

KyPSC Case No. 2024-00152
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VERIFICATION

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

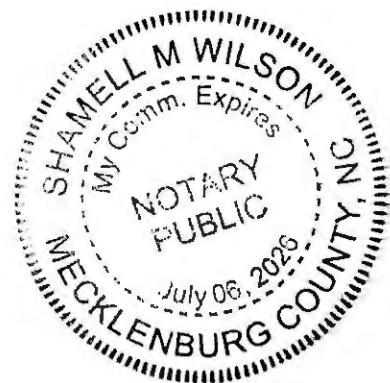
The undersigned, John Verderame, VP Fuels & Systems Optimization, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

John Verderame
John Verderame, Affiant

Subscribed and sworn to before me by John Verderame on this 28 day of August, 2024.

[Signature]
NOTARY PUBLIC

My Commission Expires:



VERIFICATION


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

The undersigned, Ryan Trogstad, Senior Data Science Consultant, 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.



Ryan Trogstad, Affiant

Subscribed and sworn to before me by Ryan Trogstad on this 5th day of September, 2024.



NOTARY PUBLIC

My Commission Expires: 8/22/28

S Jill Hamrick
NOTARY PUBLIC
Mecklenburg County, NC
My Commission Expires August 22, 2028

VERIFICATION

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

The undersigned, John D. Swez, Managing Director, Trading and Dispatch, 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.



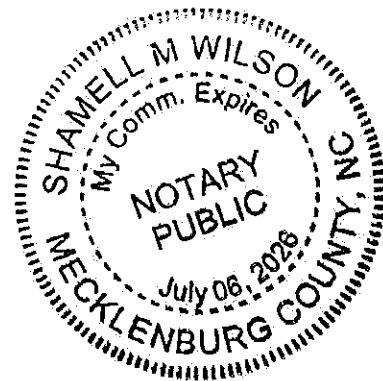
John D. Swez, Affiant

Subscribed and sworn to before me by John D. Swez on this 28 day of August, 2024.



NOTARY PUBLIC

My Commission Expires:



VERIFICATION

STATE OF OHIO)
)
COUNTY OF HAMILTON) SS:

The undersigned, J. Michael Geers, Manager Environmental Services, 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.

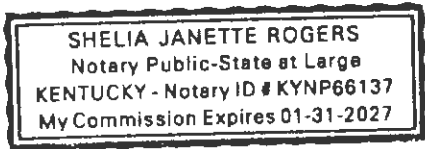


J. Michael Geers, Affiant

Subscribed and sworn to before me by J. Michael Geers on this 30th day of September, 2024.



NOTARY PUBLIC



My Commission Expires: 1-31-2027

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 26 day of September,
2024.



NOTARY PUBLIC

My Commission Expires: 1-31-2027

Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024

AG-DR-02-001

REQUEST:

Reference the response to AG-DR-1-4. Identify the means of transport for the MEL product that DEK utilizes. Explain whether any alternative means of transport exist, and if so, whether DEK explored those options.

- a. Provide all studies and analyses DEK made that analyzed these transport costs.

RESPONSE:

Duke Energy Kentucky utilizes river barge transportation to deliver the MEL product to East Bend Station. This is the only practical way to deliver lime, coal, or in the future, limestone to East Bend.

Trucking materials to East Bend could be an option in emergent situations but is not practical for on-going deliveries given the significant number of trucks needed to maintain on-site inventory.

- a. See SIERRA-DR-01-044 Confidential Attachment for historic lime transportation costs.

PERSON RESPONSIBLE: John A. Verderame

Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024

AG-DR-02-002

REQUEST:

Reference the direct testimony of Chad M. Donner at p. 8.

- a. Provide the percentage of projected savings in variable operating and maintenance that DEK believes the Limestone Conversion Project would produce.
- b. Provide the percentage of projected savings in fuel cost that DEK believes the Limestone Conversion Project would produce.
- c. Provide any projections of additional off-system sales that DEK believes the Limestone Conversion Project would produce. Provide these figures both in terms of MWh, and the projected percentage increase of off-system sales.
- d. Explain whether DEK foresees any changes to its off-system sales clause in the event it is granted the requested CPCN.

RESPONSE:

- a. The projected savings in reagent related variable operating and maintenance costs is approximately 68%. Please see STAFF-DR-021 Confidential Attachment DEK Cost Breakdowns tab.
- b. The projected savings in fuel cost is approximately 5%. Please see STAFF-DR-021 Confidential Attachment Native Fuel Cost Impact tab.
- c. As discussed in witness Verderame's direct testimony page 17, lines 18 through 19, modeled off-system sales in the 2027 through 2029 period see a net increase of 686 GWhs. This is approximately a 44% increase in modeled off-system sales.

- d. No, the Company does not foresee any changes to its off-system sales clause if granted the requested CPCN.

PERSON RESPONSIBLE: Ryan Trogstad – a., b., c.
John Swez – d.

Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024

AG-DR-02-003

REQUEST:

Explain whether the Limestone Conversion Project will or could enhance the control of East Bend's sulfur dioxide (SO₂) emissions beyond the current average of 97%. If so, explain whether the additional SO₂ emissions reduction could benefit ratepayers, and if so, how and to what extent. Include in your response a discussion of whether the proposed project would allow the Company to either retain or sell any additional SO₂ allowances.

RESPONSE:

In 2023, East Bend emitted approximately 1,563 tons of SO₂. The market price for Acid Rain Program SO₂ allowances is on the order of about \$0.50 per ton. CSAPR annual SO₂ allowances are on the order of \$2.00 to \$5.00 per ton. Even if all SO₂ emissions were eliminated, the resulting allowances would not produce significant revenue, and that revenue would be far less than the required cost to reduce those emissions. Allowance prices are not expected to increase sufficiently to change this calculus.

PERSON RESPONSIBLE: J. Michael Geers

Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024

AG-DR-02-004

REQUEST:

Reference the application at p. 4, wherein DEK states that the MEL technology

“ . . . is unique to the 1980's vintage WFGD and is the only one of its kind within the Duke Energy fleet of coal-fired generation.”

- a. Explain whether any unit in Duke Energy’s coal-fired fleet has, at any prior time ever utilized a 1980’s vintage WFGD. If so, explain whether Duke Energy retains any of the experience-based performance data arising from the operation of any such unit.

RESPONSE:

Yes, Duke Energy Kentucky operates other 1980’s vintage wet flue gas desulfurization (WFGD) scrubbers, most of which utilize limestone as the reagent and therefore any experience or operating data would not be applicable to East Bend. East Bend has the only Magnesium Enhanced Lime (MEL) reagent WFGD in the fleet. Duke’s experience with MEL reagent WFGD is limited to East Bend.

PERSON RESPONSIBLE: Chad Donner

Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024

AG-DR-02-005

REQUEST:

Is dolomite the primary agent needed to reduce SO₂ emissions? If so, explain whether any other coal-fired plants utilizing WFGD technology utilize other means of injecting / utilizing dolomite for this purpose.

RESPONSE:

Dolomite is an anhydrous carbonate mineral that contains both calcium and magnesium. The MEL currently used by East Bend is produced from a mineral deposit that contains both calcium and magnesium, although calcium is far more abundant. Other sources of lime do not have the higher magnesium content needed for MEL WFGD's. Both lime and limestone based WFGD systems chemically combine the calcium in their reagents with sulfur oxides that are removed from the flue gas. A MEL based WFGD is a two-phase regenerative process where a nominal 7-8% of magnesium produces liquid phase alkalinity that results in a highly reactive reaction that captures the SO₂. The resulting magnesium sulfite then regenerates in a slower reaction transferring sulfur oxides to the calcium in the reaction tank regenerating the magnesium for more SO₂ removal. This results in a highly efficient WFGD system that enabled the use of smaller WFGD component during initial construction reducing capital cost. With potentially losing the main source of naturally occurring MEL, East Bend considered other options to replace that magnesium by means of adding dolomite to standard quicklime. Ultimately it was determined that upgrading the WFGD system to operate without the need for the magnesium content was the best choice.

PERSON RESPONSIBLE: J. Michael Geers

Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024

AG-DR-02-006

REQUEST:

Reference the application at paragraph 15. Identify DEK's "fuel sourcing organization," and explain the services they provide for DEK.

RESPONSE:

Duke Energy Kentucky's "fuel sourcing organization" generally refers to the Fuels and Systems Optimization (FSO) Coal and Reagent Procurement and Logistics team who are responsible for all aspects of the procurement of coal and reagent commodities in the five regulated jurisdictions (Kentucky, Indiana, Florida, North Carolina, and South Carolina) that encompass Duke Energy regulated electric utilities' collective footprint. Specifically for Duke Energy Kentucky, the team is responsible for the Company's coal and reagent procurement activities, including the evaluation, negotiation, and oversight of supply and delivery contracts to ensure reliable supply at the lowest cost reasonably possible.

In the context of the Limestone CPCN Application the term "fuel sourcing organization" expanded to include various teams across the organization that provided technical expertise to evaluate and develop the Limestone Conversion project. These teams included Environmental and Regulatory Engineering, Midwest Project Engineering, Environmental Services and FSO Fuel Analytics.

PERSON RESPONSIBLE: John A. Verderame

**Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024**

AG-DR-02-007

REQUEST:

Confirm that the proposed project will not: (i) increase East Bend's heat rate; and (ii) will not cause any unit derates.

RESPONSE:

Confirmed. The project will not increase the unit heat rate and will not result in any unit derates.

PERSON RESPONSIBLE: Chad Donner

Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024

AG-DR-02-008

REQUEST:

Reference the application at paragraph 19. Explain whether the proposed project will enhance the overall reliability of the WFGD. If so: (i) provide all relevant projections; and (ii) explain whether these enhancements were included in the overall cost-benefit analysis.

RESPONSE:

It was assumed that the overall reliability would be maintained with the project and items referenced in paragraph 19 are the required scope to enable the change to limestone. No changes in reliability assumptions were included in the cost-benefit analysis and was primarily focused on the cost/benefits of switching to the limestone reagent.

PERSON RESPONSIBLE: Chad Donner

Duke Energy Kentucky
Case No. 2024-00152
AG Second Set of Data Requests
Date Received: September 20, 2024

AG-DR-02-009

REQUEST:

Explain whether the Company has identified any local sources of the type of limestone that the project would require. Include in your response: (i) how the limestone would be shipped, and whether multiple types of shipment (e.g., barge, rail) could be used if needed; and (ii) whether the Company will issue an RFP for the limestone supply, and if so, whether multiple suppliers could be selected.

RESPONSE:

There are potential sources with access to the Ohio River in reasonable proximity that could potentially supply limestone to East Bend.

- i. The only practical way to deliver limestone and coal to East Bend is by barge.
- ii. The Company would plan to issue an RFP for the limestone supply. Multiple sources could be selected to ensure reliable supply to East Bend.

PERSON RESPONSIBLE: John A. Verderame

REQUEST:

Reference the responses to PSC-DR-1-19, and PSC-DR-1-23 generally.

- a. Explain what percentage of CCR materials DEK beneficially reuses.
- b. Explain whether DEK is aware that many utilities with coal-fired plants are receiving sharply increasing revenues in the beneficial reuse market. For example, in a public announcement, LG&E-KU disclosed that from 2016-2022, those companies earned \$42 million from beneficial reuse sales, which was returned to ratepayers.¹
- c. If DEK does not engage in sale of its gypsum, and other beneficial reuse materials including coal combustion residuals and materials resulting from the WFGD process, then: (i) provide a full discussion on why not; and (ii) provide an estimate on how much revenue the Company could earn by engaging in beneficial reuse sales.

RESPONSE:

- a. Currently none of the CCR materials are beneficially reused. Please refer to response provided for STAFF-DR-02-002.
- b. Yes, Duke Energy Kentucky is aware of other company's practices; however, beneficial reuse of CCR materials is not applicable to East Bend. Please refer to STAFF-DR-02-002.
- c. Not applicable. Please refer to STAFF-DR-02-002.

PERSON RESPONSIBLE: J. Michael Geers