

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

**2022 INTEGRATED RESOURCE PLAN OF EAST
KENTUCKY POWER COOPERATIVE, INC.**

**) CASE NO.
) 2022-00098**

**RESPONSES TO SIERRA CLUB'S INITIAL REQUESTS FOR INFORMATION TO
EAST KENTUCKY POWER COOPERATIVE, INC.**

DATED JUNE 30, 2022

EAST KENTUCKY POWER COOPERATIVE, INC.
PSC CASE NO. 2022-00098
INITIAL REQUESTS FOR INFORMATION RESPONSE

SIERRA CLUB'S INITIAL REQUESTS FOR INFORMATION DATED 06/30/2022
REQUEST 1

RESPONSIBLE PERSON: **Chris Adams**

Request 1. Please provide copies of the Company's objections and responses to all Requests for Information served upon the Company in this proceeding.

Response 1. All documentation will be filed in the record in Case No. 2022-00098, and can be accessed publically via the Commission's website using the following link:

<https://psc.ky.gov/Case/ViewCaseFilings/2021-00393>

EAST KENTUCKY POWER COOPERATIVE, INC.
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REQUEST 2

RESPONSIBLE PERSON: Chris Adams

Request 2. Please provide an unredacted copy of EKPC's 2022 IRP, including unredacted data.

Response 2. EKPC will provide an unredacted copy of its 2022 IRP document upon receipt of a mutually acceptable signed confidentiality agreement with the Intervenor.

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REQUEST 3

RESPONSIBLE PERSON: **Scott Drake, Julie Tucker**

Request 3. Please provide the supporting data and workpapers for all figures and tables in EKPC's unredacted 2022 IRP in both Excel format with all formulas unlocked and intact and in non-redacted, native format (if not Excel) with all formulas unlocked and intact.

Response 3. Non-confidential supporting data is provided as attachments to this data request. EKPC will provide confidential materials upon receipt of a mutually acceptable signed confidentiality agreement with the Intervenor. The DSM measures and program cost-effectiveness algorithms and formulas are proprietary property of GDS Associates and DSMore and therefore are not provided.

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REQUEST 4

RESPONSIBLE PERSON: Julie Tucker

Request 4. Please list the respective retirement years that the Company currently forecasts for all of the power plant units that it owns or operates.

Request 4a. If the 2022 IRP identifies those retirement years, please identify the page(s) on which it does so.

- i. If that identification was redacted in the public version of the IRP, please state the basis for that redaction and identify any precedent of which EKPC is aware of for affording confidential protection to forecasted retirement years in IRPs filed with the Commission.

Request 4b. Conversely, if the 2022 IRP does not identify those forecasted retirement years, please discuss why EKPC omitted them and explain how that omission was consistent with 807 KAR 5:058, Section 8(3)(b)(11), in addition to now listing them as requested.

Response 4a-b. There are no forecasted retirements of any units within the EKPC fleet.

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REQUEST 5

RESPONSIBLE PERSON: **Jerry Purvis**

Request 5. For each one of the Spurlock and Cooper coal-fired units, produce any analysis or assessment conducted since 2017, of the economics of continued operation, i.e., a retirement study or unit disposition analysis, of the unit done by or for EKPC, including, but not limited to, any studies conducted to determine how to comply with the coal combustion residuals (“CCR Rule”) or effluent limitation guidelines (“ELG Rule”) regulations.

Response 5. EKPC has no plans to retire Spurlock and Cooper Station at this time and no assessments have been performed suggesting otherwise. EKPC filed a environmental surcharge case with the Commission on September 15, 2017. The Commission authorized and amended EKPC’s environmental compliance plan for EPA’s coal combustion residual and effluent limitations guidelines in Case No. 2017-00376, final Order dated May 21, 2018. Within the case record, EKPC responded to several data requests from the Attorney General and Commission Staff, and that information is responsive to this request.

Please see the case record for Case No. 2017-00376, which includes the drawings, vendors, and permit matrix. All of the applicable permit applications were submitted to EPA and its delegated

authority, the Kentucky Energy and Environment Cabinet (“the Cabinet”), for review, determination and final approval. EKPC received all the required permits from EPA and the Cabinet.

As required by 40 CFR 257, the EPA Coal Combustion Rule, EKPC’s web site is up-to-date and displays the status of compliance with the rule and its appropriate filings. EKPC worked closely with the Kentucky Division of Waste to keep them informed of actions under 40 CFR 257 and in return under 40 KAR 46. The Cabinet issued Solid Waste permits sw08100019, sw08100020, and sw08100005 for the construction and operation of the existing Spurlock landfill, new landfill / horizontal expansion and impoundment.

In addition, EKPC submitted a clean closure by removal plan under 40 KAR 46 and 40 CFR 257.103(f)(1) EPA CCR Part A demonstration (“103 Demonstration”) copying the Kentucky Division of Waste and EPA Region IV in essence, asking for additional time to close the surface impoundment since EKPC needed an additional 13 months to wrap-up this project. EPA issued a completeness designation and a conditional approval, one of the fifty-seven submitted at the time on January 11, 2022 after EKPC submitted its 103 Demonstration to EPA on October 5, 2020. EPA issued the completeness designation and conditional approval on January 11, 2022 and the public comment period began January 25, 2022 through March 25, 2022. The EPA docket contains 34 publicly available documents commenting on EPA’s action to conditionally approve or disapprove EKPC’s application. EKPC filed its response on March 29, 2022. USWAG, PJM,

Sierra Club, Earthjustice, Kentucky Resources Council and several others filed comments on EPA's docket within the public commentary period that has now closed. EPA is reviewing the public comments relative to this determination and several other applications for its final determination. EPA has not reached a decision on EKPC's submittal given the EPA CCR website for PART A as of July 14, 2022. It is still pending EPA review.

As for EPA effluent limitation guidelines, EKPC applied and received a NPDES / KPDES permit for Spurlock Station. The KPDES permit is available online with the Cabinet as it reflects the permitting activity, application and final issuance. Permit No. KY0022250 became effective January 1, 2019 and expires December 31, 2023. In addition, EPA requested a 308 Clean Water Act request to learn more about the technology deployed at Spurlock Station in regard to the new effluent limitations wastewater treatment system. EKPC complied with this request and provided numerous documents as to its design, performance and cost. This information is publicly available with EPA pursuant to the 308 CWA request. EPA is actively reviewing this information under its authority for future rulemaking.

EKPC Cooper Station has been operating a dry ash landfill since the middle 1990's and does not have any active or inactive surface impoundments as defined by the EPA CCR Rule. Additionally, Cooper Station does not have any wet flue gas desulfurization systems in place. EKPC utilized a dry FGD in lieu of a wet FGD process. Lastly, EKPC Cooper Station converted its wet bottoms boiler in the middle 1990's to a dry bottom boiler. Consequently, ELG does not

apply to this facility. Cooper operates under its current and existing solid waste permit no. sw10000015, groundwater and surface monitoring plan March 27, 2019 and its NPDES / KPDES permit no. KY 0003611 issued May 2020.

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REQUEST 6

RESPONSIBLE PERSON: Julie Tucker

Request 6. For each retirement/retrofit study or unit disposition analysis produced in response to Sierra Club Request for Information 5:

Request 6a. State which modeling software was used to conduct the analysis.

Request 6b. State the date that the analysis was performed.

Request 6c. State whether the units were modeled with an economic (market) or self-commitment (must run) status for each year of the analysis.

Request 6d. State the date of each forecast or projection used in the analysis.

Request 6e. State the regulation or rationale behind each unit's retirement date(s) studied.

Request 6f. Provide all underlying workbooks with formulas intact that were used to develop model input assumptions.

Request 6g. Identify all transmission grid updates or changes that would be needed to allow for the retirement of each unit.

Request 6h. Produce all analyses or assessments of the impact that retirement of each unit would have on capacity adequacy, transmission grid stability, transmission grid support, voltage support, or transmission system reliability.

Request 6i. Provide each of the following inputs by unit for each modeled scenario:

- i. Heat rate for each fossil unit (Btu)
- ii. Projected Ongoing Capital expenditures by unit (\$)
- iii. Variable Operation and Maintenance by unit (\$/MWh)
- iv. Fixed Operation and Maintenance by unit(\$/MW)

Request 6j. Provide the following inputs by scenario:

- i. A list of all capital expenditures associated with CCR and ELG compliance included in each modeled scenario and provide the cost of each;
- ii. All transmission upgrade costs assumed, if any (\$);
- iii. SPP energy price forecasts (with and without CO₂ price);
- iv. SPP capacity price forecasts (with and without CO₂ price);
- v. CO₂ price forecasts
- vi. Coal price (\$/MMBtu)
- vii. Gas price (\$/MMBtu)

Request 6k. For each replacement resource available to the model, provide each of the following inputs for each resource at the highest level of granularity used in conducting the unit disposition analysis:

- i. Replacement resource options
- ii. Replacement resource size (MW)
- iii. Year replacement resource is available (year)
- iv. Cost of replacement resource option (\$/MW)
- v. Annual capacity factor

Request 6l. Provide all model outputs by unit, including:

- i. Annual generation (MWh)
- ii. Fuel Costs (\$)
- iii. VOM Costs (\$)
- iv. FOM Costs (\$)
- v. Capital expenditures for ELG and CCR environmental compliance (\$)
- vi. Other capital expenditures (\$)
- vii. Energy and ancillary market revenues (\$)

Request 6m. Provide all post-processing workbooks with formulas intact that were used to analyze study results outside the model.

Response 6a-m. There have been no studies for unit retirements of the EKPC fleet.

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REQUEST 7

RESPONSIBLE PERSON: Jerry Purvis

Request 7. Please discuss the reconcilability of the EKPC's statement, at IRP p. 177, that "EKPC is in compliance with the existing Environmental Protection Agency ("EPA") rules[,] including the Coal Combustion Residuals ("CCR") Rule, with EPA's statements, in its January 2022 conditional approval of an alternative closure deadline for Spurlock's coal combustion residuals ("CCR") facilities and non-CCR wastestreams, that:

- "EPA's review was made more difficult by the fact that the Annual GWMCA Reports for both the Spurlock Ash Pond and the Spurlock Station Landfill failed to include monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98, as required by 40 C.F.R. § 257.90(e)(3). Groundwater elevation measurements were missing, and no laboratory analytical reports or information about statistical analyses were included.¹¹ As a result, these reports fail to include all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 C.F.R. § 257.90(e)(3)." (p.49)
- "EKPC failed to demonstrate the groundwater monitoring system is designed in compliance with criteria in 40 C.F.R. § 257.91(b) and that it accurately represents the

quality of groundwater and monitors all contaminant pathways in accordance with 40 C.F.R. § 257.91(a)(2). EKPC also failed to conduct assessment monitoring in accordance with 40 C.F.R. § 257.95(b) and (d)(1) by: 1) not including all constituents that were detected in May 2018 in the July 2018 sampling event; 2) failing to conduct semi-annual sampling in January 2019; and 3) failing to conduct annual sampling in May 2019. Additionally, EKPC failed to report data using the lowest quantitation limits that can be reliably achieved by the laboratory, as required by 40 C.F.R. § 257.93(g)(5). Finally, EPA has concerns about the independence of samples collected from the same well within a short period of time for the baseline monitoring required by 40 C.F.R. § 257.94(b).” (pp. 50-51)

- “EKPC failed to demonstrate compliance with 40 C.F.R. § 257.91(b) by failing to incorporate the effects of extraction wells into groundwater flow maps to accurately characterize groundwater flow.” (p.51)
- “EKPC failed to conduct assessment monitoring in accordance with 40 C.F.R. § 257.95(b) and (d)(1).” (p.52)

Response 7. Please see EKPC’s response to the EPA’s conditional approval dated March 29, 2022, which is still pending EPA review and determination (<https://www.regulations.gov/comment/EPA-HQ-OLEM-2021-0595-0025>). EKPC reconciles its position within this document and posted it publicly for comments and EPA determination. EPA has not provided its final determination or opinion with regards to the CCR Rule. EKPC

looks forward to EPA's opinion, guidance and determination. EKPC is actively pursuing the surface impoundment clean closure by removal. EKPC is following its authorized CPCN from the Commission and complying with its permits under Solid Waste, water and air quality regulations in the Commonwealth of Kentucky and pursuant to EPA regulations.

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REQUEST 8

RESPONSIBLE PERSON: Jerry Purvis

Request 8. Please provide the most current update on regulatory status, any construction, agency enforcement, and any other pertinent developments, at the respective coal ash facilities at the Spurlock and Cooper coal-fired power plants. Without limitation of the foregoing, please:

Response 8. EKPC complies with the existing environmental regulations including but not limited to: existing operating permits under the Clean Air Act (“CAA”), Clean Water Act (“CWA”), Resource Conservation and Recovery Act (“RCRA”), National Environmental Policy Act (“NEPA”), and Army Corp of Engineers (“USACE”), the construction activities in Maysville, KY with regards to Spurlock CCR / ELG, and the operations of its fossil and renewable fleet. EKPC has not had any enforcement actions or paid enforcement penalties in a number of years.

Request 8a. Identify any developments, since April 1, 2022, related to EPA’s January 2022 conditional approval of Spurlock’s alternative CCR closure deadline, including but not limited to correspondence from/with EPA and/or PJM concerning EPA’s conditional approval.

Response 8a. Please refer to EKPC’s response to the Sierra Club’s Request No. 5.

Request 8b. Discuss whether EKPC is on track to satisfy the deadlines set out in EPA’s conditional approval; and if not, explain why not and discuss the Company’s plan for compliance.

Response 8b. EKPC is on track to finish in accordance to request made in the 103 Demonstration. Also, please see EKPC’s response to the Sierra Club’s Request No. 5.

Request 8c. Explain whether Spurlock is at risk of needing to cease burning coal—and, if so, how imminently and for how long—as a result of the requirements and deadlines set out in the EPA’s conditional approval.

Response 8c. Originally, EKPC recognized the risk to a forced outage given the status of the conditional approval. EKPC worked with PJM. PJM provided comments to the EPA Docket that explains how this process works. After EKPC responded to EPA conditional approval, the number of days run minimize this risk to a forced outage. EKPC expects for EPA

to respond any time and at that time EKPC will work diligently again with EPA and state regulators to comply.

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REQUEST 9

RESPONSIBLE PERSONS: Craig Johnson

Request 9. State the cost of the projects the Company has undertaken or intends to undertake at the Spurlock and Cooper coal-fired units to allow compliance with the CCR Rule and/or the ELG Rule, respectively.

Request 9a. State the year these costs have been or will be incurred.

Response 9a.

EKPC started incurring costs in 2015 and has been to date:

2015-\$4,650,733.80

2016- \$9,010,252.90

2017- \$3,011,859.11

2018- \$33,662,831.27

2019- \$93,049,375.36

2020- \$85,922,002.41

2021- \$28,216,951.40

2022- \$15,308,315.57 (includes remaining 2022)

2023 Forecast - \$6,925,000

2024 Forecast - \$10,668,000

2025 Forecast - \$984,018.80

Request 9b. State whether there are any units that as of today use wet sluicing of coal ash.

Response 9b. No units use wet sluicing of ash.

Request 9c. For each project (i.e., for the CCR Rule or ELG Rule retrofits), please identify and describe each capital expenditure required to complete the project, and explain whether the expenditure is required to comply with the CCR Rule or the ELG Rule.

Response 9c. The completion of the wastewater treatment basin is required. The completion of the clean close of the ash pond is required. Each of these were required as a result of compliance with the CCR rule.

Request 9d. Identify which ELG or CCR expenditures could be avoided by making a commitment to cease burning coal under the CCR Rule's alternative closure provisions, 40 C.F.R. § 257.103, or the ELG Rule, 40 C.F.R. § 423.19(f) ("Avoidable CCR/ELG Costs").

Response 9d. There are no avoidable costs by making a commitment to cease burning coal under the CCR Rule's alternate closure provision.

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REQUEST 10

RESPONSIBLE PERSON: **Craig Johnson, Jerry Purvis**

Request 10. For each one of the Spurlock and Cooper coal-fired units, please identify the technology, equipment, and/or practices currently installed, operated, or performed by the Company to reduce the unit's emissions of nitrogen oxides (NOx). In doing so, please confirm whether the plant has selective catalytic reduction (SCR) or selective noncatalytic reduction (SNCR) technology currently installed.

Request 10a. For any and all units that do not have SCR/SNCR, please explain whether, to date, the Company has assessed, and incorporated into any technical resource modeling or planning, the upfront capital cost, and any increased operating and maintenance (O&M) cost, that would be posed to EKPC if the unit(s) were required to install and operate SCR/SNCR pursuant to the obligations and timelines set out in EPA's April 2022 proposed rule, Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard.¹

- i. If the Company has performed such modeling/planning, please identify, summarize, and provide all documents (including workpapers) comprising that already-performed assessment.

Response 10a. EKPC responded and submitted comments on the EPA Ozone Transport Rule FIP in the docket: EPA-HQ-OAR-2021-0668. Please see <https://www.regulations.gov/comment/EPA-HQ-OAR-2021-0668-0372>.

The EKPC assets subject to the Proposed FIP are:

1. Spurlock Station. The station is located near Maysville, KY on the Ohio River. All the Spurlock units have state-of-the-art NO_x, SO₂, PM, and Hg controls. In addition, EKPC has made substantial investments, including a conversion to dry bottom ash to ensure the plant is fully compliant with ELG and the CCR rule. Spurlock is located adjacent to an International Paper corrugated packaging plant to which it is contractually-committed to provide co-generation steam. EKPC has no plans to retire these units, and the closest natural gas pipeline is almost 40 miles from the Spurlock Station. The electric generating units (EGUs) at the facility are:

- Spurlock Unit 1 – is a wall-fired unit (344 MW) that combusts bituminous coal. Unit 1 has SCR and low-NO_x burners to control NO_x.
- Spurlock Unit 2 – is a tangential-fired unit (555 MW) that combusts bituminous coal. Unit 2 has a SCR, low-NO_x burners, and over-fire air to control NO_x.

- Spurlock Unit 3 – is a coal-fired Circulating Fluidized Bed (“CFB”) unit (305 MW), which is designed to emit less NO_x in the combustion process. Unit 3 has a SNCR to control NO_x. SCR technology is not feasible on CFBs.

- Spurlock Unit 4 – is a CFB unit (315 MW), which is designed to emit less NO_x in the combustion process. Unit 4 has a SNCR to control NO_x. SCR technology is not feasible on CFBs.

Spurlock Unit MW values are taken from the Consent Decree in *United States v. EKPC*, No. 04-34-KSF (E.D. Ky). MW values are provided for descriptive reference only and are only generally reflective of unit capabilities.

2. Cooper Station. The station is located near Burnside, KY adjacent to Lake Cumberland. Cooper Station is a critical asset due to its location in rural, south-central Kentucky. EKPC has no plans to retire these units. Cooper Station serves a transmission constrained area. EKPC undertook significant control enhancements in 2016, installing a pulse-jet fabric filter (baghouse) to control PM and dry FGD to control SO₂. These controls treat the flue gas for both units, which have a common stack. The closest natural gas pipeline is approximately 40 miles from Cooper Station. There are no retirement commitments for these units.

- Cooper Unit 1 – is a wall-fired unit (124 MW) that combusts bituminous coal. Unit 1 has low-NO_x burners. It shares a common stack with Cooper Unit 2.

- Cooper Unit 2 – is a wall-fired unit (240 MW) that combusts bituminous coal. Unit 2 has a SCR and low-NO_x burners. It shares a common stack with Cooper Unit 1. Cooper Unit MW values are taken from the Consent Decree in *United States v. EKPC*, No. 04-34-KSF (ED Ky).

MW values are provided for descriptive reference only and are only generally reflective of unit capabilities.

3. Smith Station. The station, located near Winchester, KY, consists of natural gas-fired combustion turbines. Smith provides EKPC with nimble assets to quickly meet daily power demands. EKPC has no plans to retire these units.

- Smith Units 1-3 – are simple-cycle gas-fired combustion turbines (115 MW each) supplied by ABB. Unit 4 is a GE EA, rated at (85 MW) has dry low-NO_x burners.

- Smith Units 5-7 -- are simple-cycle gas-fired combustion turbines (114.91 MW each). The units have dry low-NO_x burners.

- Smith Units 9 and 10 -- are simple-cycle gas-fired combustion turbines (102 MW each). The units have SCRs and catalytic oxidation.

4. Bluegrass Station. The station, located near LaGrange, KY, consists of dual fueled natural gas-fired combustion turbines. near the Louisville metropolitan area with diesel fuel as an emergency back-up. Bluegrass is low emitting facility, subject to a plant-wide NO_x emissions cap. EKPC has no plans to retire these units.

- Bluegrass Units 1-3 – are simple-cycle gas-fired combustion turbines (2076 mmBTU/hr each).

All three units have dry low NO_x burners. Bluegrass Units 1 and 2 were installed with first generation SCRs when EKPC purchased the facility; however, through EKPC's due diligence on the purchase of the station, it was known to EKPC that the SCR's as installed had operational issues. Without substantial modification estimated to be more than \$25 million dollars, the SCRs

would not work. The SCRs are not required to be operational for EKPC to meet our permit requirements.

Response 10a.i. EKPC has not performed formal modeling beyond the comments given that status of the EPA final rule. The final rule is scheduled for March 2023 in accordance with the 2022 Spring Unified Agenda released June 20, 2022. At that time, EKPC will review and vet the rule, model as needed and seek an environmental surcharge should any capital equipment need to be purchased or O&M increases occur to comply with the rule.

Request 10b. For any and all units that do not have SCR/SNCR, please estimate the total upfront capital cost of installing SCR/SNCR no later than the year 2026; and, to the extent applicable and possible, please also itemize and explain the components of that total cost.

Response 10b. Please refer to the EPA docket and comments in the response to Request 10a.

Excerpt from the comments:

EKPC has one non-SCR unit, Cooper Unit 1, for which the FIP would require SCR technology installation. EKPC performed cost calculations for SCR installation on this unit. Assuming a higher capacity factor of 75% for Cooper Unit 1, the cost per ton of NOx removed totals \$8,336, including low-NOx burners. Lowering the capacity factor to 25% commensurate with peaking

use, the cost increases to \$23,926. Both values assume a 10-year period and an interest rate of 3.5%. EKPC uses 3.5% for illustrative purposes.

Selective Catalytic Reduction Control Costs Summary

Capital Cost	\$78,290,000	
Capacity Factor	75%	25%
Annual O&M	\$1,838,000	\$1,351,000
\$/ton controlled	\$8,336	\$23,926

Selective Catalytic Reduction Detailed Cost Comparison

NOx Rate	Capacity Factor	10 Year Life			15 Year Life		
		\$/ton	Installed Cost	Total O&M	\$/ton	Installed Cost	Total O&M
0.04 lbs/mmBTU	75%	\$ 8,148	\$ 78,290,146	\$1,897,744	\$ 6,263	\$ 78,290,146	\$1,897,744
	25%	\$ 23,343	\$ 78,290,146	\$1,388,244	\$ 17,689	\$ 78,290,146	\$1,388,244
0.05 lbs/mmBTU	75%	\$ 8,336	\$ 78,290,146	\$1,837,582	\$ 6,398	\$ 78,290,146	\$1,837,582
	25%	\$ 23,926	\$ 78,290,146	\$1,350,890	\$ 18,111	\$ 78,290,146	\$1,350,890

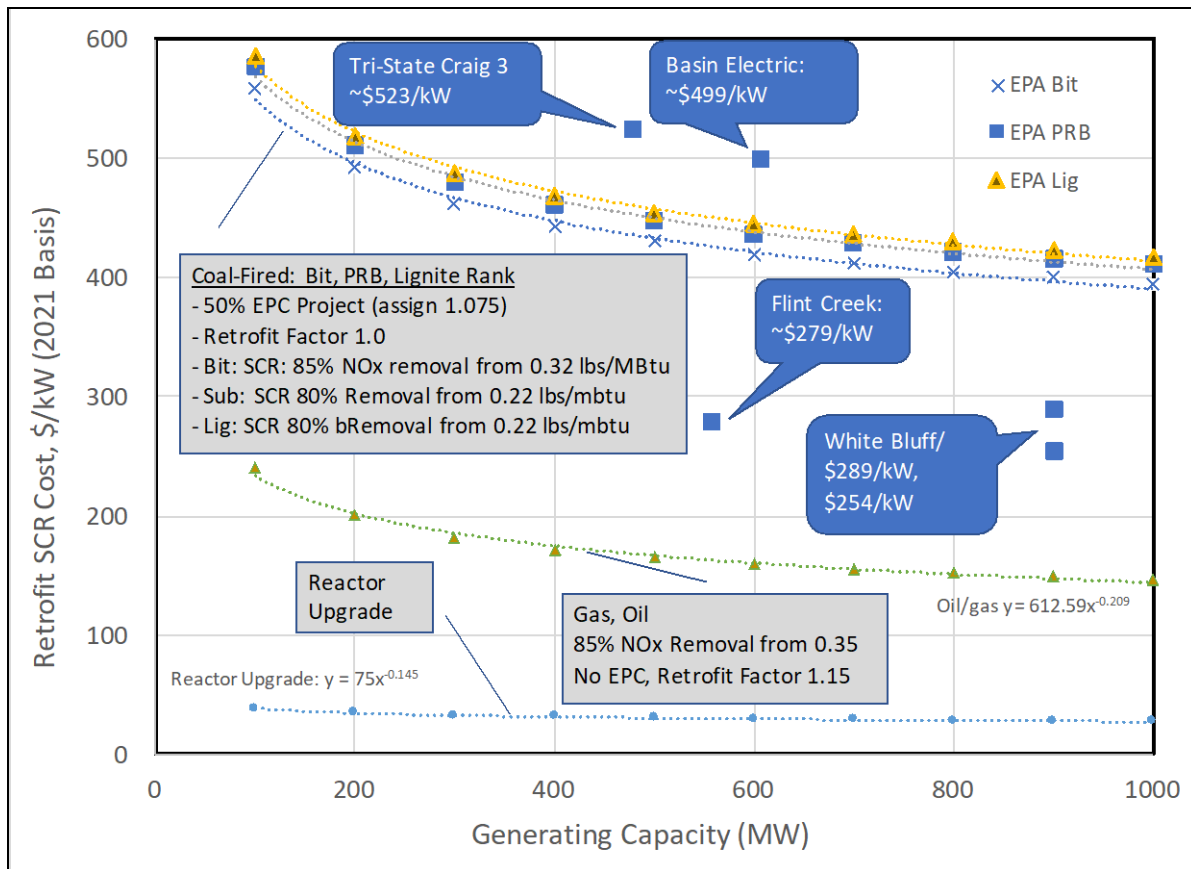
Detailed Cost Comparison Key Assumptions:

- 0.04 lbs/mmBTU = 90% reduction; 0.05 lb/MMBtu = 87.5% reduction
- Baseline is low-NOx burners and overfire air at 0.40 lbs/mmBTU
- Cost of money is 3.5%. A cost per ton analysis does not illustrate the true costs realized by utilities.

To determine whether a control installation is feasible, utilities must consider justifying the multi-million dollar price tag of installing an SCR. That cost is weighed against the megawatts of generation that the unit provides.

EPA used a 10-year period for its cost per ton calculations.

Key Assumptions for Summary: • Removal is 0.40 lbs/mmBTU to 0.05 lbs/mmBTU = 87.5% reduction • An ‘overnight’ installed cost for the equipment is in 2022 dollars and does not include: income tax, owners’ costs, escalation during construction, interest costs from financing, property taxes, and insurance.



The O&M cost used is the first-year cost in 2022 dollars. In Figure above from the Technical Report, unit generating capacity (bottom axis) presents a curve representing the affordability of a SCR retrofit. A 100 MW unit has higher dollar per kW project cost. The curve drops sharply between 100 MW to 200 MW, with a more moderate change after hitting 400 MW. It is not surprising that the remaining fleet of non-SCR units are composed of smaller units. The attached figure above “Capital Cost vs Capacity Relationship for SCR NOx Control: Coal and Distillate Oil/Natural Gas” demonstrates that the financial commitment for SCR installation is large,

especially for cooperatives and municipal units. Cost and lower NOx ton emissions than a larger EGU support EPA raising the capacity value for SCR installation to 150 MW or higher, rather than 100 MW. Otherwise, this rulemaking essentially forces smaller units to retire. Units larger than 150 MW can more readily justify SCR installation projects. The cost of SCR installation for Cooper Unit 1 is estimated at \$78,290,000, which is a significant project for a smaller capacity unit. This hefty value supports EPA raising the capacity value for SCR installation to 150 MW or higher, rather than 100 MW – which essentially forces smaller units to retire. Units larger than 150 MW can more readily justify SCR installation projects. See the attached figure above. In summary, new SCR installations on non-SCR coal units less than 250 MWs are substantially more expensive than the estimates in the Proposed FIP. Costs must be taken into account. Costs are ultimately bourn by end users of electricity. EPA has not balanced the benefits of this Rule with the costs. EPA should re-consider its approach to resolving ozone transport issues.

Request 10c. For any and all units that do not have SCR/SNCR, please estimate the annual total incremental additional O&M cost of continuously operating SCR/SNCR (relative to O&M without operating SCR/SNCR); and, to the extent applicable and possible, please also itemize and explain the estimated components of that total cost.

Response 10c. Please see the response to Request 10b.

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REQUEST 11

RESPONSIBLE PERSON: Chris Adams

Request 11. For each one of the Spurlock and Cooper coal-fired units, please identify and produce the most recent depreciation study.

Response 11. The most recent depreciation study may be referenced in Case No. 2021-00103, Volume II, Tab 15 (Exhibit JJS-1) of its application which incorporates interim and terminal net salvage components into depreciation rates for Production Plant. The referenced study, and related testimony of Mr. John Spanos, can be accessed publically via the Commission's website using the following link: https://psc.ky.gov/pscecf/2021-00103/kristen%40gossamfordlaw.com/04012021014344/EKPC_Application_Filing_Volume_2_-_Exhibits_15-29.pdf

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REQUEST 12

RESPONSIBLE PERSON: Craig Johnson

Request 12. For each one of the Spurlock and Cooper coal-fired units, please provide the following historical annual data from 2012 and through 2021, and by month as available for 2022:

- a. Installed Capacity
- b. Unforced Capacity
- c. Capacity Factor
- d. Equivalent Availability Factor (EAF)
- e. Heat Rate
- f. Forced or random outage rate
- g. Effective forced outage rate (EFORd)
- h. Fixed O&M costs
- i. Non-Fuel Variable O&M Costs
- j. Fuel Costs (by fuel type)

Response 12. Please see the Excel spreadsheet *Sierra Club DRI- Response 12.xlsx* for the responses to 12(a) and (c) through (j). For the response to 12b, please see EKPC's response to the Joint Intervenor's Request 31c for Unforced Capacity data.

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REQUEST 13

RESPONSIBLE PERSON: Julia Tucker

Request 13. For each one of the Spurlock and Cooper coal-fired units, for each of the years 2022 through 2031, please identify the Company's most recent projection of:

- a. Installed Capacity
- b. Unforced Capacity
- c. Capacity factor
- d. Availability
- e. Heat rate
- f. Forced or random outage rate
- g. Effective forced outage rate (EFORd)
- h. Fixed O&M cost
- i. Variable O&M cost
- j. Fuel Cost (by fuel type)

Response 13a-j. See attached Excel spreadsheet *Sierra Club DRI Response 13 – CONFIDENTIAL.xlsx* subject to motion for confidential treatment.

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REQUEST 14

RESPONSIBLE PERSON: Craig Johnson

Request 14. For each one of the Spurlock and Cooper coal-fired units, please provide the following:

- a. Historical capital expenditures since 2010.
- b. Projected capital expenditures through 2030.
- c. Provide a specific accounting of all projects and capital expenditures already scheduled or planned at the Spurlock and Cooper coal-fired units over the next ten years.
- d. Identify any projected capital expenditures necessary to comply with environmental requirements.
- e. For each capital expenditure involving more than \$1 million, please provide all analyses of the present value of those investments versus retirement or replacement. If EKPC did not perform any such analysis, why not?

Response 14. a. See attached Excel spreadsheet *Sierra Club DRI Response 14a - Capital Expenditures.xlsx* for a summary of historical capital expenditures incurred from January 1, 2011 through December 31, 2021 for Cooper and Spurlock Stations. It should be noted that only one operating unit profile can be assigned to construction projects. Therefore, "common" is often used during the construction phase and any needed reclassifications to specific operating units occur at the time of unitization.

b. See EKPC's response to the AG's Request No. 31.

- c. See EKPC's response to the AG's Request No. 31.
- d. See EKPC's response to the AG's Request No. 31.
- e. EKPC does not perform a NPV calculation for every capital project involving Spurlock Station and Cooper Station. For strategic investments like the CCR/ELG project at Spurlock and the Cooper Unit 1 Duct Reroute project, EKPC performs in depth analysis usually involving outside experts. For examples, refer to Case No. 2017-00376 for the Spurlock CCR/ELG project and Case No. 2013-00259 for the Cooper 1 Duct Reroute project.

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REQUEST 15

RESPONSIBLE PERSON: Julie Tucker

Request 15. Please discuss whether EKPC has, in the last three years, conducted technical modeling or otherwise robustly assessed the cost-effectiveness of replacing some or all of the power currently provided by Spurlock and/or Cooper with a clean portfolio of renewable generation and EE/DSM that would continue to satisfy EKPC's energy and capacity needs.

Request 15a. If so, please identify, summarize, and provide all documents (including workpapers) comprising that already-performed assessment.

Request 15b. If not, please explain why not.

Response 15a-b. No assessments have been performed to evaluate replacing all of the power and energy supplied by Spurlock and/or Cooper Station with other sources. The currently viable renewable and/or EE/DSM programs available are not sufficient to meet the reliable and continuous service of electricity to the owner-members. EKPC understands and agrees with the policy espoused by the Commission on several occasions that a utility should have adequate

resources in place to cover its native load. The premise of this questions would violate that policy.

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REQUEST 16

RESPONSIBLE PERSON: Michelle K. Carpenter

Request 16. Provide plant in service amounts from 2015 through the present for each one of the Spurlock and Cooper coal-fired units, account for each month. For each month, include plant balance as of the first day of the month, addition, transfers, retirements, and plant balance at the end of the month.

Response 16. Please refer to the Excel file *Sierra Club DRI Response 16.xlsx* for a roll forward schedule of plant in-service by month for all Cooper and Spurlock coal-fired units from 2015 through May 31, 2022. It should be noted that many of Cooper Station's Unit 1 and Unit 2 assets have been historically grouped together in Cooper Common for reporting purposes. Accordingly, the columns labeled Cooper Unit 1 and Cooper Unit 2 on the roll forward schedule, when viewed separately, are not representative of the entire historical cost of those respective units.

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REQUEST 17

RESPONSIBLE PERSON: Jerry Purvis

Request 17. For each one of the Spurlock and Cooper coal-fired units, has EKPC conducted any analyses of compliance with the Regional Haze Rule's "reasonable progress" requirements, including, but not limited to, any four-factor analysis under 40 C.F.R. § 51.308(f) for the control of sulfur dioxide, nitrogen oxides, or particulate matter, which were due in July 2021? If yes, please provide all such analyses, including all supporting calculations, data, documents, technical or economic reports or presentations, modeling input and output files, and workpapers associated with each such analysis. If EKPC has not conducted any such analyses, explain why.

Response 17. On July 8, 2021 Peter Tsigotis, Director of the Office of Air Quality Planning and Standards issued a memorandum to the Regional Air Directors, Regions 1-10 clarifying and guiding State regulators with regards to Regional Haze State Implementation Plans for the second implementation period. Please refer to: <https://www.epa.gov/system/files/documents/2021-07/clarifications-regarding-regional-haze-state-implementation-plans-for-the-second-implementation-period.pdf>

EPA and Kentucky are committed to supporting the efforts to develop state implementation plans (“SIPs”) as required by EPA to comply with the Clean Air Act (“CAA”) as it partners with the Federal Land Managers to prevent any future, and remedy existing impairment of visibility in Class I areas, America’s most treasured national parks and wilderness areas.

The Kentucky Division of Air Quality is working with EPA on Class I areas and found two sources affecting Class I areas but neither one of those sources are EKPC facilities. Therefore, EKPC did not have to perform a four-factor analysis and submit information to the Division of Air Quality. EKPC fleet is arguably one of the most environmentally controlled air sources in the state.