


KyPSC Case No. 2025-00002
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VERIFICATION

STATE OF OHIO)
) SS:
COUNTY OF HAMILTON)


The undersigned, Chad Donner, Principal Engineer, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.



Chad Donner Affiant

Subscribed and sworn to before me by Chad Donner on this 17TH day of MARCH,
2025.





NOTARY PUBLIC

My Commission Expires: 1/5/2029

VERIFICATION

STATE OF NORTH CAROLINA

)

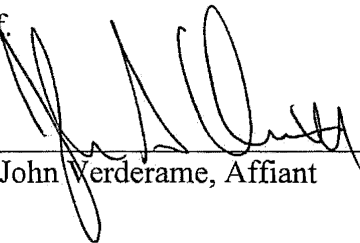
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SS:

COUNTY OF MECKLENBURG

)

The undersigned, John Verderame, VP Fuels & Systems Optimization, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.



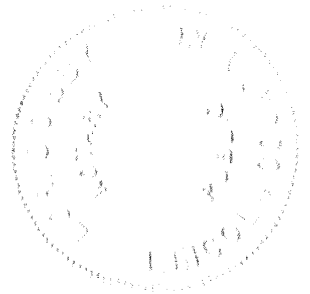
John Verderame, Affiant

Subscribed and sworn to before me by John Verderame on this 18 day of March, 2025.



NOTARY PUBLIC

My Commission Expires: Nov. 16, 2027



VERIFICATION

STATE OF NORTH CAROLINA)
)
COUNTY OF MECKLENBURG) SS:

The undersigned, Nathan Gagnon, Managing Director IRP & Analytics, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.



Nathan Gagnon, Affiant

Subscribed and sworn to before me by Nathan Gagnon on this 13 day of March, 2025.



NOTARY PUBLIC

SHEILA LEMOINE
Notary Public, North Carolina
Lincoln County
My Commission Expires
July 21, 2029

My Commission Expires:

)

)

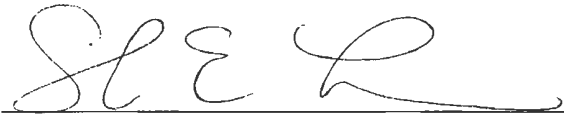
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My Commission Expires: 02-10-2033

VERIFICATION

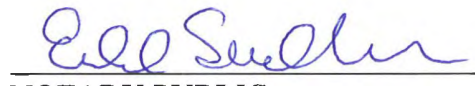
STATE OF OHIO)
)
COUNTY OF HAMILTON) SS:

The undersigned, Sarah Lawler, VP Rates & Regulatory Strategy, being duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of her knowledge, information and belief.



Sarah Lawler Affiant

Subscribed and sworn to before me by Sarah Lawler on this 18th day of March, 2025.



NOTARY PUBLIC

My Commission Expires: July 8, 2027



EMILIE SUNDERMAN
Notary Public
State of Ohio
My Comm. Expires
July 8, 2027

Duke Energy Kentucky
Case No. 2025-00002
STAFF Second Set Data Requests
Date Received: March 12, 2025

STAFF-DR-02-001

REQUEST:

Refer to the Direct Testimony of Chad M. Donner (Donner Direct Testimony), page 7, lines 10-23. Provide the capital costs for each of the identified workstreams associated with the Wet Flue Gas Desulfurization (WFGD) unit to enable the East Bend Unit to meet the new Environmental Protection Agency's (EPA) Mercury and Air Toxics Standard (MATS) Rule.

RESPONSE:

Please see Attachment CMD-1 to witness Donner's testimony for the cost breakdown. Per the cost breakdown, the "FGD Area" costs are wholly comprised of the EPC contract portion of the following scope items required for both limestone conversion and MATs compliance:

- 1) Installation of new absorber recycle slurry piping, cross-tie piping, spray headers, and spray nozzles.
- 2) Modification of the absorber trays to enhance SO₂ removal performance.
- 3) Upgrade of mist eliminator was water supply system.

The "Subcontract L&M" portion is the work necessary for the following scope items:

- 1) Upgraded absorber recycle pumps.
- 2) Operation of all absorber recycle slurry pumps to enhance SO₂ removal performance.

As these scope items are part of the broader EPC contract work, a detailed breakdown of the work scope cost areas aren't available at this time outside of the "FGD area" scope. EPC overheads are calculated as a percentage of the overall project cost and then applied as that percentage to the FGD area only scope.

PERSON RESPONSIBLE: Chad M. Donner

Duke Energy Kentucky
Case No. 2025-00002
STAFF Second Set Data Requests
Date Received: March 12, 2025

STAFF-DR-02-002

REQUEST:

Indicate whether Duke Kentucky has considered the option of fuel switching or the application of other back-end technologies that can be applied to meet the new EPA MATS regulations. If so, identify those options and technologies as well as the associated cost of each.

RESPONSE:

Apart from the co-benefits achieved through limestone conversion, no other back-end technologies have been considered. Natural gas co-firing has been evaluated from a Clean Air Act (CAA) 111(d) perspective. However, compliance provisions based on annual heat input of gas do not prevent 100% coal operation, as long as the annual heat input from gas is 40%. Consequently, gas co-firing cannot be relied upon for consistent MATs compliance benefits in this case, while providing fuel flexibility for customers during seasonal short-term cost/supply disruptions in gas.

PERSON RESPONSIBLE: Chad M. Donner

**Duke Energy Kentucky
Case No. 2025-00002
STAFF Second Set Data Requests
Date Received: March 12, 2025**

**CONFIDENTIAL STAFF-DR-02-003
(As to Attachment only)**

REQUEST:

Refer to the Direct Testimony of John Verderame (Verderame Direct Testimony), page 10. Provide the most recent supplier's magnesium enhanced lime (MEL) secondary response to the Duke Kentucky long-term MEL request for proposal or, if no secondary response exists, the offer that resulted in the described agreement in principle.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET (As to Attachment only)

Please see STAFF-DR-02-003 Confidential Attachment. On March 13, 2025, the MEL supplier provided a new proposal to Duke Energy Kentucky to potentially extend the term and lower the price. The Company is currently evaluating the proposal.

PERSON RESPONSIBLE: John A. Verderame

**CONFIDENTIAL PROPRIETARY TRADE
SECRET**

**STAFF-DR-02-003
CONFIDENTIAL ATTACHMENT**

FILED UNDER SEAL

STAFF-DR-02-004

REQUEST:

Refer to the Verderame Direct Testimony, page 28.

- a. Provide the detailed description of the modeling along with the relevant inputs that Duke Kentucky utilized to analyze the 100 percent conversion to natural gas alternative of the East Bend Unit.
- b. If no modeling of this alternative was performed, explain why.
- c. List details of any potential benefits or liabilities that could be realized if East Bend was converted to 100 percent natural gas.

RESPONSE:

In his testimony, Mr. Verderame references analysis performed for the Company's 2024 IRP as submitted in Case No. 2024-00197. The Company's evaluation of conversion of East Bend to 100% natural gas fuel is described in detail in the 2024 IRP. The model results and sensitivity analysis for the portfolios analyzed, including full natural gas conversion can be found in Section 6 of the IRP.

PERSON RESPONSIBLE: Nathan Gagnon

Duke Energy Kentucky
Case No. 2025-00002
STAFF Second Set Data Requests
Date Received: March 12, 2025

STAFF-DR-02-005

REQUEST:

In Case No. 2024-00152,¹ the estimated capital cost of the Limestone Conversion Project was \$125.8 million. Refer to the Application for Case 2025-00002, page 10. The estimated capital cost of the project is still listed as \$125.8 million. Explain why the estimated capital cost remained constant given the delay in the project.

RESPONSE:

The scope of the limestone project remains unchanged despite the delay in the project, as the original \$125.8M already accounted for project escalation and contingences.

PERSON RESPONSIBLE: Chad M. Donner

¹Case No. 2024-00152, *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* (Ky. PSC Jan. 6, 2025).

Duke Energy Kentucky
Case No. 2025-00002
STAFF Second Set Data Requests
Date Received: March 12, 2025

STAFF-DR-02-006

REQUEST:

Refer to Duke Kentucky's response to Sierra Club's First Request for Information, Item 9. Duke Kentucky claimed the East Bend facility operated at a 5-year capacity factor of 61 percent. This is significantly greater than the 49.45 percent 5-year average capacity factor provided under the Duke Kentucky's response to Commission Staff's First Request for Information, Item 15 (e), Attachment 2 in Case No. 2024-00152.¹ Does the reduced capacity factor of 49.45 lower the cost savings as associated with the elimination of the MEL reagent. If so, provide updated cost savings.

RESPONSE:

No. East Bend's 49.45 percent 5-year average capacity factor for the period of 2019 through 2023 provided in response to Commission Staff's First Request for Information, Item 15 (e), Attachment 2 in Case No. 2024-00152 does not lower the projected cost savings associated with the elimination of the MEL reagent. As discussed in Mr. Verderame's Direct Testimony, the Company's CPCN cost benefit analysis was conducted using the PowerSimm stochastic modeling software. This is the same model used by the Company to forecast East Bend's generation and cost over the mid-term planning horizon i.e., next month through the next five years.² Comparisons of production cost modeling of the two scenarios, filed as Confidential Attachment JAV-2, show on average an annual

¹ Case No. 2024-00152, (filed Sept. 6, 2024), Response to Commission Staff's First Request for Information), Item 15 (e), Attachment 2.

² Verderame Direct Testimony, pg. 19, lines 9-12.

average capacity factor of 44% for the 2028 through 2029 period should the limestone conversion take place compared to an average annual capacity factor of 37% capacity factor should East Bend remain on the MEL product. Based on this forecast, East Bend is forecasted to have an approximate 19% increase in capacity factor for the 2028 through 2029 period should the limestone conversion take place. See Confidential Attachment JAV-2 Generation and Capacity Tab for the forecasted generation and capacity factors.

Sierra Club's First Request for Information, Item 9 referenced in this request, was specifically discussing the forecast developed for the IRP in August of 2023, which was modeled using the Company's Encompass model.

PERSON RESPONSIBLE: John A. Verderame

Duke Energy Kentucky
Case No. 2025-00002
STAFF Second Set Data Requests
Date Received: March 12, 2025

STAFF-DR-02-007

REQUEST:

Refer to the Rebuttal Testimony of the Sierra Club witness Ranajit Sahu, page 4.¹ The Sierra Club witness indicates that the 2024 EPA MATS regulations may not be applicable to the East Bend facility. Provide Duke Kentucky's assessment of the referenced EPA MATS ruling.

RESPONSE:

Please see the Direct Testimony of J. Michael Geers, pp. 16 through 18 filed January 28, 2025, in this case, which provides in relevant part:

“In its data analysis, EPA did not identify East Bend as requiring, but its analysis inaccurately characterized East Bend's performance leading to an incorrect conclusion. EPA's characterization is inaccurate for multiple reasons. [...] First of all, when EPA conducted its technology review, it stated that it selectively choose a limited data set to evaluate the impact of different potential emissions limits on the regulated EGUs. Specifically stated “*We assessed summary statistics of the lowest quarter's fPM rate to evaluate the most representative metric to describe baseline fPM emissions.*”² This is inappropriate because East Bend like all EGUs must operate in continuous compliance with the regulations. Choosing such a narrow data set does not properly reflect the full range of

¹ Case No. 2024-00152, (filed Dec. 6, 2024), Sierra Club's Redacted Rebuttal Testimony of Ranajit Sahu at 4.

² Pg. 3, 2023 Technology Review for the Coal- and Oil-Fired EGU Source Category, memo to Docket No: EPA-HQ-OAR-2018-0794, Sarah Benish, Nick Hutson, Erich Eschmann, U.S. EPA/OAR, January 2023.

fuel, load, CEMS monitor operation and other conditions which cause fPM emission rates to fluctuate. Even so EPA indicated that from this narrow data set that the 99th percentile value was 0.009 lb/MMBtu which is just below the new standard but allows no compliance margin. [...] While the unit's fPM emissions are comfortably in compliance with the 2012 standard of 0.030 lbs./MMBtu based on historical data, they do regularly exceed the value of revised 0.010 lbs./MMBtu standard contained in the 2024 revised MATS rule."

PERSON RESPONSIBLE: Julie Walters

PUBLIC STAFF-DR-02-008

REQUEST:

Refer to the Direct Testimony of Nathan Gagnon (Gagnon Direct Testimony), page 8, lines 9-17. Explain the assumption that the duration of a long-term lime supply agreement may not provide a seamless transition to a Combined Cycle generator for East Bend.

RESPONSE:

CONFIDENTIAL PROPRIETARY TRADE SECRET

As described in STAFF-DR-02-003 and in my direct testimony, the current MEL agreement in principle is a [REDACTED]. Per Mr. Gagon's Direct Testimony the earliest possible date by which a combined cycle project could be completed was 2032.¹ That gap between the current end of the proposed MEL agreement and when a combined cycle generator could potentially be completed and brought in-service is the basis for the assumption that the duration of a long-term lime supply agreement may not provide a seamless transition to a Combined Cycle generator for East Bend.

Furthermore, "the Company believes that a [REDACTED] agreement may not adequately protect customers from the risks that prompted the CPCN filing. This [REDACTED] MEL contract does not negate the continued fuel security risk stemming from the scarcity of the MEL product required to operate the WFGD. Additionally, customers remain at risk for future, and potentially significant price escalations due to a potential lack of a

¹ Gagon Direct Testimony, p. 8, lines 7-8.

competitive market when the agreement comes up for renewal. If this supplier were to cease operations for any reason, and no alternative MEL supplies were available, East Bend is still at risk for not being able to operate in compliance with existing environmental regulations and would be forced to shut down. This would mean the Company would have to rely upon the PJM market to procure energy and capacity to serve its customers until it could...construct replacement generation.”²

PERSON RESPONSIBLE: John A. Verderame

² Verderame Direct Testimony, p. 11, lines 16-23 and p. 12, lines 1-5.

**Duke Energy Kentucky
Case No. 2025-00002
STAFF Second Set Data Requests
Date Received: March 12, 2025**

STAFF-DR-02-009

REQUEST:

Refer to the Gagnon Direct Testimony, page 9, lines 11-14. If the Limestone Conversion project were not to happen, explain the impact to the Integrated Resource Plan.

RESPONSE:

As explained in the Direct Testimony of Nathan Gagnon, the limestone conversion project was included in the Company's 2024 IRP as a base assumption, and the Company has not conducted full resource planning analysis of a case in which the limestone conversion project is not completed. The Company does not know the impact as such an analysis would require re-running the entire IRP.

PERSON RESPONSIBLE: Nathan Gagnon

Duke Energy Kentucky
Case No. 2025-00002
STAFF Second Set Data Requests
Date Received: March 12, 2025

STAFF-DR-02-010

REQUEST:

Refer to the Gagnon Direct Testimony, page 10, lines 13-18.

- a. Provide the impact to ratepayers if the Limestone Conversion project is approved.
- b. Provide the impact to ratepayers if the Limestone Conversion project is denied.

RESPONSE:

Please see the Direct Testimony of Sarah Lawler on page 8, lines 5-12. The estimated rate impacts of these savings for a typical residential customer using 1,000 kwh as a result of the Limestone Conversion project is listed in the table below. The table also includes the estimated residential typical bill impacts of the capital project for 2028 (the first full year the project is fully in service).

	Savings to Customers (in millions)	RS Bill Impacts	
December 2024 bill		127.53	
ESM Capital Project		1.64	1.29%
ESM Reagent Savings	\$ 11.3	(3.34)	-2.62%
FAC Savings	\$ 3.8	(0.93)	-0.73%
PSM Savings	\$ 1.0	(0.21)	-0.16%
		124.69	-2.28%

These savings would not be realized if the Limestone Conversion project is denied.

PERSON RESPONSIBLE: Sarah E. Lawler