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 Close the East Landfill at the East Bend Generating Station and for Approval to Amend its Environmental Compliance Plan for Recovery by Environmental Surcharge Mechanism	)	Case No. 2021-00290

DIRECT TESTIMONY OF

CECIL T. GURGANUS

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

September 9, 2021

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ATTACHMENT:

CTG-1 Summary of the Company's ECP

I. INTRODUCTION AND PURPOSE

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Cecil T. Gurganus and my business address is 1000 E. Main St., Plainfield, Indiana 46168.

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

A. I am employed by Duke Energy Business Services LLC (DEBS) as Vice President Midwest Generation. DEBS is a service company subsidiary of Duke Energy Corporation (Duke Energy) and a non-utility affiliate of Duke Energy Kentucky, Inc. (Duke Energy Kentucky or Company). DEBS provides services to Duke Energy and its subsidiaries, including Duke Energy Kentucky.

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUNDS.

A. I graduated from Cape Fear Community College in 1984 with an AAS degree in Engineering Technology. In 1995, I received a B.S. in Business from Shaw University. I have worked for Duke Energy and its predecessor companies for thirty-four years. My career began in the nuclear field working with reactor protection systems and turbine instrumentation, becoming certified as a Senior Reactor Operator. Over the years, I have had opportunities to work in a variety of roles, technologies, sites and areas. Those opportunities include Nuclear, Operations and Maintenance, Training, Projects, Coal, Hydro, Combined Cycle/Gas Turbines, Construction Start-ups, and Commissioning. I have held leadership roles of Operations, Maintenance, Training, Projects and Technical

groups at multiple generation sites, including Edwardsport, prior to my current role as Vice President of Midwest Generation.

Q. PLEASE SUMMARIZE YOUR DUTIES AS VICE PRESIDENT OF MIDWEST GENERATION.

A. In this role, I am responsible for providing safe, compliant and reliable operation of Duke Energy's Midwest generation fleet, which includes four coal, one syngas-fired combined cycle, one natural gas-fired combined cycle, one hydro, six simple cycle combustion turbines, and three solar sites serving Indiana and Kentucky, which provides over 8,200 MWs (summer) of generation. My primary responsibilities include managing the fleet within design parameters and implementing work practices and procedures that ensure safe and regulatorily compliant operation and maintenance activities.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I briefly describe Duke Energy Kentucky’s East Bend Generating Station (East Bend). I then describe and support the Company’s proposal in this proceeding to close the East Landfill at East Bend.

II. GENERAL DESCRIPTION OF DUKE ENERGY KENTUCKY'S EAST BEND GENERATING STATION

Q. PLEASE DESCRIBE THE EAST BEND GENERATING STATION.

A. East Bend is a 648-megawatt (MW) (nameplate rating) coal-fired base load unit located along the Ohio River in Boone County, Kentucky. East Bend was commissioned in 1981 and is owned solely by Duke Energy Kentucky. The net rating for East Bend is 600 MW representing the amount available for dispatch after supplying internal station processes. East Bend has river facilities to allow barge deliveries of coal and lime and was designed to burn eastern bituminous coal.

Q. PLEASE SUMMARIZE THE MAJOR POLLUTION CONTROL FEATURES AND ASH HANDLING PROCESSES OPERATING AT EAST BEND.

A. The major pollution control features include a high-efficiency hot side electrostatic precipitator, a lime-based flue gas desulfurization (FGD) system, and a selective catalytic reduction control (SCR) system designed to reduce nitrogen oxide (NO_x) emissions by 85 percent. The FGD system was upgraded in 2005 to increase the sulfur dioxide (SO_2) emissions removal to an average of 97 percent. The station's electrical output is directly connected to the Duke Energy Midwest (consisting of Kentucky and Ohio) 345 kilovolt (kV) transmission system.

Duke Energy Kentucky currently operates a landfill at East Bend (East Landfill) and has constructed cells 1 and 2 of the West Landfill, which was built to replace the East Landfill when it reaches disposal capacity and closes. These two landfills are used for the storage and disposal of waste products resulting

from the Company's FGD system and other CCR material. Duke Energy Kentucky has completed closure of the East Bend ash pond (Pond), and conversion of this Pond to a wastewater treatment system as was approved by the Commission previously.

III. DUKE ENERGY KENTUCKY'S PROPOSAL TO CLOSE THE EAST LANDFILL

Q. PLEASE BRIEFLY SUMMARIZE DUKE ENERGY KENTUCKY'S PROPOSAL IN THIS APPLICATION.

A. Duke Energy Kentucky is requesting a CPCN to commence closure construction activities for the East Landfill located at East Bend. The Company is also requesting Commission authorization to amend its Environmental Compliance Plan (ECP) so to recover the closure construction costs through Duke Energy Kentucky's Environmental Surcharge Mechanism (Rider ESM). Duke Energy Kentucky needs to begin construction activities to close the East Landfill, which is reaching capacity and will soon no longer receive generator waste. Landfill closure will take approximately 24 months. Duke Energy Kentucky is also requesting Commission authorization to amend its ECP to recover ongoing maintenance costs related to CCR handling at the West Landfill through Rider ESM.

Q. WHY DOES THE EAST LANDFILL NEED TO BE CLOSED AT THIS TIME?

A. The East Landfill is reaching its capacity and will no longer by able to receive waste byproducts. As this Commission is aware, the disposal of dry fly ash at East Bend is through a process where the fly ash is mixed with FGD solids and ash to

form the concrete-like substance, Poz-o-tec, which is ultimately disposed of in the onsite landfills. Now that the East Landfill is reaching its designed capacity, the Company must take necessary steps to properly close the landfill in full compliance with applicable environmental regulations. This closure is driven by a logistical and operational need to provide both sufficient space and capacity to properly dispose of generator waste material in accordance with applicable environmental regulations.

Q. PLEASE DESCRIBE THE WEST LANDFILL.

A. The West Landfill is permitted to receive various forms of generator waste, including, but not limited to, FGD waste, fly ash and bottom ash from a number of generating sources, including generating stations of other Kentucky utilities and Ohio-based electric generators. As the Company has fully explained in prior CPCN applications, the West Landfill is permitted to receive generator waste from sources other than East Bend to ensure that Duke Energy Kentucky has sufficient dry fly ash material available to make the Poz-o-tec byproduct necessary to operate the station's FGD handling process. This permitting to receive dry fly ash from multiple stations is a significant benefit to the Company as Duke Energy Kentucky, at times, does not produce sufficient quantities of fly ash necessary to make the Poz-o-tec recipe. As such, this newly constructed West Landfill provides the Company the ability to continue to dispose of its generator waste through the life of the station and also the ability to have sufficient levels of fly ash to properly make the Poz-o-tec byproduct.

East Bend has had access to an onsite landfill for generator waste since the station first went into operation. The presence of an onsite landfill has permitted Duke Energy Kentucky to manage its costs of environmental compliance while providing safe and reliable electric service by eliminating the need to transport and pay to dispose of the generator waste in commercial landfills.

Q. PLEASE DESCRIBE THE CONSTRUCTION PLAN FOR CLOSING THE EAST LANDFILL.

A. Mr. Deller more fully supports the Company's Construction Plan in his direct testimony. Closure construction activities will commence in mid-2022, with preconstruction work commencing upon approval in late 2021/ early 2022.

Q. PLEASE DESCRIBE THE ESTIMATED COST OF EAST LANDFILL CLOSURE.

A. As Mr. Deller more fully explains in his direct testimony, the estimated fully loaded costs for construction is approximately $22.6 million.

Q. WILL CLOSING THE EAST LANDFILL IMPACT THE OPERATION OF EAST BEND OR RESULT IN WASTEFUL DUPLICATION OF SERVICES?

A. No. Duke Energy Kentucky will continue to be able to provide safe, reliable and adequate service to its customers during and following the closure of the East Landfill. The presence of the West Landfill allows East Bend to continue to have access to a dedicated repository for its generator waste well into the future. The Company timed the construction of the West Landfill Cells 1 and 2 in advance of the East Landfill reaching capacity. The Company will continue to seek approval

of subsequent cell construction, as needed, and timed such that construction can commence well in advance of prior cells reaching capacity.

Q. IS THE NEED TO CLOSE THE EAST LANDFILL A RECENT DEVELOPMENT?

A. No. The Company discussed the eventual closure of the East Landfill in prior CPCN cases, including Case No. 2015-00089,[1] and Case No. 2018-00156.[2] In those cases, the Company discussed the dwindling capacity at the East Landfill and eventual closure as a driver for the need to construct the West Landfill.

Q. DO YOU BELIEVE IT IS IN THE PUBLIC INTEREST FOR DUKE ENERGY KENTUCKY TO CLOSE THE EAST LANDFILL?

A. Yes. The need to properly close the landfill is in response to environmental regulations. The closure of the landfill will allow for compliance with the CCR Final Rule and Kentucky rule 401 KAR 46 as well. In addition, the final cover proposed for this closure will also be used to remediate groundwater contamination and to help minimize the landfill's effect on groundwater in the future. This closure is protective of human health and the environment. Ms. Jett elaborates further in her testimony.

[1] *In the Matter of the Application of Duke Energy Kentucky, Inc., for a Declaratory Order that the Construction of a New Landfill constitutes an Ordinary Extension in the Usual Course of Business or, in the Alternative, for a Certificate of Public Convenience and Necessity,* Case No. 2015-00089 *(*Ky.P.S.C. Jul. 24, 2015).

[2] *In the Matter of the Application of Duke Energy Kentucky, Inc. for a Certificate of Public Convenience and Necessity to Construct Phase Two of its West Landfill and Approval to Amend its Environmental Compliance Plan for Recovery by Environmental Surcharge Mechanism,* Case No. 2018-00156 (Ky.P.S.C. Dec. 10, 2018).

IV. DUKE ENERGY KENTUCKY'S ENVIRONMENTAL COMPLIANCE PLAN

Q. PLEASE IDENTIFY THE PROJECTS CURRENTLY IN DUKE ENERGY KENTUCKY'S ENVIRONMENTAL COMPLIANCE PLAN AND RECOVERED THROUGH ITS ESM?

A. Attachment CTG-1 is a summary of the Company's ECP. The ECP consists of recovery of consumables (reagents and emission allowances) and five discrete projects as well as the amortization of the Company's East Bend ash pond closure/retirement obligation (ARO) accounting treatment as was previously approved in Case No. 2015-00187[3] and its process water system and redirection and pond repurposing strategy recently approved in Case No. 2016-00398.[4] The Company's Environmental Compliance Plan projects are as follows:

1. Project EB020290 Lined Retention Basin West;
2. Project EB020745 Lined Retention Basin East;
3. Project EB020298 East Bend SW/PW Reroute;
4. ARO amortization for Pond Closure;
5. Project EB021281 East Bend Landfill Cell 2; and
6. Emission allowance inventories and expenses and reagent expense.

Projects EB020290, EB0202745, and EB020298 (collectively the Ash Pond Projects) are interrelated and are for the closure and repurposing of the ash pond at East Bend and the associated water redirection necessary in response to the CCR Final Rule and the ELG Final Rule as well as various Kentucky

[3] *In the Matter of the Application of Duke Energy Kentucky, Inc., for an Order Approving the Establishment of a Regulatory Asset for the Liabilities Associated with Ash Pond Asset Retirement Obligations*, Case No 2015-00187 Ky.P.S.C. Dec. 15, 2015.

[4] *In the Matter of the Electronic Application of Duke Energy Kentucky, Inc., for a Certificate of Public Convenience and Necessity Authorizing the Company to Close the East Bend Generating Station Coal Ash Impoundment and for All Other Required Approvals and Relief*, Case No. 2016-00398 Ky.P.S.C. Jun. 6, 2017.

groundwater regulations. Project EB021281 is for the construction of Cell 2 of the West Landfill.

Q. WHAT RELIEF IS DUKE ENERGY KENTUCKY SEEKING IN THIS PROCEEDING FOR ITS ECP?

A. Duke Energy Kentucky is seeking authorization to amend its ECP to include the construction activities necessary for the closure of the East Landfill and the expenses associated with ongoing maintenance at the West Landfill accounted for as an ARO and to amend its ESM to allow recovery of the costs of construction. Duke Energy Kentucky Witness, Mr. Raiford explains the Company's Ash-related AROs. Duke Energy Kentucky Witness Mr. Czupik explains the expected impact of the changes to the ECP on customer bills.

Q. IS THE CLOSURE OF THE EAST LANDFILL AND THE COSTS FOR SUCH CONSTRUCTION AND THE ONGOING MAINTENANTANCE AT THE WEST LANDFILL NECESSARY FOR COMPLYING WITH THE FEDERAL CLEAN AIR ACT, AND THOSE FEDERAL STATE, OR LOCAL ENVIRONMENTAL REGULATIONS WHICH APPLY TO COAL COMBUSTION WASTES AND BY-PRODUCTS FROM FACILITIES UTILIZED FOR THE PRODUCTION OF ENERGY?

A. Yes, they are. Ms. Jett further explains this in her testimony.

V. CONCLUSION

Q. WAS ATTACHMENT CTG-1 PREPARED UNDER YOUR DIRECTION AND CONTROL?

A. Yes.

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

A. Yes.

VERIFICATION

STATE OF INDIANA)
) **SS:**
COUNTY OF HENDRICKS)

The undersigned, Cecil T. Gurganus, Vice President Midwest Generation, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing testimony and that it is true and correct to the best of his knowledge, information and belief.

Cecil T. Gurganus, Affiant

Subscribed and sworn to before me by Cecil T. Gurganus on this 31st day of August, 2021.

Bonnie J. Govert
NOTARY PUBLIC

My Commission Expires:

BONNIE JEAN GOVERT
Seal
Notary Public - State of Indiana
Vigo County
My Commission Expires Jan 7, 2024

Duke Energy Kentucky, Inc.
Environmental Compliance Plan

Project #	Project Description	Air Pollutant or Waste/Byproduct to be controlled	Control Facility	Generating Station	Environmental Regulation	Environmental Permits[1]	Scheduled Completion	Actual (A) or Est. (E) Projected Capital Cost ($Million)
1.	EB020290 Lined Retention Basin West;	Bottom Ash	CCR/ELG	East Bend	EPA CCR and ELG Final Rules	Division of Surface Water, KPDES Permit #0040444 Dam Safety Permit from Division of Surface Water listed (Stream Construction Permit), Permit No. **26395P**	November 2018	$10(A)
2.	EB020745 Lined Retention Basin East;	Bottom Ash	CCR/ELG	East Bend	EPA CCR and ELG Final Rules	Division of Surface Water, KPDES Permit #0040444 Dam Safety Permit from Division of Surface Water listed (Stream Construction Permit), Permit No. **26395P**	2021	$10(A)
3.	EB020298 East Bend SW/PW Reroute; and	Bottom Ash, misc., CCR runoff	CCR/ELG KY groundwater regulations	East Bend	EPA CCR and ELG Final Rules, KPDES	KDWM, Permit number SW00800006, KDEP Division of Surface Water, KPDES Permit #0040444	2020	$30 (A)
4.	ARO for Pond Closure; and	Bottom Ash	CCR/ELG, KY Ground water regulations	East Bend	EPA CCR and ELG Final Rules and KPDES	KDEP Division of Waste Management concurrence for clean closure.	2021	$28 (A)
5.	EB021281 East Bend Landfill Cell 2;and	Bottom Ash, FGD, Fly Ash	CCR/KY CCR regulations	East Bend	EPA CCR and ELG Final Rules and KPDES, KY CCR Regulations	KDWM, Permit number SW00800006, KDEP	2020	$17 (A)
6.	ARO for East Landfill Closure; and	East Landfill Closure	CCR, KY groundwater regulations applicable to coal combustion	East Bend	EPA CCR Final Rules and KY CCR Regulations	KDWM, Permit number SW00800006, KDEP	2023	$23 (E)
7.	ARO for West Landfill Ongonig Maintenance; and,	West Landfill Routine Maintenance, Groundwater and Well Monitoring Costs	CCR, KY groundwater regulations	East Bend			Ongoing	N/A
8.	Consumables (EAs Reagents, etc.)	SO_2, NOx, CO_2	CAIR	East Bend	CAIR		Ongoing	N/A

[1] Permits filed with Commission in Case No. 2016-00398

Duke Energy Kentucky, Inc.

Environmental Compliance Plan

Project #	Project Description	Air Pollutant or Waste/Byproduct to be controlled	Control Facility	Generating Station	Estimated Annual O&M					
					2021	2022	2023	2024	2025	2026
1.	EB020290 Lined Retention Basin West	Bottom Ash	CCR/ELG	East Bend	$0 (E)	$0 (E)	$0 (E)	$0 (E)	$0 (E)	$0 (E)
2.	EB020745 Lined Retention Basin East	Bottom Ash	CCR/ELG	East Bend	$0 (E)	$0 (E)	$0 (E)	$0 (E)	$0 (E)	$0 (E)
3.	EB020298 East Bend SW/PW Reroute	Bottom Ash, misc., CCR runoff	CCR/ELG KY groundwater regulations	East Bend	$0 (E)	$0 (E)	$0 (E)	$0 (E)	$0 (E)	$0 (E)
4.	ARO for Pond Closure	Bottom Ash	CCR/ELG, KY Ground water regulations	East Bend	$0.1 (E)*	$0.1 (E)*	$0.1 (E)*	$0.1 (E)*	$0.1 (E)*	$0.1 (E)*
5.	EB021281 East Bend Landfill Cell 2	Bottom Ash, FGD, Fly Ash	CCR/ELG/KY CCR regulations	East Bend	$0 (E)	$0 (E)	$0 (E)	$0 (E)	$0 (E)	$0 (E)
6.	ARO for East Landfill Closure; and	East Landfill Closure	CCRKY Coal Combustion Residuals	East Bend	$0 (E)	$0 (E)	$0 (E)	$0.2 (E) **	$0.2 (E) **	$0.2 (E) **
7.	ARO for West Landfill Ongonig Maintenance; and,	West Landfill Routine Maintenance, Groundwater and Well Monitoring Costs	CCR, KY groundwater regulations	East Bend	$0 (E)	$1.0 (E)	$1.0 (E)	$1.0 (E)	$1.0 (E)	$1.0 (E)
8.	Consumables (Emission Allowances, Reagents, etc)	SO_2, NOx, CO_2	CAIR	East Bend	$16 (E)	$10 (E)	$8 (E)	$8 (E)	$9(E)	$9 (E)

*O&M estimates represent post-closure maintenance costs related to all four bottom ash projects listed above: EB020290, EB020745, EB020298 and the ARO for Pond Closure.

** O&M estimates represent post-closure maintenance costs related to the East Landfill closure.

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 Close the East Landfill at the East Bend Generating Station and for Approval to Amend its Environmental Compliance Plan for Recovery by Environmental Surcharge Mechanism	)	Case No. 2021-00290

DIRECT TESTIMONY OF

ADAM S. DELLER

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

September 9, 2021

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ATTACHMENTS:

ASD-1 East Bend East Landfill Closure Cost Estimate

ASD-2 East Landfill Post Closure Maintenance Estimate

ASD-3 West Landfill Ongoing Maintenance Estimate

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Adam S. Deller and my business address is 139 East Fourth Street, Cincinnati, Ohio 45202.

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

A. I am employed by Duke Energy Indiana, LLC., (Duke Energy Indiana) as a Senior Engineer. Duke Energy Indiana provides various services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or the Company) and other affiliated companies of Duke Energy Corporation (Duke Energy Corp.).

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUNDS.

A. I graduated with a Bachelor of Science in Civil and Environmental Engineering from the University of Cincinnati in 2008.

Q. PLEASE SUMMARIZE YOUR DUTIES AS A SENIOR ENGINEER.

A. As a Senior Engineer, I have direct oversight of design and engineering involving the landfills at East Bend Station.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. Yes. I previously supported the Company's application for a certificate of public convenience and necessity for construction of the West Landfill, Cell 2, at the East Bend Generating Station (East Bend) in Case No. 2018-00156.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide detail on the design, cost, and construction activities necessary for the closure of the East Landfill at East Bend. I also sponsor Exhibits 3 and 4 to the Company's Application.

II. DISCUSSION

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF EAST BEND'S LANDFILLS.

A. East Bend has maintained an onsite landfill since the station's original commissioning in 1981. This original or "East" Landfill is permitted to receive various forms of waste, including, but not limited to, FGD waste, fly ash and bottom ash (Generator Waste). Today the East Landfill comprises approximately 162 acres (approx. 23,000,000 cubic yards) at East Bend. Originally, approximately 80 percent of the ash produced at East Bend was dry fly ash, which was then combined with the liquid sulfate waste byproduct ("slurry") produced by the station's scrubber technology and lime to produce Poz-o-tec and was disposed of in the landfill. The remaining 20 percent of the ash consisted of bottom ash that accumulated at an on-site ash pond. The Commission approved the Company's conversion to a dry-fly ash handling system and application to close its on-site ash pond in Case Nos. 2016-00268 and 2016-00398, respectively. With these projects, East Bend converted to a complete dry-ash, landfill disposal, compliance strategy.

The East Landfill is nearing waste disposal capacity and must prepare to close in accordance with all applicable environmental regulations as described by Company Witness, Ms. Tammy Jett.

In anticipation of the East Landfill reaching capacity, Duke Energy Kentucky received permission to begin construction of a replacement landfill, the West Landfill Cell 1, in Case No. 2015-00089 and approval for construction of Cell 2 in Case No. 2018-00156. Like the original East Landfill, the West Landfill is also permitted to receive various forms of generator waste, including, but not limited to, FGD waste, fly ash and bottom ash (Generator Waste) from a number of generating sources. The West Landfill is used, incidentally, in the production and furnishing of electric service as it serves as a means for storage and disposal of generator waste material produced by East Bend.

In total, the West Landfill will include eight cells that will be constructed over time, and is designed and permitted to encompass approximately 200 acres of lined landfill that will provide at least 30 years of generator waste disposal from the East Bend Station, and those other permitted sources. The West Landfill's construction includes a lined leachate collection system in compliance with all applicable federal, state, and local requirements. Cell 1's construction included the infrastructure required to operate and maintain the entire West Landfill. The Company is also required to perform ongoing maintenance related to ongoing environmental compliance at the West Landfill including but not limited to maintaining the cover system to remedy erosion rills and rodent burrows, mowing the cover system and landfill surface water ditches, dust control in and around the

landfill, and groundwater monitoring and groundwater well maintenance. The Company's estimated budgeted cost for landfill post closure care is approximately $1,025,000 per year. Attachment ASD-3 includes a detailed cost estimate.

Company witness Raiford will discuss the requirement to account for these costs as an asset retirement obligation and Company witness Czupik will discuss how the Company plans to recover these costs through its environmental surcharge mechanism.

The presence of an onsite landfill permits Duke Energy Kentucky to manage its costs of environmental compliance while providing safe and reliable electric service by eliminating the need to transport and pay to dispose of the generator waste in commercial landfills.

Q. PLEASE BRIEFLY EXPLAIN WHY THE COMPANY NEEDS TO BEGIN CLOSURE OF ITS EAST LANDFILL.

A. Mr. Gurganus supports the need for the closure of the East Landfill in his direct testimony. In short, closure construction is driven by a logistical and an operational need to provide both sufficient space and capacity to properly dispose of Generator Waste in accordance with all applicable environmental regulations. Now that the East Landfill is reaching its designed capacity, the Company must take appropriate steps to safely close the East Landfill while complying with the applicable regulations. The closure of the East Landfill will not adversely impact the continued operation of East Bend as the West Landfill was anticipated and designed for the eventual closure of the East Landfill. Accordingly, the Company will maintain its

ability to safely dispose waste material from East Bend on site, rather than incurring costs to transport and dispose of the waste material at third-party-owned landfills.

Q. PLEASE DESCRIBE THE COMPANY'S CONSTRUCTION PLAN FOR THE EAST LANDFILL CLOSURE.

A. The East Landfill closure construction is anticipated to commence in mid-2022 with pre-construction activities commencing in late 2021/early 2022, upon Commission approval of this application. The Company recently completed the engineering and design of the closure of the East Landfill, so that construction may commence upon Commission authorization.

The East Landfill closure construction services will be performed by an outside contractor with Duke Energy management oversight procured through a competitive request for proposal process. Commencing the East Landfill closure construction in the second quarter of 2022 should provide for sufficient time for the closure construction to be completed by first quarter 2024.

The East Landfill has approximately 55.3 acres of remaining area that requires final cover. As this area was filled, temporary cover was placed to comply with limits on open area. The final cover design on this remaining portion of the landfill conforms to both, the Solid Waste Permit and the coal combustion residuals (CCR) Rule. The method of closure approved by the permit, is a composite soil cover cap. This cap consists of from bottom to top; a 40 mil textured Linear Low Density Polyethylene (LLDPE) geomembrane; a Geocomposite Drainage layer; an 18 – inch soil Infiltration layer; and a 6 – inch soil Vegetative layer. The closure also includes the construction of a permanent access road, and

establishment of permanent storm water run-off features and controls to the point of discharge from the East Landfill.

Exhibits 3 and 4 to the Company's application include the maps and drawings that depict the East Landfill Closure construction, respectively.

Q. WHAT IS THE ESTIMATED COST OF CLOSURE CONSTRUCTION AT THE EAST LANDFILL?

A. The Company's estimated budgeted cost for landfill closure attributed to external contract labor is approximately $15.9 million, excluding engineering, internal labor, contingency, and escalation. The fully loaded estimated cost of construction (with engineering, internal labor, contingency, and escalation) is approximately $22.6 million. These figures include the cost of temporary cover placement over the final 55.3 acres to maintain compliance with permitted open working face limits, engineering and design of final closure cap, construction costs to install the final cap including soil and overseeding to create greenspace, permanent stormwater drainage features, and installation of a permanent access road. Attachment ASD-1 includes a detailed estimate of the costs of closure. Upon completion of the closure construction of the East Landfill, the site will enter into a 30-year period of post-closure care and continued oversight in compliance with the Solid Waste permit and both the coal combustions residuals (CCR) rule and Kentucky state rules. The oversight required by the Solid Waste permit includes items such as groundwater monitoring, mowing, maintenance and upkeep on the landfill grass slopes, surface water features and site access road. The Company's estimated budgeted cost for landfill post closure care is approximately $234,458

per year, for the designated 30-year post-closure period. Attachment ASD-2 includes a detailed cost estimate for post-closure maintenance.

Q. DOES DUKE ENERGY KENTUCKY HAVE THE NECESSARY ENVIRONMENTAL PERMITS TO CLOSE THE EAST LANDFILL?

A. Yes. Ms. Jett explains and supports these permits in her Direct Testimony.

Q. DID THE COMPANY CONSIDER ANY ALTERNATIVES TO CLOSING THE EAST LANDFILL?

A. The company is unable to consider alternatives to closing the landfill for regulatory reasons. The closure is required to meet the requirements of the Solid Waste Permit since the landfill is reaching capacity and thus the end of its useful life. Both the CCR rule and the Kentucky state rules require closure when the landfill has reached waste disposal capacity in the permitted footprint.

III. CONCLUSION

Q. WERE ATTACHMENTS ASD-1, ASD-2, ASD-3 AND EXHIBITS 3 AND 4 TO THE APPLICATION PREPARED BY YOU AND UNDER YOUR DIRECTION AND CONTROL?

A. Yes.

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

A. Yes.

VERIFICATION

STATE OF OHIO)
) **SS:**
COUNTY OF HAMILTON)

The undersigned, Adam S. Deller, Senior Engineer that he has personal knowledge of the matters set forth in the foregoing testimony and that it is true and correct to the best of his knowledge, information and belief.

Adam S. Deller, Affiant

Subscribed and sworn to before me by Adam S. Deller, on this 26th day of August, 2021.

NOTARY PUBLIC

My Commission Expires: 06-04-2022

NICOLE MCCLURE
My Commission Expires
06-04-2022
NOTARY
PUBLIC
Notary ID # 602281
STATE AT LARGE, KENTUCKY

ITEM No.	DESCRIPTION	ESTIMATED ITEM COST
General		
1	Mobilization	$462,760
2	Erosion and Sedimentation Control	$277,200
Site Preparation		
3	Demolition, Concrete Downdrains	$392,000
4	Demolition, Rip-Rap Downdrains	$26,400
5	Existing Cover Removal & Stockpiling	$138,720
6	Excavation and Stockpling (excludes top deck)	$238,000
7	Excavation and Disposal of Waste on Top Deck	$127,600
8	Fill to Site Preparation Grade (excludes top deck)	$479,600
Landfill Cover System		
9	Fine Grading	$62,200
10	Geomembrane, 40 mil LLDPE Textured	$2,066,220
11	Geocomposite Drainage Net	$2,622,510
12	Infiltration Layer	$2,818,800
13	Erosion Layer	$1,022,000
14	Seed & Mulch	$312,550
15	Erosion Control Blanket	$891,100
Haul Road		
16	Granular Base	$99,320
17	Granular Wearing Surface	$56,940
18	Chip and Seal	$36,000
19	Perimeter Service Road Restoration	$68,120
Channels, Ditches, and Underdrains		
20	Bench Drain Pipes, 6-in dia. Perforated	$1,159,200
21	Slope Drain Pipes, 6-in dia. Perforated	$31,750
22	Ditch Drain Pipes, 6-in dia. Perforated	$89,750
23	Subsurface Drain Pipes, 4-in dia, Perforated	$2,250
24	Underdrain Pipes, 6-in dia. non-perforated	$78,300
25	Underdrain Pipe Outlet Headwalls	$285,000
26	HydroTurf CS (geomembrane and fabric)	$656,950
27	Hydrobinder Infill	$1,230,000
28	Perimeter Ditch Geomembrane, 30 mil RPE	$49,100
29	Perimeter Ditch Geomembrane, 60 mil HDPE Textured	$54,010
30	Channel Lining, Class II (East Perimeter Ditch)	$8,970
31	Gabion Basket Walls	$3,600
32	Top Deck Diversion Berm	$19,680
Rip Rap Basins		
33	No. 8 Stone, Bedding	$4,640
34	No 2 Stone, Run-Out	$2,080
35	Channel Lining, Class IV	$14,760
	Contract Labor	**$15,888,080**
Engineering		
36	CQA and Field Engineering and Project closeout	**$1,115,722**

Duke Labor			
37	Project Management & Staff Augmentation		**$968,000**
38	Allocations		**$387,200**
	Total Duke Labor		**$1,355,200**
	TPC		**$18,359,002**
Contingency			
40	**15% of TPC**		**$2,753,850**
Escalation			
41	**Escalation (2.5% of TPC)**		**$458,975**

Actuals

Contract Labor			**$797,767**
Engineering			
36	CQA and Field Engineering and Project closeout		**$0**
Duke Labor			
37	Project Management & Staff Augmentation		**$181,410**
38	Allocations		**$20,842**
	Total Duke Labor		**$202,252**
	Total Actuals		**$1,000,019**

Post Closure Cost Estimate
East Landfill, East Bend Station
Adjusted to 2021 $'s

	Unit Cost	Unit	Grass Cover System	
			Quantity	Cost
Groundwater Monitoring	$41,209	Event	2	$82,418
Surface Water Monitoring	$5,151	Event	2	$10,302
Mowing (2 events)	$165	Acre	185	$30,525
Road and Ditch Maintenance	$77,266	Lump	1	$77,266
Soil Cover Erosion Filling	$30.91	c.y	440	$13,600
Over-Seed and Mulch	$5,409	Acre	3	$16,227
Inspection & Reporting	$1,030	Each	4	$4,120
			Estimated Annual Totals	$234,458
			Years of Care	30

Post Closure Cost Estimate
West Landfill, East Bend Station
Adjusted to 2021 $'s

	Cost
Groundwater Monitoring	$75,000
Well Monitoring	$206,000
Routine Maintenance*	$744,000
Estimated Annual Totals	$1,025,000

*Routine Maintenance includes: Mowing, Road and Ditch Maintenance, Surface Water control features, Soil Cover install and Erosion Filling, Over-Seed and Mulch, and Inspection & Reporting

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 Close the East Landfill at the East Bend Generating Station and for Approval to Amend its Environmental Compliance Plan for Recovery by Environmental Surcharge Mechanism	)	Case No. 2021-00290

DIRECT TESTIMONY OF

TAMMY JETT

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

September 9, 2021

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I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Tammy Jett. My business address is 139 East Fourth Street, Cincinnati, Ohio 45202.

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

A. I am employed by Duke Energy Business Services LLC. (Duke Energy Business Services) as a Principal Environmental Specialist in the Environmental Health and Safety (EHS) Programs and Environmental Sciences Department.

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUNDS.

A. I received a Master's Degree in Environmental Science from Miami University in 1989. I have also earned a Bachelor's Degree in Urban Ecology and an Associate's Degree in Psychology from Thomas More College in 1987. I began my career with The Cincinnati Gas & Electric Company in 1989 as an Intern as part of my graduate degree curriculum. I was hired as a Junior Licensing Specialist in 1989 after my internship was completed. I have held a number of environmental compliance related positions over the last thirty-two-plus years in the environmental organizations, within Duke Energy and predecessor companies. These positions involved increasing responsibility and include Regulatory Compliance Coordinator, Environmental Scientist III and Senior and Lead Environmental Specialist. In 2015, I was promoted to Principal Environmental Specialist, which is the highest technical (non-managerial) position currently available in the Duke Energy Environmental organization.

Q. PLEASE SUMMARIZE YOUR DUTIES AS PRINCIPAL ENVIRONMENTAL SPECIALIST.

A. As Principal Environmental Specialist, one of my roles is as a subject matter expert for environmental coal ash compliance for Duke Energy Kentucky's East Bend, Generating Station (East Bend). I have responsibility for permitting and specialize in all facets of the coal ash program. I assist with obtaining permits for the East Bend Station coal ash facilities, such as coal ash landfills, and then assist with monitoring, record keeping, reporting and other facets of our compliance program. I am also responsible for reviewing new Federal and State regulations which include the regulation of coal ash, such as the United States Environmental Protection Agency's (U.S. EPA) Coal Combustion Residual rule (CCR Final Rule) and the Kentucky Special Waste rules, among others, and determining their impact on our generating coal ash facilities. I am involved in strategic planning across all the Duke Energy service areas, including Ohio, Kentucky, Indiana, North Carolina, South Carolina and Florida, for federal coal ash compliance issues to provide a consistent strategy for implementing the CCR Final rule.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. Yes. I provided testimony in Case No. 2015-00089 supporting Duke Energy Kentucky's request for a Certificate of Public Convenience and Necessity for construction (CPCN) of its West Landfill at the East Bend Generating Station (East Bend). I provided testimony in Case No. 2016-00268, Duke Energy Kentucky's application for a CPCN for constructing a dry bottom ash handling system at East Bend and in Case No. 2016-00398 involving the Company's

application for a CPCN for water redirects and basin closure and repurposing. I provided testimony in Case No. 2017-00321 in support of Duke Energy Kentucky's Base Electric Case. Most recently, I provided testimony in Case No. 2018-00156 supporting Duke Energy Kentucky's request for a Certificate of Public Convenience and Necessity for construction (CPCN) of cell 2 of the West Landfill at the East Bend.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to discuss the environmental requirements applicable to Duke Energy Kentucky's operation of East Bend that specifically relate to the Company's need to close the East Landfill and request for an amendment to Duke Energy Kentucky's Environmental Compliance Plan (ECP) to include the Landfill closure construction activities and recovery as part of the environmental surcharge mechanism (ESM). In doing so, I provide an overview of the environmental controls that exist today at East Bend and the regulations that require such controls. Finally, I sponsor Exhibit 2 to the Application, consisting of the environmental permit for landfill closure.

II. ENVIRONMENTAL REGULATIONS IMPACTING DUKE ENERGY KENTUCKY'S EAST BEND GENERATING STATION

Q. WHAT ARE THE MOST SIGNIFICANT ENVIRONMENTAL REGULATIONS CURRENTLY IMPACTING DUKE ENERGY KENTUCKY'S EAST BEND STATION?

A. There are several programs promulgated by the U.S. EPA under the Clean Air Act (CAA) that impact all of the Company's generating stations, and particularly East

Bend. These regulations are the primary drivers of Duke Energy Kentucky's compliance strategies for its plants. They are as follows: the Mercury and Air Toxics Standard (MATS Rule) and the Cross State Air Pollution Rule (CSAPR) including the U.S. EPA's April 2021 final Revised CSAPR Update Rule.

The CCR Final Rule and Steam Electric Effluent Limitation Guidelines (ELG Final Rule), in addition to other emerging regulations under the Clean Water Act (CWA), are likely to impact the Company's generating stations. The regulations that most directly impact the Company's ash handling strategy as it pertains to East Bend are the CAA, CCR Final Rule and ELG Final Rule.

Q. PLEASE BRIEFLY DESCRIBE THE CAA.

A. The CAA is the comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes EPA to establish a number of programs to regulate air emissions so as to protect public health and public welfare. Many of these programs overlap and at times regulate the same pollutants.

Q. CAN YOU PROVIDE A BRIEF SUMMARY OF THE MATS RULE?

A. The MATS Rule regulates mercury and other toxic air pollutant emissions from new and existing coal- and oil-fired steam electric generating units (EGUs) that are greater than 25 MWs in capacity. It is a command-and-control program that imposes unit-by-unit restrictions on emissions of mercury, acid gases such as hydrogen chloride, and certain non-mercury metals, including arsenic, chromium, nickel and selenium. The MATS Rule allows EGUs, as one option, to demonstrate compliance by measuring mercury, hydrogen chloride, and non-mercury metal emissions directly. It also allows the EGUs the option of

demonstrating compliance by measuring surrogates for acid gases and for non-mercury metals.

Q. DOES EAST BEND CURRENTLY COMPLY WITH THE MATS RULE?

A. Yes. East Bend began complying with MATS Rule in April 2015.

Q. PLEASE PROVIDE A SHORT DESCRIPTION OF THE HISTORY AND STATUS OF THE CLEAN AIR INTERSTATE RULE (CAIR) AND CSAPR.

A. On August 8, 2011, the EPA published the final CSAPR rule to replace CAIR, which was vacated and remanded by the Court of Appeals for the District of Columbia Circuit (D.C. Circuit) in July 2008. CSAPR established new state-level annual SO_2 and NO_x budgets and ozone-season NO_x budgets. The rule was initially scheduled to take effect January 1, 2012; however, on December 30, 2011, the D.C. Circuit stayed the rule. On August 21, 2012, the D.C. Circuit then vacated CSAPR and directed that U.S. EPA continue administering CAIR pending completion of a new rulemaking to replace CSAPR. However, on April 26, 2014, the United States Supreme Court reversed the D.C. Circuit's decision and remanded the case back to the D.C. Circuit for further proceedings. Because of the litigation, the CSAPR deadlines were tolled by three years and CSPAR ultimately went into effect on January 1, 2015. In October 2016, the U.S. EPA finalized the CSAPR Update Rule, which significantly reduced the ozone season NOx emission budgets for 22 eastern states from those promulgated in the original CSAPR. These budgets, including for Kentucky, took effect on May 1, 2017. This change significantly reduced the number of ozone season NO_x allowances for East Bend. The CSAPR Update Rule also maintained the

restriction on trading contained in the original CSAPR by placing a penalty on excess emissions of NOx if statewide ozone season NOx emissions exceed the statewide budget by more than 21 percent (CSAPR Assurance provisions). As a result of a September 2019 decision by the D.C. Circuit, which found the CSAPR Update Rule was inadequate to fully address upwind state obligations to downwind states under the 2008 ozone NAAQS, the U.S. EPA has published a further revision to CSAPR on April 30, 2021, which the agency refers to as the Revised CSAPR Update Rule. This new rule further reduces the NOx emissions budgets for electric generating units in 12 states, including Kentucky, beginning with the 2021 ozone season. Under the formulas used to distribute allowances, East Bend will receive a small number of additional ozone season NOx allowances for 2021 forward as compared to the allocation under the previous rule. EPA determined that NOx reductions through this program will fully eliminate these 12 states' significant contributions to downwind air quality problems for the 2008 ozone NAAQS.

Q. HOW HAS CSAPR'S IMPLEMENTATION IMPACTED EAST BEND?

A. Because it has a well performing wet flue gas desulfurization (FGD) system and a selective catalytic reduction control (SCR), East Bend has, to date, been able to comply with CSAPR without the installation of additional controls. This is also the case with the most recent Revised CSAPR Update Rule, which went into effect for the ozone season beginning May 1, 2021. Because of the restrictions on trading within a small group of states and the more limited state allowance budgets for ozone season NO_x, the allowance prices under the Revised CSAPR Update Rule are significantly higher than they were under the previous versions

of the rule. The East Bend SCR design is expected to be robust enough to comply with the Revised CSAPR Update Rule. If it is economically prudent, East Bend could also opt to buy or sell allowances on the market.

Q. PLEASE DESCRIBE THE MAJOR EFFORTS TO REGULATE GREENHOUSE GASES THAT RELATE TO ELECTRIC GENERATING UNITS.

A. In 2007, the U.S. Supreme Court ruled in *Massachusetts v. EPA*[1] that greenhouse gases are a pollutant subject to regulation under the CAA. Subsequently, the U.S. EPA undertook a number of rulemakings targeting greenhouse gas emissions from EGUs. The first was the 2010 Tailoring Rule, which required major stationary sources of greenhouse gases to obtain preconstruction and operating permits. The U.S. Supreme Court eventually ruled that the U.S. EPA could only require a source to obtain a preconstruction permit for greenhouse gases if it also had to obtain a preconstruction permit for conventional pollutants such as sulfur dioxide. On April 13, 2012, the U.S. EPA proposed a rule to establish New Source Performance Standards for CO_2 emissions from new natural gas and coal-fired EGUs. Then on January 8, 2014, the U.S. EPA withdrew that proposal and proposed emission guidelines for states to follow in developing plans to address CO_2 emissions from existing fossil fuel-fired EGUs. On the same day, the U.S. EPA proposed a replacement establishing CO_2 emission limits for new, modified, and reconstructed fossil fuel-fired EGUs. On June 18, 2014, EPA proposed a rule, known as the Clean Power Plan (CPP) to regulate CO_2 emissions from existing fossil fuel-fired EGUs. The EPA finalized both rules on October 23, 2015.

[1] *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007).

Q. PLEASE DISCUSS THE STATUS OF THE EPA'S CPP RULE AND WHETHER THERE WILL BE ANY IMPACT TO EAST BEND.

A. The CPP established an emission performance rate of 1,305 pounds of CO_2 per net megawatt-hour of electricity produced for all existing coal-fired EGUs, including East Bend. The final rule also established state-level pounds of CO_2 per net megawatt-hour of electricity produced emission performance rates and state-level mass-based annual CO_2 tonnage limits for all states. The CPP required each state to develop and submit an implementation plan to EPA detailing how it would achieve the CO_2 emission limitations specified in the CPP. The CPP gave states the option of developing a rate-based or a mass-based implementation plan. The EPA in the CPP outlined three rate-based and three mass-based approaches states could select from when developing their implementation plans.

Numerous petitions for review were filed with the D.C. Circuit challenging the legal status of the CPP. On February 9, 2016, the U.S Supreme Court granted a stay of the CPP effective until its legal status is resolved. Oral argument before the full D.C. Circuit was held on September 27, 2016. The court has not issued a decision in the case.

The Supreme Court's stay of the CPP means that Kentucky is under no obligation at this time to develop and submit an implementation plan to EPA and would not be unless the CPP were ultimately upheld by the courts. If the CPP is ultimately overturned or otherwise repealed, there will be no obligation to reduce CO_2 emissions at East Bend. If the CPP were to be upheld by the courts, the September 6, 2018, date in the final CPP for states to submit final implementation

plans to EPA for approval will need to be revised. The new date would depend on when the final legal status of the CPP is resolved.

On April 4, 2017, the U.S. EPA announced in the Federal Register that it is conducting a review of the CPP, in accordance with an Executive Order by the President issued on March 28, 2017. The EPA indicated that it "if appropriate, will as soon as practicable and consistent with law, initiate proceedings to suspend, revise or rescind this rule." On April 28, 2017, the D.C. Circuit issued an order temporarily suspending the litigation while it considers EPA's motion to stay the litigation while the Agency reviews the rule.

On July 8, 2019, the Trump EPA finalized the Affordable Clean Energy (ACE) rule, and in a separate but related rule repealed the Clean Power Plan and established a process to develop CO_2 emission standards for existing coal-fired power plants. Rather than generation shifting as under the CPP, EPA based the standards on efficiency improvements that can be implemented at the plant itself. EPA declined to set standards for existing natural gas plants.

On February 12, 2021, the Biden EPA filed a motion with the D.C. Circuit asking the court to vacate the ACE rule but to stay the issuance of the mandate for the vacatur of the CPP repeal until EPA can respond to the court remand in a new rulemaking regulating CO_2 emissions from existing coal-fired power plants. In a declaration and memorandum accompanying U.S EPA's motion, the agency explains that it interprets the court's decision to have the effect of removing the ACE Rule but not reinstating the CPP. On February 22, 2021, the D.C. Circuit granted this motion. Staying the mandate for vacatur of the CPP repeal removes

any doubt about states' and regulated entities' obligations under the CPP during the interim period before a new rule is issued.

III. GENERAL DESCRIPTION OF ENVIRONMENTAL CONTROLS AT DUKE ENERGY KENTUCKY'S EAST BEND GENERATION STATION

Q. PLEASE DESCRIBE THE ENVIRONMENTAL CONTROLS AT EAST BEND.

A. The major environmental and pollution control features at East Bend are: a mechanical draft cooling tower, a high-efficiency hot side electrostatic precipitator, a lime-based flue-gas desulfurization (FGD) system, low nitrogen oxide (NO_x) burners and a selective catalytic reduction (SCR) system. The SCR is designed to reduce NO_x emissions by approximately 85 percent. The FGD system was upgraded in 2005 to increase the sulfur dioxide (SO_2) emissions removal capability to about 97 percent. The station electrical output is directly connected to the Duke Energy Midwest (consisting of Kentucky and Ohio) 345 kilovolt (kV) transmission system.

Q. PLEASE DESCRIBE HOW ASH IS CURRENTLY HANDLED AT EAST BEND.

A. Duke Energy Kentucky currently operates two landfills at East Bend (collectively, the Landfills), which are used for the disposal of materials and ash resulting from the Company's FGD process and other CCR-producing processes.

The original or "East" Landfill is comprised of approximately 162 acres and has been in place since East Bend was constructed in 1981. The East Landfill's original construction pre-dated the CCR rule's effective date. The East Landfill now must be closed in a manner that complies with the CCR rule.

The newer or "West" Landfill, once all phases are completed, will consist of approximately 200 acres of lined landfill that is designed to accept approximately 30 years of CCR waste from the East Bend Station and other permitted sources, as needed, to make fixated scrubber sludge. Duke Energy Kentucky received CPCN approval to construct the first cell of the West Landfill in Case No. 2015-00089 and the second cell of the West Landfill in Case No. 2018-00156. As part of the approval in Case No. 2015-00089, the Commission directed the Company to file a new CPCN request prior to commencing construction of each additional phase or cell.

The Landfills are permitted to receive various forms of CCR waste, including, but not limited to, FGD waste, fly ash and bottom ash (Generator Waste), from a number of generating sources, including those generating stations currently owned and/or operated by Duke Energy Kentucky and from generating stations owned by other Kentucky utilities and Ohio-based electric generators. Dry fly ash is combined into a mixture of FGD solids, fly ash, and lime, and forms a substance called Poz-o-Tec, that sets up much like concrete, and is placed in the Landfills. Depending upon generation output, East Bend produces approximately 1 million tons of Poz-o-Tec, including approximately 156,000 tons of fly ash annually. In addition, the Landfills receive CCR material referred to as bottom ash. The bottom ash has historically been treated in an ash pond (Pond) located on site at East Bend. Duke Energy Kentucky has completed converting its East Bend ash handling system to a complete dry ash system and has completed closing the pond as approved by the Commission in Case No's 2016-00268 and in Case No. 2016-00398.

The presence of the Landfills and former Pond has permitted Duke Energy Kentucky to manage its costs of environmental compliance by eliminating the need to transport and pay for sending Generator Waste to commercial landfills.

Q. PLEASE DESCRIBE THE CURRENT STATUS OF, AND THE COMPANY'S MODELING ASSUMPTIONS FOR, THE CCR AND ELG FINAL RULES.

A. In April 2009, the EPA began assessing the integrity of ash dikes nationwide, and began developing regulations to manage CCRs. CCRs primarily include fly ash, bottom ash, and FGD byproducts (typically calcium sulfate (gypsum) or calcium sulfite) that are destined for disposal. In June 2010, the EPA proposed a rule containing two options for handling CCRs: 1) as a special waste listed under the Resource Conservation and Recovery Act (RCRA) Subtitle C Hazardous Waste Regulations; and 2) as a solid waste under RCRA Subtitle D Non-Hazardous Waste Regulations. Both options included dam safety requirements and had strict new requirements regarding the handling, disposal, and beneficial use of CCRs except when reused in encapsulated applications (such as ready mix concrete and the production of wallboard).

In the CCR proposal, the EPA said that there could be strong support for a conclusion that regulation of CCR disposal under RCRA Subtitle D would be adequate because of 1) potentially lower CCR risk assessment results, 2) the ELG requirements that the EPA may promulgate, and 3) increased federal oversight such requirements could achieve. The CCR Final Rule and/or ELG Final Rule result in conversions to dry handling of fly ash and bottom ash; increased use of landfills; the closure of existing wet ash storage ponds; and the addition of

alternative wastewater treatment systems. When the EPA published its proposed ELG revisions, it indicated that it was working to integrate the ELG rule with the CCR rule. The EPA indicated that the requirements of the two rules needed to be harmonized before either rule was released. The CCR Final rule was published as final as a Subtitle D, non-hazardous waste rule on April 17, 2015.

Q. PLEASE DESCRIBE THE IMPACT OF THE CCR AND ELG FINAL RULES ON EAST BEND'S OPERATIONS.

A. The ELG Final Rule was published on November 3, 2015. This rule sets new or additional requirements for wastewater streams from several processes and byproducts at steam electric generating plants. Some of these wastewater streams are generated at East Bend Station, including, but not limited to fly ash and bottom ash wastewaters. This rule required the Company to take action to achieve compliance that includes conversion of the existing wet ash system to a dry ash handling system. As part of converting to dry ash handling, new wastewater treatment systems were installed. The existing Pond could no longer be used as an ash transport water treatment system. Additionally, due to East Bend site limitations (*e.g.*, proximity to the river, availability of other land, *etc*.) the existing Pond needed to be repurposed through closure by excavation to comply with the ELG Final Rule. Compliance with some aspects of the CCR Final Rule began within 6-12 months after publication and continue today. Since the Pond was certified as closed-by-excavation on March 20, 2020 in accordance with the CCR Final Rule, the repurposed Pond now functions solely as an NPDES permitted wastewater treatment facility. It no longer handles or contains ash solids. The Landfills will require compliance with the CCR Rule for the foreseeable future,

including 30 years of post-closure care. Compliance with the ELG Final Rule was set to begin as early as November 1, 2018, but no later than December 31, 2023. On August 14, 2017, EPA filed a motion with the 5th Circuit to put portions of the 2015 ELG Final Rule litigation on hold while they reconsider certain ELG Final Rule limits. The EPA requested to sever and hold in abeyance the issues related to bottom ash transport water, FGD wastewater, and IGCC gasification wastewater. The EPA also proposed reconsideration of the effluent limits and pre-treatment standards for only bottom ash transport water and FGD wastewater. This action alone did not have a direct impact on any compliance needs or implementation schedules for East Bend projects because the drivers for the station's ash-related projects were not limited to the ELG Final Rule. However, the action did provide an indication that EPA planned to review and potentially change the ELG limits for the two waste streams listed above.

On October 13, 2020, the Steam Electric Reconsideration Rule (ELG Final Rule 2020) was published by EPA and revised the requirements for FGD wastewater and bottom ash transport water. The rule became effective on December 14, 2020. The rule allows less costly FGD wastewater technologies that could be used with the modification of the Steam Electric Power Generating Effluent Guidelines 2015 rule (the 2015 rule) limitations; less costly BA transport water technologies made possible by the revision of the 2015 rule's zero discharge limitations; a two-year extension of compliance time frames for meeting FGD wastewater and BA transport water limitations, and additional subcategories for both FGD wastewater and BA transport water. The rules also allow participation in the voluntary incentive program would contribute to the reduction in pollutant

discharges by these steam electric power plants in FGD wastewater while extending the timeframe by which compliance must be achieved. None of the revisions in the ELG Final Rule 2020 affect the projects which have already taken place at East Bend since Duke Energy Kentucky was proactive in meeting the requirements of the 2015 ELG Final Rule. Nor do the ELG Final Rule 2020 revisions impact the planned East Bend East Landfill closure.

As expected, the combination of ELG Final Rule, CCR Final Rule, and Kentucky groundwater regulations implementation required East Bend's conversion to dry ash handling (bottom ash). The Commission approved the Company's CPCN request to convert East Bend to a dry ash handling system on February 23, 2017, in Case No. 2016-00268, and that conversion was completed as described in the CPCN filing. Additionally, these rules required the initiation of closure of the active wet ash storage Pond; installation of balance-of-plant wastewater treatment systems, including Pond repurposing. The Commission approved the Company's CPCN request for the water redirection, and Pond closure and repurposing on June 6, 2017 in Case No 2016-00398

With respect to closure and repurposing of the Pond, in accordance with the Final CCR Rule, Duke Energy commenced closure activities on one-half of the Pond in 2017 and completed closure by excavation of this portion in 2018. Duke Energy then lined the excavated portion of the Pond and commenced closure by excavation of the remaining portion of the Pond in accordance with the Final CCR Rule. In March 2020, Duke Energy certified that all coal combustion residuals had been removed from the Pond in accordance with the Final CCR Rule's closure-by-removal provisions.

Q. PLEASE EXPLAIN HOW THE CCR AND ELG REGULATIONS IMPACT DUKE ENERGY KENTUCKY'S ENVIRONMENTAL COMPLIANCE STRATEGY.

A. The CCR Final Rule and ELG Final Rule have implications to ash handling and impoundment basins across the industry, not just Duke Energy Kentucky. In Duke Energy Kentucky's situation, compliance strategies included provisions that necessitated the conversion to dry handling of ash and closure of Duke Energy's existing Pond and repurposing it in accordance with more stringent CCR and ELG Final Rule standards. Specifically, as it relates to East Bend, the CCR Final Rule also required implementation of a groundwater monitoring program for the Landfills and the Pond.

Q. PLEASE EXPLAIN HOW THE CCR, ELG, AND ANY OTHER ENVIRONMENTAL REGULATIONS WILL IMPACT THE COMPANY'S EAST LANDFILL CLOSURE STRATEGY AND COMPLIANCE.

A. The East Landfill is nearing the limits of CCR disposal capacity. When there is no longer capacity in a landfill, the CCR Final Rule in 40 C.F.R. 257.102(d) and Kentucky rule 401 KAR 46:110 Section 9, require closure of CCR landfills in accordance with certain performance standards and a final cover design which meets specific criteria. The criteria in these rules require the East Landfill closure strategy and compliance to include a final cover system different from the originally permitted design. As a result, it was necessary to submit a permit modification application to the Kentucky Department for Environmental Protection (KDEP), Division of Waste Management (DWM) to update the Solid Waste Permit with a compliant cover. The East Landfill will close under the new

Permit, which was issued on April 16, 2021. This will allow for an updated closure strategy which complies with the performance standards and cover criteria requirements in both the CCR Final Rule and the Kentucky rule. In addition, the modified, compliant cover system will become part of the groundwater remediation strategy required as a result of a lithium groundwater protection standard exceedance in two groundwater monitoring wells located near the East Landfill. This will allow Duke Energy Kentucky to take advantage of the new cover system design to also assist in complying with the groundwater remedy requirements of the CCR Final Rule in 401 C.F.R. 257.97. and Kentucky rule 401 KAR 46:110 Section 8. These rules require both groundwater remediation where groundwater protection standards have been exceeded and 30 years of post-closure groundwater monitoring regardless of the presence or absence of groundwater protection standard exceedances.

Q. DOES CCR AND/OR ELG RULE(S) CREATE POST-CLOSURE MAINTENANCE OBLIGATIONS ON THE COMPANY FOR THE HANDLING OF COAL ASH AT EAST BEND IN RELATION TO THE LANDFILLS AND FORMER BASIN? PLEASE EXPLAIN.

A. The CCR and Kentucky rules contain post-closure maintenance obligations for the handling of coal ash at East Bend in relation to the landfills and former ash basin. The CCR Final Rule in 40 C.F.R. 257.104 and Kentucky rule 401 KAR 46:110 Section 9, require post closure care and maintenance of CCR landfills in accordance with certain performance standards. The Kentucky rule requirements mimic directly the CCR Final Rule requirements in regard to post-closure care. At

a minimum, Duke Energy must do the following for the landfills since ash must be left in place when these facilities are closed:

(1) Maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(2) Maintaining the integrity and effectiveness of the leachate collection and removal system and operating the leachate collection and removal system in accordance with the requirements of 40 C.F.R. 257.70; and

(3) Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of 40 C.F.R. 257.90 through 257.98.

Duke Energy must conduct post-closure care of the landfills for a minimum of 30 years. If at the end of the post-closure care period the landfill is operating under groundwater assessment monitoring in accordance with 40 C.F.R. 257.95, Duke Energy must continue to conduct post-closure care until groundwater detection monitoring is reached in accordance with § 257.95.

Q. PLEASE BRIEFLY SUMMARIZE THE TYPES OF POST-CLOSURE ACTIVITIES THAT MUST OCCUR.

A. As I previously stated, maintaining the integrity and effectiveness of the final cover system to prevent or correct settlement, subsidence, erosion and prevent run-off requires a multitude of activities through the post-closure period. These include, but are not limited to, proper vegetation management and animal controls to ensure the integrity of the cap is maintained, not compromised, erosion is

prevented, and that the cap remains capable of inspection. Additionally, Ground water monitoring is also required. Also, the Commonwealth of Kentucky has continuing annual permitting fees throughout the post-closure period.

Q. PLEASE EXPLAIN WHY CLOSURE OF THE EAST LANDFILL IS NECESSARY FOR DUKE ENERGY KENTUCKY TO CONTINUE TO COMPLY WITH ENVIRONMENTAL REGULATIONS AND OPERATE EAST BEND.

A. Until the point of closure, the operation of the landfill has been necessary to economically and safely dispose of East Bend's CCR material and comply with the regulations that govern the disposal of CCR material. The CCR material has been generated as part of the compliance with the air regulations as previously discussed in this testimony. The CCR Final Rule section 40 C.F.R. 257.102(d) and Kentucky rule 401 KAR 46:110 Section 9 require closure of CCR landfills in accordance with certain performance standards once there is no longer capacity in the landfill. The East Landfill is reaching its designed capacity and must close in accordance with these two rules in order to remain in compliance with the environmental regulations.

The closure of the landfill is also expected to be a key component of meeting the groundwater remedy requirements of the CCR Final Rule in 401 C.F.R. 257.97 and Kentucky rule 401 KAR 46:110 Section 8 for which the East Landfill is obligated to meet as a result of exceeding a groundwater protection standard for lithium at two wells near the landfill waste boundary. Installing an engineered final cover system, as specified in the permitted closure plan, will provide an effective way to prevent infiltration of water through, or contact of

water with, the CCR material in the landfill. This is referred to as "source control" and should prevent or minimize releases of additional contaminants to the groundwater around the East Landfill. Once source control has been implemented, additional treatment to clean up the lithium should be more effective and efficient.

Q. PLEASE EXPLAIN HOW THE CURRENT LANDFILL CLOSURE PLAN IS IN COMPLIANCE WITH CCR, ELG, AND OTHER APPLICABLE ENVIRONMENTAL REGULATIONS.

A. The current landfill closure plan is in compliance with all environmental regulations. Specifically, the closure plan complies with the closure performance standards set forth in the CCR Final Rule section 40 C.F.R. 257.102(d) and Kentucky rule 401 KAR 46:110 Section 9. The Kentucky rule adopted the CCR Final Rule closure performance standards as written. The closure plan incorporates measures which provide for slope stability, minimizes maintenance needs, allows completion of the closure project in the shortest amount of time, is consistent with generally accepted good engineering practices, minimizes infiltration and erosion and meets the final cover design criteria of the CCR Final Rule.

The ELG rule does not explicitly apply to the closure plan.

Q. WILL THE CLOSURE OF EAST BEND'S EAST LANDFILL AND CONTINUED OPERATION OF THE WEST LANDFILL ALLOW THE COMPANY TO COMPLY WITH THE CCR RULE?

A. Yes. Duke Energy Kentucky must have a way to dispose of its Generator Waste, especially the CCRs from the FGD process. An onsite landfill is the most reasonable and cost-effective manner in which to satisfy this need. In addition the

closure of the landfill will promote source control preventing or minimizing the infiltration of contaminants into the groundwater in the future. The West Landfill meets the CCR Final Rule requirements, so it provides a compliant method to continue to comply with the Rule even with the closure of the East Landfill.

IV. DUKE ENERGY KENTUCKY'S ENVIRONMENTAL COMPLIANCE PLAN

Q. PLEASE IDENTIFY THE PROJECTS THAT DUKE ENERGY KENTUCKY CURRENTLY INCLUDES IN ITS ENVIRONMENTAL COMPLIANCE PLAN AND RECOVERS THROUGH THE ESM.

A. There are several projects, as well as compliance inventories, that Duke Energy Kentucky currently includes in its ECP. These projects are as follows as follows:

1. Project EB020290 Lined Retention Basin West;
2. Project EB020745 Lined Retention Basin East;
3. Project EB020298 East Bend SW/PW Reroute;
4. ARO amortization for Pond Closure;
5. Project EB021281 East Bend Landfill Cell 2; and
6. Emission allowance inventories and expenses and reagent expense.

The projects are interrelated and include the water redirection, pond closure, post closure maintenance, and repurposing in compliance with ELG Final Rule and CCR Final Rules previously authorized by this Commission. The Commission approved these projects as part of the Company's ECP in Case No 2017-00321 and Case No. 2018-00156.

Q. PLEASE DESCRIBE DUKE ENERGY KENTUCKY'S PROPOSAL TO AMEND ITS ECP.

A. Duke Energy Kentucky is seeking authorization to amend its ECP to include the East Landfill closure and post-closure ongoing costs.

Q. HAS DUKE ENERGY KENTUCKY RECEIVED THE NECESSARY PERMITS FOR THE CLOSURE OF THE EAST LANDFILL?

A. Yes. On April 15, 2021, The Company received an amended Solid Waste Permit number SW00800006 approving the East Bend East Landfill modification of the final cover system to close in accordance with the CCR rule and Kentucky rule 401 KAR 46. A copy of this permit and the permit approval letter are included in Exhibit 2 to this Application.

V. CONCLUSION

Q. WAS EXHIBIT 2 TO THE APPLICATION PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR CONTROL?

A. Yes. It represents a true and accurate copy of the necessary permit for landfill closure.

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

A. Yes.

VERIFICATION

STATE OF OHIO)
) **SS:**
COUNTY OF HAMILTON)

The undersigned, Tammy Jett., Principal Environmental Specialist that she has personal knowledge of the matters set forth in the foregoing testimony and that it is true and correct to the best of his knowledge, information and belief.

Tammy Jett

Tammy Jett, Affiant

Subscribed and sworn to before me by Tammy Jett, on this 31 day of August, 2021.

Barry Ralph Lovell

NOTARY PUBLIC

My Commission Expires: 02-22-2025

NOTARY PUBLIC STATE OF OHIO

BARRY RALPH LOVELL
NOTARY PUBLIC
STATE OF OHIO
MY COMMISSION
EXPIRES 02-22-2025

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 Close the East Landfill at the East Bend Generating Station and for Approval to Amend its Environmental Compliance Plan for Recovery by Environmental Surcharge Mechanism	)	Case No. 2021-00290

DIRECT TESTIMONY OF

DAVID G. RAIFORD

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

September 9, 2021

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PAGE

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is David G. Raiford and my business address is 550 South Tryon Street, Charlotte, North Carolina 28202.

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

A. I am employed by Duke Energy Business Services LLC (DEBS), as Manager Accounting I. DEBS provides various administrative and other services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I am a graduate of the University of North Carolina at Wilmington, with a Bachelor of Science degree in Business Administration, and a Master of Science degree in Accountancy. I am a Certified Public Accountant in the State of North Carolina. I began my employment with Duke Energy in 2010 in the Financial Reporting group within the Accounting Department and have also supported the accounting for Asset Retirement Obligations within Asset Accounting. I transitioned to my current position within Asset Accounting in June 2020. My work experience prior to Duke Energy was with Grant Thornton, LLP as an Audit Senior Associate serving clients in a variety of industries.

Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS MANAGER ACCOUNTING I.

A. As Manager I, Asset Accounting, I have responsibility for accounting and

reporting activities within Duke Energy's electric and natural gas utilities related to fixed assets, including electric and natural gas plant in service, construction work in progress, depreciation, asset retirement obligations (ARO), as well as accounting research.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION?

A. I recently provided testimony supporting Duke Energy Kentucky's net plant in service as part of the Company's recently filed natural gas base rate case, Case No. 2021-00190.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. My testimony describes and supports the Company's accounting for Asset Retirement Obligations (AROs) related to coal ash at the East Bend generating station, and more specifically how the Company is proposing to address the ARO related to the East Bend East Landfill closure, East Bend West Landfill ongoing maintenance, and East Bend basin post closure maintenance in this proceeding.

II. ASSET RETIREMENT OBLIGATIONS

Q. WHAT IS AN ARO?

A. AROs are legal obligations associated with the retirement of long-lived assets that result from the acquisition, construction, development and/or normal operation of such assets. In accordance with Financial Accounting Standards Board (FASB) Accounting Standards Codification for Asset Retirement and Environmental Obligations (ASC 410-20) and Federal Energy Regulatory Commission's Order No.

631, Duke Energy Kentucky records an ARO when it has a legal obligation to incur retirement costs associated with the retirement of a long-lived asset and the obligation can be reasonably estimated. The liability is accreted to its present value each period and the capitalized cost is depreciated over the useful life of the related asset. When required removal activities are performed, the entity settles the obligation for its recorded amount.

Q. PLEASE PROVIDE A BACKGROUND OF THE COAL COMBUSTION RESIDUALS (CCR) FINAL RULE AS IT RELATES TO EAST BEND COAL ASH.

A. In June 2010, the United States Environmental Protection Agency (EPA) proposed national minimum criteria to regulate the disposal of Coal Combustion Residuals (CCRs) and the operation and closure of active CCR landfills and existing active and inactive CCR surface impoundments. Approximately five years later, EPA published the CCR Final Rule in the Federal Register in April 2015. All ash basins and eventually, the landfills at East Bend must be closed under this program, and the Company has begun the closing process. As this Commission is aware, the Company has previously received approval for the creation of its coal-ash related ARO in Case No. 2015-00187, and received Certificates of Public Convenience and Necessity (CPCNs) for construction of a new landfill,[1] water redirect and closure of its ash basin,[2] as well as approval for conversion to a dry-bottom ash handling

[1] *In the Matter of the Application of Duke Energy Kentucky, Inc., for a Declaratory Order that the Construction of a New Landfill Constitutes an Ordinary Extension in the Usual Course of Business or, in the Alternative, for a Certificate of Public Convenience and Necessity*, Case No. 2015-00089 (Ky.P.S.C. Jul. 24, 2015).

[2] *In the Matter of the Application of Duke Energy Kentucky, Inc., for a Certificate of Public Convenience and Necessity Authorizing the Company to Close the East Bend Generation Station Coal Ash Impoundment and*

process.[3] These projects, as well as the existing East Landfill that the Company must now close influence the Company's ARO accounting. As part of the Company's 2017 base electric rate case, the Commission authorized the Company to begin including the costs associated with the coal ash ARO in its environmental surcharge mechanism (ESM) as part of its environmental compliance plan.[4]

As part of the Company's response in Case No. 2015-00187 STAFF-DR-01-001, Duke Energy Kentucky provided detail of the underlying cash flows that supported the ARO liability of $116 million as of June 30, 2015 associated with the East Bend ash pond, which included expected costs of "building a lined on-site landfill, capping that landfill, and conducting post-closure maintenance."[5] This response also noted that "Preliminary scientific studies on the ash basin at East Bend indicate that the ash will most likely be excavated to an on-site landfill by 2021."[6]

Q. PLEASE DESCRIBE THE COMPANY'S ASH-RELATED AROS.

A. The ARO Duke Energy Kentucky has recorded resulting from this CCR Final Rule uses costs based on management's best estimates of required underlying activities at fair value, as required under Generally Accepted Accounting Principles (GAAP) ASC 410-20, as described above. The total of the coal ash basin and West Landfill

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For All Other Required Approvals and Relief, Case No. 2016-00398 (Ky.P.S.C. Jun. 6, 2017).

[3] *In the Matter of the Application of Duke Energy Kentucky, Inc., For a Certificate of Public Convenience and Necessity for Dry Bottom Ash Conversion of the East Bend Generating Station*, Case No. 2016-00268 (Ky.P.S.C. Feb. 23, 2017).

[4] *In the Matter of the Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Electric Rates; 2) Approval of an Environmental Compliance Plan and Surcharge Mechanism; 3) Approval of New Tariffs; 4) Approval of Accounting Practices to Establish Regulatory Assets and Liabilities; and 5) All Other Required Approvals and Relief*, Case No. 2017-00321, Order at pg. 80 (Ky.P.S.C. Apr. 13, 2018).

[5] *In the Matter of the Application of Duke Energy Kentucky, Inc., for an Order Approving the Establishment of a Regulatory Asset for the Liabilities Associated with Ash Pond Retirement Obligations*, Case No. 2015-00187, Response to STAFF-DR-01-001 and Confidential Attachment (Ky.P.S.C. Jul. 27, 2015).

[6] Id.

AROs is $40.0 million and the East Landfill ARO is $26.1 million at June 30, 2021. The remaining coal ash basin ARO is related to post closure maintenance and the East and West Landfill AROs are primarily related to ongoing maintenance, the capping of the landfills and associated post closure maintenance.

Q. PLEASE DESCRIBE THE POST CLOSURE MAINTENANCE AND WORK REQUIRED BY CCR AND INCLUDED IN THE ARO FOR EAST BEND.

A. The CCR Final Rule requires ongoing and post closure maintenance of CCR landfills and surface impoundments, among other items, that consists of items such as:

a) maintaining the integrity and effectiveness of the cover system,

b) maintaining the integrity and effectiveness of the leachate collection and removal system, operating the leachate collection and removal system, and

c) maintaining groundwater monitoring system and monitoring the groundwater.[7]

The CCR Final Rule generally requires that post-closure maintenance requirements be conducted for 30 years.

Q. DOES THIS POST-CLOSURE MAINTENANCE ARO EXPENSES APPLY SOLELY TO THE EAST LANDFILL CLOSURE? PLEASE EXPLAIN.

A. No, the post-closure maintenance requirements apply to both CCR landfills and former CCR surface impoundments, among other items, in accordance with the CCR Final Rule.

[7] *See* 40 C.F.R. 257 and 401 KAR 46:110 Section 9

Q. IS THE WEST LANDFILL CURRENTLY INCURRING ANY ARO EXPENSES AS A RESULT OF THE CCR RULE? IF SO, WHAT ARE THE EXPECTED ANNUAL EXPENDITURES?

A. Yes, approximately one million tons of sluiced coal ash materials were removed from the ash pond during closure and transported to the East Bend landfills. Currently, Cells 1 and 2 of the West Landfill have approximately 30 acres of temporary cover soils, that will ultimately become part of the final cover system utilized during closure of the landfill in the future. The CCR Final Rule, as well as State of Kentucky rules in accordance with the Solid Waste Permit, require ongoing maintenance, similar to those required for post-closure maintenance discussed above. Duke Energy Kentucky estimates annual ongoing maintenance expenditures of approximately $1.0 million as outlined in Company Witness Mr. Deller's testimony.

Q. HAS THE COMPANY PREVIOUSLY DESCRIBED THE ARO RELATED TO THE EAST LANDFILL TO THIS COMMISSION?

A. Yes. The Company described the need to close the East Landfill and the ARO associated with it as part of the Company's 2017 and 2019 electric base rate cases. In the most recent 2019 case, the Company stated the timing of final closure of the East Landfill is expected to occur in 2021-2022 to correspond with the anticipated end of life for the landfill.[8] The landfill must be closed in compliance with current environmental regulations, including the CCR rule.

[8] *In the Matter of the Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Electric Rates; 2) Approval of New Tariffs; 3) Approval of Accounting Practices to Establish Regulatory Assets and Liabilities; and 4) All Other Required Approvals and Relief*, Case No. 2019-0271, Direct Testimony of Melissa Abernathy pg. 8. (Ky.P.S.C. Sept. 3, 2019).

Q. PLEASE DESCRIBE THE RELIEF THE COMPANY IS REQUESTING IN THIS PROCEEDING AS IT RELATES TO ARO ACCOUNTING.

A. This CPCN specifies the nature, timing, and expected amount of costs for closure, and ongoing maintenance of the East Landfill, in compliance with applicable environmental regulations as explained by Company witness Ms. Jett. The proposed recovery addressed in this testimony specifically relates to the costs necessary to close and maintain the existing landfills at East Bend, ongoing maintenance, including groundwater monitoring, related to the existing West Landfill and East Bend basin post-closure maintenance.

The Company has recorded an ARO as a result of this legal obligation to close the East Bend East Landfill in accordance with the CCR Final Rule, as well as AROs for the ongoing maintenance, closure activities and post-closure maintenance at the West Landfill and the former basin. My testimony supports the reasonableness of the ARO associated with these required CCR landfill closure and maintenance costs, basin post closure maintenance costs and the proposed recovery schedule. Duke Energy Kentucky proposes to recover the cost of the East Landfill closure and other ARO costs I described through its Rider ESM once approved in this proceeding as described by Duke Energy Kentucky Witness, Mr. Czupik. See Company Witness, Mr. Deller's testimony for Duke Energy Kentucky's current East Bend East Landfill closure and post-closure maintenance costs and West Landfill ongoing maintenance costs.

III. CONCLUSION

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

A. Yes.

VERIFICATION

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

The undersigned, David G. Raiford, Manager Accounting I, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing testimony and that it is true and correct to the best of his knowledge, information and belief.

David Gordon Raiford, Jr.
David G. Raiford Affiant

Subscribed and sworn to before me by David G. Raiford on this 27 day of August, 2021.

Oliver Tonsay
NOTARY PUBLIC

My Commission Expires: APRIL 24, 2022

Oliver Tonsay
NOTARY PUBLIC
Forsyth County, NC
My Commission Expires April 24, 2022

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 Close the East Landfill at the East Bend Generating Station and for Approval to Amend its Environmental Compliance Plan for Recovery by Environmental Surcharge Mechanism	)	Case No. 2021-00290

DIRECT TESTIMONY OF

THEODORE H. CZUPIK JR.

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

September 9, 2021

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ATTACHMENTS:

THC-1 Revised ESM FORM 2.20, Amortization Calculation for ARO

THC-2 Estimated Revenue Requirement for Rider ESM – Landfill Closure

THC-3 Typical Bill Comparison

I. INTRODUCTION

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Theodore H. Czupik Jr. and my business address is 139 E. Fourth Street, Cincinnati, Ohio 45201.

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

A. I am employed by the Duke Energy Business Services LLC (DEBS) as Rates and Regulatory Strategy Manager. DEBS is a service company subsidiary of Duke Energy Corporation and a non-utility affiliate of Duke Energy Kentucky, Inc. (Duke Energy Kentucky or Company).

Q. PLEASE DESCRIBE BRIEFLY YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science degree in Accounting from the University of Dayton in 1985. I became a Certified Public Accountant (CPA) in the State of Ohio in 1988.

I began my career with The Cincinnati Gas & Electric Company (CG&E) in 1985 as a Staff Accountant in the Accounting Department. Between 1985 and 1993, I held various positions in the Accounting Department until I transferred to the Rate Department in 1993. I progressed through various positions until receiving my current position as Rates & Regulatory Strategy Manager in January 2014.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL AFFILIATIONS.

A. I am a member of the American Institute of Certified Public Accountants and the Ohio Society of Certified Public Accountants.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THE PUBLIC SERVICE COMMISSION?

A. Yes. I have testified in several fuel adjustment clause (FAC) and environmental surcharge mechanism (ESM) proceedings before the Kentucky Public Service Commission (Commission).

Q. PLEASE SUMMARIZE YOUR DUTIES AS RATES AND REGULATORY STRATEGY MANAGER.

A. As Rates & Regulatory Strategy Manager, my duties include filing various monthly, quarterly and annual rate recovery mechanisms, preparation of cost of service studies, and preparation of other schedules used in retail rate filings for Duke Energy Kentucky and its parent, Duke Energy Ohio, Inc.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide an overview of the impact to customers of including the construction activities necessary for the closure of the East Landfill at the East Bend Generating Station in Duke Energy Kentucky's Environmental Surcharge Mechanism (Rider ESM).

II. DISCUSSION

Q. PLEASE BRIEFLY DESCRIBE THE COMPANY'S APPLICATION IN THIS PROCEEDING.

A. Duke Energy Kentucky is requesting a certificate of public convenience and necessity (CPCN) to close its East Bend East Landfill in accordance with

environmental regulations, and to amend its current Environmental Compliance Plan (ECP) and to adjust its Rider ESM to include the costs of construction.

Q. HOW DOES DUKE ENERGY KENTUCKY INTEND TO FINANCE THE CONSTRUCTION OF THE CLOSURE OF THE EAST LANDFILL?

A. The Company is proposing to finance the construction through continuing operations and, if necessary, through debt issuances. The mix of debt and equity used to finance the amended project will be determined so as to allow Duke Energy Kentucky to maintain its investment-grade credit rating.

Q. HOW DOES DUKE ENERGY KENTUCKY PROPOSE TO RECOVER THE COST OF THE LANDFILL CLOSURE?

A. Duke Energy Kentucky proposes to recover the cost of the East Landfill closure through its Rider ESM once approved in this proceeding. The total cost of the closure to be recovered includes costs of engineering, construction, temporarily capping the landfill, and overhead costs. The Company proposes to revise FORM 2.20 of its monthly ESM filing to add columns for the monthly cash spend related to the closure of the East Landfill, for recovery on a two month lag, similar to recovery of other ARO costs currently recovered in Rider ESM. The Company is further proposing to amortize the costs that have already been spent to temporarily cap the landfill, over a twelve month period, similar to how the amortization of the previously approved coal ash ARO spend through April 13, 2018 is being handled today. An example of the revised FORM 2.20 is attached to my testimony as Attachment THC-1. As discussed in the testimony of Mr. Deller, the Company currently estimates to begin incurring construction expenses in late

2021/early 2022. The Company proposes to begin including costs in Rider ESM as outlined above as soon as these costs are incurred pending Commission approval of this CPCN.

Q. WHY IS IT APPROPRIATE FOR DUKE ENERGY KENTUCKY TO RECOVER THE COST OF CONSTRUCTION ACTIVITIES FOR THE EAST LANDFILL CLOSURE THROUGH RIDER ESM?

A. The ESM is authorized by KRS 278.183(1), which provides in relevant part:

> a utility shall be entitled to the current recovery of its costs of complying with the Federal Clean Air Act as amended and those federal, state, or local environmental requirements which apply to coal combustion wastes and by-products from facilities utilized for production of energy from coal in accordance with the utility's compliance plan as designated in subsection.

The statute goes on to state:

> Recovery of costs pursuant to subsection (1) of this section that are not already included in existing rates shall be by environmental surcharge to existing rates imposed as a positive or negative adjustment to customer bills in the second month following the month in which costs are incurred.

As more fully explained by the Company's application and the direct testimony of Mr. Gurganus, Mr. Deller and Ms. Jett, the construction activities required for closure of the East Bend East Landfill and the ongoing maintenance at the West Landfill are necessary for the Company's East Bend Station to continue to comply with both state and federal environmental regulations. As Mr. Deller explains, the Company anticipates pre-construction activities to commence in late 2021/early 2022 with actual construction commencing in the spring of 2022. The costs of the East Landfill closure are appropriate for eventual recovery through the ESM.

Q. WHAT ARE THE ESTIMATED COSTS OF CLOSING THE EAST LANDFILL?

A. As explained and supported in the testimony of Mr. Deller, the estimated fully-loaded cost of closing the East Landfill is $22,571,846 including contingency and escalation ($19,359,002 excluding contingency, escalation, *etc.*,).

Q. ARE THERE ANY ONGOING COSTS AT THE EAST AND WEST LANDFILLS TO BE RECOVERED THROUGH RIDER ESM?

A. Yes. As discussed in the testimony of Mr. Deller, post closure maintenance costs for the closure of the East Landfill are included in the estimate of the total cost to be recovered in Rider ESM. These post closure maintenance costs are estimated to be $234,458 annually for 30-years beginning in 2024 for a total expected cost of $7,033,740. Additionally, as discussed in Mr. Deller and Mr. Raiford's testimony, there are ongoing maintenance costs for the West Landfill that will be incurred and are accounted for as an asset retirement obligation. These costs are estimated to be approximately $1.025 million annually and are being proposed to be recovered in Rider ESM.

Q. HAS DUKE ENERGY KENTUCKY ESTIMATED THE IMPACT OF EAST LANDFILL CLOSURE ON RIDER ESM?

A. Yes. Attachment THC-2 shows the detailed calculation of the estimated annual impact of the construction costs on the environmental surcharge for the years 2022 through 2054, including the estimated annual impact on Total E(m), Jurisdictional E(m), and the incremental billing factors for Residential and Non-Residential customers associated with the project. As shown in Attachment THC-

2, the estimated impact is an increase in the ESM billing factor of 2.1365% for residential customers and 2.1364% for non-residential customers initially in 2022 and increasing to a maximum of 5.2793% for residential customers and 5.2792% for non-residential customers in 2023. For Residential customers using an average of 1,000 kWh per month, the initial monthly increase is expected to be $2.08 or 1.9613% in 2022. It is estimated that this amount will increase to a maximum of $5.14 per month or 4.8468% in 2023. Attachment THC-3 provides the estimated monthly bill impact on all Residential and Non-Residential customer rate schedules for the years 2022 through 2053.

III. CONCLUSION

Q. WERE ATTACHMENTS THC-1, THC-2 AND THC-3 PREPARED BY YOU AND UNDER YOUR DIRECTION AND CONTROL?

A. Yes.

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

A. Yes.

VERIFICATION

STATE OF OHIO)
) **SS:**
COUNTY OF HAMILTON)

The undersigned, Theodore H. Czupik, Jr., Rates & Regulatory Strategy Manager, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing testimony and that it is true and correct to the best of his knowledge, information and belief.

Theodore H. Czupik, Jr., Affiant

Subscribed and sworn to before me by Theodore H. Czupik, Jr., on this 8th day of September, 2021.

NOTARY PUBLIC

My Commission Expires: July 8, 2022

NOTARY PUBLIC STATE OF OHIO

E. MINNA ROLFES-ADKINS
Notary Public, State of Ohio
My Commission Expires
July 8, 2022

ES FORM 2.20
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DUKE ENERGY KENTUCKY, INC.
ENVIRONMENTAL SURCHARGE REPORT

Amortization Calculation for ARO

For the Expense Month of _____

			Coal Ash ARO								Landfill Closure				
Line No.	Period (1)		Cash Spend (2)	COR Credit (3)	Carrying Cost (4)	Recovery: 10-Yr Amort. (5)	Ending Balance (6)	Cash Spend (7)	Recovery: 2-Month Cycle (8)	Ending Balance (9)	Recovery: 1-Yr Amort. (10)	Cash Spend (11)	Recovery: 2-Month Cycle (12)	Ending Balance (13)	Total Recovery (1410) = (5) + (8) + (10) + (12)
1	Apr-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	May-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3	Jun-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4	Jul-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	Aug-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	Sep-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	Oct-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Nov-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	Dec-22	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
22		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
25		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
26		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
27		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
28		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
29		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
31		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
32		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
33		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
34		*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
35	Jan-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
36	Feb-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
37	Mar-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
38	Apr-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
39	May-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
40	Jun-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
41	Jul-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
42	Aug-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
43	Sep-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
44	Oct-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
45	Nov-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
46	Dec-52	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	Jan-53	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
48	Feb-53	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
49	Mar-53	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
50	Apr-53	*Actual*	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			$ -	$ -	$ -	$ -		$ -	$ -		$ -	$ -	$ -		-

Monthly Amortization Amount

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Duke Energy Kentucky, Inc.
East Landfill Closure
Estimated Revenue Requirement for Rider ESM

Line No.		Source	Environmental Compliance Plans 2022	2023	2024	2025-2053
1	Environmental Operating Expenses (OE)					
2	Monthly Amortization Expense		7,071,376	17,473,470	1,336,458	1,259,458
3						
4	Sub-Total E(m)		$ 7,071,376	$ 17,473,470	$ 1,336,458	$ 1,259,458
5	Jurisdictional Allocation as of June 30, 2021	ES Form 1.10 [1]	96.86%	96.86%	96.86%	96.86%
6	Jurisdictional E(m)	(4) x (5)	$ 6,849,335	$ 16,924,803	$ 1,294,493	$ 1,219,911
	Allocation of Estimated Annual Revenue Requirement [1]					
7	Estimated Annual Revenue Requirement		$ 6,849,335	$ 16,924,803	$ 1,294,493	$ 1,219,911
8	Residential	42.15%	$ 2,886,995	$ 7,133,804	$ 545,629	$ 514,192
9	Non-Residential	57.85%	$ 3,962,340	$ 9,790,999	$ 748,864	$ 705,719
	Total Revenues for the twelve months ended June 30, 2021	ES Form 3.00 [1]	$ 320,593,560	$ 320,593,560	$ 320,593,560	$ 320,593,560
10	Residential	ES Form 3.00 [1]	$ 135,128,305	$ 135,128,305	$ 135,128,305	$ 135,128,305
11	Non-Residential	ES Form 3.00 [1]	$ 185,465,255	$ 185,465,255	$ 185,465,255	$ 185,465,255
	Estimated Percentage Increase on ESM Billing Factor					
12	Residential	(8) / (10)	2.1365%	5.2793%	0.4038%	0.3805%
13	Non-Residential	(9) / (11)	2.1364%	5.2792%	0.4038%	0.3805%

[1] From Expense Month June 2021 ESM filing.

Duke Energy Kentucky, Inc.
Case No. 2021-00290
Typical Bill Comparison
Current Versus Proposed Rates - Rider ESM

Line No.	Rate Code	Level of Demand (a) (kW)	Level of Use (b) (kWh)	Current Bill [1] (c) ($)	2022 Proposed Bill (d) ($)	2022 Dollar Incr/(Decr) (d - c) (e) ($)	2022 Percent Incr/(Decr) (e / c) (f) (%)	2023 Proposed Bill (g) ($)	2023 Dollar Incr/(Decr) (g - c) (h) ($)	2023 Percent Incr/(Decr) (h / c) (i) (%)	2024 Proposed Bill (j) ($)	2024 Dollar Incr/(Decr) (j - c) (k) ($)	2024 Percent Incr/(Decr) (k / c) (l) (%)	2025 - 2053 Proposed Bill (m) ($)	2025 - 2053 Dollar Incr/(Decr) (m - c) (n) ($)	2025 - 2053 Percent Incr/(Decr) (n / c) (o) (%)
1	RS	N/A	1,000	$ 106.05	$ 108.13	$ 2.08	1.9613%	$ 111.19	$ 5.14	4.8468%	$ 106.44	$ 0.39	0.3678%	$ 106.42	$ 0.37	0.3489%
2																
3	DS	25	7,000	$ 764.07	$ 778.49	$ 14.42	1.8873%	$ 799.71	$ 35.64	4.6645%	$ 766.80	$ 2.73	0.3573%	$ 766.64	$ 2.57	0.3364%
4																
5	DP	400	165,000	$ 13,573.18	$ 13,745.36	$ 172.18	1.2685%	$ 13,998.65	$ 425.47	3.1346%	$ 13,605.72	$ 32.54	0.2397%	$ 13,603.85	$ 30.67	0.2260%
6																
7	DT	1,000	500,000	$ 39,122.97	$ 39,606.32	$ 483.35	1.2355%	$ 40,317.36	$ 1,194.39	3.0529%	$ 39,214.33	$ 91.36	0.2335%	$ 39,209.06	$ 86.09	0.2200%
8																
9	TT	3,000	1,500,000	$ 105,289.97	$ 106,511.71	$ 1,221.74	1.1604%	$ 108,308.99	$ 3,019.02	2.8673%	$ 105,520.89	$ 230.92	0.2193%	$ 105,507.57	$ 217.60	0.2067%
10																
11	EH	N/A	20,000	$ 1,537.23	$ 1,556.04	$ 18.81	1.2236%	$ 1,583.71	$ 46.48	3.0236%	$ 1,540.79	$ 3.56	0.2316%	$ 1,540.58	$ 3.35	0.2179%
12																
13	SP	N/A	1,500	$ 195.31	$ 198.23	$ 2.92	1.4951%	$ 202.53	$ 7.22	3.6967%	$ 195.86	$ 0.55	0.2816%	$ 195.83	$ 0.52	0.2662%
14																
15	GSFL	5	500	$ 294.25	$ 299.48	$ 5.23	1.7774%	$ 307.17	$ 12.92	4.3908%	$ 295.24	$ 0.99	0.3364%	$ 295.18	$ 0.93	0.3161%

[1] Based on rates in effect for June 2021.