COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

AN ELECTRONIC EXAMINATION OF THE APPLICATION OF THE FUEL ADJUSTMENT CLAUSE OF DUKE ENERGY KENTUCKY, INC. FROM NOVEMBER 1, 2022 THROUGH OCTOBER 31, 2024	)))))	CASE NO. 2025-00342

DIRECT TESTIMONY OF

JOHN D. SWEZ

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

January 23, 2026

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I. INTRODUCTION AND PURPOSE

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John D. Swez and my business address is 525 S Tryon Street, Charlotte, North Carolina 28202.

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

A. I am employed as Managing Director, Trading and Dispatch, by Duke Energy Carolinas, LLC, a utility affiliate of Duke Energy Kentucky, Inc. (Duke Energy Kentucky or Company).

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

A. I received a Bachelor of Science degree in Mechanical Engineering from Purdue University in 1992. I received a Master of Business Administration degree from the University of Indianapolis in 1995. I joined PSI Energy, Inc. in 1992 and have held various engineering positions with the Company or its affiliates in the generation dispatch or power trading departments. In 2003, I assumed the position of Manager, Real-Time Operations, on January 1, 2006, became the Director of Generation Dispatch and Operations, and finally assumed my current role on November 1, 2019.

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

A. Yes, I have testified before the Kentucky Public Service Commission (Commission) on several occasions.

Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AS MANAGING DIRECTOR, TRADING & DISPATCH.

A. As Managing Director, Trading and Dispatch of Duke Energy, I am responsible for Power Trading on behalf of Duke Energy's regulated utilities in the Carolinas and Florida and Generation Dispatch on behalf of Duke Energy's regulated utilities in Indiana, Ohio, and Kentucky. I am responsible for Duke Energy Kentucky's participation as a member of PJM Interconnection LLC (PJM) as it relates to the Company's generation dispatch, unit commitment, 24-hour real-time operations, and short-term maintenance planning. I am also responsible for the Company's submittal of supply offers in PJM's Day-Ahead and Real-Time electric energy (collectively Energy Markets) and ancillary services markets (ASM), as well as managing the Company's short-term supply position to ensure that the Company has adequate economic resources committed to serve its retail customers' electricity needs. I also work closely with the teams responsible for managing the Company's capacity position with respect to meeting its Fixed Resource Requirement (FRR) obligation and going forward participation in the auction-based Reliability Pricing Model (RPM) Base Residual (BRA) and Incremental Auctions (IA).

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my testimony is to respond to Paragraph 6(f)-(l) of the Commission's December 19, 2025 Order (Order) and to more broadly discuss changes in the wholesale electric power market, the Company's efforts to mitigate high fuel and purchased power costs, as well as, its handling of outages and off-

system sales and to discuss Duke Energy Kentucky's operation in the PJM market including Duke Energy Kentucky's move from being an FRR capacity market participant to being an RPM capacity market participant effective with the 2027/28 Delivery Year. Finally, I sponsor several of Duke Energy Kentucky's responses to the Commission's Data Requests contained in Appendix B of its Order.

II. DISCUSSION OF DUKE ENERGY KENTUCKY'S POWER PROCUREMENT PRACTICES

Q. PLEASE DESCRIBE ANY CHANGES THAT OCCURRED IN THE WHOLESALE ELECTRIC POWER MARKET BETWEEN NOVEMBER 1, 2022 AND OCTOBER 31, 2024 THAT SIGNIFICANTLY AFFECTED DUKE ENERGY KENTUCKY'S ELECTRIC POWER PROCUREMENT PRACTICES.

A. Duke Energy Kentucky joined PJM effective January 1, 2012, and continued to operate within PJM during the period under review in this proceeding. Accordingly, the Company continues to offer its generation and bid its load into the PJM Energy Market. For the PJM Capacity Market, the Company participated as an FRR capacity market participant during the review period. The generating resources that are committed in the FRR plan have a must-offer obligation for their energy in the Day-Ahead Energy Market. Duke Energy Kentucky Witness Mr. McClay discusses the PJM Capacity Markets in greater detail through his direct testimony.

The wholesale electric power market sustained significant volatility during the review period of November 1, 2022 through October 31, 2024. Just prior to

the review period, natural gas and PJM power prices rose significantly and coal markets became constrained beginning in the summer of 2021 and remained constrained for all of 2022. The rapid climb in power prices across the market drove demand for coal higher, resulting in higher coal burns across the energy sector. During the first two months of the review period, November and December 2022, power prices remained elevated, with the Day-Ahead average around-the-clock price at the AEP-Dayton Hub (AD Hub) reaching $82.28/MWh in December — the peak for the review period and nearly matching the highest market prices from earlier that year. Beginning in January 2023, both natural gas and power prices saw a marked decline, with the remaining monthly average prices of the review period all below $42.92/MWh (January 2024), considerably below the market peaks seen in 2022.

As described in the testimony of Kimberly Hughes, during 2023 and 2024, published coal market prices declined relative to 2021 and 2022 prices in response to low natural gas prices and overall lack of coal generation demand, although there were also countervailing inflationary factors. Additionally, seasonal NOx prices also decreased significantly during the review period, from highs of $47,000/ton in 2022, declining during the 2023 ozone season from $9,750/ton at the start of the season in June 2023 to $2,000/ton by the end of the season, and dropping again to $1,000/ton by the end of the review period in 2024. For context, at a $47,000/ton NOx price, East Bend has an added NOx variable cost of approximately $20/MWh, but at $1,000/NOx price, East Bend has an additional NOx variable cost of only $.40/MWh.

East Bend continued to compete favorably in the PJM Energy Market through the period, with the typical commitment of the unit offered with a commitment status of Must Run, when the unit was available, during most of the review period. When committed, the unit dispatched between minimum and maximum, with minimum load more often in off-peak hours, while experiencing dispatch closer to maximum output in the on-peak hours. Reserve shutdown, or turning or keeping the unit off-line when available, is possible outside of Winter months if power prices drop below the variable cost of the unit for a prolonged period, prompting the Company to submit a commitment status offer of Economic, resulting in potential decommitment by PJM. Although the Company's six combustion turbines at Woodsdale station continue to have relatively low Net Capacity Factors (NCF), utilization within the PJM Energy Markets has steadily increased, as evidenced by the station's approximate 11% NCF for the last 6-month period of this review period, May through October 2024.

Duke Energy Kentucky continued to make economic purchases from PJM when purchases were more economic than dispatching its own generation for the benefit of the Company's customers. Additionally, the Company continued to make economic power purchases for both planned and unplanned outages from PJM during the audit period to mitigate exposure to market prices. Said another way, the Company does not commit more expensive generation to the market for the purpose of replacing generation in outage; it follows the fundamentals of

economic commitment and dispatch to purchase the most economic power possible at all times.

PJM commits and dispatches these resources via their security constrained unit commitment and least-cost economic dispatch software by modeling the Duke Energy Kentucky generating resources with all other generating resources in the PJM area. If not committed in the Day-Ahead Market, the units may still be committed in the Real-Time Market. There are separate LMPs calculated for Day-Ahead versus Real-Time Markets paid to the generators or charged to the load. PJM also operates an Ancillary Services Market for Regulation and Frequency Response Service (Regulation), Secondary, Non-Synchronized, and Synchronized Reserves, each of which is cleared separately with different prices for each product. In addition, PJM reimburses Duke Energy Kentucky for Black Start Service (Black Start) and Reactive Supply and Voltage Control Services (Reactive)[1] provided by Company resources. The Duke Energy Kentucky Woodsdale Combustion Turbine (CT) station is currently a Black Start resource in the applicable Duke Energy Black Start plan and, in addition, is reimbursed for certain costs to provide Black Start Service by PJM. Duke Energy Kentucky continues to operate its generating resources to optimize revenues available in the PJM Capacity and Energy Markets and for Ancillary Services, Black Start Service, and Reactive Service in a reliable manner for the benefit of customers and shareholders.

[1] Payment for reactive power within the standard power factor range is ending in PJM on June 1, 2026.

Q. PLEASE IDENTIFY ANY CHANGES IN THE WHOLESALE POWER MARKET THAT ARE EXPECTED TO OCCUR IN THE NEXT TWO YEARS THAT COULD SIGNIFICANTLY AFFECT DUKE ENERGY KENTUCKY'S POWER PROCUREMENT PRACTICES.

A. From a macro level perspective, the Company believes that the energy and electricity sector continues to go through an extraordinary period of change. This change is primarily driven by changes in load growth, generator retirements, and integration of renewable generation.

Although the Company believes that the PJM Energy Markets will continue to function as they do today, wholesale energy price volatility will likely continue, as well as a prolonged period of elevated PJM capacity prices. Direct drivers behind this increased volatility include the volatility of natural gas and coal prices and the impact on wholesale power prices. Other fuel related drivers include the effects of the onset of the transitioning energy mix in the wholesale power market to include more renewable and intermittent generation, impacts of retiring coal generation on traditional coal supply chains, impacts of additional customer demand across the interconnection and in PJM, and the ongoing relationship between domestic coal and natural gas production to export demand. Finally, the impact of evolving environmental regulations on traditional fossil fuel energy resources, and any structural market changes implemented by PJM that impact energy and capacity markets could significantly impact power procurement practices as well. As additional customer demand is brought onto the

grid, the wholesale power market will continue to digest the impact on how grid operators will reliably meet demand.

The Company expects, over the next two years, to continue to provide reliable and economic generation from its resources at East Bend, and Woodsdale, as well as its solar resources and expects to continue meeting its energy needs economically through the PJM Energy Market. Duke Energy Kentucky will continue to make economic purchases from PJM when market purchases are more economic than committing or dispatching its own generation for the benefit of the Company's native load. Due to the risk of PJM capacity performance events, the company currently models East Bend as a Must Run unit in its forward-looking fuel projection model for the months of December, January, and February. Additionally, although the unit typically has a marginal cost below PJM energy prices and thus may still have a Must Run offer in non-Winter months, in the forward-looking model, East Bend is modeled using an Economic commitment, meaning when the model sees power prices below the cost of East Bend, the unit can be decommitted. Thus, it is possible that East Bend may experience typically short instances of reserve shutdown in the future when energy prices do not support operating the unit.

Finally, as mentioned, payment for reactive power within a unit's standard power factor range ends in PJM on June 1, 2026. In addition, the normal cost of reactive power charged to the customer is also ending on this same date. Thus, Duke Energy Kentucky is expecting the majority of the payments charged for Reactive and the costs paid for Reactive to substantially decrease on this date,

notwithstanding charges or credits that occur for instances outside of the standard power factor range and adjustments from past accounting periods.

Q. PLEASE EXPLAIN A RESERVE SHUTDOWN IN THE CONTEXT OF EAST BEND AND IF COAL IS CONSUMED DURING A RESERVE SHUTDOWN.

A. Reserve shutdown occurs when the amount of revenue received from a unit in the PJM Energy Market is less than the variable cost of operating a generation, resulting in the unit either staying or coming off-line. This is an event where a unit is available to produce energy but is not committed. During this time, the unit status may also be referred to as being in an economic outage or economic shutdown. Based on the fundamentals of economic commitment and dispatch, if a unit is in reserve shutdown, it is more economic to purchase energy from the market to meet demand than to commit and dispatch the unit into the PJM Energy Markets. Since the unit is not operational during a reserve shutdown event, coal is not consumed.

Q. PLEASE GENERALLY DESCRIBE DUKE ENERGY KENTUCKY'S POWER PROCUREMENT PRACTICES.

A. During the entire review period, Duke Energy Kentucky has been a member of PJM, the nation's first fully functioning RTO that operates the power grid and wholesale electric market for all or parts of thirteen states and the District of Columbia. As discussed herein and in the Direct Testimony of James McClay, this electric market consists of energy markets, capacity markets, ancillary services markets, and an FTR market. PJM's operation is governed by agreements

approved by the Federal Energy Regulatory Commission (FERC) including the Operating Agreement, Open Access Transmission Tariff (OATT), and the Reliability Assurance Agreement. As a member of PJM, Duke Energy Kentucky is subject to these agreements, which, among other things, require Duke Energy Kentucky to offer all of its available generation to PJM and to purchase its customer energy load from the PJM Day-Ahead or Real-Time Energy Markets. The Day-Ahead and Real-Time Energy Markets are collectively referred to as the PJM Energy Market for the remainder of my testimony.

Consistent with its PJM membership, during the period under review, the Company met all its energy needs through the PJM Energy Market and did not purchase any energy outside of PJM. Through PJM's Day-Ahead Energy Market, market participants can mitigate their exposure to real-time price risk by selling available generation and purchasing forecasted demand in the Day-Ahead Energy Market. Duke Energy Kentucky submits demand bids and supply offers as both a load serving entity and a generator owner, respectively. Thus, the Company simultaneously functions as both a buyer and seller to serve its retail electric customers.

During the review period, Duke Energy Kentucky also participated in PJM's Ancillary Services Markets. Day-ahead and real-time clearing prices for ancillary services appear to be at reasonable price levels consistent with market conditions. Furthermore, Duke Energy Kentucky's generating units are appropriately receiving day-ahead and real-time awards for supply of reserves.

Q. PLEASE DESCRIBE ANY ACTIONS TAKEN BY DUKE ENERGY KENTUCKY TO MITIGATE HIGH FUEL OR PURCHASED POWER COSTS FOR CUSTOMERS THROUGH ITS POWER PROCUREMENT PRACTICES.

A. Duke Energy Kentucky takes several actions in the normal course of business to mitigate high fuel or purchase power costs for customers. Throughout the period the Company maintained up to date and accurate supply offers of its available generation to continue to maximize its generating units' margin and minimize customer costs. As discussed in the testimony of Ms. Hughes, the Company continues to maintain a comprehensive coal procurement strategy that has proven successful in limiting average annual fuel price increases while actively managing the dynamic demands of its fossil fuel generation in a reliable and cost-effective manner. The coal procurement strategy discussed in her testimony is designed to mitigate high fuel costs to Duke Energy Kentucky customers. To lessen the impact and risk of PJM capacity performance events, the company offers East Bend as a Must Run unit, when the unit is available, in the months of December, January, and February. Thus, if East Bend is available during Winter months, the unit is committed by the Company and PJM dispatches the unit between minimum and maximum output. During this time, committing the unit as Must Run when the unit is available not only minimizes capacity performance risk, but maximizes portfolio stability, mitigates customer risk against power and natural gas price volatility and mitigates purchased power costs.

Furthermore, the Company staffs and offers its Woodsdale CT units to ensure they are available for commitment and dispatch. The Company maintains accurate offers for Woodsdale units, which are dual fuel units that can operate using natural gas or fuel oil. As discussed in the direct testimony of Mr. McClay, with respect to natural gas, the company maintains supplier agreements to ensure natural gas can be procured at a competitive market price to meet the needs of the Company's gas generation fleet. The Company's natural gas supply agreements enable the Company to procure the needed volume of natural gas at the most competitive price each day. Maintaining these agreements as discussed by Mr. McClay helps mitigate higher fuel costs to the customer based on the ability to procure natural gas at competitive prices. The Company typically offers the Woodsdale units with a commitment status offer of Economic, due to the higher marginal cost to operate the units as compared to market prices. Although the Woodsdale units can be started remotely, the Company will extend staffing beyond normal schedules, including around-the-clock coverage during periods of high demand or when natural gas supply is limited. This approach ensures maximum unit availability, optimizes generating margins, and helps mitigate purchased power costs. The Company also takes advantage of its fuel diversity at Woodsdale station, which, as mentioned, can operate on natural gas or fuel oil. Especially during times when natural gas deliverability or availability is constrained, the Company mitigates purchase power risk by also continuously offering Woodsdale units on fuel oil. If the Woodsdale units are unable to operate on natural gas and if energy market prices

rise above the marginal cost to operate the unit on fuel oil, the unit may be committed and dispatched while operating using fuel oil, as was the case during Winter Storm Elliott in December 2022.

Company station and dispatch personnel collaborate regularly to coordinate maintenance schedules on its generating units. This is accomplished using both planned and maintenance outages, which are undertaken to proactively address maintenance needs at a generating unit to avoid longer term performance issues and potential forced outages. Reducing forced outages at its generating units mitigates purchase power costs and is an essential element to company personnel in operating an effective portfolio. Station and dispatch personnel work together to identify prudent market opportunities to address maintenance, such as over weekends and in off peak hours, when power prices are lower which helps mitigate purchased power costs for customers and also helps maintain longer term reliability of the generating units. Additionally, to reduce the volatility of purchased power expense during scheduled outages, the Company is able to enter into financial hedges, with scheduled outages including both planned and maintenance outages.

Duke Energy Kentucky personnel use software models to create an hourly forecast of expected customer demand for the next 7 to 21 days, with the next day's hourly forecast used as the basis for the two demand bids, DEK and Longbranch, submitted daily to PJM. Producing demand bids that are as accurate as possible helps reduce costs for customers by minimizing exposure to real-time prices and by minimizing load deviations from day-ahead schedules, which is a

key input in the Balancing Operating Reserve charge, PJM Billing Line Item (BLI) 2375. If the Company was to habitually buy more load from PJM in the Day-Ahead Market than ultimately needed, it would be forced to sell the excess back to PJM at Real-Time LMPs, subjecting itself to additional real-time price volatility as well as additional Balancing Operating Reserve charges. If the Company were to habitually buy less load from PJM in the Day-Ahead Market than ultimately needed, it would be forced to buy the additional need from PJM at Real-Time LMPs, again subjecting itself to additional real-time price volatility as well as additional Balancing Operating Reserve charges. The Company conducts daily forecasting reviews to identify and address forecasting error trends that could affect customers, thereby ensuring demand bids submitted to PJM remain as accurate as possible. Finally, Company personnel perform daily reviews of resource supply offers to ensure accuracy, discuss strategy of different offer approaches, and conduct monthly PJM settlement statement review meetings to identify any potential issues that may impact billing to customers.

Q. DURING THE REVIEW PERIOD, WERE THERE ANY PLANNED OUTAGES THAT EXTENDED BEYOND THE ESTIMATED TIME OF THE OUTAGE? IF YES, PLEASE EXPLAIN HOW THE COMPANY ADDRESSED THE EXTENDED OUTAGE AND ANY RESULTING ENERGY OR CAPACITY SHORTFALLS.

A. No, there were no planned outages during the review period that resulted in Planned Outage Extensions.

Q. DID DUKE ENERGY KENTUCKY ENGAGE IN ANY OFF-SYSTEM SALES OR INTER-SYSTEM SALES TO OFFSET HIGH FUEL OR POWER COSTS DURING THE REVIEW PERIOD? PLEASE EXPLAIN.

A. Duke Energy Kentucky did not engage in any specific additional off-system or inter-system sales during the review period. However, the Company does make non-native sales to PJM when the amount of generation produced in an hour is greater than the amount of customer load in the same hour. These off-system sales flow through the Company's PSM filing where 90% of sales margins are credited back to the customer, which would contribute toward offsetting fuel or purchase power costs during the review period.

Q. PLEASE BRIEFLY DESCRIBE THE PJM ENERGY MARKET.

A. PJM administers its Energy Market utilizing locational marginal pricing (LMP). LMP can be defined as the value of one additional megawatt of energy at a specific point on the electric grid. In PJM, LMP is composed of three components: the system energy price, the transmission marginal congestion price, and the marginal loss price. Both the Day-Ahead and Real-Time Energy Markets are based on supply offers and demand bids submitted to PJM by market participants, including both resource owners (as sellers) and load serving entities (as buyers).

The Day-Ahead Energy Market provides a means for market participants to mitigate their exposure to price risk in the Real-Time Energy Market. The Day-Ahead Energy Market also provides meaningful information to PJM regarding expected real-time operating conditions for the next day, which enhances PJM's

ability to ensure reliable operation of the transmission system. The Real-Time Energy Market functions as a balancing market between generation and load in real-time. Through the PJM Energy Market and the LMP price signals, PJM provides a market-based solution to value and thus manage energy production, transmission congestion, and marginal losses in the PJM region. PJM also operates, and Duke Energy Kentucky participates in the Ancillary Services Market. Ancillary services include:

- Synchronized Reserves, which provide energy from on-line resources during an unexpected period of need;
- Non-Synchronized Reserves, which also provide energy during an unexpected period of need, but which are typically off-line;
- Regulating Reserves, which are utilized to manage short-term changes in energy requirements;
- Secondary Reserves, a 30-minute day-ahead reserve product;
- Black Start Service, which provides energy to the grid in the event of a black out condition; and
- Reactive Supply and Voltage Control, which is produced by capacitors and generators and absorbed by reactors and other inductive devices.

PJM Ancillary Services Markets are co-optimized with the PJM Energy Market in order to minimize overall production costs across the PJM footprint.

In addition to these more physical Energy and Ancillary Services Markets, PJM offers financial products that can be utilized to hedge exposure to the Energy Markets. Virtual transactions can hedge risk in the Real-Time Energy Market, and

FTR transactions can hedge exposure to day-ahead congestion costs. FTR auctions are conducted annually, quarterly, and monthly. FTRs are defined by a source and sink point that entitle and obligate the holder to a stream of revenues or charges based on the hourly day-ahead congestion price differences across the defined path. Duke Energy Kentucky utilizes FTRs to manage the congestion risk from its generation stations to its load zone. Virtual transactions clear in the Day-Ahead Energy Market as virtual generators and loads at specific points on the grid. Virtual transactions settle based on the difference between the day-ahead and real-time LMP at the specific node. Duke Energy Kentucky may utilize virtual transactions to hedge generator performance risk, primarily during start up or as a potential operational contingency.

Q. PLEASE EXPLAIN HOW PJM DISPATCHES GENERATING RESOURCES TO MEET DEMAND.

A. An RTO such as PJM performs a least-cost security constrained economic commitment and dispatch process that simultaneously optimizes energy and reserves for all generation in its footprint in determining which assets to commit and dispatch. This process considers the various, unique challenges faced in reliably and economically supplying power to all load across its footprint, most significantly aligning the production of energy simultaneously with the volatility in demand within the capability of the transmission network. PJM must continually act to account for the fact that customer demand is dynamic in nature, fluctuating over the course of a day, week, and season, while analyzing factors such as costs and operating characteristics of generation from different types of

units within its entire footprint and expected and unexpected conditions on the transmission network that affect which generation units can be used to serve load economically and reliably given the numerous constraints that must be considered. Because of these challenges, PJM's dispatch process "is designed to be an optimization process…so that a reliable supply of electricity at the lowest cost possible under the conditions prevailing in each dispatch time interval can be delivered."[2]

Importantly, PJM's decisions as to which generating units should be dispatched are not made exclusively based on the individual unit's cost. Although the price of energy at a generating unit is certainly important, PJM's dispatch process must consider a number of factors, including system-wide reliability, transmission grid congestion and losses, and numerous operational conditions. PJM has access to complete information regarding the operation of its Day-Ahead and Real-Time Energy Markets in making the determination to commit and dispatch a unit. Because of the efficient and informed nature of PJM's dispatch methodology, a utility's energy purchases in PJM's Day-Ahead and Real-Time Energy Markets are the most efficient and economic means available to satisfy customer load. Stated another way, energy acquired by all load serving entities from PJM is necessarily, and by definition, purchased on an economic dispatch basis.

[2] FERC Docket AD05-13-000, *Report on Security Constrained Economic Dispatch by the Joint Board of PJM/MISO Region*, Attachment 1, at p. 5 (May 24, 2006).

Q. WHAT LEVEL OF CONTROL DOES PJM HAVE OVER DISPATCH OF DUKE ENERGY KENTUCKY'S GENERATING UNITS?

A. PJM is the grid operator for the PJM RTO and is responsible for all regional reliability coordination (as defined in the NERC and regional standards and applicable PJM Operating Manuals) as well as commitment and dispatch of system resources via their security constrained unit commitment and least-cost economic dispatch model. The model is also used to calculate real-time LMP and is created and maintained from input data received by PJM from various sources including Transmission Owners, Generation Owners, Load Serving Entities, and other Balancing Authorities. Duke Energy Kentucky generation dispatchers follow PJM generation dispatch signal instructions and relay necessary instructions to the generation stations and maintain constant communication with PJM.

Q. PLEASE EXPLAIN HOW DUKE ENERGY KENTUCKY OFFERS ITS GENERATING ASSETS INTO PJM'S ENERGY MARKETS.

A. Duke Energy Kentucky offers its units to PJM's energy and ancillary service market for commitment and dispatch purposes based on variable production costs used for the calculation of the three-piece offer: the units incremental cost, no-load cost, and startup cost. These costs are comprised of the dynamic market price of fuel and emissions plus variable operation and maintenance costs. For purposes of clarification, "commitment" means the decision to start a generator that is offline or to maintain online output from a generator that is already online and "dispatch" means the decision to operate an already committed generator at a

certain megawatt output level. Once a unit has been committed and online above its economic minimum load, Duke Energy Kentucky predominantly follows PJM dispatch signals between its economic minimum load and economic maximum load.

Under the terms of PJM's Reliability Assurance Agreement, as an FRR entity and generation owner in PJM, Duke Energy Kentucky is under a must-offer requirement to offer all its generation committed to the FRR plan into the Day-Ahead Energy Market. The generating units are offered with designations including Economic, Emergency, Must Run, and Unavailable. Units offered with a Must Run status will clear the market and are dispatched down or at minimum load during periods when the marginal cost of the unit is above LMP or are dispatched up or at full load during periods when the marginal cost of the unit is below LMP. Economic status units will generally be committed if their "all in" costs, including startup costs, are economic across the following day or during periods of the following day. Emergency status units are committed during an energy emergency event. The commitment and dispatch model does not consider units offered with a commitment status of unavailable.

Each available generating unit is offered hourly with a segmented incremental energy price pair quantity and ancillary service offer curve across the unit's operational range as well as a start-up cost, no-load cost, and operating parameters. Hourly offers are based on numerous factors, including but not limited to, the daily fuel cost, unit efficiency, emissions and variable operations and maintenance (O&M) costs, maximum and minimum capability, and unit

availability and characteristics. Unit status is determined based upon unit availability, marginal energy costs, expected impact of certain PJM charges and credits, and anticipated market clearing prices. Generating unit day-ahead awards are financially binding on both Duke Energy Kentucky and PJM.

Offers are submitted in the Day-Ahead Market, then updated in the Real-Time Market. As system conditions change between the Day-Ahead Market and the Real-Time Market, the Company continuously maintains and updates its offers. Duke Energy Kentucky makes hourly updates to energy and ancillary service real-time offers, primarily with respect to unit availability, but also considering unit operating parameters. Intra-day changes to fuel prices, especially for natural gas generating units, are also considered to maintain accurate fuel pricing in its offers in the Real-Time Energy Market. It is possible that in real-time; despite receiving a day-ahead energy award, PJM may dispatch a unit to move to generation output to something other than its day-ahead award level. These instructions are based on the real-time energy and ancillary services needs of the overall system as manifested through LMP price signals at the generator. If Real-Time LMP is below a unit's marginal cost of energy, PJM will reduce output or even delay or cancel a unit startup. Conversely, if system conditions have changed from day-ahead model assumptions, PJM may direct a Duke Energy Kentucky unit to start up even without a day-ahead energy award. Duke Energy Kentucky has an obligation and financial incentive to follow PJM dispatch instructions. When the unit is online and the unit's incremental cost offer price is greater than the LMP, under the fundamentals of economic dispatch, PJM will

dispatch the output of the unit down between the economic maximum of the unit and economic minimum of the unit. Alternatively, when the unit is online and the unit's incremental cost offer price is less than LMP, PJM will generally dispatch the output of the unit up between the economic minimum and economic maximum of the unit. There are times in which the Company will "self-schedule" a generator's output with PJM under circumstances required for safety, testing, plant operational requirements, or reliability reasons. During these circumstances, the unit is dispatched at a specific loading level and would not be at the discretion of PJM for economic dispatch. The Company can and does "self-schedule" or offer a unit as Must Run in order to commit the unit as efficiently as possible, such as to ensure the unit to be committed from an offline state and to avoid uneconomic unit cycling.

Q. HOW DOES DUKE ENERGY KENTUCKY DETERMINE THE MANNER IN WHICH THE GENERATING UNITS ARE OFFERED INTO THESE MARKETS.

A. The Company takes several factors into consideration when determining unit offers into the PJM energy and ancillary services market with the goal of maximizing generating units' margin and minimizing customer costs. The Company conducts a daily morning meeting with station and dispatch personnel to discuss topics including but not limited to market conditions, weather conditions, unit availability, unit parameters, any scheduled or potential unit maintenance issues, and fuel availability to determine inputs for its generating offers and demand bids to PJM for the following day. The Company also

constructs a daily profit and loss analysis that compares the unit's expected revenue to the variable cost of the unit and provides an expected daily unit margin for the next three weeks based on expected market prices and expected unit variable costs. This profit and loss analysis forecasts the generating units' expected margin, informs the expected commitment status of its generating units, and communicates market risk factors to station personnel pertaining to any potential maintenance issues impacting a generating unit. The Company's offers utilize current market fuel and emissions prices, variable O&M costs and unit parameters including minimum and maximum capability, ramp rate, and minimum up time in order to build and submit its units' supply offers to PJM. The Company's Generation Dispatch and Operations personnel are responsible for submitting generating unit offers to PJM with input from several workgroups including but not limited to power and gas trading, oil and emissions trading, meteorology, fleet analytics, station personnel, outage scheduling personnel and others to maintain up to date and accurate generating unit offers to PJM. Company Fuels and Systems Optimization personnel, which consists of personnel from Dispatch and Operations, Gas and Power Trading, Fleet Analytics and Fuel Procurement, also meet regularly to review generation and fuel forecasts, to discuss any fuel procurement challenges and to proactively monitor general supply conditions impacting the portfolio to maintain consistent communication across workgroups to effectively employ a portfolio management strategy to maximize generating unit margin and minimize customer costs.

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF HOW DUKE ENERGY KENTUCKY MEETS ITS KENTUCKY LOAD OBLIGATIONS.

A. Duke Energy Kentucky currently owns and operates approximately 1,076 net installed megawatts (MW) of summer generating capacity, provided primarily by two assets. Base load requirements are met by the East Bend Unit 2 Generating Station (East Bend). East Bend is a 600-megawatt (MW) (net rating) coal-fired base load unit located along the Ohio River in Boone County, Kentucky. The Company meets its peaking requirements with the Woodsdale Generating Station (Woodsdale). Woodsdale is a 476 MW (net summer rating) six-unit natural gas-fired CT facility with fuel oil back-up located in Trenton, Ohio. The net ratings represent the amount of power that the Company can dispatch from the plants after a portion of the gross power output is used to power the plant machinery.

Additionally, the Company has 8.8 MW of solar assets consisting of the nameplate ratings of Walton 1 (2 MW), Walton 2 (2 MW), Crittenden (2.7 MW), and Aero Solar (2 MW) sites. These assets are connected at the distribution level and thus, from PJM's perspective are behind the meter, meaning these generating assets reduce the customer demand as seen from PJM's perspective, but are not separately dispatched into the market.

Collectively, East Bend and Woodsdale generating assets are dispatched into PJM, which maintains functional control of the transmission system within its footprint including the Duke Energy Ohio/Kentucky (DEOK) system. To the extent Duke Energy Kentucky can monetize its assets to produce off-system sales

through PJM, customers receive the majority of those net revenues (or costs) through the Company's profit-sharing mechanism (Rider PSM).

Q. HOW DID THE COMPANY'S ASSETS PERFORM OVER THE COURSE OF DECEMBER 23-24, 2022, DURING WINTER STORM ELLIOTT?

A. Prior to the start of the Winter Storm Elliott period, on December 9, 2022, the Company proactively started East Bend after the unit had been removed from service briefly for a maintenance outage. The Company committed the unit after this short outage so that the unit would be in a position to operate reliability throughout the remaining Winter season. As Winter Storm Elliott approached, on Friday, December 23, 2022, the Duke Energy Kentucky service territory experienced the lowest temperature of the period at -8° F and a wind chill as low as of -36° F, with peak wind gusts overnight as the front came through as high as 45 mph and sustained winds of 35 mph. The Duke Energy Kentucky peak load was 799[3] MW on December 23, just shy of the Companies all-time winter peak set in January 2014. As actual peak loads for PJM significantly exceeded the PJM forecasted peak loads, generation was committed and dispatched in response by PJM, including Woodsdale CTs. As natural gas availability tightened and natural gas prices increased above the cost of fuel oil, the Company transitioned the Woodsdale units from natural gas operation to fuel oil operation and successfully operated the units in this state for the majority off the event. Although a sizable portion of the PJM generation fleet failed to perform as expected, Company assets performed and customers benefited from the execution of these actions.

[3] "ULHP Peak Load with losses" from Energy Accounting (TGIS).

PJM declared capacity performance events on two days, December 23 and 24, 2022. On December 23, PJM declared 5.5 hours of performance assessment intervals (PAI) and on the 24th, an additional 17.5 hours of PAI occurred, for a total of 23 hours. Throughout the period, East Bend was capable of near or full load operation and Woodsdale units operated successfully on fuel oil, resulting in significant performance bonus payments (BLI 2667) of approximately $887,000, as well as significant additional non-native sales. Although the Company had zero capacity performance charges (BLI 1667), it did have a small performance assessment of 1.2 MW for its 2023/24 FRR plan and .5 MW to its 2025/26 FRR plan. Overall, operation of the Company generation asset's reliability and economically served the Company's customers during this time, avoided potentially significant capacity performance penalties, and created non-native sales, with the majority of those proceeds credited to customers.

Q. HAS DUKE ENERGY KENTUCKY PERFORMED ANY COST-BENEFIT ANALYSIS REGARDING MAINTAINING ITS OVERALL PARTICIPATION IN PJM?

A. The Company has not performed any cost-benefit analysis regarding its overall participation in PJM. Due to the Company's relatively small size and the fact that it is largely dependent on the DEOK transmission system, the significant costs of exiting PJM, and impractical/uneconomic operation outside of an RTO due to the additional expenses associated with balancing load and generation, such an analysis would intuitively produce a result demonstrating exiting PJM would not be beneficial to customers. Duke Energy Kentucky's customers currently benefit

significantly from the centralized dispatch of generating resources to serve load within the PJM Energy Market.

Q. HAS DUKE ENERGY KENTUCKY PERFORMED ANY ANALYSIS REGARDING THE COMPANY STRATEGY FOR PARTICIPATION IN PJM'S CAPACITY MARKET? PLEASE EXPLAIN.

A. Yes. As the Commission is aware, there are two ways for a PJM member to participate in the PJM capacity market; either through the RPM BRA and subsequent IAs, or as a self-supply FRR entity. Historically, the Company has periodically reviewed its PJM Capacity Market participation to determine whether remaining an FRR entity was in customers' best interests. The most recent evaluation occurred in late 2024 and was submitted by the Company to the Commission in Case No. 2024-00285. In this evaluation, the Company determined that participation as an FRR capacity construct participant was no longer in the customers' best interest and that transitioning to the RPM capacity construct would both reduce risk and produce greater value for customers.

Q. WHAT WAS THE FINAL OUTCOME OF DUKE ENERGY KENTUCKY'S ANALYSIS?

A. With the potential for customer load growth - especially those loads that can be added more quickly than generation supply, combined with PJM capacity market structural changes, projected increases in PJM capacity market clearing prices, and changes to the PJM supply/demand balance, the Company determined through its evaluation that a move to the RPM capacity construct was in the customer's best interest. Following Commission approval of this transition in

Case No. 2024-00285[4], the Company notified PJM that it would exit the FRR capacity construct and transition to the RPM capacity construct.[5] The Company began participating in the RPM for the 2027/28 BRA that occurred in December 2025.

Q. DO YOU BELIEVE DUKE ENERGY KENTUCKY'S CUSTOMERS BENEFIT FROM THE COMPANY'S MEMBERSHIP IN PJM?

A. Yes. Duke Energy Kentucky's customers benefit significantly from the centralized dispatch of generating resources to serve load within the PJM Energy Market. PJM dispatches generation in broad consideration of total RTO cost minimization, the benefits of which are directly passed to customers in the form of energy alternatives to owned generation. Further, these markets provide an opportunity for non-native sales from the Company's generation, with most of the proceeds given back to Duke Energy Kentucky's customers through a credit on their bill. PJM's focus is on maintaining and improving reliability across its entire system, which directly translates to more efficient and reliable access to electric resources to serve Kentucky demand.

[4] *In the Matter of the Electronic Application of Duke Energy Kentucky, Inc. to Become a Full Participant in the PJM Interconnection LLC, Base Residual and Incremental Auction Construct for the 2027/2028 Delivery Year and for Necessary Accounting and Tariff Changes*, Case No. 2024-00285, Final Order (Ky. P.S.C. May 16, 2025).

[5] *Id.*, Duke Energy Kentucky Inc's Notice of Termination as an FRR Alternative with PJM (Oct. 31, 2025).

Q. PLEASE IDENTIFY THE RESPONSES TO COMMISSION DATA REQUESTS YOU ARE SPONSORING.

A. I sponsor the Company's responses to Data Request Numbers 7, 12, 14, 15, 16, 17, 20, 29, 30, 34, 35, 37, 38, 44, 45, 46, and 47. These responses were prepared by me and under my direction and control and are true and accurate.

III. CONCLUSION

Q. IN YOUR OPINION, WERE DUKE ENERGY KENTUCKY'S POWER PROCUREMENT PRACTICES REASONABLE DURING THE AUDIT PERIOD?

A. Yes.

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

A. Yes.

VERIFICATION

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

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

John D. Swez, Affiant

Subscribed and sworn to before me by John D. Swez on this 13th day of January, 2026.

NOTARY PUBLIC

My Commission Expires:

SHAMELL M WILSON
My Comm. Expires
NOTARY PUBLIC
July 06, 2026
MECKLENBURG COUNTY, NC