preparation and thus are appropriate special contemporary issues:

- **Assess the Potential for Clean Electrification in Ameren Missouri's Service Territory (Staff Issue B, SC Issue 1)** – Electrification of end uses currently powered by fossil fuels has the potential to provide benefits to customers and the environment. This includes electric vehicles and other applications. An assessment of the potential load impacts of electrification is highly important in assessing a utility's future resource needs and options.
- **Assess the Need for and Cost of Transmission Infrastructure Associated with Coal Plant Retirements (Staff Issue C, SC Issue 10)** – The potential need for transmission infrastructure when considering retirement of existing coal-fired facilities may have

significant implications for both the cost (potentially hundreds of millions of dollars) and timing of unit retirements and the location and timing of new resources.

- **Assess the Implications of Current and Potential Environmental Regulations (Including Recent Court Decisions) on the Company's Coal Energy Centers (OPC Issue 5, SC Issues 8, 9, 13)** – Environmental regulations may have a material impact on the cost and operations of the Company's coal-fired generation fleet. The options for compliance and their associated costs should be evaluated, including the potential for unit retirements. Because this can be a complex issue, specific alternative resource plans to evaluate such implications should be reviewed with stakeholders prior to analysis rather than being explicitly specified now.
- **Assess the Potential for Securitization in Conjunction with Coal Retirements (NRDC Issue 3, SC Issue 3)** – Securitization is being used in conjunction with coal retirements and investment in cleaner energy resources in other jurisdictions. An evaluation of its potential as a funding mechanism for investments in cleaner energy sources and the potential cost implications for customers would be useful, particularly in the context of the coal plant retirement-related analyses mentioned above.

Moderate Priority Issues

The issues listed below have the potential for moderate impacts on resource decisions in the near term and potentially greater impacts in the long term and the Company does not object to them being considered special contemporary issues:

- **Describe and Document Programs and Plans for Providing Customers Access to Renewable Energy (NRDC Issue 2, SC Issue 2)** – Customers of various sizes are seeking access to greater levels of renewable energy resources. The Company should describe and document current programs and plans for future programs to help customers meet these goals.
- **Assess the Potential for Integrated Distribution Planning (NRDC Issue 1)** – Integrated distribution planning is being pursued in other jurisdictions in varying manners and to varying degrees. An assessment of how integrated distribution planning could affect resource decisions could provide valuable insights. While the sophistication of such analysis today would be limited, it could provide a basis for expanded consideration as technologies, systems and process advance.

Issues Covered by Existing DSM Planning

The following suggested issues are addressed as a matter of course in the Company's IRP process and thus should not be considered special contemporary issues:

- Foreseeable demand response technologies (Staff Issue A.i)
- Assess needs for information and financing for building owners (NRDC Issue 4)
- Assess various levels of demand-side potential (SC Issue 14)
- Assess potential for combined heat and power (SC Issue 15)

Issues Covered by Existing Supply Side Planning

The following suggested issues are addressed as a matter of course in the Company's IRP process and thus should not be considered special contemporary issues:

- Foreseeable energy storage resources (Staff Issue A.ii)
- Foreseeable distributed energy resources (Staff Issue A.iii) [Note: This suggested issue also includes providing a database of existing distributed generation. The Company can work with Staff to determine how best to satisfy this request given the sensitive nature of customer-specific information.]
- Combinations of renewable and storage resources (SC Issue 4)
- Costs and performance characteristics for utility scale wind and solar resources (SC Issue 16)

Issues Covered by Existing Risk Analysis Process

The following suggested issues are addressed as part of the Company's existing risk analysis process and modeling and should not be considered special contemporary issues:

- Assumptions for climate policy (e.g. CO_2 prices) (SC Issue 5)
- Assumptions for power prices (SC Issue 6) [Note: Power price scenarios are developed based on assumptions for various levels of key drivers such as natural gas prices.]
- Various levels of off-system sales (SC Issue 7) [Note: Off-system sales are an output of modeling and are a function of the modeled dispatch of the Company's generators using the above-mentioned power price assumptions and assumptions for the cost and operating characteristics of the Company's generators.]

Issues of Low Potential Impact/Urgency

The following suggested issues appear to have little potential for impact to utility resource decisions in the near or medium term and should not be considered special contemporary issues:

- Concrete block energy storage (OPC Issue 1)
- Additive manufacturing (OPC Issue 2)
- Virtual power plant (OPC Issue 3)
- Customer renewable rate impacts (OPC Issue 4)
- Performance building hub (NRDC Issue 4)

Issues Associated with the Commissions Self-Commit Inquiry

Several suggested issues (NRDC Issue 5, SC Issues 11, 12) as well as a side discussion in Staff's filed comments on special contemporary issues address the determination of unit operating status (e.g., must-run). Such determinations are made for current operations and applied to long-term planning. The Company has stated its position on this issue in the appropriate docket and believes it is a matter best addressed in another forum, whether it be the ongoing workshop docket on in individual prudence reviews or, where appropriate, individual rate proceedings. Should such reviews result in a change in the operating status of the Company's units, any resultant changes will be appropriately incorporated into the Company's planning.

August 30, 2019

REMEDY SELECTION REPORT - 40 CFR § 257.97
RUSH ISLAND, LABADIE, SIOUX AND MERAMEC CCR BASINS

In May 2019, Ameren Missouri completed Corrective Measures Assessment (CMA) Reports for certain coal ash (CCR) basins located at the Rush Island, Labadie, Meramec, and Sioux energy centers. For each site, the CMAs considered a series of alternatives, all of which are protective of human health and the environment, control source material, minimize the potential for further releases and, over time, will attain site-specific groundwater protection standards. After sharing the CMAs publicly, Ameren Missouri solicited public input. In addition to the CMAs, Ameren Missouri and its consultants performed numerous technical evaluations, all of which help to inform the Company's remedy selection. Those evaluations include groundwater modeling; human health and ecological risk assessments; groundwater treatment assessments; onsite and offsite monitoring data; rail, barge and truck transportation studies; and a deep excavation study report.[1] The technical assessments, data and public input inform the evaluation of selection factors that has led to this final remedy selection.

Set forth below is a summary of Ameren Missouri's remedial plan that, when fully implemented and completed, will achieve CCR Rule requirements. As previously announced, Ameren Missouri intends to expeditiously close CCR basins at its energy centers by completing necessary steps to remove the basins from service and then installing an engineered cap system that exceeds, by more than two orders of magnitude, the federal regulatory requirements and, as modeling indicates, will minimize the limited and localized impact to groundwater observed at the CCR basins. In time, the sites will attain site-specific groundwater protection standards. As conditions stabilize after cover system installation, groundwater evaluations and monitoring will continue, and, as necessary, be modified. Ameren Missouri intends to implement the following corrective action measures in conjunction with the closure of CCR basins.

CORRECTIVE MEASURES REMEDIAL PLAN

CMA Reports Alternative 1: Source Control Through Installation of Low Permeable Cover System & Monitored Natural Attenuation

1. Source control, stabilization and containment of CCR by installation of a low-permeability geomembrane cap (a minimum 1 x 10 -7 centimeters per second (cm/sec) versus 1 x 10 -5 cm/sec required by the CCR Rule).

2. Once source control is achieved, monitor the natural attenuation (MNA) of groundwater concentrations to address limited and localized CCR-related impacts. Ongoing monitoring and modeling evaluations will document that concentrations are

[1] Technical assessments are appended to the CMA reports and/or to Ameren Missouri's Response to Public Concerns and all have been posted to Ameren's CCR website.

decreasing as modeled. MNA occurs due to naturally occurring processes within the aquifer.

3. Annual Groundwater *Monitoring and Corrective Action Reports* for each site will address the following:

   - Demonstrate that groundwater plume(s) are stable or decreasing and not expanding;

   - Contain an ongoing summary of baseline and periodic geochemical analysis including groundwater chemistry, subsurface soils chemical composition and mineralogy;

   - Determine site-specific attenuation factors and rate of attenuation process; and

   - Design a long-term performance monitoring program based on the specific attenuation mechanism to confirm concentration reductions and document trends.

The installation of a low-permeability, geomembrane cap system satisfies both the CCR Rule's basin closure requirements and can constitute an appropriate remedial corrective measure for groundwater impacts, as recently confirmed by the Missouri Department of Natural Resources (MDNR). A properly engineered and installed cap will practically eliminate the infiltration of water into the stored ash material. As summarized in the CMA reports, concentrations will reduce once the cap system stops recharge into the ash and groundwater conditions, such as pH levels, stabilize. Ameren Missouri will establish a long-term performance monitoring plan in accordance with the CCR Rule to document and confirm such reductions. MNA encompasses a variety of physical and chemical processes (biodegradation, sorption, dilution, chemical reactions and evaporation), which, under the right conditions, can immobilize metals in aquifer sediments. In addition to capping as a remedial corrective measure, both EPA and MDNR recognize MNA as a corrective action component for addressing inorganics (metals) in groundwater. *EPA Directive 9283.1-36 (2015); Section 644.143 RSMo (1999).* As MDNR notes, MNA is not a "no action" alternative and is complementary to source control measures. *(See Fact Sheet: MNA of Groundwater at Brownfields/Voluntary Cleanup Program Sites.)*

IMPLEMENTATION OF REMEDY

Under its current schedule, Ameren Missouri will close more than 67% (428 acres) of its CCR units by the end of 2020, with the remaining 33% by December 2023. Installation of a geomembrane cap at the energy centers will practically eliminate infiltration. Site preparation activities are underway at Rush Island and Labadie, with construction of the cap/cover systems occurring over the next 12 -18 months. Closure of additional basins at Meramec will occur in 2020 and 2021, with closure of remaining basins following the retirement of the energy center in 2023. At Sioux, use of the ash basins will terminate once wastewater and dry ash handling facilities are

completed in 2020. Set forth below are key milestones in the implementation of Ameren's remedial plans. Such schedule is subject to revision based upon each energy center's construction schedule, ongoing field investigations and, if needed, regulatory approvals.

Facility	Ash Basin Removed from Service	Ash Basin Cap System Completed	Performance Review: Groundwater & Cap System
Rush Island	04/2019	12/2020	Annual - Commencing 2021
Labadie	09/2019	12/2020	Annual - Commencing 2021
Sioux	12/2020	2021	Annual - Commencing 2023
Meramec	12/2022	2023	Annual - Commencing 2024

SUPPLEMENTAL CORRECTIVE MEASURES

In its laboratories, XDD, Ameren Missouri's environmental consultant, reproduced existing (i.e. pre-closure) groundwater and soil conditions so as to evaluate potential treatment methods to accelerate existing natural attenuation processes. Under appropriate conditions, metals can attenuate through precipitation, co-precipitation and/or sorption processes with subsurface soil minerals. XDD is evaluating potential treatment methods such as the use of pH adjustment, zero valent iron (ZVI), and bio-augmentation.[2] Laboratory results for arsenic and molybdenum, the primary contaminants of concern (COC) at some of Ameren's energy centers, indicate that through the adjustment of pH levels in subsurface soils and groundwater, groundwater protection standards (GWPS) can be met for each site[3] and that the use of chemical reduction (ZVI) and bioremediation may be helpful in the reduction process for these and other compounds.

Set forth below is a summary chart reflecting results from ongoing treatment studies. Boron is included for evaluation purposes even though under the Federal CCR Rule it is not currently an Appendix IV parameter.

[2] Ameren Missouri and XDD have experience with the use of ZVI and bio-augmentation at its Huster Substation property, a groundwater remediation project supervised by USEPA and MDNR, (CERCLA-07-2017-0129). Using a drill rig, XDD injected a slurry comprised of water and ZVI into subsurface soils and groundwater forming a reactive barrier that successfully contained groundwater contaminants that had migrated from the substation. In addition, ongoing degradation of source contaminants continues to occur through a bio-augmentation process consisting of the injection of feedstock into the sands of the aquifer.

[3] The slow groundwater flow rate at the Sioux energy center has allowed for the concentration of molybdenum at levels higher than those observed at the other energy centers. Such conditions however may be particularly conducive to the use of ZVI or bioremediation.

August 30, 2019

SUMMARY OF LABORATORY TREATMENT STUDIES

	Arsenic	Molybdenum	Boron	Lithium	Attenuation Mechanism
	mg/L				
pH 10		R/M5/M6		M6	P,C
pH 9	R				P,C
pH 8	R	M6			P,C
pH 7	R				P,C
pH 6	R/M5*/M6*	R/M5/M6/L/S			P,C
CaSx	R	R/M5/M6/L	M6	M5	P,C
Dissolved Iron (Anaerobic)	R	L			P,C
Dissolved Iron (Aerobic)	R	L			P,C
ZVI Injectable	R	R/M5/M6/L/S	L/S R/M5/M6	M5/M6	P,C
ZVI PRB	R	R/M5/M6/L	R/M5/M6	M5/M6	P,C
ZVI Injectable + Bio	R	R/M5/M6/L/S	R/M5/M6	M5/M6	P,C
ZVI Injectable pH 8 + Bio	R	R/L	R		P,C
ZVI PRB + Bio	R	M5/M6/L/S	S	M5/M6 L/S	P,C
ZVI PRB pH 8 + Bio	R	R/L	R	M6 L/S	P,C

Notes:

No Effect

Reduce

Increase

Attains Standard

Non-Detect

L = Labadie

S = Sioux

R = Rush Island

M5/M6 =Meramec monitoring wells

PRB = permeable reactive barrier

Injectable = iron particles at micro-scale; potentially applied through injection

Dissolved iron = 50 mg/L Iron(II) sulfate

CaSx = calcium polysulfide

P = Precipitation

C = Co-precipitation

* = arsenic was not detected in M5/M6 baseline despite being detected during quarterly sampling at M5. Results indicate arsenic would likely be removed under pH 6 conditions.

Additional pilot studies are needed to confirm that laboratory results can be replicated and appropriately scaled under field conditions. Assuming such confirmation, corrective action Measures may also include groundwater treatment to facilitate reductions. Field demonstrations and groundwater treatment applications could require a state-issued permit pursuant to *10 CSR 20-6.010*. Remedial actions are iterative in nature and Ameren Missouri (as part of the long-term performance monitoring program) will periodically evaluate then-existing groundwater conditions relative to GWPS and determine whether additional treatment measures are warranted.