COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC EXAMINATION OF THE APPLICATION OF THE FUEL ADJUSTMENT CLAUSE OF DUKE ENERGY KENTUCKY, INC. FROM NOVEMBER 1, 2018 THROUGH OCTOBER 31, 2020	)))))	Case No. 2021-00057

DIRECT TESTIMONY OF

BRAD DANIEL

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

March 22, 2021

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I. INTRODUCTION AND PURPOSE

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Brad Daniel and my business address is 526 S. Church Street, Charlotte, North Carolina 28202.

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

A. I am employed as Director, Generation Dispatch and Operations, 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 Arts degree from the University of Oklahoma in 2000. I received a Master's in Business Administration from Wake Forest University in 2009. I joined Cinergy Corporation in 2001 and have held various positions with the Company or its affiliates in the generation dispatch and operations and power trading roles. I have managed the Midwest short term trading portfolio, where I was responsible for power, natural gas, and Financial Transmission Rights (FTR) hedging portfolios covering Duke Energy Kentucky. I also have managed our Fuels and Fleet Analytics team, responsible for fuels forecasting of the Duke Energy Kentucky portfolio. I assumed my current position in December of 2019.

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

A. No.

Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AS DIRECTOR, GENERATION DISPATCH & OPERATIONS.

A. I am responsible for the Company's: (i) generation dispatch; (ii) unit commitment; (iii) 24-hour real-time operations; and (iv) short-term generating maintenance planning. I am also responsible for the submission of the Company's supply offers to the PJM Interconnection, L.L.C. (PJM) regional transmission organization (RTO) day-ahead and real-time electric power markets, as well as managing the Company's short-term supply position to ensure that the Company has adequate resources committed to serve its retail customers' electricity needs.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my direct testimony is to respond to the Commission's March 4, 2021 Order and address the changes in the wholesale electric power market that occurred during the two-year review period of November 1, 2018 through October 31, 2020, and how those changes have impacted Duke Energy Kentucky's power procurement practices. In doing so, I describe the Company's participation in PJM. Finally, I sponsor several of the Company's responses to the Commission's Data Requests contained in Appendix B of its March 4, 2021 Order.

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

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 John D. Swez, this electric market consists of energy markets, capacity markets, ancillary services markets, and a 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 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 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 BRIEFLY DESCRIBE THE PJM ENERGY MARKET.

A. PJM administers its Energy Market utilizing locational marginal pricing (LMP). LMP can be broadly 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 generator 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 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;
- Day-Ahead Scheduling 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 with source and sink points 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.

Other non-PJM operated financial markets that are based on PJM market settlements exist. Duke Energy Kentucky participates in these financial markets to hedge Duke Energy Kentucky's customers' exposure to day-ahead and real-time energy prices when its generation stations are unavailable due to planned maintenance outages or are not expected to clear the PJM Energy Market in volumes sufficient to serve native load demands.

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

A. An RTO such as PJM performs a security constrained economic commitment and least-cost security constrained economic 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."[1]

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.

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

Q. PLEASE BRIEFLY EXPLAIN HOW DUKE ENERGY KENTUCKY'S CURRENT GENERATION PORTFOLIO PARTICIPATES AND IS DISPATCHED IN THE DAY-AHEAD AND REAL-TIME ENERGY MARKETS.

A. Under the terms of PJM's Reliability Assurance Agreement, as a fixed resource requirement (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: Must Run, Economic, Emergency, Fixed Gen, and Unavailable. Units offered with a Must Run status will clear the market and are generally dispatched down or at minimum load during periods when the marginal cost of the unit is above the LMP solved by the dispatch model, or are dispatched up or at full load during periods when the marginal cost of the unit is below the LMP solved by the dispatch model. 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. Fixed Gen units are committed but intend to remain fixed or otherwise not follow PJM real-time dispatch. Unavailable status units will not be considered by the commitment and dispatch model.

Each 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. The 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 loadings, and plant output 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.

Day-ahead generation unit offers are submitted to PJM by 11:00 Eastern Prevailing Time the day prior to energy flow. Generally, by 13:30 Eastern Prevailing Time that day, following execution of a security constrained unit commitment model, PJM posts energy and ancillary services awards for the following day. These awards are financially binding on both Duke Energy Kentucky and PJM.

In real time, Duke Energy Kentucky makes hourly updates to the energy and ancillary service offers, primarily with respect to unit availability, but also taking into account the unit's operating parameters. The Duke Energy Kentucky generation dispatchers follow PJM generation dispatch signal instructions and relay necessary instructions to the generation stations.

It is possible that in real time, despite receiving a day-ahead energy award, PJM dispatch signals will instruct Duke Energy Kentucky plants to move to generation loadings other than their 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 bus. If the real-time LMP is below a unit's marginal cost of energy, PJM will likely reduce

output, or 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.

Q. PLEASE DESCRIBE ANY CHANGES THAT OCCURRED IN THE WHOLESALE ELECTRIC POWER MARKET BETWEEN NOVEMBER 1, 2018 AND OCTOBER 31, 2020 THAT SIGNIFICANTLY AFFECTED DUKE ENERGY KENTUCKY'S ELECTRIC POWER PROCUREMENT PRACTICES.

A. Duke Energy Kentucky joined PJM effective January 1, 2012, and thus operated 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 market. For the Duke Energy Kentucky generating capacity, the Company offered its resources in an FRR capacity plan. 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. Swez discusses the PJM Capacity markets in greater detail through his direct testimony.

East Bend continues to compete favorably in the PJM market, with typical dispatch of this unit at full load during on-peak periods and even during much of the off-peak periods as well. The Company's six combustion turbines at Woodsdale station continue to see limited dispatch within the PJM energy markets. The Company continued to make economic power purchases for both

planned and unplanned outages during the audit period to mitigate exposure to market prices. In addition, Duke Energy Kentucky made economic purchases from PJM when the purchases were more economic than dispatching its own generation for the benefit of the Company's native load.

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 day-ahead, the units may still be called upon in real-time. There are separate LMPs calculated for Day-Ahead versus Real-Time Markets that are paid to the generators or charged to the load. PJM also operates an ancillary service market for regulation, day-ahead scheduling reserves, non-synchronized, and synchronized reserves, each of which is cleared separately with different prices for each product. In addition, PJM reimburses service providers such as Duke Energy Kentucky for blackstart and reactive services. The Duke Energy Kentucky Woodsdale gas-fired combustion turbine plant is currently a blackstart unit in the applicable Duke Energy blackstart plan and, in addition, is reimbursed for certain costs to provide blackstart service by PJM. Duke Energy Kentucky continues to operate its generating resources to optimize revenues available in the PJM capacity market and energy market and for ancillary services, blackstart, and reactive service in a reliable manner for the benefit of customers and shareholders.

Q. IS DUKE ENERGY KENTUCKY CONTEMPLATING ANY CHANGES TO ITS PARTICIPATION IN THE PJM CAPACITY PLANNING PROCESS?

A. The Company continually evaluates the merits of a potential switch from the FRR capacity planning process to participate in the Base Residual Auction capacity planning process. The Company has not made a decision in that regard and is mindful of its commitment to seek approval from this Commission in advance of such a change.

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

A. I sponsor the Company's responses to Data Request Numbers 14, 15, 16, 17, 29, and 32. 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 DIRECT TESTIMONY?

A. Yes.

COMMONWEALTH OF KENTUCKY

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DIRECT TESTIMONY OF

BRETT PHIPPS

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

March 22, 2021

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I. INTRODUCTION AND PURPOSE

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Brett Phipps and my business address is 526 S. Church Street, Charlotte, North Carolina 28202.

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

A. I am employed as Managing Director, Fuel Procurement, by Duke Energy Progress, Inc., a utility affiliate of Duke Energy Kentucky, Inc. (Duke Energy Kentucky, or Company).

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

A. I am a 1992 graduate of Marshall University with a Bachelor of Science in Chemistry. I have worked in the energy industry for approximately 29 years. My career began in the mining industry in 1993 where I held various roles associated with surface mining operations. I began my employment with Progress Energy in 1999, where I held roles in terminal operations and sales and marketing for the unregulated business. I transitioned to the regulated business in 2005 where I worked in various fuels procurement functions and leadership roles. I joined Duke Energy Corporation (Duke Energy) in July 2012 and am currently Managing Director, Fuel Procurement. I am a member of: American Coal Council, The Coal Institute, the Lexington Coal Exchange, and Southern Gas Association.

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

A. Yes, I have testified in numerous fuel adjustment clause (FAC) proceedings before the Kentucky Public Service Commission (Commission).

Q. PLEASE SUMMARIZE YOUR DUTIES AS MANAGING DIRECTOR, FUEL PROCUREMENT.

A. As Managing Director, Fuel Procurement, I oversee Duke Energy's Coal Procurement Group. I am ultimately responsible for all aspects of the purchase and delivery of coal, natural gas, oil and emissions in the five regulated jurisdictions (Kentucky, Indiana, Florida, North Carolina, and South Carolina) that encompass Duke Energy regulated electric utilities' collective footprint. As part of this responsibility, I review forecasts of supply and demand, price, quality, availability, and deliverability. These coal forecasts cover both existing supply sources and potential supply sources that may be economically developed. On behalf of Duke Energy Kentucky, I also supervise the Company's coal and natural gas procurement activities, including the negotiation and delivery of coal purchase contracts.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my testimony is to respond to Paragraph 8(a)-(e) of the Commission's March 4, 2021 Order, to more broadly discuss and support Duke Energy Kentucky's fuel procurement practices from November 1, 2018 through October 31, 2020. Finally, I sponsor several of Duke Energy Kentucky's

responses to the Commission's Data Requests contained in Appendix B of its March 4, 2021 Order.

II. DISCUSSION

Q. PLEASE COMMENT GENERALLY ON THE REASONABLENESS OF DUKE ENERGY KENTUCKY'S FUEL PROCUREMENT PRACTICES DURING THE REVIEW PERIOD.

A. Duke Energy Kentucky's coal procurement policy is designed to assure that we procure a reliable and consistent supply of appropriate quality coal for our coal generating station at a competitive price. Coal is generally purchased under long-term contracts of one to three years in length. The Company secures both its spot (one year or less) and long-term coal supply from producers through competitive bid processes, that are evaluated thoroughly, taking into account coal quality, quantity, transportation alternatives and price, among other factors. The producer (or producers) whose coal offers the best value, particularly with regard to overall utilization costs, is selected for further negotiations to produce contracts. The Company's long-term contracts may contain provisions for periodic price adjustments or a mechanism to adjust prices based upon published market price indices. The Company has established guidelines for the amounts of coal to be placed under contract during a specific period of time, and the Coal Procurement Group follows these guidelines.

The Company's Coal Procurement Group stays continually informed as to the current market for spot and contract coal and specific opportunities for the purchase of such coal. Coal supply needs are determined by an ongoing review of

generating station stockpiles, consumption projections, and current coal supply quantities already contracted. In addition, Duke Energy's Coal Procurement personnel visit each of the Company's contract producers and mining operations regularly and any potential new spot producers as well, gathering information which assists in our analysis of spot coal needs. This information, coupled with constant monitoring of pricing information published in various places (*e.g.* industry newsletters, trade publications, regulatory filings, *etc*.), as well as a close review of the weekly spot market pricing indices published by brokers and traders provides a thorough understanding of the various spot and long-term alternatives for coal supply. Usually, spot coal commitments are made for small quantities of coal, over short durations, as compared to long-term contracts of greater than one year.

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 gas procurement personnel stay abreast of market trends and prices through real-time market electronic pricing platforms such as the Intercontinental Exchange (*i.e*. ICE) real-time price feeds, information published in trade publications, industry reports, and various interactions with suppliers and pipelines. As part of natural gas procurement, the gas personnel review projections of natural gas needed based on projected generation unit runs before making commitments to purchase natural gas. The Company's natural gas supply agreements provide the provisions to ensure the

company procures the needed volume of natural gas at the most competitive price each day.

Q. PLEASE DESCRIBE THE MODELING OUTPUTS THE COMPANY USES TO ASSIST IN EVALUATING ITS PROCUREMENT NEEDS.

A. In the past, the Company used the modeling outputs from its forecast model, GenTrader, in evaluating its coal procurement needs. In October 2020, Duke Energy Kentucky began transitioning to incorporating the outputs of its new Fleet Analytics Stochastic Tool "FAST" model into its fuel evaluation process for 2021 and beyond.

Q. PLEASE EXPLAIN THE MODEL CHANGES UTILIZING STOCHASTIC CAPABILITIES.

A. The stochastic model uses historic weather information to simulate numerous scenarios of future weather and commodity prices. For each of these scenarios, system load and commodity prices (gas, coal, oil and power) are all calculated in a correlated manner using historical correlations with each other and with weather. The resulting forecasts of this stochastic model gives the Company not only expected fuel burns, but also the range of fuel burns and the probability associated with each range.

Q. PLEASE DESCRIBE THE COAL AND NATURAL GAS SUPPLIER'S ADHERENCE TO CONTRACT DELIVERY SCHEDULES DURING THE REVIEW PERIOD.

A. During the review period, the Company received approximately 90 percent of all contracted coal during the agreed upon delivery schedule. The small amount of

contract delivery shortfalls were primarily spread over several different suppliers and were caused by typical operational and logistical delays. During the review period, the Company did experience non-delivery of 33,873 tons, or approximately one percent of its contracted coal for the period due to a supplier bankruptcy. Upon review the Company determined that the inventory levels were trending between 40 and 45 days and that contact volume was not needed. The Company maintained adequate inventory levels and a reliable supply of fuel during the review period.

Duke Energy Kentucky does not maintain long term commitments for natural gas supply given the burn profile and low capacity factor of the Woodsdale natural gas-fired generating station (Woodsdale), the Company utilizes firm delivered spot gas as needed each day from the most cost competitive supplier. In the review period, the Company experienced normal pipeline constraints resulting in immaterial supply cuts on delivered gas but did not significantly impact operations to the customer.

With respect to natural gas needs, the Company monitors conditions along the interstate pipeline that Woodsdale is connected. Duke Energy Kentucky has not historically maintained firm transportation on the interstate pipeline that supplies Woodsdale because the costs of doing so could not justify having such a contract. Procuring delivered gas purchased on a short-term spot basis has been sufficient to meet the Company's generating needs at a cost competitive market. The Company purchases natural gas from the short-term spot market based upon the day-ahead and real-time energy market dispatch awards received through PJM

Interconnection LLC (PJM). Duke Energy Kentucky continually monitors the natural gas markets for pricing and scarcity changes and those changes are factored into the Company's daily bids into PJM. Duke Energy Kentucky witness John Swez explains how the Company, (and all PJM members) operates in PJM.

Q. PLEASE DESCRIBE DUKE ENERGY KENTUCKY'S EFFORTS TO ENSURE COAL ADHERENCE TO CONTRACT DELIVERY SCHEDULES DURING THE REVIEW PERIOD.

A. Duke Energy Kentucky constantly monitors and enforces the provisions of our coal contracts with respect to quantities and qualities of coal due the Company. The Company monitors supplier performance monthly and determines the causes of any supplier under-performance for quantity or quality. If our review determines that the supply shortages were not the result of a Force Majeure event, we will either work with the particular supplier to determine a new alternate delivery schedule or seek damage provisions per the terms of the contract. In either case, we preserve as much of the market value as possible. All coal contracts contain quality adjustment provisions to account for the differences between the actual coal quality shipped and the contracted quality. Monthly quality pricing adjustments are made per the terms of the contract which include penalties for non-conforming shipments of coal. Contracts also contain terms stating if shipments are not in compliance with contract specifications, the Company has the ability to suspend deliveries and terminate the contract if quality deficiencies cannot be corrected.

Q. PLEASE DESCRIBE DUKE ENERGY KENTUCKY'S EFFORTS TO MAINTAIN THE ADEQUACY OF ITS COAL AND NATURAL GAS SUPPLIES IN LIGHT OF ANY SUPPLIER'S INABILITY OR UNWILLINGNESS TO MAKE CONTRACT DELIVERIES.

A. As mentioned earlier, the Company monitors supplier delivery performance monthly as part of a strong adherence to contract administration. The Company also closely monitors actual coal burns, actual coal inventories and projected coal burns and inventories. If a supplier fails to make contracted deliveries per the agreed upon schedule, the Company immediately notifies the supplier and discusses the reasons and nature of the shortfall. Depending upon the nature of the failure to perform, the parties either agree to reschedule the missed shipments or the Company enforces the legal terms of the contracts for non-performance. The Company then factors any shortfall or agreed upon make up schedule for missed tons into the forward plans for projected inventories. If the missed shipments will lead to a situation where the Company's coal inventories will fall below established inventory guidelines, the Company will purchase replacement coal through its competitive bid process.

Similarly, with respect to natural gas procurement, the Company maintains supplier agreements to ensure natural gas can be procured at a competitive market price and continually monitors the interstate pipeline that connects to Woodsdale. During times of operational flow restrictions, the pipeline will provide the Company with operational information on the pipeline and the

Company will communicate with the pipeline operator as needed to stay abreast of operational conditions.

Q. WERE THERE ANY CHANGES IN COAL AND NATURAL GAS MARKET CONDITIONS THAT OCCURRED DURING THE REVIEW PERIOD OR THAT DUKE ENERGY KENTUCKY EXPECTS TO OCCUR IN THE NEXT TWO YEARS THAT HAVE SIGNIFICANTLY AFFECTED OR WILL SIGNIFICANTLY AFFECT DUKE ENERGY KENTUCKY'S COAL AND NATURAL GAS PROCUREMENT PRACTICES?

A. During the review period, coal markets became increasing distressed and there continues to be significant market volatility due to a number of factors, including: (1) deteriorated financial health of coal suppliers due to declining demand for coal stemming from accelerated coal retirements and overall declines in coal generation demand resulting from the impacts of COVID-19 economic shutdowns in 2020; (2) continued abundant natural gas supply and storage resulting in lower natural gas prices, which has lowered overall domestic coal demand; (3) uncertainty around proposed, imposed, and stayed U.S. Environmental Protection Agency (EPA) regulations for power plants; (4) changing demand in global markets for both steam and metallurgical coal; (5) uncertainty surrounding regulations for mining operations; (6) tightening access to investor financing coupled with deteriorating credit quality is increasing the overall costs of financing for coal producers; and, (7) corrections in production levels in an attempt to bring coal supply in balance with demand.

With respect to natural gas, the nation's natural gas supply has grown significantly over the last several years and producers continue to enhance production techniques, enhance efficiencies, and lower production costs. Natural gas prices are reflective of the dynamics between supply and demand factors, and in the short term, such dynamics are influenced primarily by seasonal weather demand and overall storage inventory balances. While there continues to be adequate natural gas production capacity to serve increased market demand, pipeline infrastructure permitting and regulatory process approval efforts are challenged due to increased reviews and interventions, which can delay and change planned pipeline construction and commissioning timing.

Over the longer-term planning horizon, natural gas supply is projected to continue to increase while the pipeline infrastructure needed to move the growing supply to meet demand related to power generation, liquefied natural gas exports and pipeline exports to Mexico is highly uncertain.

The Company expects to continue to employ similar procurement practices over the next two years as it has in the past for coal and natural gas. Our practices have maintained a reliable supply of coal and natural gas at a very competitive cost for our customers. Practices include the use of staggered terms on long term contracts, seeking to maintain a diversified mix of suppliers and supply sources, ensuring the right quality of coal depending on power market conditions, using a mixture of fixed price contracts and variable price contracts tied to changes in certain indices as appropriate, enforcement of all contract provisions and continuing compliance with Company coal contracting coverage

guidelines.

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

A. I sponsor the Company's responses to Data Request Numbers 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 18, 19, 20, 21, 34 in this proceeding. 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 FUEL COSTS AND PROCUREMENTS DURING THE REVIEW PERIOD REASONABLE?

A. Yes.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

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DIRECT TESTIMONY OF

JOHN D. SWEZ

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

March 22, 2021

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I. INTRODUCTION

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John D. Swez and my business address is 526 S. Church 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 DESCRIBE BRIEFLY YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science degree in Mechanical Engineering from Purdue University in 1992. I received a Master's 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 EVER 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 Gas, Oil, and Power Trading and Generation Dispatch on behalf of Duke Energy's regulated utilities in the Carolinas, Florida, Indiana, Ohio, and Kentucky. I am responsible for Duke Energy Kentucky's generation dispatch, unit commitment, 24-hour real-time operations, and plant communications related to short-term generating maintenance planning. I lead the teams responsible for managing the Company's capacity position with respect to meeting its Fixed Resource Requirement (FRR) obligation as a member of PJM Interconnection, L.L.C. (PJM), for the submission of the Company's supply offers and demand bids in PJM's day-ahead and real-time electric energy (collectively Energy Markets) and ancillary services markets (ASM), as well as those 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. In that respect, my teams are also responsible for any financial hedging done to mitigate exposure to short-term energy prices and congestion risks.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my testimony is to respond to the Commission's March 4, 2021 Order and specifically to address changes in the wholesale electric power market that the Company expects to occur within the next two years that will affect Duke Energy Kentucky's power procurement practices. In doing so, I provide an overview of the Company's participation in PJM as it pertains to the capacity

markets and discuss the customer benefits that the Company's PJM membership provides. I then describe recent market changes by PJM and the Federal Energy Regulatory Commission that will impact both the Company and Duke Energy Kentucky's customers going forward.

II. DISCUSSION

Q. PLEASE DESCRIBE THE PJM CAPACITY MARKET.

A. PJM's capacity market is called RPM, which is an acronym for Reliability Pricing Model. The purpose of RPM is to provide a market construct that enables PJM to secure adequate generation resources to meet the reliability needs of the regional transmission organization (RTO). The RPM construct and the associated rules regarding how PJM members participate in the PJM capacity market is described within the PJM Open Access Transmission Tariff (OATT) and Reliability Assurance Agreement (RAA). The PJM capacity market operates on a planning period that spans twelve months beginning June 1st and ending May 31st of each year (Delivery Year). In PJM, the capacity market structure is intended to provide transparent forward market signals that support generation and infrastructure investment. There are two ways for a PJM member to participate in the RPM capacity structure: 1) through the RPM baseline procurement auctions; or 2) as a self-supply FRR entity. The baseline procurement auction is called a base residual auction (BRA). BRAs are typically conducted three years in advance of the actual Delivery Year in order to allow bidders to complete construction of projects that clear the BRA. The PJM capacity market is designed to provide incentives for the

development of generation, demand response, energy efficiency, and transmission solutions through capacity market payments.

Another important component of RPM is that price signals are locational and designed to recognize and quantify the geographical value of capacity. PJM divides the RTO into multiple sub-regions called locational delivery areas (LDA) in order to model the locational value of generation.

Q. PLEASE BRIEFLY EXPLAIN PJM'S FRR PROCESS.

A. The PJM OATT and RAA specify the obligations and compensation to load serving entities (LSE) for supplying capacity. The FRR process is an alternative means for a PJM LSE such as Duke Energy Kentucky to satisfy its customer capacity obligation under the PJM RAA. Under the FRR construct, an LSE must annually submit a preliminary three-year forward, and a final current year FRR capacity plan that meets a PJM defined customer capacity obligation (FRR Plan). The FRR Plan must identify the unit-specific generating or demand response resources that will be providing the capacity that will fulfill the LSE's customer obligation. FRR allows the LSE to match its customer reliability requirement to its own generation, demand response, energy efficiency and/or transmission resources, while still being permitted to sell some or all of its excess supply into RPM. Duke Energy Kentucky would face severe penalties and limitations on its ability to choose the FRR option if PJM were to deem either its initial or final FRR plans to be insufficient or it's generation otherwise non-compliant with PJM requirements.

Duke Energy Kentucky annually submits both a preliminary and a final FRR Plan to PJM. Note that the timing of these submittals was impacted due to recent activity related to the PJM Minimum Offer Price Rule (MOPR) as will be discussed later in this testimony. These submittals are consistent with the Commission's Order in Case No. 2010-00203 whereby the Commission required the Company to participate in PJM as an FRR entity until such time as it received Commission approval to participate in the PJM capacity auctions. To date, Duke Energy Kentucky has not requested such permission, but will do so if the Company determines that a change would be in the best interests of its customers and should be made. The Company continues to evaluate the merits of both an FRR entity but also considers benefits of becoming a full RPM auction participant. However, in particular due to the recent aforementioned MOPR ruling, no such change to becoming a full RPM auction participant is anticipated.

Q. PLEASE EXPLAIN WHAT BEING AN FRR ENTITY MEANS FOR DUKE ENERGY KENTUCKY.

A. As an FRR entity, Duke Energy Kentucky must secure and commit unit-specific generation resources to meet the peak load capacity requirements for all of its customers in advance of the PJM's annual BRA through its FRR Plan. Presently, the load requirements include both the forecasted load of Duke Energy Kentucky's customers, as well as the reserve requirement for that load mandated by PJM. As the FRR plan timeline follows the RPM auction timeline, the Company will soon have to submit its initial FRR Plan for the delivery period spanning June 1, 2022 through May 31, 2023, and its final FRR plan for the

delivery period spanning June 1, 2021 through May 31, 2022. Note that the 2022/2023 auction timing period was delayed and would have normally occurred prior to now.

The Duke Energy Kentucky FRR plan currently includes East Bend 2 and Woodsdale generating stations, as well as any bilateral capacity purchases required to meet customer demand.

Q. HAVE THERE BEEN ANY RECENT AND SIGNIFICANT DEVELOPMENTS WITH RESPECT TO DUKE ENERGY KENTUCKY'S FRR PLAN IN PJM?

A. Yes. On October 15, 2020, FERC ruled on a PJM filing relating to the Minimum Offer Price Rule (MOPR). The issue at hand addressed PJM concerns that, under previous rules, the bidding behavior of owners of subsidized generation was having a suppressive effect on PJM capacity market clearing prices. This order, which will apply to capacity auctions starting with the 2022-2023 delivery year, had minimal impact to Duke Energy Kentucky's FRR plan. For FRR entities, this ruling clarified that as long as units have been historically in the Company's FRR plan, they will qualify for a self-supply exemption and not be subject to any MOPR going forward in the event that Duke Energy Kentucky has excess capacity to sell. However, if new units are brought into the plan, any excess created will be subject to the MOPR. For example, if Duke Energy Kentucky, as an FRR entity, were to replace an existing 77 MW Woodsdale CT with a new 100 MW unit, the new unit can be used to satisfy the Companies FRR plan up to 77 MW without any MOPR requirement, with the excess amount of 23 MW then

being subject to MOPR. However, a self-supply entity in PJM would have MOPR assigned to all of the new unit that it sells into RPM, creating a possibility of double purchasing of capacity for its' customers. This possibility does not exist for Duke Energy Kentucky customers due to its FRR status.

Q. PLEASE EXPLAIN THE TIMING CHANGES TO THE PJM CAPACITY MARKET AS A RESULT OF THE FERC MOPR RULING?

A. Due to the delays caused by the MOPR issue, PJM will conduct an accelerated schedule of auctions. The 2022/2023 auction will occur in May 2021, the 2023/2024 auction in December 2021, the 2024/2025 auction in June 2022, the 2025/2026 auction in January 2023, and finally the 2026/2027 auction in July 2023.

Q. HAS THE DUKE ENERGY OHIO KENTUCKY (DEOK) DELIVERY ZONE SEPERATED AS A CONSTRAINED ZONE SINCE THE 2020/2021 PLANNING YEAR AS PREVIOUSLY REPORTED?

A. No. As noted, in the Base Residual auction for the 2020/2021 Planning year, the Duke Energy Ohio Kentucky (DEOK) delivery zone separated as a constrained zone. Duke Energy Kentucky is required to provide capacity in its FRR plans that meet the requirements of the DEOK zone. While the Company's owned generation at East Bend and Woodsdale stations meet that requirement, if satisfying upcoming FRR plans required purchases of additional short or long-term capacity, such capacity would need to meet those same requirements. The DEOK zone separation could impact market liquidity for capacity; particularly when combined with retirements of other generation in the zone. While this

diminished liquidity has not impacted Duke Energy Kentucky to date, the Company is mindful of the potential impacts on capacity planning. Thus, even though Duke Energy Kentucky does not participate directly in the PJM capacity market, it is impacted by market developments.

Q. PLEASE EXPLAIN THE PJM CAPACITY PERFORMANCE CONSTRUCT.

A. In a stated effort to improve the reliability of generating resources in the PJM footprint, PJM redesigned the RPM with its "Capacity Performance" construct. In doing so, PJM redefined its capacity products and implemented new performance-based penalties. Capacity Performance Resources must be capable of sustained, predictable operation that allows resource to be available to provide energy and reserves during performance assessment hours throughout the Delivery Year. Capacity Performance capacity is subject to non-performance charges assessed during emergency conditions throughout entire Delivery Year. Capacity Performance capacity must quite simply be required to be available to the RTO during periods of high load demand or system emergency or face substantial performance penalties. With Capacity Performance, PJM adopted a no-excuses policy in order to improve reliability through a new penalty structure.

In this new construct, PJM transitioned all capacity in the footprint to Capacity Performance. In other words, all capacity purchased on behalf of the load through RPM or eligible for inclusion in FRR capacity plans must meet the Capacity Performance criteria.

Q. WHEN DID THE CAPACITY PERFORMANCE RULES GO INTO EFFECT?

A. As an FRR entity, Duke Energy Kentucky was exempted from Capacity Performance through May 31, 2019. Following this date, a transition started and on June 1, 2019, Duke Energy Kentucky included 80% of its obligation as Capacity Performance capacity. Finally, the FRR plan that Duke Energy Kentucky filed for the 2020/2021 Delivery Year, starting on June 1, 2020 included 100% Capacity Performance capacity.

Q. HOW WOULD YOU CLASSIFY THE CURRENT DUKE ENERGY KENTUCKY RESOURCES IN TERMS OF COMPLIANCE WITH THE CAPACITY PERFORMANCE CONSTRUCT?

A. East Bend 2 meets the minimum requirements of a Capacity Performance resource in that it is a coal fired facility with a significant reserve of fuel stored on-site. The Woodsdale Combustion Turbine facility now successfully meets the Capacity Performance requirements with the completion of the construction of its new dual fuel system on June 1, 2019. The primary fuel at Woodsdale is natural gas delivered under a non-firm delivery contract. Due to its low capacity factor, it is not economic to maintain contracted firm natural gas transportation for the station. In order to meet the capacity performance requirements, the Company sought and received Commission authorization to construct a low sulfur diesel fuel system with onsite storage. The Company continues to evaluate Capacity Performance compliance opportunities for its portfolio to increase their value and mitigate non-performance risks.

Q. PLEASE EXPLAIN THE CHOICE THE COMPANY HAS BETWEEN A PHYSICAL OR FINANCIAL CAPACITY PERFORMANCE PENALTY AND THE ELECTION SELECTED?

A. As an FRR entity, to manage the Company's potential capacity performance penalty, Duke Energy Kentucky can choose either a financial or physical option before it enters the delivery year. The financial option is the default option for RPM entities. Under this option, financial penalties/bonus are assessed if a resource commitment under/over performs its obligation during a PJM declared Capacity Performance Interval (PAI). The penalty rate has been typically around $3000 to $3500 per MWH with the penalty assessment limited to 50% of the capacity commitment. Non-committed resource can receive an over performance bonus or can be used in a replacement transaction for the underperforming resource.

The physical option is available to FRR entities only. Under this option, the FRR entity will be penalized, but not financially. Instead, a greater resource commitment is procured in next year FRR plan. The physical penalty is assessed by netting over and under performance of the resources in the FRR plan. The penalty rate for the physical option is 0.00139 MW/PAI. The total accumulative physical MW penalty is capped at 50% of the capacity commitment. Unlike the financial option, an FRR entity under physical penalty option is not eligible to receive an over performance bonus or to use a replacement transaction for the underperforming resource.

Duke Energy Kentucky selected the financial option for the 2019/2020 FRR plan and the physical option for the 2020/2021 FRR plan. The 2019/2020 decision was driven by the DEOK zone capacity clearing separation that occurred and the fact that it would have been harder to find physical capacity as it would have needed to be inside the DEOK zone. The 2020/2021 decision was driven by an excess FRR capacity projection for the following year due to both a lower load obligation and a lower generation forced outage rate. The Company has not made a penalty decision for the 2021/2022 delivery year but anticipates selecting the physical penalty option prior to the start of the delivery year for similar reasons as was done for the 2020/2021 FRR plan.

Q. DO YOU BELIEVE THE CHANGES THAT PJM HAS MADE OR PROPOSES ARE HARMFUL TO DUKE ENERGY KENTUCKY OR ITS CUSTOMERS?

A. Duke Energy Kentucky does not believe that, on balance, the changes PJM has made or proposes to make harm Duke Energy Kentucky or its customers. Duke Energy Kentucky follows closely and participates fully in the PJM stakeholder process in consideration of its current market participation as well as potential future participation. Most PJM initiatives are designed to improve market design and may require Duke Energy Kentucky to modify operations or make investments such as the dual fuel system at Woodsdale station. The Company is particularly mindful of market changes that impact Duke Energy Kentucky's ability to effectively utilize its generation fleet as a hedge against short term capacity and energy prices.

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 PJM's centrally dispatched RTO construct. 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 a majority of the proceeds being given back to Duke Energy Kentucky's customers through a credit on their bills. 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.

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, 28, and 33. These responses were prepared by me and under my direction and control and are true and accurate.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC EXAMINATION OF THE APPLICATION OF THE FUEL ADJUSTMENT CLAUSE OF DUKE ENERGY KENTUCKY, INC. FROM NOVEMBER 1, 2018 THROUGH OCTOBER 31, 2020	)))))	Case No. 2021-00057

DIRECT TESTIMONY OF

LIBBIE S. MILLER

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

March 22, 2021

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I. INTRODUCTION AND PURPOSE

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Libbie S. Miller. 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 the Duke Energy Business Services LLC (DEBS) as Lead Rates and Regulatory Analyst for Duke Energy Kentucky, Inc., (Duke Energy Kentucky or Company) and Duke Energy Ohio, Inc. (Duke Energy Ohio). DEBS provides various administrative and other services to Duke Energy Kentucky and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL QUALIFICATIONS.

A. I earned a Bachelor of Science in Accounting from Indiana State University, Terre Haute, Indiana, in 1988. I also am a Certified Public Accountant licensed in Indiana. I began my career with Public Service Indiana, in 1988, where I held positions in Fuels Accounting, Corporate Accounting, and Financial Systems. I transferred to Cincinnati, Ohio, in 1995 with the inception of Cinergy Corp., the parent of Duke Energy Ohio, where I continued working in Financial Systems and later held various accounting positions within the generation business. In 2015, I worked in Program Performance supporting Energy Efficiency and Demand Response customer programs for Duke Energy Indiana. In January 2018, I began my current role as Lead Analyst, Rates and Regulatory Strategy for Duke Energy Kentucky and Duke Energy Ohio.

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

A. No.

Q. PLEASE DESCRIBE YOUR DUTIES AS LEAD ANALYST, RATES AND REGULATORY STRATEGY.

A. As Lead Analyst, I am responsible for the preparation of various monthly, quarterly, and annual rate recovery mechanisms. I also prepare other schedules used in retail rate filings for Duke Energy Kentucky and Duke Energy Ohio.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my direct testimony is to sponsor the calculation of Duke Energy Kentucky's FAC, including the adjustments during the review period of November 1, 2018 through October 31, 2020. I support the Company's decision to increase its base fuel rate and the calculation of the proposed base fuel rate to be set in this proceeding. Finally, I sponsor several of Duke Energy Kentucky's responses to the Commission's Data Requests contained in Appendix B of its March 4, 2021 Order.

II. DISCUSSION

A. The Company's FAC Calculation

Q. PLEASE COMMENT GENERALLY ON THE REASONABLENESS OF DUKE ENERGY KENTUCKY'S CALCULATION OF ITS FAC RATE DURING THE REVIEW PERIOD.

A. The monthly FAC rates were prepared by me or under my direction and control and, to the best of my knowledge, information, and belief, accurately reflect the Company's actual fuel and economy power costs.

Q. WHAT IS THE COMPANY'S CURRENT BASE FUEL RATE AND WHEN WAS IT LAST MODIFIED.

A. In its December 26, 2019, Order in Case No. 2019-00006, the Company's previous two-year review, the Commission ordered that Duke Energy Kentucky's existing base fuel rate of 0.023837 $/kWh should remain unchanged. The rate originally was determined in Case No. 2017-00005, based upon the Company's October 2016 fuel costs.

Q. IN YOUR OPINION WAS THE COMPANY'S BASE FUEL RATE DURING THE REVIEW PERIOD ACCURATE AND REASONABLE?

A. Yes.

Q. WHAT RATE DOES THE COMPANY PROPOSE FOR THE BASE FUEL RATE IN THE UPCOMING TWO-YEAR PERIOD FOR THE FAC?

A. As shown in response to STAFF-DR-01-023, the Company proposes to set its base fuel rate at 0.025401 $/kWh, which is an increase of 0.001564 $/kWh over its current base fuel rate.

Q. WHAT MONTH IS THE COMPANY USING AS THE BASE PERIOD FOR ITS PROPOSED BASE FUEL RATE?

A. As shown in response to STAFF-DR-01-023, the Company is proposing to use March 2020 as the month to represent the base period.

Q. WHAT IS YOUR RATIONALE FOR DETERMINING THIS TO BE A REASONABLE LEVEL FOR THE BASE FUEL RATE?

A. I analyzed the actual monthly fuel rate over the past 24 months (*i.e.*, the review period) and noted that the actual monthly fuel rate was greater than the base fuel rate in 18 of the 24 months. This means that in 18 of the 24 months during the review period, the FAC rate was a charge to customers. As a result, I have chosen to use the average monthly fuel rate over the last 24 months, which is 0.001564 $/kWh higher than the current base fuel rate as the basis for determining the new base fuel rate.

Q. WHAT ARE THE COMPANY'S 2021 AND 2022 PROJECTED FUEL RATES?

A. The Company's projected average fuel rates for the calendar years 2021 and 2022 are 0.024442 $/kWh and 0.023484 $/kWh, respectively.

Q. WHY DID THE COMPANY DECIDE TO USE HISTORICAL COSTS RATHER THAN PROJECTED COSTS IN DETERMINING ITS PROPOSED BASE FUEL RATE?

A. The Company has chosen to use historical costs in determining its proposed base fuel rate because the Company is of the opinion that historical costs will be

effective in limiting the monthly volatility of the FAC rate for customers. The Company would like to keep the volatility as low as possible.

Q. IN YOUR OPINION IS THE COMPANY'S PROPOSED BASE FUEL RATE REASONABLE?

A. Yes, the Company's proposed base fuel rate of 0.025401 $/kWh based on the month of March 2020 is reasonable.

B. Data Requests and Tariffs Sponsored

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

A. I sponsor the Company's responses to Data Request Numbers 13, 14, 16, 22 through 27, 29, 30, and 31. These responses were prepared by me and/or under my direction and control and are true and accurate to the best of my knowledge and belief.

Q. IS DUKE ENERGY KENTUCKY PROVIDING COPIES OF ITS PROPOSED TARIFFS REFLECTING THE CHANGE IN THE BASE FUEL RATE DESCRIBED IN YOUR DIRECT TESTIMONY?

A. Yes. A copy of the Company's proposed tariffs reflecting the proposed change in the base fuel rate and the resulting change in base rates are included in the attachment responding to STAFF-DR-01-027. That attachment was prepared at my request and/or under my direction and control.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.