

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of:

**ELECTRONIC APPLICATION OF DUKE)
ENERGY KENTUCKY, INC. FOR A)
CERTIFICATE OF PUBLIC CONVENIENCE)
AND NECESSITY TO CONVERT ITS WET FLUE)
GAS DESULFURIZATION SYSTEM FROM A)
QUICKLIME REAGENT PROCESS TO A)
LIMESTONE REAGENT HANDLING SYSTEM)
AT ITS EAST BEND GENERATING STATION)
AND FOR APPROVAL TO AMEND ITS)
ENVIRONMENTAL COMPLIANCE PLAN FOR)
RECOVERY BY ENVIRONMENTAL)
SURCHARGE MECHANISM)
)
)
)**

Case No. 2024-00152

**CORRECTED DIRECT TESTIMONY OF CHELSEA
HOTALING ON BEHALF OF SIERRA CLUB**

November 13, 2024

**CORRECTED DIRECT TESTIMONY OF CHELSEA HOTALING
ON BEHALF OF SIERRA CLUB
BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY**

Case No. 2024-00152

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LIST OF EXHIBITS

CH-1: Resume of Chelsea Hotaling

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I. INTRODUCTION

1

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Chelsea Hotaling, and my business address is 91 Main Street, Canton, NY
4 13617.

5 **Q. BY WHOM ARE YOU EMPLOYED, AND IN WHAT CAPACITY, FOR THE**
6 **PURPOSES OF THIS PROCEEDING?**

7 A. I am providing comments and testimony on behalf of the Sierra Club.

II. BACKGROUND

8

9 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND**
10 **PROFESSIONAL QUALIFICATIONS.**

11 A. I have worked for eight years in electric utility regulation and related fields. I have reviewed
12 dozens of integrated resource plans (“IRPs”) and related filings by utilities in Arizona,
13 Colorado, Georgia, Kansas, Kentucky, Iowa, Indiana, Michigan, Missouri, Montana,
14 Minnesota, New Mexico, Nova Scotia, Puerto Rico, and South Carolina. I have performed
15 my own capacity expansion, production cost, and reliability modeling in numerous cases
16 using multiple models, including EnCompass, AURORA, PLEXOS, and the Strategic
17 Energy & Risk Valuation Model (“SERVM”).

18 I received a Bachelor’s Degree in Accounting and Economics from Elmira College in 2011. I
19 also received a Master of Business Administration Degree in 2012, a Master’s Degree in
20 Environmental Policy in 2019, and a Master’s Degree in Data Analytics in 2020, all from
21 Clarkson University. My resume is attached as Exhibit CH-1.

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1 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS OR ANY COMMISSION?**

2 A. Yes, I filed expert witness testimony in Case No. 2022-00371 and Case No. 2022-00387. I
3 have also filed testimony before regulatory commissions in Colorado, Georgia, Iowa,
4 Michigan, South Carolina, and West Virginia.

5 **III. PURPOSE OF TESTIMONY**

6 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

7 A. The purpose of my testimony is to respond to Duke Energy Kentucky’s (“Company” or
8 “Duke”) request for a certificate of public convenience and necessity (“CPCN”) to convert
9 the existing wet flue gas desulfurization (“WFGD”) at the East Bend Generating Station
10 (“East Bend”) from a magnesium enhanced lime (“MEL”) based scrubbing process to a
11 process that uses limestone (“Limestone Conversion Project”) as the reagent. In particular, I
12 respond to Duke Energy Kentucky’s analysis in this CPCN filing and the modeling
13 conducted for the 2024 Integrated Resource Plan (“IRP”).

14 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS FOR THE KENTUCKY**
15 **PUBLIC SERVICE COMMISSION.**

16 A. I am aware of Mr. Sahu’s recommendation, and agree that newly available information from
17 Duke should be considered, including affording an opportunity for all parties to provide
18 supplemental testimony.

19 On the basis of the analyses provided to date, the Commission should deny the CPCN and
20 direct Duke to provide more fulsome analysis of potentially cost-effective alternatives,
21 including at least the East Bend operational pathways evaluated in the 2024 IRP. To the
22 extent that Duke reports that there is not enough time to explore or implement an alternative

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1 option, Duke should be responsible for increased costs of not acting sooner to resolve a
2 reagent supply issue that it has seen coming since early 2020.

3 **IV. DUKE HAS NOT TAKEN TIMELY AND NECESSARY ACTION**

4 **Q. WHAT HAS DUKE INDICATED ABOUT THE REPORTED NEED FOR THE**
5 **LIMESTONE CONVERSION PROJECT?**

6 A. Witness Verderame reports that cost and volatility in the reagent supply are the reasons for
7 Duke Energy Kentucky seeking the CPCN for the Limestone Conversion Project.¹

8 **Q. WAS THERE PRIOR NOTICE OF CONCERNS ABOUT THE REAGENT SUPPLY?**

9 A. Yes. In response to a discovery question, Duke Energy Kentucky indicated that supply
10 concerns arose in Q1 of 2020, and additional information about price increases and supply
11 availability arose after the April 2023 Request for Proposal:

12 Duke Energy Kentucky has received reliable supply and competitive pricing on its
13 lime supply agreements from the current supplier since the 1980's. In Q1, 2020,
14 Duke Energy Kentucky received notice from the supplier of the operational
15 suspension of its MEL mining operation due to a lack of industry demand for the
16 MEL product. However, the supplier made the commitment to honor the
17 contractual obligations from an alternative affiliated mine which would require
18 additional chemical processing to meet East Bend's WFGD system specifications.
19 As a result of the suspension in operations, Duke Energy Kentucky has since tested
20 the only other known alternative source of the MEL product as well as tested
21 alternative chemical additives to quicklime to increase potential supply sources to
22 meet environmental requirements. During the April 2023 Request for Proposal,
23 Duke Energy Kentucky became aware of both the significant MEL product price
24 increase as well as lack of availability of both MEL and quicklime when the other
25 known alternative of MEL lime withdrew its bid due to other contractual
26 commitments and no other viable quicklime bids were received.²

27 **Q. HOW HAS THE FINANCIAL PERFORMANCE OF EAST BEND BEEN IN**
28 **RECENT YEARS?**

¹ Direct Testimony of Witness Verderame at 6.

² Duke response to Sierra Club DR-01-044(b).

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1 A. After reviewing data provided by Duke on East Bend’s revenues and costs, East Bend has
2 only had positive net revenue in one year between 2018 through July 2024. Net revenue is
3 the difference between the total revenue from East Bend, which includes energy market,
4 ancillary service, and capacity revenues and subtracts the total costs, which include fuel,
5 fixed operations and maintenance (“O&M”), non-fuel variable O&M, and capital costs.
6 Table 1 below provides an overview of the revenue and cost data I used for this analysis and
7 the corresponding discovery response where Duke provided the revenue and cost data.

Table 1. Data Sources for Net Revenue Analysis

Revenue/Cost Data	Source
Energy Market Revenue	Sierra Club DR-01-004(k)
Ancillary Services Revenue	Sierra Club DR-01-004(m)
Capacity Revenue	Sierra Club DR-01-004(l)
Fuel Cost	Sierra Club DR-01-004(c)
Fixed O&M Cost	Sierra Club DR-01-00(a)
Non-Fuel Variable O&M Cost	Sierra Club DR-01-039
Capital Cost	Sierra Club DR-01-004(d)

9
10 There are three things to note about the net revenue analysis I developed. First, when asked
11 for the historical non-fuel variable O&M costs for East Bend, Duke said “Duke Energy
12 Kentucky does not maintain this information on an after the fact basis”.³ Since that data was
13 not provided, I used the information that Duke provided related to the expenses associated
14 with the WFGD operating costs. It is likely that the costs I used in this analysis are lower
15 than the variable O&M incurred by East Bend. In the 2024 IRP, the reported variable O&M
16 for East Bend in 2024 is \$ [REDACTED] /MWh.⁴ The variable O&M reported in the 2024 IRP is
17 higher than the \$/MWh WFGD costs that I used in this analysis as a proxy for the non-fuel

³ Duke response to Sierra Club DR-01-004(b).

⁴ Duke Energy Kentucky 2024 IRP, Confidential Table H.2 at 151.

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1 variable O&M costs. The second thing to note is that when Duke provided the ancillary
2 services and capacity revenue, Duke indicated that this information was not available on an
3 individual station level, which means that the numbers provided are for the entire Duke
4 Energy Kentucky fleet. For the net revenue analysis, I included the full ancillary services and
5 capacity revenues. The third item to note is that I levelized the annual capital expenditures
6 reported by Duke assuming a 20-year life and a discount rate of 7.29% to allocate the capital
7 expenditures instead of assuming that the entirety of the capital expenditures were imposed
8 in the year they were incurred. All three of these items result in my analysis being on the
9 conservative side in terms of giving more of a cost advantage for East Bend.

10 Table 2 below shows the results of the net revenue analysis for East Bend. The analysis
11 indicates that for each year between 2018 and YTD 2024, with the exception of 2022, East
12 Bend has incurred negative net revenue. Notably, 2022 was an outlier year, with global
13 market changes, and relatively high fuel and energy market prices. The higher energy market
14 prices led to East Bend incurring higher energy market revenues in 2022.

Table 2. East Bend Net Revenue

Year	Total Revenue	Total Costs	Net Revenue
2018			
2019			
2020			
2021			
2022			
2023			
2024 YTD ⁵			

⁵ Through July 2024.

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1 **Q. HAS DUKE EVALUATED RETIREMENT OF EAST BEND IN ITS IRP**
2 **MODELING?**

3 A. For the 2021 IRP, Duke evaluated the economic retirement date for East Bend. When the
4 capacity expansion model, EnCompass, was allowed to retire East Bend, it was economically
5 retired in 2027 in the base case.⁶

6 **Q. HOW DID DUKE EVALUATE EAST BEND IN THE 2024 IRP?**

7 A. The 2024 IRP evaluated several scenarios around the conversion or retirement of East Bend
8 as prescribed courses of action under the Environmental Protection Agency’s (“EPA”) Clean
9 Air Act (“CAA”) Section 111 Update for existing coal facilities. The four compliance
10 pathways under the EPA 111 Rules are: (1) convert to dual fuel by 2030, (2) convert to
11 operate on 100% natural gas by 2030, (3) retire by 2032, or (4) add carbon capture and
12 sequestration (“CCS”) by 2032.⁷ The three different compliance pathways modeled by Duke
13 in the 2024 IRP are retirement by 2032, convert to natural gas by 2030 and retire by 2045,
14 and co-firing with natural gas, or dual fuel operation (“DFO”) and then retire by 2039.⁸ There
15 was not a modeling run that looked at optimizing around an economic retirement date for
16 East Bend like there was in the 2021 IRP.

17 **Q. WAS THE LIMESTONE CONVERSION EVALUATED IN THE 2021 OR 2024**
18 **INTEGRATED RESOURCE PLAN (“IRP”)?**

19 A. No, it was not. For the modeling conducted as part of the 2024 IRP, Duke included the
20 Limestone Conversion Project as part of the base case, which means it was included in all
21 modeling runs conducted.⁹

⁶ Duke Energy Kentucky 2021 IRP at 42-46; *see also* Duke Kentucky response to Sierra DR-01-013.

⁷ Case No. 2024-00197, Duke response to Staff DR-01-023(c).

⁸ Duke Energy Kentucky 2024 IRP at 56.

⁹ Duke response to Sierra Club DR-01-015.

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1 **Q. GIVEN THE RECENT ECONOMICS OF EAST BEND, HOW SHOULD DUKE**
2 **APPROACH CAPITAL INVESTMENTS FOR EAST BEND?**

3 A. Any additional significant capital investment for the East Bend Generating Station should be
4 evaluated in a manner that evaluates the cost impact of pursuing the investment against all
5 feasible alternative pathways without that investment.

6 **V. THE CPCN MODELING DOES NOT SUPPORT GRANTING CPCN**

7 **Q. WHAT ANALYSIS DID DUKE PERFORM IN SUPPORT OF THIS CPCN?**

8 A. Witness Verderame put forward an analysis comparing the project costs of the Limestone
9 Conversion Project against the costs of a scenario where East Bend would become
10 unavailable and inoperable due to lack of reagents and the plant being unable to comply with
11 environmental regulations.¹⁰ For this scenario, Duke calculated the Fixed Resource
12 Requirement (“FRR”) Deficiency Penalty, capacity and energy replacement costs, and
13 foregone energy margins for East Bend. Duke initially reported these costs to be \$166.1
14 million and later updated the costs to \$192.4 million in a discovery response to Staff.¹¹

15 **Q. WHAT ALTERNATIVES TO THE LIMESTONE CONVERSION PROJECT DID**
16 **DUKE EVALUATE FOR THE CPCN FILING?**

17 A. Witness Verderame discussed the consideration for a process where a standard high calcium
18 quicklime product was procured and mixed with a magnesium hydroxide slurry to develop
19 the chemical composition needed for operating the current WFGD process. Witness
20 Verderame reported that this alternative was deemed unreasonable due to the costs and
21 supply chain risk exposure.¹²

¹⁰ Direct Testimony of Witness Verderame at 10.

¹¹ Duke response to Staff DR-01-007.

¹² Direct Testimony of Witness Verderame at 15-16.

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1 **Q. DID DUKE PROVIDE OTHER SUPPORTING ANALYSES OF THE LIMESTONE**
2 **CONVERSION PROJECT?**

3 A. Yes, in response to a discovery question from Staff, Duke provided high level results from an
4 analysis dated August 2023.¹³

5 **Q. WHAT WAS INCLUDED IN THE AUGUST 2023 EVALUATION?**

6 A. Based on the information shared by Duke, Duke evaluated the Limestone Conversion Project
7 under various cases that looked at portfolios continuing to use lime versus using limestone.

8 The information Duke provided showed that the cases were compared based on the Present
9 Value of Revenue Requirements (“PVRR”). [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED].¹⁵

13 [REDACTED]¹⁶

[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

14

15

¹³ Duke response to Staff DR-02-008.
¹⁴ STAFF-DR-02-008 Confidential Attachment at 3.
¹⁵ STAFF-DR-02-008 Confidential Attachment at 3.
¹⁶ STAFF-DR-02-008 Confidential Attachment at 3.

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1 **Q. HOW DOES THE AUGUST 2023 EVALUATION FROM DUKE COMPARE TO**
2 **THE INFORMATION PRESENTED IN THE CPCN FILING?**

3 A. There are three major differences between the evaluation performed by Duke in August 2023
4 compared to the information presented in the CPCN filing. First, the cost of the Limestone
5 Conversion Project is significantly different. The costs reported in the August 2023 analysis
6 were \$ [REDACTED]¹⁷ compared to the project cost of \$125.8 million reported in this CPCN
7 filing.¹⁸ If Duke had used the \$125.8 million cost that was included in the CPCN filing at the
8 time that the evaluation was done in August 2023, that would impact the PVRR of the cases
9 that included the Limestone Conversion Project. The second difference is that the August
10 2023 evaluation was performed using the EnCompass software model. EnCompass is a
11 capacity expansion and production cost model that Duke utilizes for its IRP modeling. Based
12 on the information presented by Duke, EnCompass was used to develop cost information to
13 calculate PVRRs of each case out to 2050. This contrasts with the analysis presented in the
14 CPCN filing, as those costs were not based on a PVRR for the portfolios and scenarios
15 modeled.¹⁹ The third difference is that part of the analysis presented in the CPCN filing does
16 include the impact of the Limestone Conversion Project on the operational cost and energy
17 market revenue for East Bend. For this analysis, Duke used the modeling software,
18 PowerSimm, to evaluate the dispatch of East Bend with and without the Limestone
19 Conversion Project for a five-year period up to 2029.²⁰ This is a much shorter timeframe than
20 what was modeled for the August 2023 analysis and for the 2024 IRP.

¹⁷ STAFF-DR-02-008 Confidential Attachment at 2.

¹⁸ Direct Testimony of Witness Verderame at 10.

¹⁹ Duke response to Sierra Club DR-01-006.

²⁰ Direct Testimony of Witness Verderame at 14; Duke response to Sierra Club DR-01-072.

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1 **Q. IS IT POSSIBLE THAT THE 2023 EVALUATION AND THE ANALYSIS**
2 **INCLUDED IN THE CPCN FILING ARE NOT CONSIDERING ALTERNATIVE**
3 **PATHWAYS TO THE LIMESTONE CONVERSION PROJECT?**

4 A. Yes, it is possible. The portfolios evaluated in the 2024 IRP included a portfolio where East
5 Bend converts to DFO and a portfolio where East Bend converts to operate 100% on natural
6 gas. Both of these portfolios have implications for Duke’s need for reagents and neither were
7 included as an alternative to pursuing the Limestone Conversion Project. Duke stated that
8 “This case is about the construction of a lime-stone-based reagent handling process, which
9 has nothing to do with whether or not or how the Company pursues a potential conversion of
10 East Bend to a dual-fuel, natural gas co-firing generator.”²¹ However, converting East Bend
11 to DFO or operating on 100% natural gas has implications on the reported need and cost of
12 the Limestone Conversion Project. As Duke stated, “[...] if East Bend Unit 2 were operated
13 fully on natural gas, the FGD system would not be required to remove large amounts of
14 sulfur dioxide as it currently does. As a result, it would not require the large amounts of
15 reagent (lime or limestone) to combine with that SO₂ that it currently utilizes.”²² An
16 additional alternative that would reduce the need for reagents is pursuing a pathway where
17 East Bend is replaced with a new thermal resource such as a Combined Cycle (“CC”).

18 **Q. HOW DO THE ESTIMATED TIMEFRAMES FOR THE LIMESTONE**
19 **CONVERSION PROJECT AND A CONVERSION TO NATURAL GAS COMPARE?**

20 A. Duke reported that the timeframe needed from the start of the CPCN process to project
21 completion is approximately three years for the Limestone Conversion Project.^{23,24} Duke

²¹ Duke response to Sierra Club DR-01-056(f).

²² Duke response to Sierra Club DR-01-011.

²³ Direct Testimony of Witness Verderame at 11.

²⁴ Duke response to Sierra Club DR-01-036(a).

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1 reported that the expected timeline for a conversion to natural gas would be 4–5 years. This
2 timeline includes performing an engineering study, filing the CPCN, procuring equipment,
3 commencing construction activities, building the gas lateral, and commissioning and testing
4 the unit.²⁵

VI. THE IRP MODELING DOES NOT SUPPORT GRANTING CPCN

Q. WHAT ARE THE IMPLICATIONS OF MODELING THE LIMESTONE

CONVERSION PROJECT AS PART OF THE BASE CASE IN DUKE’S 2024 IRP?

8 A. Since Duke assumed the Limestone Conversion Project as part of all of the modeling runs,
9 the 2024 IRP modeling cannot determine if there is a lower cost alternative pathway to the
10 Limestone Conversion Project. This means that neither Duke nor intervening parties know
11 whether pursuing an alternative portfolio without the Limestone Conversion Project is
12 cheaper if that cost can be avoided.

Q. WHAT MODELING RUNS WERE CONDUCTED IN THE IRP?

14 A. Table 3 below shows the Optimized and Alternative Portfolios, both with and without the
15 EPA CAA Section 111 modeling, that Duke modeled as part of the 2024 IRP.

Table 3. Portfolios Modeled in the 2024 IRP²⁶

Optimized Portfolios with EPA CAA Section 111
East Bend DFO Conversion by 2030
East Bend 100% Natural Gas Conversion by 2030
East Bend Retires by 2032
Optimized Without EPA CAA Section 111
East Bend DFO Conversion by 2030
East Bend 100% Natural Gas Conversion by 2030
East Bend Retires by 2036
Alternative Portfolio with EPA CAA Section 111

²⁵ Case No. 2024-00197, Duke response to Staff DR-01-003(a) and Staff DR-01-022..

²⁶ Duke Energy Kentucky 2024 IRP at 9-10.

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East Bend DFO Conversion with CC Replacement by 2039
East Bend DFO Conversion with SMR Replacement by 2039
East Bend DFO Conversion with CC with CCS Replacement by 2039
East Bend DFO Conversion with CC Replacement by 2036 and Accelerated Renewables
East Bend Retirement by 2032 with CC Replacement
Alternative Portfolios Without EPA CAA Section 111
East Bend DFO Conversion with CC Replacement by 2039
East Bend DFO Conversion with SMR Replacement by 2039
East Bend DFO Conversion with CC Replacement by 2036
East Bend DFO Conversion with CC Replacement by 2039 and Accelerated Renewables
East Bend Retirement by 2036 and Accelerated Renewables
East Bend Retirement by 2042

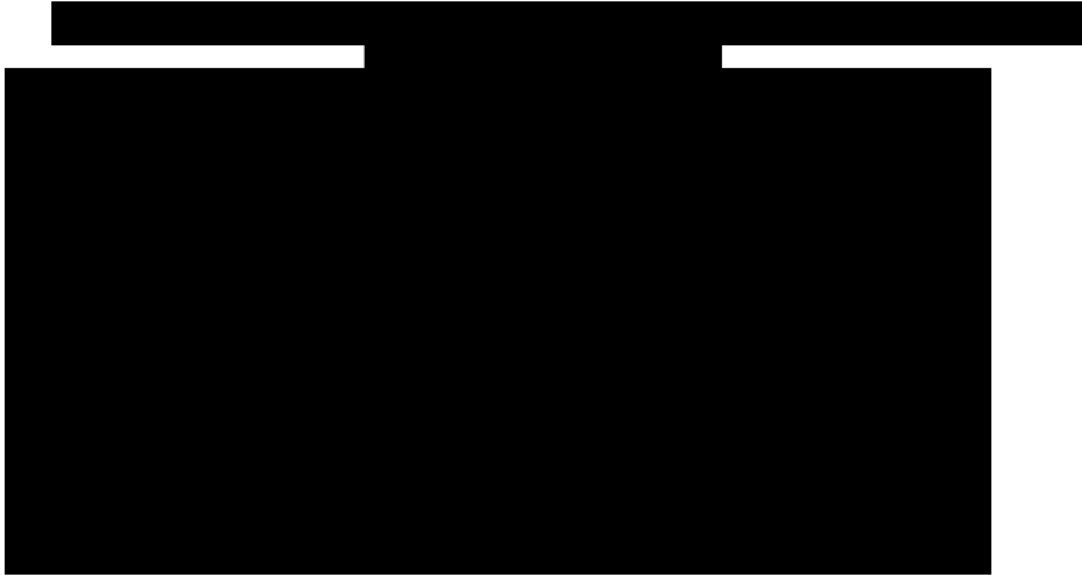
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Q. IS THERE OTHER INCOMPLETE INFORMATION ABOUT THE MODELING PERFORMED BY DUKE IN THE IRP?

A. Yes, there are two aspects of the 2024 IRP that could have an impact on a pathway for East Bend. First, the IRP included information on the projected fixed O&M and maintenance capital for East Bend as shown in CONFIDENTIAL Figure 1. There is a [REDACTED] [REDACTED]. Based on the information provided with the 2024 IRP, it is not clear what these costs are, and if they can be avoided by the DFO or full natural gas conversion pathway for East Bend. If these costs can be avoided, then that lends more support for a closer look at DFO or full natural gas conversion as it relates to the decision on the Limestone Conversion Project.

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3

4 The second item relates to how Duke evaluated additional renewable resource builds for its
5 Preferred Plan, which Duke referred to as “Accelerated Renewables”.

6 **Q. WHAT DOES “ACCELERATED RENEWABLES” MEAN IN THE 2024 IRP?**

7 A. As part of the modeling for the 2024 IRP, Duke evaluated optimized and alternative
8 portfolios. Duke reported that the modeling results from the optimized portfolios indicated
9 that solar and storage were selected and that “Solar was selected by 2040 in all cases as it
10 provided valuable energy to avoid market purchases.”²⁸ The alternative portfolios included
11 specific actions, such as accelerating the builds of solar resources. Duke stated that it “[...]”
12 tested the value of accelerating solar into the late 2020s in the DFO conversion pathway and
13 found that the increase in PVRR²⁹ was negligible.”³⁰ When the PVRR between two portfolios
14 is found to be negligible, which is typically within a 1% difference, this means that the
15 portfolios can be considered cost comparable.³¹ As Duke further stated in the IRP, “Finally,

²⁷ Duke Energy Kentucky 2024 IRP, Table H.2 at 151.

²⁸ Duke Energy Kentucky 2024 IRP at 56.

²⁹ Present Value of Revenue Requirements.

³⁰ Duke Energy Kentucky 2024 IRP at 56.

³¹ This result is not atypical from what I have seen in my review of other utility IRPs or in my own modeling experience.

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1 accelerating solar into the late 2020s allows for increased resource diversity in Duke Energy
2 Kentucky at little to no incremental PVRR.”³² In Duke’s Preferred Portfolio, 50 MW of solar
3 is added in the years 2029, 2031, and 2033.³³

4 **Q. HOW DOES THIS IMPACT THE PORTFOLIOS EVALUATED?**

5 A. While it is encouraging that Duke included the accelerated renewables for the DFO
6 Conversion portfolio, it does not appear that this was also evaluated for the Natural Gas
7 Conversion by 2030 portfolio. This is important due to the level of market purchases that
8 result in the Natural gas Conversion by 2030 portfolio, which are in the range of 40% to 95%
9 between 2030 and 2040.³⁴ As Duke stated, “[...] in the 100% natural gas conversion case
10 there is a greater reliance on the PJM market as the dispatch cost of East Bend on natural gas
11 is greater than the projected cost of power from the PJM market due to the inefficiency of
12 running East Bend solely on natural gas.”³⁵ Without the additional modeling run being done,
13 like what Duke did for the DFO conversion portfolio, it is not clear if including additional
14 solar resources in the model would also result in a negligible PVRR difference.

15 **Q. WOULD ADDING MORE RENEWABLES TO THE NATURAL GAS CONVERSION**
16 **PORTFOLIO OFFSET MARKET PURCHASES?**

17 A. Yes, the inclusion of energy producing resources would help offset the level of market
18 purchases observed in the Natural Gas Conversion portfolio. Typically, given the expected
19 capacity factor of a coal to natural gas converted resource, the conversion would be paired
20 with deployment of energy producing resources, whether that is from renewables, thermal
21 resources, or energy efficiency, given the expected capacity factor of a converted resource.

³² Duke Energy Kentucky 2024 IRP at 57.

³³ Duke Energy Kentucky 2024 IRP, Figure 1.2 at 4.

³⁴ Duke Energy Kentucky 2024 IRP, Figure 6.9 at 54 and Figure 6.11 at 55.

³⁵ Case No. 2024-00197, Duke response to AG DR-01-002(a).

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1 Not taking the additional step of evaluating whether accelerating solar builds, like what Duke
2 did for the Preferred Plan, results in an incomplete picture of what a portfolio with East Bend
3 converting to operate on 100% natural gas could look like from a cost and market purchases
4 standpoint.

5 **Q. WHY IS IT IMPORTANT THAT DUKE EVALUATE THE LIMESTONE**
6 **CONVERSION PROJECT AS PART OF ITS 2024 IRP PORTFOLIO MODELING?**

7 A. Since a conversion to natural gas or replacement with a new CC has implications on the
8 future need of reagents for the WFGD, and the need for the Limestone Conversion Project, it
9 is important that these alternative pathways be evaluated in a manner that provides Duke with
10 information to help inform the decision for the Limestone Conversion Project. If the Natural
11 Gas Conversion portfolio or a portfolio with a new CC, with or without accelerated
12 renewables, can avoid the investment in the Limestone Conversion Project and result in a
13 lower or comparable PVRR than Duke’s Preferred Portfolio with the Limestone Conversion
14 Project, then the those should be considered as alternative pathways.

15 **VII. NEITHER ANALYSIS MEETS THE INDUSTRY STANDARD FOR A LARGE**
16 **CAPITAL INVESTMENT**

17 **Q. HOW DOES A UTILITY SHOW THAT ITS RATES ARE FAIR, JUST AND**
18 **REASONABLE WHEN IT SEEKS AN APPROVAL FOR A MAJOR CAPITAL**
19 **INVESTMENT?**

20 A. Duke has the burden to prove its rates are fair, just and reasonable, including the rates that
21 will result from the issuance of a CPCN from the Commission. This burden of proving a
22 proposed rate is fair, just and reasonable includes showing that the proposed project is “least
23 cost” is one of the fundamental principles utilized by this Commission and other

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1 commissions across the country when setting rates. The industry standard term for such an
2 analysis is a “prudence analysis.”

3 **Q. WHAT DOES THIS COMMISSION AND OTHER STATE COMMISSIONS**
4 **CONSIDER IN A PRUDENCE ANALYSIS?**

5 A. Prudence analysis tests whether a utility has behaved reasonably, based on industry norms,
6 using all professional tools objectively and competently. Prudence analysis examines
7 whether the process leading to a utility’s decision with a material impact on rates was
8 reasonable.

9 **Q. ASSUMING A UTILITY’S DECISION TO BUILD A GENERATION SOURCE WAS**
10 **PRUDENT, IS THE UTILITY RELIEVED FROM FURTHER PRUDENCE**
11 **REVIEWS WITH RESPECT TO THAT SOURCE?**

12 A. No, just because a utility prudently constructed and operated a plant does not mean that it is
13 forever immune from reassessing whether it is prudent to maintain the plant in service. A
14 prudent utility responds to changing circumstances that arise during the operating life of an
15 existing asset, periodically reassessing whether its current plan and expenses constitute the
16 reasonably least-cost means of providing reliable service to its ratepayers.

17 **Q. WHAT IS THE STANDARD INDUSTRY PRACTICE FOR REASSESSING**
18 **WHETHER CONTINUED OPERATION OF A GENERATION RESOURCE IS THE**
19 **LEAST COST-OPTION WHEN THE UTILITY IS PRESENTED WITH A MAJOR**
20 **CAPITAL INVESTMENT?**

21 A. When the utility is faced with the need for capital investment to continue the lawful operation
22 of a unit or other major decision to make about further financial commitment to sustain

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1 operation of the unit, it is standard industry practice to evaluate the prudence of such an
2 investment compared to feasible alternatives.

3 **Q. PLEASE DESCRIBE THE STANDARD INDUSTRY PROCESS UTILIZED BY**
4 **UTILITIES PRIOR TO MAKING MAJOR CAPITAL INVESTMENTS.**

5 A. If faced with a major investment decision, a utility should evaluate whether it is more cost-
6 effective to invest in and continue to operate a plant compared to the costs of alternatives.
7 The prudence of a decision to continue operations with further investments (such as the new
8 capital costs and prospective avoidable fixed costs) is evaluated based on what a reasonable
9 utility manager would do (and not do) in light of the circumstances known or reasonably
10 knowable at the time the investment was made or expense was incurred. A reasonable
11 decision-making process includes the appropriate steps to compare investing in the existing
12 asset and alternatives, including identifying all feasible alternatives and comparing them
13 objectively and over an appropriate forward-looking time-frame.

14 A prudent utility will look at the prospective costs that are avoidable for continuing to
15 operate an existing asset compared to the prospective all-in costs on alternatives.
16 Specifically, the utility would analyze whether the unit's prospective or avoidable operating
17 cost to provide capacity and energy exceeds the all-in (capacity and energy) costs of
18 reasonable alternatives. The proper comparison is of prospective and avoidable spending
19 only; sunk costs should not be included.

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VIII. CONCLUSION

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**Q. OVERALL, WHAT ARE YOUR RECOMMENDATIONS TO THE COMMISSION
IN THIS PROCEEDING?**

A. I am aware of Mr. Sahu’s recommendation, and agree that newly available information from Duke should be considered, including affording an opportunity for all parties to provide supplemental testimony.

On the basis of the analyses provided to date, the Commission should deny the CPCN and direct Duke to provide more fulsome analysis of potentially cost-effective alternatives, including at least the East Bend operational pathways evaluated in the 2024 IRP. To the extent that Duke reports that there is not enough time to explore or implement an alternative option, Duke should be responsible for increased costs of not acting sooner to resolve a reagent supply issue that it has seen coming since early 2020.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF DUKE)
ENERGY KENTUCKY, INC. FOR A)
CERTIFICATE OF PUBLIC CONVENIENCE)
AND NECESSITY TO CONVERT ITS WET FLUE)
GAS DESULFURIZATION SYSTEM FROM A)
QUICKLIME REAGENT PROCESS TO A)
LIMESTONE REAGENT HANDLING SYSTEM)
AT ITS EAST BEND GENERATING STATION)
AND FOR APPROVAL TO AMEND ITS)
ENVIRONMENTAL COMPLIANCE PLAN FOR)
RECOVERY BY ENVIRONMENTAL)
SURCHARGE MECHANISM)

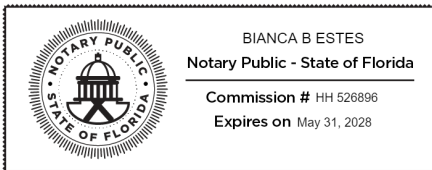
Case No. 2024-00152

AFFIDAVIT OF CHELSEA HOTALING
IN SUPPORT OF CORRECTED DIRECT TESTIMONY
ON BEHALF OF SIERRA CLUB

~~COMMONWEALTH OF~~)
~~KENTUCKY~~)
State of Florida
County of Pasco

Chelsea Marie Hotaling 11/13/2024
Chelsea Hotaling

SUBSCRIBED, ACKNOWLEDGED, AND SWORN to before me by Chelsea Hotaling
this 13th day of November, 2024. By means of online notarization this by Chelsea Marie Hotaling.
___ Personally Known OR ___ Produced Identification
Type of Identification Produced DRIVER LICENSE



Bianca B Estes
Notary Public Bianca B Estes
Notary ID No.: HH 526896

My Commission expires: 05/31/2028

Notarized remotely online using communication technology via Proof.