COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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ELECTRONIC 2024 INTEGRATED RESOURCE PLAN OF DUKE ENERGY KENTUCKY, INC.	)	**Case No. 2024-00197**
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SIERRA CLUB'S COMMENTS ON THE COMMISSION STAFF'S REPORT ON DUKE ENERGY KENTUCKY'S 2024 INTEGRATED RESOURCE PLAN

Sierra Club respectfully submits these comments on the Commission Staff's ("Staff") Report regarding Duke Energy Kentucky Inc.'s ("Duke" or "the Company") proposed 2024 Integrated Resource Plan ("2024 IRP"). Sierra Club agrees with Staff's ultimate conclusion that the Company has not adequately supported its selection of the preferred plan to co-fire East Bend Unit 2 in 2030. The evidence in this case demonstrates that full gas conversion of East Bend Unit 2 is the least-cost option. If the Company instead planned for full gas conversion of the unit it could also avoid the $125 million Limestone Conversion project. Full gas conversion would be a "no regrets" strategy that would result in East Bend Unit 2 remaining a dispatchable resource yet avoiding the capital costs associated with continued coal operation.

I. Commission Staff are correct that Duke has not justified its preferred plan.

A. Commission Staff state correctly that Duke has not proven that its preferred plan is least-cost.

The Commission Staff's review of the evidence in this case leads them to conclude in their post-hearing report that "the IRP does not include enough modeling details to explain why it selected a plan that does not appear to be the least-cost alternative."[1] Sierra Club agrees with

[1] Case No. 2024-00197, Commission Staff's Report, p. 41 (April 7, 2025) (hereafter "Commission Staff's Report").

the Staff's conclusion. Sierra Club has argued throughout this case that the preferred plan was not the least-cost plan and that full gas conversion would be a lower-cost and lower-risk alternative for the Company to pursue.

It is also important to clarify Staff's discussion of the arguments from Duke and Sierra Club regarding portfolios costs. The Staff report summarizes Duke's reply comment arguments on certain plans' costs stating that:

> Duke Kentucky responded to Sierra Club's comments by stating that the "East Bend Retirement by 2036 and Accelerated Renewables" portfolio was cheaper by PVRR than the optimized Natural Gas Conversion portfolio in scenarios with and without EPA CAA Section 111(d) and has a lower PVRR than the optimized Retirement portfolio in the scenario with EPA CAA Section 111(d).

This is not entirely accurate. Duke only modeled a plan with *no* co-firing, retirement in 2036 and accelerated renewables under the no 111(d) future. All of the plans under 111(d) assume either co-firing, gas conversion, or retiring the unit in 2032; the 111(d) plans with co-firing either retire and replace the co-fired unit by 2036 or 2039.[2] However, there is no "East Bend Retirement by 2036 and Accelerated Renewables" under a 111(d) future. Therefore, Duke did not actually claim that this plan was cheaper in both futures because it did not run the plan in both futures—indeed the plan would not have complied with 111(d).

Staff could further cite Duke's reply comments, where it claimed that the optimized co-firing (duel fuel option or "DFO") portfolio is cheaper than the full conversion portfolio.[3] But Duke's claim is questionable for two reasons: 1) Sierra Club calculated the PVRR from the Encompass modeling outputs and found that full gas conversion was cheaper than co-firing—

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[2] Case No. 2024-00197, Duke Reply Comments, p. 13 (Nov. 27, 2024) (hereafter "Duke Reply Comments").
[3] *Id.*

with or without 111(d);[4] and 2) Duke did not pursue the optimized co-firing plan because it found that the carbon capture and sequestration ("CCS") was not yet at a "level of maturity" to rely upon.[5] Duke admits that "In the absence of a CC with CCS as a replacement resource option, the natural gas conversion portfolio does have a slightly lower PVRR."[6] Duke's claims of the superiority of the optimized co-firing plan to full gas conversion are therefore lacking adequate support.

B. The Commission Staff state correctly that Duke should have tested other portfolios under different assumptions.

Commission Staff discuss how modeling "alternate scenarios" is important for considering portfolio options, and explain that when Duke did this modeling it was too focused on the preferred plan rather than modeling other plans under different assumptions.[7] In the alternate portfolios, Duke tested different replacement variations for East Bend Unit 2, but nearly all alternate portfolios assumed co-firing in 2030 and retiring the unit in 2039. Duke also conducted a sensitivity analysis where it modeled *only* the preferred plan under low fuel prices, high fuel prices, and higher demand. Staff conclude that modeling *other* plans under different assumptions would "test the appropriateness of portfolios selected in the primary analysis" and that the Company should have done so with plans that did not include co-firing East Bend Unit 2.[8] Sierra Club agrees with Staff's conclusion about the alternate portfolios, but would also extend this argument to the sensitivity analysis, which failed to consider any other plan under differing conditions.[9] There is simply no way for stakeholders or the Commission to see how

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[4] Case No. 2024-00197, Sierra Club Post-Hearing Comments, pp. 2-3 (Feb. 20, 2025) (hereafter, "Sierra Club Post-Hearing Comments").
[5] *Id.*
[6] *Id.*
[7] Commission Staff's Report, p. 39
[8] *Id.*
[9] *Id.*

other portfolio options would perform under low fuel prices, high fuel prices, or high demand because such costs were only estimated for the preferred plan. Duke's approach to the alternate portfolios and sensitivity analysis was done as if the preferred plan was already set in stone, and therefore it found further exploration of other options besides co-firing the unit unnecessary. But this approach evades the very purpose of sensitivity analysis in an IRP, which is to explore how multiple plans perform under different assumptions and better inform the ultimate decision. Reasonable consideration of alternatives is a foundational concept in sound utility planning. Unfortunately, the IRP completely fails on this front.

C. Commission Staff demonstrate that the preferred plan is not justified based on emissions reductions.

Commission Staff points out that Duke had listed carbon emissions reduction as one of the "main drivers in choosing an optimization path" yet other plans had significantly more emissions reductions.[10] We agree with Staff on this point. Duke has not made the case for its preferred plan on either a cost- or emissions-basis. Indeed, the full gas conversion plan emits the least pollution of all plans, on a cumulative basis, with roughly 10 million fewer tons of carbon dioxide (CO_2) compared to the preferred plan.[11] Contrary to the Company's preferred plan, the full gas conversion is the best option for the Company in terms of both cost and emissions.

II. Duke has still not justified including the Limestone Conversion Project in every portfolio.

Sierra Club has argued that the Limestone Conversion Project should not be included in every plan evaluated in the IRP. The Company has never considered or modeled a plan where the project was avoided, and the unit was fully converted to gas or retired. The Commission Staff

[10] Commission Staff's Report, p. 40.
[11] STAFF-DR-01-019 Attachment.

discusses the Limestone Conversion Project, summarizing Duke's argument for including it in all plans because it "would be in the best interest of customers to undertake regardless of whether East Bend would be converted to gas fuel by 2030."[12] But Duke's claim requires more context. Duke acknowledged that since the 2024 IRP modeling was conducted, the cost of the Limestone Conversion Project has increased while the cost of the quicklime—which had been the impetus for the project—has decreased.[13] Therefore, Duke has admitted that the economics of the project are now less favorable. Duke does not provide any quantitative evidence that the project is needed in every plan, including after the recent change in costs. Instead, the Company tries to justify the Limestone Conversion Project as something that would protect it from risks of "reagent procurement in a future in which the unit continues to burn coal into the 2030s, including in the event that US EPA 111(d) is reversed."[14] But this does not answer the question of whether the project makes sense if the unit was fully converted to gas or retired in the near-term.

The Company has simply claimed that the Limestone Conversion project is favorable without any quantitative evidence to support this claim, which is further undermined because the economics of the project have gotten worse since the IRP modeling was conducted. The failure to justify including this project in every plan, especially for the full gas conversion plan, is another major flaw of this IRP.

III. The Commission Staff's and Sierra Club's conclusions show why the IRP cannot be used to justify pursuing a CPCN related to the preferred plan.

Commission Staff conclude that the IRP is a "precursor" to the Company seeking pre-

[12] Commission Staff's Report, p. 33 (citing Duke's Reply Comments at 11).
[13] Duke Reply Comments, p. 11-12.
[14] *Id.*

approval for major resource decisions in a CPCN.[15] Staff appear to warn that the preferred plan would not hold up to the scrutiny required for pre-approval and recommends that Duke either choose a different option or justify its preferred plan. Staff state that the Company did "not clearly establish that the selected portfolio is the least-cost reasonable option for meeting forecasted load" and to rectify this it would need to "select a different portfolio or fully explain why the selected portfolio is less costly or justify selecting a portfolio other than the least-cost option."[16] Sierra Club agrees with Staff that Duke has failed to justify its preferred plan and that this IRP should not be used in support of a future CPCN. The IRP provides strong evidence for full gas conversion of East Bend Unit 2 as the least-cost option, and therefore the Commission should require a change to the preferred plan to that effect.

IV. Conclusion

Duke's 2024 IRP outlines the Company's preferred plan for continued operation of East Bend Unit 2, which includes undertaking a near-term $125 million Limestone Conversion Project, converting the plant's scrubber from using quicklime to using a limestone reagent, and co-firing the unit with gas by 2030. But as Sierra Club demonstrated in its November 2024 Comments and February 2025 Post-Hearing Comments, the Limestone Conversion Project is unnecessary and co-firing East Bend Unit 2 is not the least-cost option for ratepayers. Duke's IRP modeling included two key flaws: first, it relied on cost figures for the Limestone Conversion Project that Duke acknowledges are outdated and no longer accurate; and second, the modeling inappropriately included the Limestone Conversion Project as part of the costs of every scenario modeled, including those where the project is unnecessary.

[15] Commission Staff's Report, p. 41.
[16] *Id.*

Instead, Duke should fully convert East Bend Unit 2 to gas. Doing so would avoid saddling ratepayers with the expense of the unnecessary Limestone Conversion Project, and it represents the least-cost option both with and without enforcement of current federal environmental safeguards under Clean Air Act section 111(d). As the Commission Staff explain, "the IRP does not include enough modeling details to explain why it selected a plan that does not appear to be the least-cost alternative to meet capacity requirements."[17] Sierra Club agrees.

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Respectfully submitted,

/s/ Joe F. Childers

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[17] Commission Staff's Report, p. 41.

CERTIFICATE OF SERVICE

This is to certify that the foregoing copy of Sierra Club's Comments on the Commission Staff's Report on Duke Energy Kentucky's 2024 Integrated Resource Plan in this action is being electronically transmitted to the Commission on April 21, 2025, and that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding.

/s/ Joe F. Childers
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