COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of an Examination of The Application of The Fuel Adjustment Clause of Duke Energy Kentucky From November 1, 2012, Through October 31, 2014.	))))	Case No. 2014-00454

DIRECT TESTIMONY OF

JOHN D. SWEZ

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

February 25, 2015

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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 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 Science degree in Mechanical Engineering from Purdue University in 1992. I received a Masters 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 Power Services and Power Trading departments. In 2003, I assumed the position of Manager, Real-Time Operations. Though my title has changed on several occasions, I assumed my current role on January 1, 2006.

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 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 February 5, 2015, Order and address the changes in the wholesale electric power market that occurred during the two-year review period of November 1, 2012, through October 31, 2014, and how those changes have impacted Duke Energy Kentucky's power procurement practices. In doing so, I describe the Company's participation in PJM and also describe the various PJM Billing Line Item (BLI) charges and credits that are currently included in the fuel adjustment clause (FAC) and why those charges and credits are appropriate for inclusion in the FAC calculation. Finally, I sponsor certain of the Company's responses to the Commission's Data Requests.

II. DISCUSSION

A. Overview of PJM

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 A. Verderame, this electric market consists of energy markets, capacity markets, ancillary services markets, and a financial transmission rights (FTR) market. PJM's operation is governed by its Open Access Transmission Tariff (OATT) and other agreements approved by the Federal Energy Regulatory Commission (FERC). As a member of PJM, Duke Energy Kentucky is subject to the OATT and FERC-approved agreements, which impose upon it the obligation to offer all of its available generation to PJM and to purchase its expected or actual customer energy load from the PJM Day-Ahead or Real-Time Energy Market, respectively. 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 of 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.

Additionally, to ensure reliability and to minimize potential volatility during scheduled outages, Duke Energy Kentucky operates under a back-up power supply plan consisting of capacity purchases through bilateral contracts and energy purchases through daily energy markets with forward contracts purchased through the Intercontinental Exchange, a regulated exchange and clearinghouse for financial and commodity markets and over-the-counter brokers. Duke Energy Kentucky's current back-up supply plan, approved in Case No. 2012-00220, expires in May 2015. The Company is in the process of analyzing its alternatives and intends to file a new plan with the Commission shortly.

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). Thus, Duke Energy Kentucky functions as both a seller and a buyer in the PJM Energy Market on behalf of its retail electric customers in Kentucky.

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 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 takes into account 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 take into account 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.

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

[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).

under a must-offer requirement to offer all of 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, and Unavailable. Units offered with a Must Run status will clear the market and are generally dispatched at a minimum load during periods when the marginal cost of the unit is above the LMP solved by the dispatch model, or are dispatched up 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. 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, 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 12PM Eastern Prevailing Time the day prior to energy flow. Generally by 4PM 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 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, 2012, AND OCTOBER 31, 2014, THAT SIGNIFICANTLY AFFECTED DUKE ENERGY KENTUCKY'S ELECTRIC POWER PROCUREMENT PRACTICES.

A. Duke Energy Kentucky's two coal generating units continue to compete favorably in the PJM market, with typical dispatch of these units 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, although as noted in another proceeding, the units did clear the Day-Ahead Energy Market multiple times during much of January and February 2014. The Company continued to make economic power purchases for both planned and forced 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.

Q. WHAT OTHER CHANGES HAVE OCCURRED BETWEEN NOVEMBER 1, 2012, AND OCTOBER 31, 2014, 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. Thus, the Company continues to offer its generation and bid its load into the PJM market. As I discussed above, PJM operates both a Day-Ahead Market and a Real-Time (balancing) Market for energy and ancillary services. For the Duke Energy Kentucky generating capacity, the Company offers 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. 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 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, black start, 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.

B. PJM Charges and Credits Currently in the FAC

Q. PLEASE LIST THE PJM BLI CODES THAT ARE CURRENTLY INCLUDED AS PART OF THE COMPANY'S FAC CALCULATION.

A. The Company is currently including the following BLI Codes in its FAC calculation:

- 1200 - Day-Ahead Spot Market Energy
- 1205 – Balancing Spot Market Energy
- 1210 – Day-Ahead Transmission Congestion
- 1215 – Balancing Transmission Congestion
- 1220 – Day-Ahead Transmission Losses
- 1225 – Balancing Transmission Losses
- 2370 – Day-Ahead Operating Reserve Credit
- 2375 – Balancing Operating Reserve Credit

Q. PLEASE EXPLAIN EACH OF THESE BLI CODES.

A. BLI Codes:

- 1200 - Day-Ahead Spot Market Energy: This represents a portion of the net energy resulting from Company's participation in the PJM markets. Only the portion of the day-ahead spot market energy attributable to purchase power is currently included in the Company's FAC. Said in another way, if the Company has more cleared day-ahead generation than day-ahead demand in an hour, there is no day-ahead spot market energy included for that hour in the FAC. If the

Company has less cleared Day-Ahead generation than Day-Ahead demand in an hour, there would typically be a charge for the energy portion of this day-ahead spot market energy purchase power.

- 1205 - Balancing Spot Market Energy: This represents net real-time deviations for day-ahead spot market energy and is charged at the hourly PJM-wide real-time system energy price. If there is no change to the quantity of demand bought or generation sold between the Day-Ahead and Real-Time Energy Markets, there is no adjustment in balancing spot market energy.
- 1210 - Day-Ahead Transmission Congestion: This represents the change in energy costs due to re-dispatch in the Day-Ahead Market during hours when the PJM transmission system is constrained and assessed to participants based on the congestion price component of LMP. Only the portion of the day-ahead transmission congestion attributable to purchase power is currently included in the Company's FAC. Said in another way, if the Company has more cleared day-ahead generation than day-ahead demand in an hour, there is no Day-Ahead transmission congestion charge or credit included for that hour in the FAC. If the Company has less cleared day-ahead generation than Day-Ahead demand in an hour, there could either be a charge or credit for the day-ahead transmission congestion portion of the day-ahead purchase power.
- 1215 - Balancing Transmission Congestion: This represents the change in energy costs due to redispatch in the balancing market during hours when PJM transmission system is constrained and assessed to participants based on the congestion price component of LMP. If there is no change to the quantity of

demand bought or generation sold between the Day-Ahead and Real-Time Energy Markets, there is no adjustment in balancing transmission congestion charges or credits.

- 1220 - Day-Ahead Transmission Losses: This represents the change in energy costs due to transmission losses in the Day-Ahead Market represented in the PJM network model and assessed to participants based on the loss component of LMP. Only the portion of the day-ahead transmission losses attributable to purchase power is currently included in the Company's FAC. Said in another way, if the Company has more cleared day-ahead generation than day-ahead demand in an hour, there is no Day-Ahead transmission loss charge or credit included for that hour in the FAC. If the Company has less cleared day-ahead generation than day-ahead demand in an hour, there could either be a charge or credit for the day-ahead transmission losses portion of the day-ahead purchase power.
- 1225 - Balancing Transmission Losses: This represents the change in energy costs due to transmission losses in the balancing market represented in the PJM network model and are assessed to participants based on the loss component of LMP. If there is no change to the quantity of demand bought or generation sold between the day-ahead and real-time energy markets, there is no adjustment in balancing transmission losses charges or credits.
- 2370 and 2375 - Day-Ahead Operating Reserve Credit and Balancing Operating Reserve Credit: The credit that results from PJM scheduled generation and demand resources that operate as requested by PJM and are guaranteed to

fully recover their offer amounts. The credits are the portion of the offer amount in excess of the scheduled MWh times LMP. These credits are included in the Company's FAC clause for any generators that were determined to serve native load.

Q. WHY ARE THESE BLI'S APPROPRIATE FOR INCLUSION IN THE FAC?

A. BLI 1200, 1205, 1210, 1215, 1220 and 1225 represent the components of power purchases from PJM that were necessary to serve native load. These BLI's would exist in a different form absent the Company's involvement in PJM as either additional fuel expense or purchased power but they are materially the same thing. Thus, absent the Company's involvement in PJM, and operating as stand-alone balancing authority, in lieu of these BLI's, the Company would run additional generating units, incurring additional fuel expense, or made additional bi-lateral energy transactions to serve its load. Absent these power purchases from PJM, the Company would not be serving the energy needs of its native load customers.

BLI 2370 and 2375 represent additional credits beyond payment from LMP to generators that are necessary to keep the generator whole to its offer. Thus, without these credits following the allocation of the fuel expense from an individual generator, the generator would get short changed and not receive the credit necessary to keep the unit whole to its offer.

Q. ARE THERE ANY ADDITIONAL PJM BILLING LINE ITEMS THAT SHOULD BE INCLUDED IN THE FAC CALCULATION GOING FORWARD THAT THE COMPANY HAS NOT BEEN INCLUDING, OR

POTENTIAL CHANGES TO ALLOCATION METHODOLOGY OF THESE BILLING LINE ITEMS?

A. Yes.

Q. PLEASE EXPLAIN.

A. The PJM BLIs that the Company is currently charging and crediting native load customers in the FAC reflect the calculations and methodology as of the Company's most recent Commission-approved base electric rate case that occurred when the Company was operating under the Midcontinent Independent System Operator (MISO) and well before the Company moved to PJM on January 1, 2012. The Company has not has a base electric rate case since becoming a PJM member. Because MISO and PJM do not use identical billing criteria, a review of all BLIs will be necessary at the time of the Company's next base rate proceeding to ensure that all such charges and credits are appropriately reflected in the FAC, base rates, or another recovery mechanism.

To briefly illustrate the difference, there are some PJM BLIs that do not exist on the MISO settlement statements and, likewise, some MISO BLIs that do not exist on the PJM settlement statements. In addition, not all of the remaining MISO charges and credits line up perfectly with corresponding PJM charges and credits. Finally, other than the aforementioned operating reserve credits, the Company is only including charges and credits in its FAC during hours in which the Company is a net purchaser of power. This is a relatively simple approach when calculating and allocating PJM charges and credits. At the next rate case, all PJM BLI charges and credits, as well as the calculation and allocation

methodology, should be examined to determine proper inclusion in base rates, the FAC, the profit sharing mechanism, or another recovery methodology that may be recommended at that time.

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

A. I sponsor the Company's responses to Data Request Numbers 9, 10, 11, 14, 34, and 39. 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, it does.

VERIFICATION

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

The undersigned, John D. Swez, Director of General Dispatch & Operations, Power Trading and Dispatch, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing testimony are 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 18 day of February, 2015.

KATIE JAMIESON
Notary Public
Mecklenburg County
NORTH CAROLINA

NOTARY PUBLIC

My Commission Expires: June 14, 2016

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of an Examination of the Application of the Fuel Adjustment Clause of Duke Energy Kentucky from November 1, 2012 Through October 31, 2014.	))))	Case No. 2014-00454

DIRECT TESTIMONY OF

LISA STEINKUHL

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

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I. INTRODUCTION AND PURPOSE

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Lisa Steinkuhl and my business address is 139 E. Fourth Street, Cincinnati, Ohio 45201.

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

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

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

A. I received a Bachelor Degree in Mathematics from Western Kentucky University in Bowling Green, Kentucky. After completing my Bachelor Degree, I received a Post Baccalaureate Certificate in Professional Accountancy from the University of Southern Indiana in Evansville, Indiana. I became a Certified Public Accountant (CPA) in the State of Ohio in 1993. After receiving my Post Baccalaureate Certificate in 1988, I was employed by small public accounting firms. I was hired by Cinergy Services, Inc., (Cinergy Services) in 1996 as a tax accountant. I held various positions with Cinergy Services including responsibilities in Regulated Business Financial Operations, Commercial Business Asset Management, and Budgets and Forecasts. I joined the Rates Department in April 2006 as a Lead

Rates Analyst and have held my current position as Rates & Regulatory Strategy Manager since January 2014.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL AFFILIATIONS.

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

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

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

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

A. As Rates and Regulatory Strategy Manager, I am responsible for the preparation of financial and accounting data used in retail rate filings and various other rate recovery mechanisms for Duke Energy Ohio and Duke Energy Kentucky, Inc.

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, 2012, through October 31, 2014. I support the calculation of the Company's proposed base FAC rate to be set in this proceeding. I also support the regional transmission organization (RTO) code charges and credits that the Company included in its FAC calculation during the review period. Finally, I sponsor several of Duke Energy Kentucky's responses to the Commission's Data Requests contained in Appendix B of its February 5, 2015, 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. In the Commission's May 17, 2013, Order in Case No. 2012-00554, Duke Energy Kentucky's base rate of recovery for fuel was set at 2.7466 ¢/kWh based upon the Company's June 2012 fuel costs. Duke Energy Kentucky began using the new base fuel rate in its monthly adjustments to its FAC rate effective with the June 2013 expense month for rates effective in August 2013 billing cycle. The monthly adjustments were prepared by me or under my direction and control and, to the best of my knowledge, information, and belief, accurately reflected the Company's actual fuel and economy power 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 COST IN THE UPCOMING TWO-YEAR PERIOD FOR THE FAC?

A. The Company proposes to set its base fuel rate at 2.9117 ¢/kWh. The calculation is provided in response to Staff-DR-01-001 prepared in response to the Commission Data Requests set forth in Appendix B of its February 5, 2015, Order.

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

A. The rate I am proposing for the base fuel rate is the closest actual fuel rate in the prior twelve months to the Company's projected fuel rate over the next two years. This judgment is based upon a comparison of the average forecast fuel rate for the calendar year 2015 and 2016 and the average forecast fuel rate for the two-year period of 2015 and 2016 with the actual fuel rates for the prior twelve months. The projected fuel rate over the next two years is slightly lower than the actual fuel rate for July 2014 as reflected in the Company's response to Staff-DR-01-001.

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

A. Yes.

B. RTO Costs in the FAC

Q. DOES DUKE ENERGY KENTUCKY INCLUDE SOME RTO-RELATED COSTS IN ITS MONTHLY FAC CALCULATION?

A. Yes.

Q. PLEASE LIST THE RTO CODE CHARGES AND CREDITS INCLUDED IN THE COMPANY'S FAC CALCULATION FOR THE REVIEW PERIOD OF NOVEMBER 1, 2012 THROUGH OCTOBER 31, 2014.

A. The only PJM charges/credits taken directly from the invoice and included in the FAC calculation are the native portion of Billing Line Item 2370 - Day-Ahead Operating Reserve Credit and Billing Line Item 2375 - Balancing Operating

Reserve Credit. These are being credited to fuel costs because of the nexus between receiving the payment from PJM and incurring fuel costs to run the plants. Additionally, as discussed by Company witness John D. Swez, the following PJM BLI codes are included in Duke Energy Kentucky's FAC calculation, although the direct correlation to the PJM Invoice is not expressly evident:

1200 – Day-ahead Spot Market Energy

1205 – Balancing Spot Market Energy

1210 – Day-ahead Transmission Congestion

1215 - Balancing Transmission Congestion

1220 – Day-ahead Transmission Losses

1225 – Balancing Transmission Losses

The FAC only includes the portion of these billing line items attributable to purchased power. The amount attributable to purchased power is based on the Company's after-the-fact generation model which is used to economically dispatch on an hourly basis the Company's demand (load) with the available supply resources (i.e. generation or purchased power). If Duke Energy Kentucky's real-time native load is greater than the available real-time generation not committed in the Day-Ahead energy market to non-native, then Duke Energy Kentucky will purchase energy from PJM to make-up the difference. The purchased power is priced at the Day Ahead/Real Time blended locational marginal price (LMP). The LMP price is comprised of the system energy price, the transmission marginal congestion price, and the marginal loss price. If Duke

Energy Kentucky's real-time native load is less than the available real-time generation not committed in the Day-Ahead market to non-native, then any excess generation is considered as a real-time non-native energy market sale and priced at the Day Ahead/Real Time blended locational marginal price (LMP). The LMP price is comprised of an energy component, a transmission congestion component, and a transmission loss component. The sale is included in the Company's Profit Sharing Mechanism (PSM).

Q. ARE THERE ANY OTHER PJM BILLING LINE ITEMS COSTS THAT THE COMPANY BELIEVES SHOULD BE INCLUDED IN THE FAC GOING FORWARD?

A. Yes.

Q. PLEASE EXPLAIN.

A. There are a multitude of PJM Billing Line Items (BLIs) a market participant may receive on their invoice depending on the type of product they are providing to PJM or PJM is providing to the market participant. These charges/credits have symmetry. For example if a member is a vertically integrated utility, they will receive revenues for selling a generation product into the various markets; however, they will also incur a cost for buying the same type of product from PJM for its load. LDS-1 Attachment to my testimony is a PJM document demonstrating all the possible BLIs. At the next rate case, all PJM BLIs charges and credits, as well as the calculation and allocation methodology, should be examined to determine proper inclusion in base rates, the FAC, the PSM, or another recovery methodology that may be recommended at that time.

C. 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 1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 16, 17, 23, 30, 35, 36, 38, and 40. These responses were prepared by me and 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 change in base rates as a result of the proposed change in the base fuel rate are included in the attachment responding to Staff-DR-01-017. That attachment was prepared at my request and under my direction and control.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

PJM Billing Statement Line Items

ID #	Weekly BLI	CHARGES	ID #	Weekly BLI	CREDITS
1000		Amount Due for Interest on Past Due Charges			
1100	1	Network Integration Transmission Service	2100	1	Network Integration Transmission Service
1101	1	Network Integration Transmission Service (ATSI Low Voltage)	2101	1	Network Integration Transmission Service (ATSI Low Voltage)
1104	1	Network Integration Transmission Service Offset	2104	1	Network Integration Transmission Service Offset
			2106	1	Non-Zone Network Integration Transmission Service
1108		Transmission Enhancement	2108		Transmission Enhancement
1109		MTEP Project Cost Recovery	2109		MTEP Project Cost Recovery
1110		Direct Assignment Facilities	2110		Direct Assignment Facilities
1120		Other Supporting Facilities	2120		Other Supporting Facilities
1130		Firm Point-to-Point Transmission Service	2130		Firm Point-to-Point Transmission Service
			2132		Internal Firm Point-to-Point Transmission Service
1133		Firm Point-to-Point Transmission Service Resale	2133		Firm Point-to-Point Transmission Service Resale
1135		Neptune Voluntary Released Transmission Service (Firm)	2135		Neptune Voluntary Released Transmission Service (Firm)
1138		Linden Voluntary Released Transmission Service (Firm)	2138		Linden Voluntary Released Transmission Service (Firm)
1140		Non-Firm Point-to-Point Transmission Service	2140		Non-Firm Point-to-Point Transmission Service
			2142		Internal Non-Firm Point-to-Point Transmission Service
1143		Non-Firm Point-to-Point Transmission Service Resale	2143		Non-Firm Point-to-Point Transmission Service Resale
1145		Neptune Voluntary Released Transmission Service (Non-Firm)	2145		Neptune Voluntary Released Transmission Service (Non-Firm)
1146		Neptune Default Released Transmission Service (Non-Firm)	2146		Neptune Default Released Transmission Service (Non-Firm)
1147		Neptune Unscheduled Usage Billing Allocation			
1155		Linden Voluntary Released Transmission Service (Non-Firm)	2155		Linden Voluntary Released Transmission Service (Non-Firm)
1156		Linden Default Released Transmission Service (Non-Firm)	2156		Linden Default Released Transmission Service (Non-Firm)
1157		Linden Unscheduled Usage Billing Allocation			
1200	1	Day-ahead Spot Market Energy			
1205	1	Balancing Spot Market Energy			
1210	1	Day-ahead Transmission Congestion	2210	1	Transmission Congestion
1215	1	Balancing Transmission Congestion			
			2217		Planning Period Excess Congestion
1218		Planning Period Congestion Uplift	2218		Planning Period Congestion Uplift
1220	1	Day-ahead Transmission Losses	2220	1	Transmission Losses
1225	1	Balancing Transmission Losses			
1230	1	Inadvertent Interchange			
1240		Day-ahead Economic Load Response	2240		Day-ahead Economic Load Response
1241		Real-time Economic Load Response	2241		Real-time Economic Load Response
1242		Day-Ahead Load Response Charge Allocation			
1243		Real-Time Load Response Charge Allocation			
1245		Pre-Emergency and Emergency Load Response	2245		Pre-Emergency and Emergency Load Response
1250		Meter Error Correction			
1260	1	Emergency Energy	2260	1	Emergency Energy
1301		PJM Scheduling, System Control and Dispatch Service - Control Area Administration			
1302		PJM Scheduling, System Control and Dispatch Service - FTR Administration			
1303		PJM Scheduling, System Control and Dispatch Service - Market Support			
1304		PJM Scheduling, System Control and Dispatch Service - Regulation Market Administration			
1305		PJM Scheduling, System Control and Dispatch Service - Capacity Resource/Obligation Mgmt.			
1306		PJM Scheduling, System Control and Dispatch Service - Advanced Second Control Center			
1307		PJM Scheduling, System Control and Dispatch Service - Market Support Offset			
1308		PJM Scheduling, System Control and Dispatch Service Refund - Control Area Administration			
1309		PJM Scheduling, System Control and Dispatch Service Refund - FTR Administration			
1310		PJM Scheduling, System Control and Dispatch Service Refund - Market Support			
1311		PJM Scheduling, System Control and Dispatch Service Refund - Regulation Market Administration			
1312		Mgmt.			
1313		PJM Settlement, Inc.			
1314		Market Monitoring Unit (MMU) Funding			
1315		FERC Annual Charge Recovery			
1316		Organization of PJM States, Inc. (OPSI) Funding			
1317		North American Electric Reliability Corporation (NERC)			
1318		Reliability First Corporation (RFC)			
1320		Transmission Owner Scheduling, System Control and Dispatch Service	2320		Transmission Owner Scheduling, System Control and Dispatch Service
1330		Reactive Supply and Voltage Control from Generation and Other Sources Service	2330		Reactive Supply and Voltage Control from Generation and Other Sources
1340		Regulation and Frequency Response Service	2340		Regulation and Frequency Response Service
1350		Energy Imbalance Service	2350		Energy Imbalance Service
1360		Synchronized Reserve	2360		Synchronized Reserve
1362		Non-Synchronized Reserve	2362		Non-Synchronized Reserve
1365		Day-ahead Scheduling Reserve	2365		Day-ahead Scheduling Reserve
1370		Day-ahead Operating Reserve	2370		Day-ahead Operating Reserve
1371		Day-ahead Operating Reserve for Load Response	2371		Day-ahead Operating Reserve for Load Response
1375		Balancing Operating Reserve	2375		Balancing Operating Reserve
1376		Balancing Operating Reserve for Load Response	2376		Balancing Operating Reserve for Load Response
1377		Synchronous Condensing	2377		Synchronous Condensing
1378		Reactive Services	2378		Reactive Services
1380		Black Start Service	2380		Black Start Service
1400		Load Reconciliation for Spot Market Energy			
1410		Load Reconciliation for Transmission Congestion			
1420		Load Reconciliation for Transmission Losses	2420		Load Reconciliation for Transmission Losses
1430		Load Reconciliation for Inadvertent Interchange			
1440		Load Reconciliation for PJM Scheduling, System Control and Dispatch Service			
1441		Load Reconciliation for PJM Scheduling, System Control and Dispatch Service Refund			

1442		Load Reconciliation for Schedule 9-6 - Advanced Second Control Center			
1444		Load Reconciliation for Market Monitoring Unit (MMU) Funding			
1445		Load Reconciliation for FERC Annual Charge Recovery			
1446		Load Reconciliation for Organization of PJM States, Inc. (OPSI) Funding			
1447		Load Reconciliation for North American Electric Reliability Corporation (NERC)			
1448		Load Reconciliation for Reliability First Corporation (RFC)			
1450		Load Reconciliation for Transmission Owner Scheduling, System Control and Dispatch Service			
1460		Load Reconciliation for Regulation and Frequency Response Service			
1470		Load Reconciliation for Synchronized Reserve			
1472		Load Reconciliation for Non-Synchronized Reserve			
1475		Load Reconciliation for Day-ahead Scheduling Reserve			
1478		Load Reconciliation for Balancing Operating Reserve			
1480		Load Reconciliation for Synchronous Condensing			
1490		Load Reconciliation for Reactive Services			
1500	1	Financial Transmission Rights Auction	2500	1	Financial Transmission Rights Auction
			2510	1	Auction Revenue Rights
1600	1	RPM Auction	2600	1	RPM Auction
1610	1	Locational Reliability			
			2620	1	Interruptible Load for Reliability
			2630	1	Capacity Transfer Rights
			2640	1	Incremental Capacity Transfer Rights
1650	1	Auction Specific MW Capacity Transaction	2650	1	Auction Specific MW Capacity Transaction
1660		Demand Resource and ILR Compliance Penalty	2660		Demand Resource and ILR Compliance Penalty
1661	1	Capacity Resource Deficiency	2661	1	Capacity Resource Deficiency
1662		Generation Resource Rating Test Failure	2662		Generation Resource Rating Test Failure
1663	1	Qualifying Transmission Upgrade Compliance Penalty	2663	1	Qualifying Transmission Upgrade Compliance Penalty
1664		Peak Season Maintenance Compliance Penalty	2664		Peak Season Maintenance Compliance Penalty
1665		Peak-Hour Period Availability	2665		Peak-Hour Period Availability
1666		Load Management Test Failure	2666		Load Management Test Failure
1670	1	FRR LSE Reliability	2670	1	FRR LSE Reliability
1680		FRR LSE Demand Resource and ILR Compliance Penalty	2680		FRR LSE Demand Resource and ILR Compliance Penalty
1681		FRR LSE Capacity Resource Deficiency	2681		FRR LSE Capacity Resource Deficiency
1682		FRR LSE Generation Resource Rating Test Failure	2682		FRR LSE Generation Resource Rating Test Failure
1683		FRR LSE Qualifying Transmission Upgrade Compliance Penalty	2683		FRR LSE Qualifying Transmission Upgrade Compliance Penalty
1684		FRR LSE Peak Season Maintenance Compliance Penalty	2684		FRR LSE Peak Season Maintenance Compliance Penalty
1685		FRR LSE Peak-Hour Period Availability	2685		FRR LSE Peak-Hour Period Availability
1686		FRR LSE Load Management Test Failure	2686		FRR LSE Load Management Test Failure
1687		FRR LSE Schedule 9-5	2687		FRR LSE Schedule 9-5
1688		FRR LSE Schedule 9-6	2688		FRR LSE Schedule 9-6
1710		PJM/MISO Seams Elimination Cost Assignment	2710		PJM/MISO Seams Elimination Cost Assignment
1712		Intra-PJM Seams Elimination Cost Assignment	2712		Intra-PJM Seams Elimination Cost Assignment
1720		RTO Start-up Cost Recovery	2720		RTO Start-up Cost Recovery
1730		Expansion Cost Recovery	2730		Expansion Cost Recovery
1900		Unscheduled Transmission Service			
1910		Ramapo Phase Angle Regulators	2910		Ramapo Phase Angle Regulators
1911		Michigan - Ontario Interface Phase Angle Regulators			
			2912	1	CT Lost Opportunity Cost Allocation
1920		Station Power			
1930		Generation Deactivation	2930		Generation Deactivation
1932		Generation Deactivation Refund	2932		Generation Deactivation Refund
1950		Virginia Retail Administrative Fee	2950		Virginia Retail Administrative Fee
1952		Deferred Tax Adjustment	2952		Deferred Tax Adjustment
1955		Deferral Recovery	2955		Deferral Recovery
1980		Miscellaneous Bilateral	2980		Miscellaneous Bilateral
1995		PJM Annual Membership Fee			
			2996		Annual PJM Cell Tower
			2997		Annual PJM Building Rent
1999		PJM Customer Payment Default			

VERIFICATION

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

The undersigned, Lisa Steinkuhl, being duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing testimony, and that the answers contained therein are true and correct to the best of her knowledge, information and belief.

Lisa D Steinkuhl
Lisa Steinkuhl, Affiant

Subscribed and sworn to before me by Lisa Steinkuhl on this 17th day of February, 2015.

Adele M. Frisch
NOTARY PUBLIC

ADELE M. FRISCH
Notary Public, State of Ohio
My Commission Expires 01-05-2019

My Commission Expires: 1/5/2019

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of an Examination of the Application of the Fuel Adjustment Clause of Duke Energy Kentucky from November 1, 2012 Through October 31, 2014	))))	Case No. 2014-00454

DIRECT TESTIMONY OF

BRETT PHIPPS

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

February 25, 2015

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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 20 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 the American Coal Council, The Coal Institute and the Lexington Coal Exchange.

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

A. Yes, I have testified in numerous fuel adjustment clause (FAC) proceedings before the 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 6(a)-(e) of the Commission's February 5, 2015 Order, to more broadly discuss and support Duke Energy Kentucky's fuel procurement practices from November 1, 2012 through October 31, 2014. I also sponsor certain of the Company's responses to the Commission Data Requests.

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 stations 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 (less than one year) and long-term coal supply from producers through competitive bid processes, which 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 one year or more.

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

A. During the review period, the Company received approximately 94% of all contracted coal during the agreed upon delivery schedule. The shortfall tons were spread over several different suppliers and represented production issues relevant to mining coal. The Company did not face any inventory problems during the review period as a result of these contract delivery shortfalls. The shortfalls were not of a sufficient amount to cause a significant increase in spot tons purchased by the Company.

Q. PLEASE DESCRIBE DUKE ENERGY KENTUCKY'S EFFORTS TO ENSURE COAL SUPPLIERS 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 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.

Q. WERE THERE ANY CHANGES IN COAL 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 PROCUREMENT PRACTICES?

A. The Company currently sources a majority of its coal for Duke Energy Kentucky from either the Illinois Basin or from the Upper Ohio River near Pennsylvania/Ohio. Between late 2012 and late 2014, published coal market prices have remained in the low to mid $40's per ton for high sulfur Illinois Basin coal loaded on the Ohio River and published coal market prices for high sulfur Ohio River coal loaded near Pennsylvania/Ohio in the mid $30's per ton. The biggest drivers for these declining coal market prices are low natural gas prices that have depressed coal generation, published reports of surplus amounts of coal

inventories in stockpile at most U.S. power plants and relatively weak economic conditions impacting overall electric generation. Going forward, the Company expects (a) the continued decline in U.S. steam coal supplies, (b) a slumping global coal market, (c) low natural gas prices, (d) healthy utility coal inventories, and (e) volatile power prices. Coal markets are likely to be relatively stable in the near term; however, longer term, we see potential for market volatility as coal suppliers continue to cut production and bring supply into balance with demand.

The Company expects to continue to employ many of the same procurement practices over the next two years as it has in the past. Our practices have maintained a reliable supply of coal 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 15, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 29, 31, 32, 33, and 37. 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, they were.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

VERIFICATION

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

The undersigned, Brett Phipps, Managing Director of Fuel Procurement, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing testimony are true and correct to the best of his knowledge, information and belief.

Brett Phipps, Affiant

Subscribed and sworn to before me by Brett Phipps on this 18TH day of February, 2015.

KATIE JAMIESON
Notary Public
Mecklenburg County
NORTH CAROLINA

Katie Jamieson
NOTARY PUBLIC

My Commission Expires: June 14, 2016

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of an Examination of the Application of the Fuel Adjustment Clause of Duke Energy Kentucky from November 1, 2012 Through October 31, 2014	))))	Case No. 2014-00454

DIRECT TESTIMONY OF

JOHN A. VERDERAME

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

February 25, 2015

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I. INTRODUCTION 1

II. DISCUSSION 3

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I. INTRODUCTION

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John A. Verderame, and my business address is 526 S. South Church Street, Charlotte, North Carolina 28202.

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

A. I am employed by Duke Energy Progress, Inc. (Duke Energy Progress) as Managing Director, Power Trading and Dispatch. Duke Energy Progress is the utility formerly known as Progress Energy Inc., (Progress Energy) located in North and South Carolina. As part of the merger integration process, Duke Energy Progress now provides various administrative and other services to the regulated affiliated companies within Duke Energy Corp., including Duke Energy Kentucky, Inc., (Duke Energy Kentucky or the Company).

Q. PLEASE DESCRIBE BRIEFLY YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Arts degree in Economics from the University of Rochester in 1983, and a Masters in Business Administration in Finance from Rutgers University in 1985. I have worked in the energy industry for 14 years. Prior to that, from 1986 to 2001, I was a Vice President in the United States (US) Government Bond Trading Groups at the Chase Manhattan Bank and Cantor Fitzgerald. My responsibilities as a US Government Securities Trader included acting as the Firm's market maker in US Government Treasury securities. I joined Progress Energy, in 2001, as a Real-Time Energy Trader. My responsibilities as a Real-Time Energy Trader included managing the real-time energy position of the

Progress Energy regulated utilities. In 2005, I was promoted to Manager of the Power Trading group. My role as manager included responsibility for the short-term capacity and energy position of the Progress Energy regulated utilities in the Carolinas and Florida.

In 2012, upon consummation of the merger between Duke Energy Corporation (Duke Energy Corp.) and Progress Energy, Progress Energy became Duke Energy Progress and I was promoted to my current position.

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

A. Yes. I recently provided testimony in Case No. 2014-00201 involving the Company's purchase of the 31 percent interest in the East Bend Generating Station (East Bend) from the Dayton Power & Light Company (DP&L).

Q. PLEASE SUMMARIZE YOUR DUTIES AS MANAGING DIRECTOR, POWER TRADING AND DISPATCH.

A. As Managing Director, Power Trading and Dispatch of Duke Energy Progress, I am responsible for Power Trading and Generation Dispatch on behalf of the Company's regulated utilities in the Carolinas, Florida, Indiana, and Kentucky. I am primarily 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 team 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 (Ancillary Services Markets), as well as managing the Company's short-term and long-term supply position to ensure that the Company has adequate economic resources committed to serve its retail customers' electricity needs. In that respect, I am 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 February 5, 2015 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 significantly 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 PJM proposals currently under consideration by the Federal Energy Regulatory Commission that will impact both the Company and Duke Energy Kentucky's customers going forward.

II. DISCUSSION

Q. HAVE THERE BEEN ANY RECENT AND SIGNIFICANT DEVELOPMENTS WITH RESPECT TO DUKE ENERGY KENTUCKY'S POWER PROCUREMENT PRACTICES AS IT PERTAINS TO ITS OPERATION IN PJM?

A. Yes. Although occurring after the review period of November 2, 2012 through October 31, 2014, it is worthy of mention that effective December 30, 2014, Duke Energy Kentucky became the sole owner of East Bend, having completed its purchase of the remaining 31 percent interest from DP&L.

Q. WHY IS THIS SIGNIFICANT?

A. The acquisition of East Bend represents additional capacity and energy that is being dedicated to Duke Energy Kentucky's customers. However, it also represents the first step in a change to the Company's generation portfolio profile. The East Bend purchase was predicated on the need to replace capacity that will have to be retired due to forthcoming federal environmental regulations, primarily the Mercury and Air Toxics Standards (MATS). The Company anticipates retiring approximately 163 MegaWatts (MWs) of net installed capacity from its Miami Fort Unit 6 Generating Station (MF6) on or before May 31, 2015. The East Bend acquisition represents approximately 186 MWs of net installed capacity intended to supplant the capacity at MF6 upon its retirement.

The significance of this purchase and retirement is that, together, the two transactions result in a shift in the Company's base load generation portfolio. As more fully described in the direct testimony of Company witness John D. Swez, the Company purchases energy from PJM to meet all of the demands of its Kentucky customers and offers all of its owned generating resources for sale in the Day-Ahead and Real-Time Energy markets. The Company's generation thus serves as a hedge against wholesale energy prices because the energy sales from those Company-owned generating resources can offset energy purchases. Once

MF6 is retired, the majority of Duke Energy Kentucky's customer demand purchases will be offset by sales to PJM by a single unit. While East Bend is a reliable and reasonable cost unit, the increased reliance of this unit and the consequent decrease in resource diversity will translate into a different exposure to short-term power prices when the station is not operating due to either forced or scheduled maintenance outages. This portfolio change impacts the Company's strategies in both the PJM capacity and energy markets.

Q. PLEASE DESCRIBE ANY CHANGES TO THE WHOLESALE ELECTRIC POWER MARKET THAT THE COMPANY EXPECTS TO OCCUR WITHIN THE NEXT TWO YEARS THAT WILL SIGNIFICANTLY AFFECT DUKE ENERGY KENTUCKY'S POWER PROCUREMENT PRACTICES.

A. The wholesale power markets that directly impact Duke Energy Kentucky are the energy and capacity markets in PJM. Duke Energy Kentucky's customers benefit significantly from this 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 off-system sales from the Company's generation, the majority proceeds of which flow 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.

The Company believes that the PJM energy markets will continue to function as they do today; however, wholesale energy and capacity price volatility will likely experience upward pressure. Drivers behind this increased volatility include pricing impacts from new environmental regulations as they become effective, and structural market changes, either imposed on, or proposed by, PJM. Specifically in response to extreme weather condition events, PJM is seeking significant changes to its wholesale capacity market construct. These proposals, if approved and implemented, would significantly impact both Duke Energy Kentucky and its customers. The proposed changes by PJM are specifically intended to increase capacity market payments in order to incentivize investment in the generation assets inside the PJM footprint.

Q. PLEASE DESCRIBE THE PJM CAPACITY MARKET AS IT CURRENTLY EXISTS.

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 Fixed Resource Requirement (FRR) entity. The baseline procurement auction is called a base residual auction (BRA). BRAs are 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 an 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 MWs of 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 annually submits an FRR Plan to PJM. This is 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 exiting the FRR and becoming a full RPM auction participant.

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 FRR Plan for the delivery period spanning June 1, 2018 through May 31, 2019.

The Duke Energy Kentucky FRR plan currently includes East Bend, MF6 and Woodsdale generating stations, as well as any bilateral capacity purchases

required to meet customer demand. Going forward, upon MF6's retirement, the Company's FRR plan will likely consist primarily of East Bend and Woodsdale.

Q. WHY DO YOU QUALIFY THE COMPANY'S FUTURE FRR PLAN AS LIKELY CONSISTING OF EAST BEND AND WOODSDALE?

A. PJM is currently in the process of revising its capacity markets and the type of capacity that can qualify to satisfy load obligations in PJM for both FRR entities and BRA participants. It is possible that the least cost solution to meet customer load obligations under the proposed capacity market changes may include additional or other resources.

Q. PLEASE EXPLAIN THE CHANGES TO THE CAPACITY MARKET CONSTRUCT THAT PJM IS SEEKING TO IMPLEMENT.

A. In a stated effort to improve the reliability of generating resources in the PJM footprint, PJM is proposing to replace the RPM construct with the newly coined "Capacity Performance" construct. In doing so, it is redefining its capacity products and proposing new performance-based penalties. Specifically, PJM is proposing to establish two classes of capacity, "Base Capacity" and "Capacity Performance." Base Capacity can generally be described as resources that satisfy the current PJM capacity product requirements. Capacity Performance will 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 is adopting a no-excuses policy in order to improve reliability new penalty structure.

In its new proposal, PJM sets a goal of transitioning all capacity in the footprint to Capacity Performance by the 2020-2021 Delivery Year. In other words, by June 1, 2020 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. HOW WOULD YOU CLASSIFY THE CURRENT DUKE ENERGY KENTUCKY RESOURCES?

A. In my opinion, 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 would not meet Capacity Performance requirements. The primary fuel at Woodsdale is natural gas delivered under a non-firm delivery contract. In the event that natural gas was unavailable at the site, due to delivery limitations on the natural gas pipeline, the station would not be able to meet a demand for energy from PJM. Currently Woodsdale, due to its low capacity factor, does not have contracted firm natural gas transportation. While the Woodsdale Units are capable of running on propane as a secondary fuel, there is very limited storage capability at the site, not nearly enough to meet Capacity Performance expectations.

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

A. PJM has requested that the Federal Energy Regulatory Commission rule on the proposed changes by April 15, 2015 in order for PJM to implement the changes in the next Base Residual auction.

Q. PLEASE EXPLAIN POTENTIAL IMPACTS TO THE COMPANY AND CUSTOMERS IF THE CAPACITY PERFORMANCE PROPOSAL IS APPROVED.

A. The generation assets that the Company has invested in are sound and dependable. Duke Energy Kentucky continues to invest in and maintain these assets so that they remain reliable resources and continue to provide benefits to Duke Energy Kentucky's customers. The Company believes that the investments it makes in generation assets are under the purview of this Commission; and as such, believes that as an FRR entity, the Company and all FRR entities should be exempted from compliance with the Capacity Performance proposal. Duke Energy Kentucky has argued this position through the PJM stakeholder process and as an intervener in the current PJM proceeding before the Federal Energy Regulatory Commission.

While PJM has made some concessions to the FRR construct in its proposal evolution, those concessions primarily address the timing of full compliance with Capacity Performance. If the FERC approves PJM's plan as proposed, the Company anticipates that significant and ongoing expenses will be required in order to ensure that Duke Energy Kentucky resources meet the no excuses availability requirements of Capacity Performance. These expenses will likely include capital expenditures in dual fuel capability or other costs to ensure generation unit availability, as well as potential upgrades at generation stations designed to mitigate, to the greatest extent possible, exposure to the significant penalties in the proposal for non-performance. Other anticipated responses to

Capacity Performance risks could include the onsite maintenance of critical long lead time replacement part inventories that could reduce exposure to prolonged outages during penalty periods. The penalties proposed by PJM in Capacity Performance represent a paradigm shift in risk exposure for the Company. A significant outage at East Bend that happens to coincide with a compliance period could easily subject the Company to penalties that exceed its total yearly earnings.

PJM has also proposed an FRR-only option of meeting compliance penalties through the addition of physical generation into subsequent FRR Plans. While this option may prove to be an economically viable alternative, the Company cannot simply elect to make investments in supplemental capacity absent some assurance of cost recovery. The Company must first come to this Commission with any such proposal and receive approval. In short, under its current regulatory authority, there are few explicit recovery options for expenses incurred to meet these requirements or mitigate these significantly increased risks. The Company and the Commission must continue to work together to develop an appropriate and reasonable strategy to address these necessary changes to the wholesale electric capacity markets.

Q. DO YOU BELIEVE THE CHANGES THAT PJM IS PROPOSING TO IMPLEMENT ARE HARMFUL TO DUKE ENERGY KENTUCKY OR ITS CUSTOMERS?

A. PJM has recognized a reliability issue in its footprint, and is acting in good faith to improve reliability of electric supply. The changes being considered are intended to incentivize investment in generating resources by both enhancing the

value of capacity that meets the proposed performance guidelines and through the implementation of severe penalties for non-performance. That said, I also believe PJM needs to recognize that its proposal to address capacity performance concerns is not a one-size fits all approach and that some recognition and distinction needs to be made for those LSEs that operate as an FRR entity and are situated in a fully regulated jurisdiction under state commission oversight.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

VERIFICATION

STATE OF NORTH CAROLINA)
)
COUNTY OF MECKLENBURG)

SS:

The undersigned, John Verderame, Director of Power Trading & Dispatch, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing testimony are true and correct to the best of his knowledge, information and belief.

John Verderame, Affiant

Subscribed and sworn to before me by John Verderame on this 18 day of February, 2015.

KATIE JAMIESON
Notary Public
Mecklenburg County
NORTH CAROLINA

NOTARY PUBLIC

My Commission Expires: June 14, 2016