COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF DUKE ENERGY KENTUCKY, INC. FOR AN ADJUSTMENT TO RIDER NM II RATES AND FOR TARIFF APPROVAL	)))	CASE NO. 2025-00258

DIRECT TESTIMONY OF

NATHAN GAGNON

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

August 4, 2025

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I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Nathan Gagnon, and my business address is 525 South Tryon Street, Charlotte, North Carolina.

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

A. I am employed by Duke Energy Business Services LLC (DEBS) as Managing Director, Integrated Resource Planning & Analytics. DEBS provides various administrative and other services to Duke Energy Kentucky and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science in Biology in 2004 and a Master of Science in Environmental Science in 2008 from the State University of New York College of Environmental Science and Forestry. I received a Master of Business Administration from the New York University Stern School of Business in 2015. From 2008 to 2014 I held several analyst roles with IHS (now a unit of S&P Global) covering North American power and renewable energy markets. In 2014, I joined Public Service Enterprise Group (PSEG) as a Senior Project Valuation Analyst, performing due diligence and cash flow analytics for potential new power generation projects and acquisitions. I joined Duke Energy in 2016 as a Lead Planning Analyst on the Midwest Integrated Resource Planning team, moved to Integrated System and Operations Planning team as a Principal Coordinator in 2019, and in 2021 joined Duke Energy's Carolinas Integrated Resource Planning

team, first as Principal Planning Analyst and then as Director of IRP Regulatory & Policy Strategy. In 2024 I became Managing Director, IRP & Analytics, for the Company's Midwest regulated utilities.

Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS MANAGING DIRECTOR INTEGRATED RESOURCE PLANNING AND ANALYTICS.

A. I oversee the development of the long-term resource plans for the Company's Midwest utilities. The overriding objective of those plans is to provide customers with a generating system that is mindful of costs and risks, is increasingly diverse and environmentally sustainable.

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. The purpose of my testimony is to explain and provide support for certain prices, cost data, and assumptions, as detailed below, that serve as starting points and/or inputs for the Avoided Cost of Excess Generation Credit (ACEGC) calculations performed by Duke Energy Kentucky witness Bruce L. Sailers. Specifically, I provide support for the calculation of the following categories of avoided costs: generation capacity, energy, environmental, and carbon. I also explain the Company's use of Effective Load Carrying Capability (ELCC) values in this proceeding.

II. DISCUSSION

Q. ARE YOU FAMILIAR WITH THE INTEGRATED RESOURCE PLANNING PROCESS FOR DUKE ENERGY KENTUCKY?

A. Yes. Duke Energy Kentucky files its integrated resource plan (IRP) approximately every three years. The Company filed its last IRP with the Commission in Case No. 2024-00197. Although this IRP provided a snapshot of Duke Energy Kentucky's resource planning at that point in time, IRP planning is a dynamic process that is periodically updated.

Q. PLEASE GENERALLY DESCRIBE THE IRP PLANNING PROCESS.

A. The IRP planning process assesses various supply-side, demand-side and emission compliance alternatives to develop a long-term, cost-effective portfolio to provide customers with reliable service at reasonable costs. The IRP planning process involves various assumptions such as future energy prices, future environmental compliance requirements and reliability constraints. Among other things, the Company develops a number of forecasts to generate inputs for IRP analytics.

Q. PLEASE EXPLAIN AND DESCRIBE HOW THE COMPANY IS CALCULATING AVOIDED GENERATION CAPACITY COSTS IN THIS PROCEEDING.

A. The Company is using the published PJM net cost of new entry (CONE) as the starting point for avoided generation capacity value. PJM publishes region-specific net CONE values for each planning year, based on the capital and operating costs of a simple-cycle combustion turbine generator, net of the forecasted energy and

ancillary services values provided by that generator.[1] Netting out of the forecasted energy and ancillary services values yields a cost estimate for capacity alone. The Company multiplied the net CONE for unforced capacity (UCAP) in the DEOK zone by the ELCC of fixed-tilt solar resources, also provided by PJM, to estimate the capacity cost that the utility avoids (*i.e.*, "avoided costs") due to the availability of net energy metered ("NEM") solar resources. This information was provided to Mr. Sailers to develop the avoided generation capacity rate proposed in this filing. Consistent with the Commission's order in Case No. 2023-00413,[2] the Company is using the most up-to-date ELCC values published by PJM.[3]

Q. PLEASE EXPLAIN AND DESCRIBE IN DETAIL HOW THE FORECASTED ENERGY PRICES USED IN MR. SAILERS' CALCULATIONS FOR AVOIDED ENERGY COSTS WERE DEVELOPED.

A. The Company forecasts the price at which Duke Energy Kentucky can purchase energy from, or sell energy into, the broader PJM marketplace on an hourly basis. These hourly prices are forecasted using EnCompass power system planning software. The EnCompass model allows the Company to simulate the entire Eastern Interconnection which includes nearly the entirety of the central and eastern United States and Canada. Yes Energy, from which Duke Energy licenses EnCompass,

[1] https://www.pjm.com/-/media/DotCom/markets-ops/rpm/rpm-auction-info/2026-2027/2026-2027-planning-period-parameters-for-base-residual-auction-pdf.pdf

[2] *See In the Matter of the Electronic Application of Duke Energy Kentucky, Inc. for an Adjustment to Rider NM Rates and for Tariff Approval,* Case No. 2023-00413, Order, pp. 32-33 (Ky. P.S.C. Oct. 11, 2024) (finding that updated data, including updated ELCC should be used).

[3] *See* https://www.pjm.com/planning/resource-adequacy-planning/effective-load-carrying-capability (containing publicly available reports); Direct Testimony of Bruce L. Sailers, Attachment BLS-1.

also provides a database of existing units, planned unit retirements, and planned unit additions for the Eastern Interconnection. The Company uses this database, as well as forecasted fuel prices, emissions allowance costs, and production and investment tax credits (i.e., PTC and ITC) to develop a 25-year simulation of the Eastern Interconnection. This is done in two steps.

First, Duke Energy Kentucky uses EnCompass's capacity expansion model to determine the optimized least cost mix of resources over the planning period, including future retirements and resource additions beyond the planned actions included in the database provided by Yes Energy. Next, the Company uses EnCompass's production cost model to simulate hourly dispatch of the optimized mix of resources over the 25-year period. The marginal cost of energy calculated in this hourly simulation serves as the hourly power price forecast.

Finally, to ensure alignment with actual market prices, the Company develops a blended forecast, using both market forward curves and the simulated power prices developed using EnCompass. The final blended energy price forecast consists of three years of market data (forward curve through 2028), three years of transition (2029-2031), and simulated prices through the remainder of the period. The blended energy price forecast was provided to Mr. Sailers for his calculations. This forecast, because it is based on the expected marginal cost of energy, incorporates the impacts of anticipated environmental costs and tax credits.

Q. PLEASE EXPLAIN AND DESCRIBE HOW THE FORECASTED ENERGY PRICES INCORPORATE ANY ANTICIPATED AVOIDED ENVIRONMENTAL COSTS AND TAX CREDITS, AS WELL AS ANY AVOIDED CARBON COSTS.

A. The forecasted energy prices, which represent the marginal cost of energy in each hour of the forecast, incorporate environmental costs and tax credits, as well as any anticipated avoided carbon costs in two ways. First, variable costs such as sulfur dioxide (SO_2) and nitrogen oxide (NO_X) allowance costs, reagent costs for emissions controls that are included in the variable operating costs for fossil generators, and production tax credits directly influence the marginal cost of energy. Second, fixed costs such as the capital cost of emissions control equipment, and investment tax credits affect the relative economics of different types of generation. The variable costs and production tax credits I mentioned also affect the relative economics of different resource types. Those relative economics influence future resource additions and retirements in the simulation and, by shaping the resource mix, indirectly influence the marginal cost of energy in the future. The Company did not include a price on carbon emissions in its analytics here because there is currently no regulation in place that imposes such a cost (e.g., CO_2 tax). Thus, the forecasted energy prices already adequately incorporate any avoided environmental costs, tax credits, and there is no basis to incorporate any additional amount for avoided carbon costs.

III. CONCLUSION

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

A. Yes.

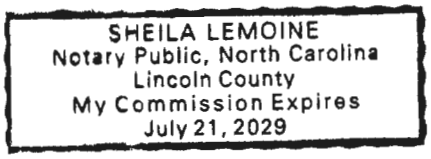
VERIFICATION

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

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

Nathan Gagnon Affiant

Subscribed and sworn to before me by Nathan Gagnon on this 31 day of July, 2025.



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My Commission Expires: July 21, 2029