

**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of:

The Electronic Application of Duke Energy )  
Kentucky, Inc. for a Certificate of Public )  
Convenience and Necessity to Convert its Wet Flue ) Case No. 2024-00152  
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 )

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**DUKE ENERGY KENTUCKY, INC.’S MOTION FOR LEAVE TO FILE  
SUPPLEMENTAL DIRECT TESTIMONY**

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Duke Energy Kentucky, Inc. (Duke Energy Kentucky or Company), by and through counsel, and for its Motion for Leave to File Supplemental Direct Testimony in the above-referenced matter, hereby states as follows:

1. On July 25, 2024, Duke Energy Kentucky filed its Application in this matter. The Company’s Application requests that the Commission issue 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 (Limestone Conversion Project).

2. In conjunction with and in support of its Application, Duke Energy Kentucky filed, *inter alia*, the Direct Testimony of John Verderame and Chad Donner. Mr. Verderame serves as Vice President, Fuels & Systems Optimization for Duke Energy Corporation. Within his Direct Testimony, Mr. Verderame discusses a number of items, including, but not limited to, the contract

negotiations for the Company's magnesium enhanced lime (MEL) supply at its East Bend Generating Station. Further, Mr. Donner serves as a Principal Engineer for the Company and within his Direct Testimony, Mr. Donner discusses a number of items, including, but not limited to, the impacts to the limestone conversion cost savings.

3. Since the filing of its Application in September 2024, the current MEL supplier became aware of the Company's Application in this case and approached the Company, now willing to discuss a contract longer than the current two-year agreement with revised and more competitive pricing. Following that solicitation, the Company began discussions with the supplier to determine the potential for a longer-term MEL supply and whether the supplier could address the Company's concerns regarding price and scarcity.

4. The result of these discussions is a proposal for a new contract, which albeit less expensive than the current pricing, does not fully address the concerns identified by the Company in its Application and Direct Testimony.

5. So that the record of this case may accurately reflect the developments herein discussed, Duke Energy Kentucky requests that it be permitted to file the sworn Confidential Supplemental Direct Testimony of Mr. Verderame and Mr. Donner, the same being attached hereto as Exhibits A and B. Both Confidential Supplemental Direct Testimonies discuss Duke Energy Kentucky's decision to still seek its CPCN, and specifically addresses how the Limestone Conversion Project may be affected by the ongoing MEL-supply negotiations. Importantly, and as elucidated in Mr. Verderame's Confidential Supplemental Direct Testimony, Duke Energy Kentucky believes that a potential MEL supply agreement does not eliminate the need for the CPCN and the financial benefit from a lower priced MEL supply would be both minimal and likely temporary. For this reason, the Company considers the present filing primarily informational and

relevant to the Commission's consideration of the merits of the CPCN insofar as the Company's evaluation of alternatives but does not believe that the new information alters the need for the project in any meaningful way.

6. In addition to the aforementioned testimonies, the Company is also supplementing the following responses and accompanying attachments to data requests previously provided, which reflect necessary updates reflecting this newly obtained information including discussion and analysis of the revised MEL supply pricing from these recent negotiations:

- a. Attorney General First Set: 4, 5, 6, 8, 11, and 12;
- b. Attorney General Second Set: 2;
- c. Sierra Club First Set: 7, 25, 40, 47, 48, 49, and 65;
- d. Staff First Set: 2, 3, 5, 9, 21, and 22;
- e. Staff Second Set: 1, 8, and 9.

WHEREFORE, on the basis of the foregoing, Duke Energy Kentucky, Inc. respectfully requests that the Commission enter an Order permitting the attached Confidential Supplemental Direct Testimonies to be filed in the record of this case.

Respectfully submitted,

DUKE ENERGY KENTUCKY, INC.

/s/ Rocco O. D'Ascenzo  
Rocco O. D'Ascenzo (92796)  
Deputy General Counsel  
Duke Energy Business Services LLC  
139 East Fourth Street, 1303-Main  
Cincinnati, Ohio 45201-0960  
Phone: (513) 287-4320  
Fax: (513) 287-4385  
E-mail: rocco.d'ascenzo@duke-energy.com

**CERTIFICATE OF SERVICE**

This is to certify that the foregoing electronic filing is a true and accurate copy of the document being filed in paper medium; that the electronic filing was transmitted to the Commission on November 1, 2024; and that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding.

*/s/Rocco D'Ascenzo*  
\_\_\_\_\_  
Rocco D'Ascenzo

**COMMONWEALTH OF KENTUCKY**

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Mechanism )

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**PUBLIC SUPPLEMENTAL DIRECT TESTIMONY OF JOHN**

**A. VERDERAME**

**ON BEHALF OF**

**DUKE ENERGY KENTUCKY, INC.**

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November 1, 2024

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**I. INTRODUCTION AND PURPOSE**

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

2 A. My name is John A. Verderame, and my business address is 525 South Tryon  
3 Street, Charlotte, North Carolina 28202.

4 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5 A. I am employed by Duke Energy Progress, LLC (Duke Energy Progress), as Vice  
6 President, Fuels & Systems Optimization for Duke Energy Corporation (Duke  
7 Energy). Duke Energy Progress is a public utility that is an affiliate of Duke Energy  
8 Ohio, Inc. (Duke Energy Ohio or the Company), both of which are subsidiaries of  
9 Duke Energy Corporation (Duke Energy).

10 **Q. ARE YOU THE SAME JOHN A. VERDERAME THAT FILED DIRECT**  
11 **TESTIMONY IN THIS PROCEEDING?**

12 A. Yes.

13 **Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL DIRECT**  
14 **TESTIMONY IN THIS PROCEEDINGS?**

15 A. The purpose of my supplemental direct testimony is to provide a status update on  
16 the magnesium enhanced lime (MEL) supply contract negotiations since the filing  
17 of this Application in July 2024.

**II. UPDATE ON MEL CONTRACT NEGOTIATIONS SINCE FILING THIS APPLICATION**

1 **Q. WHAT IS THE STATUS OF THE COMPANY’S CURRENT LIME**  
2 **REAGENT CONTRACT?**

3 A. The Company’s current contract was executed through a public request for proposal  
4 (RFP) issued in 2023 for the MEL product. As I explained in my Direct Testimony,  
5 the Company received [REDACTED] bids for the requested and complying product. However,  
6 [REDACTED] The  
7 Company reached an interim agreement, but at more than double the price of the  
8 prior contract. [REDACTED]

9 [REDACTED]  
10 [REDACTED] The supplier cited market prices and demand from other  
11 industries, including steel production and lithium battery production, as the primary  
12 driver for its cost increases.

13 **Q. DID THE COMPANY EXPLORE A LONG-TERM CONTRACT WITH**  
14 **THE MEL SUPPLIER?**

15 A. Yes. As I explained in my Direct Testimony, at the time of the Company’s filing of  
16 this Application, the MEL supplier was unwilling to enter into a long-term contract  
17 due to anticipated future non-utility demand resulting in upward pressure on future  
18 pricing. Following the issuance of the RFP that resulted in the current supply  
19 contract, the Company attempted to negotiate a longer-term supply contract, at  
20 lengths greater than two-years with the supplier. As I previously testified, the  
21 supplier was unwilling to engage in these discussions.



1           However, as I explain below, recently, after the Company filed its  
2 Application in this proceeding, and after it became aware that the Company was  
3 seeking to convert East Bend's WFGD to a Limestone-based handling system, the  
4 current MEL supplier approached the Company to discuss the potential for a  
5 longer-term contract at more favorable pricing.

6 **Q. PLEASE FURTHER EXPLAIN THE SUBSEQUENT DISCUSSIONS WITH**  
7 **THE SUPPLIER.**

8 A. Sometime in early September 2024, the current MEL supplier became aware of the  
9 Company's CPCN application to convert to a limestone-based reagent handling  
10 process. The supplier contacted Duke Energy Kentucky and indicated that it was  
11 now willing to consider the possibility of a longer-term MEL supply contract and  
12 potentially more competitive pricing options. As a prudent operator, it was in the  
13 best interest of customers to have this discussion. Between mid-September into  
14 October, my team met with the supplier to discuss potential contract terms.

15 **Q. WHY IS THIS SUPPLIER NOW INTERESTED IN A CONTRACT TERM**  
16 **LONGER THAN TWO YEARS?**

17 A. As I previously stated, Duke Energy Kentucky made continuous attempts to  
18 negotiate a contract longer than two years and at more competitive pricing  
19 following its last RFP. Unfortunately, [REDACTED]  
20 [REDACTED] and a need to maintain the MEL supply  
21 for East Bend's continued operation. It was only after the MEL supplier learned of  
22 the Company's Application to convert to a Limestone based WFGD process, and  
23 the possibility of more suppliers, greater competition, and the loss of a buyer for its

1 existing MEL product that this supplier became willing to consider alternatives  
2 terms and pricing.

3 **Q. WHAT IS THE CURRENT CONTRACT OFFER?**

4 A. [REDACTED]  
5 [REDACTED]  
6 [REDACTED]  
7 [REDACTED]  
8 [REDACTED]  
9 [REDACTED]

10 **Q. DO YOU BELIEVE THIS OFFER IS A REASONABLE ALTERNATIVE TO**  
11 **THE CPCN?**

12 A. No. Duke Energy Kentucky recognizes the value of, and would execute, a lower  
13 cost contract greater than 24 months in length if the Commission were to deny the  
14 Application. However, the Company believes that a [REDACTED] agreement may not  
15 adequately protect customers from the risks that prompted the CPCN filing. This  
16 [REDACTED] MEL contract does not negate the continued fuel security risk stemming  
17 from the scarcity of the MEL product required to operate the WFGD. Additionally,  
18 customers remain at risk for future, and potentially significant price escalations due  
19 to a potential lack of a competitive market when the agreement comes up for  
20 renewal. This lack of availability may be further exacerbated by pending  
21 environmental regulations affecting lime manufacturing plants.<sup>1</sup> If this supplier  
22 were to cease operations for any reason, and no alternative MEL supplies are

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<sup>1</sup> Lime Manufacturing Plants National Emission Standards for Hazardous Air Pollutants (NESHAP) | US EPA

1 available, East Bend is still at risk for not being able to operate in compliance with  
2 existing environmental regulations and would be forced to shut down. This would  
3 mean the Company would have to rely upon the PJM market to procure energy and  
4 capacity to serve its customers until it could acquire or construct replacement  
5 generation.

6 **Q. WHY IS IT NOT REASONABLE FOR THE COMPANY TO ENTER INTO**  
7 **THE PROPOSED MEL AGREEMENT AND FILE ITS CPCN TO**  
8 **CONVERT TO LIMESTONE WFGD AT A LATER DATE IF**  
9 **NECESSARY?**

10 A. This delay is not a reasonable option for several reasons. First, as discussed in  
11 witness Donner's supplemental direct testimony, should the CPCN be denied there  
12 are new MATs regulations effective July 2027 that would need to be addressed for  
13 East Bend to remain operational that would otherwise be provided as co-benefits of  
14 the limestone conversion. Second, one must consider the age of East Bend and its  
15 likely remaining operational life. Based upon current environmental regulations,  
16 and as discussed in the Company's IRP, the most recent update to the Clean Air  
17 Act dictates that East Bend must retire or convert to natural gas co-firing (dual fuel)  
18 or full natural gas burning by 2030. And under a dual fuel (coal and natural gas  
19 cofiring) scenario, East Bend would still have to retire by the end of 2038. Finally,  
20 the cost of the Limestone Conversion is likely to increase in the future due to supply  
21 chain tightening, construction costs and simple inflation. These three factors,  
22 additional new environmental regulations, approaching unit end of life and  
23 construction cost increases would make a Limestone Conversion a potentially more  
24 costly strategy for customers five years from now. The rate impact to customers

1 five years from now could be significant as there would be fewer years over which  
2 to spread the cost of the project for customers.

3 **Q. HAS THE COMPANY UPDATED ITS ANALYSIS OF ALTERNATIVE**  
4 **COMPLIANCE OPTIONS WITH THIS NEW CONTRACT**  
5 **INFORMATION? PLEASE EXPLAIN.**

6 A. Yes. The Company reran its stochastic production cost modeling to capture the  
7 projected impacts of the proposed reduction in MEL commodity costs on dispatch  
8 costs, native fuel costs, capacity factor and off system sales. Despite the tightened  
9 spread between the lime and limestone cases, customers continue to see a net  
10 decrease of \$10.56/MWh in forecasted dispatch costs in the 2027 through 2029  
11 operating period when operating on limestone. This now represents a 25% decrease  
12 from the projected [REDACTED] cost in the same period when operating on the  
13 MEL product under the newly proposed price. Stochastic production cost modeling  
14 shows the net reduction in variable operational costs to be approximately 73% or  
15 ~\$9.95/MWh in reduced dispatch cost. The reduction in dispatch costs continues to  
16 result in increased economic dispatch of East Bend into the PJM market and  
17 reduced reliance on PJM resources to serve customer demand.

18 Comparisons of production cost modeling of the two scenarios continue to  
19 show on average a 17% increase in capacity factor in the limestone scenario for the  
20 2027 through 2029 period, which translates to total average additional generation  
21 in the limestone case of ~1000 GWh over the three-year period. The cost to serve  
22 the Duke Energy Kentucky customer load continues to be reduced by an annual  
23 average amount of \$3.1 million per year in fuel and purchase power, and \$11.6  
24 million in reagent costs from 2027 through 2029, with an additional approximate

1 \$500 thousand of annual non-native off-system sales margin in the same period, for  
2 a total annual savings of \$15.2 million per year. The system average fuel rate  
3 (exclusive of reagents) in the 2027 through 2029 period is projected to decline  
4 \$0.75/MWh annually, primarily due to the continued reduction in PJM purchase  
5 volumes.

6 **Q. WHAT IS THE IMPACT TO THE COMPANY'S OFF SYSTEM SALES**  
7 **MECHANISM, RIDER PSM?**

8 A. In the Company's updated analysis, the increase in modeled off system sales in the  
9 2027 through 2029 period only see a net increase of 309 GWhs. This results in net  
10 revenue from off system sales flattening to an average of approximately \$500  
11 thousand per year.

12 **Q. DOES THE ANALYSIS INDICATE THAT THE POSSIBILITY OF A**  
13 **LOWER COST LONGER-TERM CONTRACT WILL OBLIATE THE**  
14 **NEED FOR THIS CPCN?**

15 A. No, it does not. While this proposed contract is more favorable than the previous  
16 terms presented by the supplier, the Company still does not believe it represents the  
17 best interests of customers over the long-term. As previously stated, the purpose of  
18 this Application is to address the risks of price escalations impacting the economics  
19 of East Bend and the risk of a [REDACTED]. Even with a longer-term  
20 contract, there remains the same risks of price uncertainty once the contract term  
21 expires and the [REDACTED] of lime that the Company's application seeks to  
22 mitigate. Additionally, should the Company delay the conversion, the costs of  
23 converting the unit to limestone is likely to increase making the project more  
24 expensive, and is contingent on the supplier continuing to operate or that alternative

1 sources become available. The Company continues to believe that the Limestone  
2 conversion remains in the best interests of customers and should be approved.

### **III. CONCLUSION**

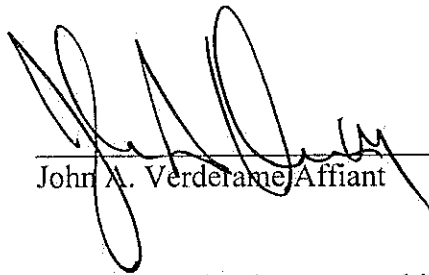
3 **Q. DOES THIS CONCLUDE YOUR PRE-FILED SUPPLEMENTAL DIRECT**  
4 **TESTIMONY?**

5 A. Yes.

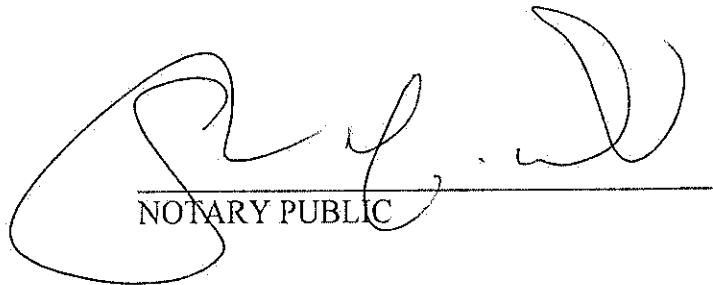
VERIFICATION

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

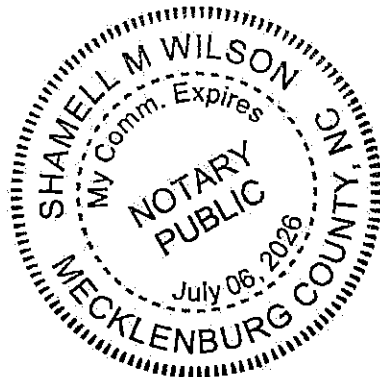
The undersigned, John A. Verderame VP Fuels and Systems Optimization, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing supplemental testimony and that it is true and correct to the best of his knowledge, information and belief.

  
\_\_\_\_\_  
John A. Verderame Affiant

Subscribed and sworn to before me by John A. Verderame on this 25<sup>th</sup> day of October, 2024.

  
\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires:



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Mechanism	)	

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**PUBLIC SUPPLEMENTAL DIRECT TESTIMONY OF CHAD**

**M. DONNER**

**ON BEHALF OF**

**DUKE ENERGY KENTUCKY, INC.**

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November 1, 2024



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Attachment:

Supplemental Attachment CMD-1

**I. INTRODUCTION**

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

2 A. My name is Chad M. Donner, and my business address is 139 E. 4th Street,  
3 Cincinnati, Ohio.

4 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5 A. I am employed by Duke Energy Business Services LLC (DEBS) as Principal  
6 Engineer. DEBS provides various services to Duke Energy Kentucky, Inc., (Duke  
7 Energy Kentucky or the Company) and other affiliated companies of Duke Energy  
8 Corporation (Duke Energy Corp.).

9 **Q. ARE YOU THE SAME CHAD M. DONNER THAT FILED DIRECT**  
10 **TESTIMONY IN THIS PROCEEDING?**

11 A. Yes.

12 **Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL DIRECT**  
13 **TESTIMONY IN THIS PROCEEDING?**

14 A. The purpose of my supplemental direct testimony is to provide a status update on  
15 the impacts to the Limestone Conversion cost savings from the proposed lower cost  
16 magnesium enhanced lime (MEL) supply contract negotiations, discussed by Mr.  
17 Verderame in his supplemental direct testimony. In addition, I provide an update  
18 on emergent environmental mercury air toxics standards (MATs) regulations that  
19 the Limestone Conversion Project provides co-benefits for compliance and timing.

**II. DISCUSSION**

20 **Q. SINCE FILING THE CPCN APPLICATION HAS THE COMPANY RECEIVED**  
21 **ANY ADDITIONAL LIME SUPPLY PROPOSALS?**

1 A. Yes, in early September 2024, the current MEL supplier became aware of the  
 2 Company's Application for a certificate of public convenience and necessity  
 3 (CPCN) to convert to a limestone-based reagent handling process. As explained by  
 4 Mr. Verderame in his Supplemental Direct Testimony, the MEL supplier, contacted  
 5 Duke Energy Kentucky and indicated that it was now willing to consider the  
 6 possibility of a longer-term MEL supply contract and potentially more competitive  
 7 pricing options.

8 **Q. HAS THE COMPANY UPDATED THE LIMESTONE CONVERSION ANALYSIS**  
 9 **BASED UPON THE NEWLY PROPOSED CONTRACT INFORMATION?**

10 A. Yes. Based upon these discussions, the Company did update its analysis to reflect the  
 11 proposed lower MEL commodity cost at a [REDACTED].  
 12 Despite the tightened commodity price spread between the lime and limestone cases, the  
 13 Limestone Conversion Project strategy would continue to reduce variable operating and  
 14 maintenance (VOM) on the order of [REDACTED] and provide an estimated benefit of  
 15 [REDACTED] savings in fuel cost and additional off system sales revenues. Shown below  
 16 are the cost differences between the proposed quicklime and limestone reagents, inclusive  
 17 of transportation.

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 (RFP)	2024 (RFP)	2025	2026	2027	2028	2029
	Current Contract Pricing										Future Projections					
Lime Cost (\$/TN)	84.4	87.27	90.24	93.31	97.4	102.4	117.9	123.98	130.04	[REDACTED]						
Limestone Cost (\$/TN)	11.96	9.89	9.4	10.15	11.21	12.92	15.21	14.27	15.37	[REDACTED]						
Difference (\$/TN)	72.44	77.38	80.84	83.16	86.19	89.48	102.69	109.71	114.67	[REDACTED]						

18 **Q. HOW WILL THE LIMESTONE CONVERSION CHANGE THE OPERATIONS**  
 19 **OF EAST BEND AND/OR THE REAGENTS IT CONSUMES?**

20 A. As I previously stated, currently the East Bend WFGD operates using MEL for SO<sub>2</sub>  
 21 removal and quicklime for wet flue gas desulfurization (WFGD) byproduct waste

1 stabilization. Converting to limestone will not materially change the operation of the  
2 WFGD system, however, two additional reagents will be required for future LSIO  
3 operation. Limestone will replace MEL for SO<sub>2</sub> absorption in addition to a new PH buffer  
4 additive to help with the dissolution of limestone and SO<sub>2</sub> removal performance. The  
5 WFGD byproduct waste stabilization process will remain unchanged and will continue to  
6 use quicklime for fixation albeit at a reduced rate due to the improved dewatering  
7 characteristics of the LSIO waste sludge. Additionally, the Limestone Conversion Project  
8 allows the Company to meet new MATs compliance regulations without any additional  
9 project scope. Given the MATs compliance date of July 2027, timely completion of the  
10 Limestone Conversion Project is essential to incurring the synergies between Project  
11 benefits and MATs compliance. Based on inherent process design differences the current  
12 MEL process does not support MATs compliance. The Company is evaluating potential  
13 alternatives to meet MATs compliance should the Company's CPCN Application be  
14 denied.

15 **Q. DOES THE COMPANY HAVE ANY ESTIMATES ON AN APPROXIMATE**  
16 **COST OF A STAND-ALONE WFGD SYSTEM UPDATE TO COMPLY**  
17 **WITH MATS IF THE LIMESTONE CONVERSTION PROJECT CPCN IS**  
18 **DENIED?**

19 A. As I previously stated, the Company is evaluating such alternatives and because the  
20 Limestone Conversion incorporated a compliance pathway, a separate project has  
21 not yet gone through the engineering scope process. Due to inherent design  
22 characteristics for a MEL WFGD, many of the same upgrades for conversion to  
23 limestone also provide a fine particulate capture and carryover benefit mainly  
24 related to the increase in liquid to gas ratio and flue gas contact coverage. That said,  
25 based upon the pending CPCN, which does include component upgrade co-benefits

1 that would meet the new MATs standard, a rough estimate can be extrapolated. By  
2 reviewing the current project scope included in my Direct Testimony, I determined  
3 the engineering, procurement and construction (EPC) Labor portion of the WFGD  
4 absorber area upgrades only and calculated the percentage of the costs. I then  
5 determined the EPC Material portion of the FGD absorber area upgrades only and  
6 calculated the percentage of the cost. I calculated the total Duke Energy Kentucky  
7 performed subcontract labor & material associated with the FGD absorber area only  
8 upgrades. I then ratioed all of the remaining values by the appropriate labor or  
9 material percentages to determine the total estimated project cost for the absorber  
10 area upgrades that would enable the current WFGD to be MATs compliant. The  
11 rough analysis shows that the project costs for the WFGD absorber only upgrades  
12 in the CPCN equate to approximately \$25-30 Million of the total Limestone  
13 Conversion project scope. While not perfect, this does provide a very high-level  
14 assumption for potential costs of a stand-alone project. A copy of this analysis is  
15 included as Supplemental Attachment CMD-1

### **III. CONCLUSION**

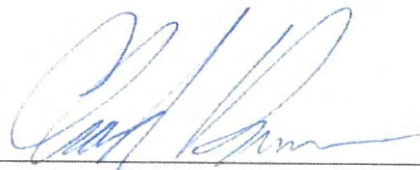
16 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

17 **A. Yes.**

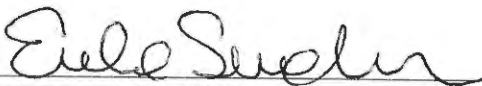
VERIFICATION

STATE OF OHIO                    )  
  )  
COUNTY OF HAMILTON        )        SS:

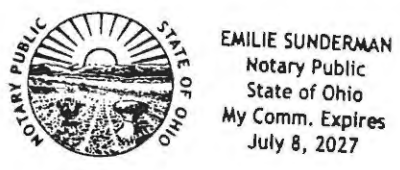
The undersigned, Chad Donner, Principal Engineer, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing supplemental testimony and that the therein are true and correct to the best of his knowledge, information and belief.

  
\_\_\_\_\_  
Chad Donner, Affiant

Subscribed and sworn to before me by Chad Donner, on this 24<sup>th</sup> day of October, 2024.

  
\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires: July 8, 2027



EB022450-1 East Bend, Limestone Conversion		
Estimate Charge Type (Power Plan)	Description	Total
AFUDC Debt (99970)	Power Plan - calculated labor loadings	\$ -
AFUDC Equity (99971)	Power Plan - calculated labor loadings	\$ -
Company Labor - Exempt (11000)	PM, PE, Env-SME-Plant Support (2024 thru 2027)	\$ 3,675,000
Company Labor - Union (11002)	Plant Support, Startup, Training (2026 & 2027)	\$ 438,125
Company Material (21000)	Storeroom Supplies to Support Project, 2025 - 2027 (ie: valves, instr, flex conduit, piping & tubing fittings, ss tubing, elect matls, threaded rod, plugs, fire blanket, fire est, safety supplies)	\$ 375,000
Contract Labor (69000)	Engineering (AECOM), Scheduler, Elec Engr, Mech Engr, Ctls Engr - 2024 thru 2027	\$ 7,250,000
Contract Labor (69000)	Contract Labor-AECOM Est (Demo, Civil, Concrete, Architectural, Painting & Coating, Mech Eqpt, Piping-Valves-Supports, Insulation, Elec Eqpt, Raceway-Cable-Conduit, Cable, Control & Instr)	\$ 34,900,000
Contract Material (31000)	Contract Material-AECOM Est (Civil, Concrete, Architectural, Painting & Coating, Piping, Insulation, Elect Eqpt, Raceway-Cable Tray-Conduit, Cable, Control & Instr, Escalation)	\$ 30,160,000
Labor Loadings - Exempt (18001)	Power Plan - calculated labor loadings	\$ 2,590,000
Labor Loadings - Union (18001)	Power Plan - calculated labor loadings	\$ 227,500
Labor Loadings (18000)	Power Plan - calculated labor loadings	\$ 120
Contract Labor (69000)	Subcontract - Duke Managed Scope	\$ 6,745,000
Contract Labor (69000)	Subcontract - Owners Engineering	\$ 4,125,000
Construction Oversight	Construction Indirects, IM / Construction Management	\$ 8,608,000
Contingency	Contingency - Duke	\$ 18,200,000
Overhead (78000)	Power Plan - calculated overhead	\$ 5,456,000
Stores Loading Allocation (28002)	Power Plan - calculated overhead	\$ 72,000
Retirements - Overhead (78000)	Power Plan - calculated overhead	\$ (2,231)
Retirements	Demo Mag Lime Prep Eq.- Labor Cost + Constr Indirect & Contingency	\$ 2,750,000
Retirements	Demo Agitators/Other- Subcontract Cost	\$ 325,000
Retirements - Salvage (99416)	Demo Mag Lime Equipment - Scrap Value	\$ (81,969)
<b>Total Cost =</b>		<b>\$ 125,812,546</b>

MATs PortionTotal

EPC Contract Labor - AECOM Estimate	
\$ 3,850,000	Material Handling
\$ 12,250,000	Reagent Prep
\$ 3,950,000	FGD Area
\$ 975,000	Dewatering Area
\$ 9,750,000	Fee and profit
\$ 4,125,000	Construction Management
<b>\$ 34,900,000</b>	<b>Total</b>

EPC Contract Material - AECOM Estimate	
\$ 3,810,000	Material Handling
\$ 17,375,000	Reagent Prep
\$ 4,825,000	FGD Area
\$ 875,000	Dewatering Area
\$ 750,000	Misc. Freight
\$ 2,525,000	Misc Ductwork and piping
<b>\$ 30,160,000</b>	<b>Total</b>

Subcontract L&M - Estimate	
\$ 300,000	Civil Work
\$ 835,000	Concrete, Asphalt
\$ 325,000	Mech Eqpt
\$ 725,000	Piping
\$ 425,000	Insulation
\$ 450,000	Electrical Equipment
\$ 850,000	Tank Coatings
\$ 1,825,000	Absorber Recirc Pump Rebuilds
\$ 325,000	PA System for Reagent Prep Building
\$ 275,000	Fire Protection Systems
\$ 85,000	FRP Plan & Permitting
\$ 325,000	Escalation
<b>\$ 6,745,000</b>	<b>Total</b>

Owners Engineering Support	
\$ 1,825,000.00	Design Review
\$ 550,000.00	Quality Control
\$ 1,750,000.00	Construction Oversight
<b>\$ 4,125,000.00</b>	<b>Total</b>

Construction Indirects - Estimate	
\$ 467,000	Labor Supervision
\$ 1,525,000	Construction CM
\$ 652,000	Field Office Expenses
\$ 144,000	Pre-Operational Testing
\$ 175,000	Site Services
\$ 325,000	Temporary Facilities
\$ 150,000	Temporary Utilities
\$ 175,000	Mobilization/Demob
\$ 50,000	Legal Expenses/Claims
\$ 125,000	Small Tools & Consumables
\$ 755,000	Scaffolding
\$ 450,000	Site Improvements
\$ 75,000	General Liability Insurance
\$ 15,000	Constr. Equip. Mob/Demob.
\$ 225,000	Freight on Material
\$ 875,000	Quality Control
<b>\$ 6,183,000</b>	<b>Total</b>

Contingency on Estimates	
\$ 300,000	Contingency on Constr. Eqpt
\$ 6,200,000	Contingency on Material
\$ 8,500,000	Contingency on Labor & SO
\$ 1,500,000	Contingency on Subcontr.
\$ 300,000	Contingency on Process Eq.
\$ 1,400,000	Contingency on Indirects
<b>\$ 18,200,000</b>	<b>Total</b>

	EPC Contract Labor	EPC Contract Material
FGD Area	\$ 3,950,000	\$ 4,825,000
% of FGD Area Scope	0.188	0.179
FGD Fee & Profit, Misc Freight	\$ 1,831,747.92	\$ 134,601.08
FGD Const Mgmt, Misc Ductwork/Piping	\$ 774,970.27	\$ 453,156.96
<b>Total</b>	<b>\$ 6,556,718.19</b>	<b>\$ 5,412,758.04</b>

Subcontract L&M	
Absorber Recirc Pump Rebuilds	\$ 1,825,000
Mech Eqpt	\$ 325,000
Piping	\$ 725,000
Electrical Equipment	\$ 450,000
<b>Total</b>	<b>\$ 3,325,000</b>