COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF DUKE ENERGY KENTUCKY, INC. TO AMEND ITS DEMAND SIDE MANAGEMENT PROGRAMS	))))	Case No. 2019-00277

REBUTTAL TESTIMONY OF

BRUCE L. SAILERS

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

January 24, 2020

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I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Bruce L. Sailers. My business address is 139 East Fourth Street, Cincinnati, Ohio 45202.

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

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

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

A. I received a bachelor's degree in Finance and Quantitative Analysis and a master's degree in Marketing from the University of Cincinnati. After three years working with Marathon Oil Company as a systems analyst, I began my career with The Cincinnati Gas & Electric Company, a predecessor to Duke Energy Ohio, in Load Forecasting in February 1990. I worked in the Load Forecasting area for approximately five years in various capacities, and then transferred to Market Research for approximately ten years. In early 2006, I became Manager, Product Development Analytics where I was responsible for demand response product support analysis, certain demand response product operational support functions, demand response product measurement and verification, and demand response product Regional Transmission Organization (RTO) integration for Duke Energy affiliates, including Duke Energy Kentucky. Having these same responsibilities,

my title changed to Manager, Retail Energy Desk and then Manager, Demand Response Analytics. I assumed my current role under the title Rates and Regulatory Strategy Manager, Pricing & Rate Options, in January 2014. Having the same responsibilities, my title has since changed to Pricing and Regulatory Solutions Manager and finally to Manager, Rates and Regulatory Strategy.

Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AS MANAGER RATES & REGULATORY STRATEGY.

A. As Manager Rates & Regulatory Strategy, I am responsible for performing analyses and studies to support new or revised rates, providing oral and written testimony before regulatory agencies, meeting with commission staff members in support of filings, rate changes, or tariff administration issues, assisting in administration of rates and programs, preparing or coordinating preparation of required regulatory compliance filings, leading projects related to new or revised rates and other regulatory support.

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

A. Yes. Most recently I provided direct testimony in Duke Energy Kentucky's Application for an Increase in its Natural Gas Base Rates, in Case No. 2018-00261. In addition, I have also provided testimony in cases before the Indiana Utility Regulatory Commission, the North Carolina Utilities Commission, and the Public Utilities Commission of Ohio.

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

A. The purpose of my Rebuttal Testimony is to address several recommendations of Paul Alvarez, witness of the Kentucky Attorney General. In doing so, I will first provide a brief summary of the Company's Peak Time Rebate Pilot program (PTR-Pilot) and proposed tariff (Rider PTR) that is currently pending before the Kentucky Public Service Commission (Commission). Next, I respond to Mr. Alvarez's numerous recommendations and provide relevant information to explain why some of Mr. Alvarez's recommendations are reasonable and can be incorporated into the Company's PTR Pilot, while other recommendations are unreasonable and should be rejected by the Commission.

II. DISCUSSION

A. SUMMARY OF RIDER PTR

Q. PLEASE BRIEFLY DESCRIBE DUKE ENERGY KENTUCKY'S PROPOSED PTR PILOT AND RIDER PTR.

A. The PTR Pilot is a form of price-induced demand response as described in the Company's application in this proceeding. Duke Energy Kentucky proposes to offer a multiple year PTR Pilot program that offers customers the opportunity to earn bill credits for load reduction during identified time periods, referred to as critical peak events (CPEs). The bullet list below summarizes several key elements of the proposed PTR Pilot including:

- a target of 16 to 25 CPEs annually:
- 1,000 pilot participants;

- an incentive offer of $0.37/ kWh reduced during CPEs (this incentive offer is revised to correct an inadvertent error in the initial rebate calculation that was identified during discovery);[1]
- day-ahead notice by 8 pm for most CPEs;
- a reminder message on the same day of and prior to a CPE for half of the CPEs;
- a list of questions to be answered by the EM&V report; and
- providing summary credit information on the participant's bill no later than the second bill received after the CPE.

Q. PLEASE EXPLAIN WHY DUKE ENERGY KENTUCKY FILED THE RIDER PTR.

A. The PTR Pilot program was filed pursuant to a stipulation and recommendation between Duke Energy Kentucky and the Kentucky Attorney General (KY AG) in Case No. 2016-00152 (The Stipulation).[2] The Stipulation was approved by the Kentucky Public Service Commission (KYPSC or Commission) in the referenced case.

Q. DOES THE COMPANY'S RIDER PTR, AS FILED, COMPLY WITH THE STIPULATION AND RECOMMENDATION IN CASE NO. 2016-00152?

A. Yes. During negotiation of The Stipulation, the Company and the KY AG included several specific pilot program elements desired. The bullet list below highlights

[1] *See* response to AG-DR-02-11, Attachment AG-DR-02-11(d).

[2] *The Application of Duke Energy Kentucky, Inc., for (1) a Certificate of Public Convenience and Necessity Authorizing the Construction of an Advanced Metering Infrastructure; (2) Request for Accounting Treatment; and (3) All Other Necessary Waivers, Approvals, and Relief,* Case No. Case No. 2016-00152 Stipulation and Recommendation (December 6, 2016).

several items specified in The Stipulation. The Company's proposed PTR Pilot program complies with each element listed below:

- The Stipulation specifies that a bill credit is provided after-the-fact to customers provided advance notice of an event who are able to actually lower their energy consumption relative to a baseline;
- available to 1000 eligible residential customers who enroll in the pilot;
- a bill credit provided on a cents per kWh basis;
- to include participant self-identification of programmable thermostat ownership; and
- a list of six questions to be discussed in the EM&V report.

Q. PLEASE EXPLAIN HOW THE PTR PILOT/RIDER PTR COMPLIES WITH THE NEGOTIATED TERMS OF THE STIPULATION AND RECOMMENDATION IN CASE NO. 2016-00152.

A. The Company's proposed PTR Pilot meets each of the criteria listed above. The bullets below align with the bullet element list above.

- The Company's proposed Rider PTR specifies that participants will be notified in advance of CPEs typically with day-ahead notice but no less than one hour prior to the CPE. Bill credits are provided to participants on the participant's bill after a CPE for those participants who actually lowered their energy consumption during a CPE relative to a baseline.
- The proposed Rider PTR is open to 1000 eligible residential customers who elect to enroll in the pilot. Note that the Company would like to slightly exceed this enrollment limit if needed. This is not a sample size issue and

would not constitute new information regarding the pilot. The Company does not desire to turn customers away. The Company will attempt to send enrollment invitations to the exact number of customers needed to enroll 1000 participants. However, we propose to accept up to 100 additional participants recognizing that we cannot be exact with our marketing and don't wish to decline enrollment requests to customers we invite to participate. The slight additional enrollment will serve to buffer against reduced customer satisfaction and customer attrition over the 2 plus year pilot. But for clarity, the Company will target the enrollment limit of 1000.

- The bill credit proposed is $0.37/kWh reduced during CPEs.[3]
- When customers enroll, they will be asked if they own a programmable thermostat.
- Nexant, the EM&V vendor, was provided the list of 6 questions to address and incorporated them into their EM&V plan.

Q. DID DUKE ENERGY KENTUCKY DEVELOP RIDER PTR IN COORDINATION WITH ITS DSM COLLABORATIVE?

A. Yes. Rider PTR program design was discussed in both the 2017 and 2018 DSM collaborative meetings. An EM&V approach was presented at the 2018 meeting and adopted for the program. One design element discussed during the meetings was whether participants would be required to respond to event notifications, so the Company knows whether they will attempt to reduce load during a CPE. The KY

[3] Id.

AG was opposed to this reply requirement and it was not included in the Company's proposed PTR Pilot program.

Q. WAS IMPLEMENTING THE PTR PILOT PROGRAM AS A DEFAULT RATE OFFERING TO CUSTOMERS AGREED UPON IN THE AMI STIPULATION?

A. No. To the contrary, the Stipulation specifies that participants are voluntary and elect to enroll in the pilot. While witness Alvarez is not recommending the proposed PTR pilot become a default offering as a condition to the Commission's approval, his testimony certainly advocates for such a default design in the future.

Q. DOES DUKE ENERGY KENTUCKY HAVE ANY CONCERNS WITH IMPLEMENTING A PTR RATE DESIGN AS A DEFAULT RATE STRUCTURE FOR ALL RESIDENTIAL CUSTOMERS?

A. Yes. The Company believes that default/mandatory enrollment PTR program designs can present significant incentive overpayment issues and that any review of such a design in the future should carefully consider the cost and cost-effectiveness implications. A default PTR rate design would be a sea change for both the Company and its customers. Mr. Alvarez is putting the cart before the horse on this point, as talk of a default structure is premature. The Commission need not rule upon or consider a mandatory PTR rate design as a default rate design now. Rather, the Company recommends that the Commission view Rider PTR as was its intention, as a pilot, to gain learnings and see what if any benefits it can provide.

Q. WAS THE SAMPLE SIZE AGREED UPON IN THE STIPULATION ARBITRARY?

A. No. This negotiated sample size was carefully considered regarding the resources needed to conduct a pilot of this size and to collect the information needed to provide insight for a PTR program. In terms of statistical significance, load reduction during summer and winter CPEs is the only treatment group and a sample size of 1,000 is sufficient to measure summer and winter load reduction during CPEs. The Company acknowledges that a Power Analysis to determine a sample size has not been performed. However, the Company also submits that the 2008 BG&E Smart Energy Pricing (SEP) pilot (*i.e.,* the BG&E pilot program preceding the PTR program witness Alvarez cites multiple times in his testimony) consisted of 1,021 treatment group participants spread across 8 treatment groups.[4] Duke Energy Kentucky's proposed PTR Pilot/Rider PTR contains 1 treatment group with 1,000 participants. Once again, Mr. Alvarez is missing the point of the pilot program that was previously negotiated. The Company's proposed pilot is approximately the same size as BG&E's own pilot for the program Mr. Alverez is holding as a standard.

Q. CAN YOU PROVIDE MORE DETAIL ON TREATMENT GROUPS?

A. A treatment group is a group of participants that will receive a certain experience with the pilot where the results, load reduction for example, will be statistically measured. For example, one group of participants could receive day ahead notice

[4]*See* The Brattle Group's report entitled BG&E's Smart Energy Pricing Pilot Summer 2008 Impact Evaluation, available at:

(last accessed January 21, 2020).

and another group could receive same day notice of CPEs. The objective would be to statistically measure the difference in load reduction provided between the two groups so that a statistical conclusion can be made on which group provided more load reduction. If it is not statistically measured, the value in doing something a bit different is an operational test and a review of directional information. Using this example further, the Company is proposing to have one or two CPEs where we provide same day notice. There is no reason to measure the load reduction with a separate treatment group. A CPE will most always have day-ahead notice. Having one or two CPEs with shorter notice is a realistic situation. System events or emergencies that are not foreseen day ahead can occur and do occur occasionally. The implementation of one or two same day notice CPEs would not provide statistically significant information on whether customers provide more or less load reduction when notified the same day as compared to day ahead. However, it is a realistic event that can provide operational information and insight.

Q. PLEASE EXPLAIN AND CONTRAST THE ENERGY COST DURING CRITICAL PEAK EVENTS THAT THE COMPANY INCORPORATED INTO THE DEVELOPMENT OF THE INCENTIVE FOR REDUCED LOAD VERSUS THAT RECOMMENDED BY MR. ALVAREZ.

A. On page 18 of his testimony, Mr. Alvarez, absent any support, cites an LMP value from a single hour of the year of $0.36/ kWh as representative of the entire year. The Company, however, took a more realistic view of the energy value avoided during CPEs than that suggested by witness Alvarez. Rider PTR as proposed is incentivizing participants for load reduction for 64 to 100 hours, in 4-hour segments

corresponding to high load periods throughout the year. Therefore, the avoided energy value should be representative of the intended implementation. The Company calculated an average LMP value across the years 2012 to 2018 consistent with the average implementation of 25 events to be approximately $0.125 / kWh. It is important to use a holistic view that matches how the program is expected to be implemented so that the fixed incentive paid to customers for load reduction does not exceed the avoided cost. Otherwise, the program would not be cost effective and not be sustainable, a fundamental flaw with Mr. Alvarez's approach.

Q. SHOULD THE INCENTIVE VALUE OFFERED TO CUSTOMERS FOR REDUCED LOAD BE GREATER THAN JUST THE AVOIDED ENERGY COST?

A. If the program can provide avoided capacity, transmission, and distribution costs, it would be reasonable to reflect a portion of these other benefits; so long as the program remains cost effective. Although the Company believes the pilot will provide little if any capacity value in the short run, the incentive value we are offering is increased to reflect a portion of these avoided cost values.

Q. CAN YOU EXPAND ON HOW THE PTR PILOT CAN PROVIDE CAPACITY BENEFITS?

A. Similar to other demand response programs, the PTR Pilot program will provide avoided energy cost benefits during CPEs. As noted by witness Alvarez, this will also serve as a small amount of capacity protection during CPEs. I use the words capacity protection only to suggest that load reduction during peak events will

translate into a small amount of reduced capacity that the Company's other resources would not need to provide on peak days. However, I do not suggest that the PTR pilot will be able to qualify as a resource included in the Company's FRR plan during the pilot phase. In fact, the Company's FRR Plan, as described by witness Swez, will already be final for the 2020/2021 delivery year before Rider PTR is implemented. Benefits to the Company's FRR plan could be possible in the future once we collect the required information that the pilot will provide. The Company is currently thinking that after the pilot, the Company will most likely use the PJM option to recognize capacity benefit called the Peak Shaving Adjustment mechanism. The pilot results will help clarify how Rider PTR can be used to capture capacity benefits.

B. PJM CAPACITY OPTIONS FOR A PTR PROGRAM

Q. IS THE INCENTIVE RECOMMENDED BY WITNESS ALVAREZ UNREASONABLE?

A. Yes. Witness Alvarez recommends a minimum of $1.00 / kWh as the PTR Pilot program incentive. As I explained above, the full avoided energy cost estimate is $0.125 / kWh. Using that avoided energy calculation, Mr. Alverez's incentive equates to a capacity minimum incentive of $0.875 / kWh. The Company believes this incentive is too large for a DSM program, especially considering a DSM program must be cost effective and recognizing that PJM may not fully recognize the load reduction value the program provides.

Q. DID MR. ALVAREZ PERFORM ANY INDEPENDENT, DISCRETE STUDIES OR MODELING OF DUKE ENERGY KENTUCKY'S LOAD OR CUSTOMERS TO ARRIVE AT HIS RECOMMENDED PROGRAM INCENTIVE?

A. No. He did not. His incentive was based upon a program deployed in Maryland.

Q. CAN PRICE INDUCED DEMAND RESPONSE PROGRAMS CAPTURE PJM CAPACITY BENEFITS?

A. Yes, if they meet the qualifications under PJM's rules and regulations. There are three options PJM provides to acknowledge the capacity benefits of a price induced demand response program such as Rider PTR proposed. These options are as follows: 1) the Demand Resource (DR); 2) Price Responsive Demand (PRD); and 3) the Peak Shaving Adjustment (PSA).

Q. PLEASE DESCRIBE THE DEMAND RESOURCE (DR).

A. As more fully described in witness Swez's testimony, DRs are supply side resources like generation and provide a committed MW capacity value that can be used to fulfill capacity obligations. The resources must be available as dispatched by PJM during capacity performance hours and emergency events for up to 10 hours in duration. They must fully respond and provide the committed capacity amount within at most a 2-hour notice period (*i.e.*, subject to performance penalties otherwise) and be available throughout the delivery year. Rider PTR as proposed will investigate the load reduction provided by participants in the winter, previously not tested by the Company, as well as summer load reduction.

Q. PLEASE DESCRIBE THE PRD PROGRAM.

A. PRD resources serve to reduce the amount of capacity resources required. These resources have requirements including 1) a link to or based on a real-time LMP trigger, 2) have 1-hour or more frequent interval metering, and 3) have supervisory control that enables the utility to capture the committed load reduction if it is not provided through the price signal. The last requirement, supervisory control, suggests that a direct load control device is required which is not proposed in the PTR Pilot/ Rider PTR and is somewhat inconsistent with a PTR program philosophy.

Q. PLEASE DESCRIBE THE PSA PROGRAM.

A. The PSA mechanism allows a load reduction program to adjust the PJM load forecast for the utility and thereby serve to reduce the amount of capacity resources required. This mechanism requires the utility to specify a THI (temperature humidity index) value as an implementation trigger. PJM will then adjust the historical load of the utility back through approximately 8-10 years and reduce the load values during the hours that meet the THI threshold. This will result in a lower load forecast for the utility but typically not on a 1 to 1 MW basis. The lower the THI threshold (*i.e.*, the more hours the program is implemented), the more impact realized in the load forecast. As the program is implemented, a performance factor is calculated and incorporated into the process.

Q. ARE THERE ANY OTHER NON-PJM OPTIONS TO REDUCE THE COMPANY'S LOAD?

A. There is one option that does not involve PJM directly. Essentially, a program can be implemented during peak load periods to reduce the utility's load. If the utility is vigilant and is able to implement load reduction during peak load periods, over time (several years), this will flow into the PJM peak load forecast process through the lowered historical load values and will serve to lower the PJM forecast thereby lowering the capacity needs of the utility. Like the PSA, the more peak load periods that are addressed, the more load forecast impact recognized over time. However again, it is unlikely that the PJM load forecast would adjust for the full amount of load reduction available even after many years of program implementation since a utility is unlikely to perfectly implement the program during each and every peak load period.

Q. HOW DOES THE COMPANY ASSESS THE PTR PILOT'S FIT WITH THE CAPACITY OPTIONS PRESENTED ABOVE?

A. During the pilot, the capacity impact provided will be recognized by the fourth option described above. The impact on the Company's FRR capacity obligation will be limited. If the pilot is continued, this is not the option the Company would ultimately expect to use to recognize capacity value since the PJM options provide opportunity to capture more capacity value and sooner than this option. One of the primary objectives of the PTR Pilot program is to estimate the load reduction provided during CPEs. This estimated load reduction is required to implement any of the three PJM capacity options listed above. However, there are basic

inconsistencies between a PTR program and DR. DR requires an all year commitment to be dispatched for up to a 10-hour duration. This requirement could be quite difficult for a residential based PTR program. PRD requires supervisory control which essentially means that a device (*i.e.*, cycling switch or thermostat, *etc.*) must be incorporated to ensure the committed load reduction. The Stipulation acknowledges this potential but does not call for a pilot program that incorporates a device but instead asks for customers to self-identify whether they have such a device, programmable thermostat, so that information can be reviewed for these customers. PRD is a potential option post-pilot if a direct load control device is ultimately incorporated into the program. Having a direct load control device is somewhat inconsistent with a pure PTR program where customers have the choice to participate or not in any particular event. PSA is a viable option as well and the information collected in the pilot will enable the Company to develop this option if the pilot continues.

C. RESPONSE TO MR. ALVAREZ'S OTHER RECOMMENDATIONS

Q. PLEASE SUMMARIZE MR. ALVAREZ'S RECOMMENDATIONS AND CRITICISMS OF THE COMPANY'S RIDER PTR.

A. Apparently, Mr. Alvarez believes that his PTR "enhancements" are necessary and recommends the Commission *only* approve the Company's PTR Pilot if it adopts each of his recommendations. These recommendations are summarized on page 25 of his testimony and are as follows:

1. Define questions the Pilot must answer in advance, to include, at a minimum the questions provided by Mr. Alvarez;

2. Complete a Power Analysis to determine, in advance, the minimum Pilot sample size required to answer the questions in a statistically significant manner;
3. Increase the summer rebate amount to between $1.00 and $1.33 per kWh;
4. Prohibit the calling of CPEs unless participant notification can be accomplished by 9:00 p.m. the evening prior;
5. Provide feedback as to rebate award/size within three business days of a CPE, and providing bill credit details which identify each credit by CPE date;
6. Provide reminder notices to each program participant between 7:00 and 8:00 a.m. the day of a CPE, for each and every CPE;
7. Limit the number of CPE's to six per season (six summer, six winter);
8. Consider PJM Price-Responsive Demand program requirements as a secondary, rather than primary, objective of Pilot design.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. ALVAREZ'S FIRST RECOMMENDATION REGARDING PILOT QUESTIONS TO BE ANSWERED?

A. Not entirely.

Q. PLEASE EXPLAIN.

A. First, the questions included in the Company's pilot were those that were negotiated as part of the Stipulation in Case No. 2016-152. That said, the Company agrees to incorporate all of witness Alvarez's newly suggested questions except the following:

- What is the average kWh reduction (and estimated kW reduction) per participant earning a rebate, broken down by summer events and winter events?
- How do differences in participant characteristics impact the size of kWh reductions per summer event? Per winter event?

Q. PLEASE EXPLAIN WHY DUKE ENERGY KENTUCKY DOES NOT SUPPORT ADDING THOSE TWO QUESTIONS.

A. The first question will require a more detailed control group where each participant in the pilot is assigned a control group account to enable an answer to this question given that participants are not required to reduce load during every CPE. The Company notes that this will add additional complexity to the PTR Pilot and increase the program EM&V cost that will ultimately occur to incorporate this criteria. Nonetheless, if the Commission truly desires this, it is technically feasible to do so.

The second question is overly broad and undefined. Duke Energy Kentucky agrees to review customer characteristics available including the participant's self-identified ownership of a programmable thermostat but does not agree to answer this question in a statistically significant manner by creating additional treatment groups.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. ALVAREZ'S SECOND RECOMMENDATION REGARDING PERFORMING A POWER ANALYSIS TO DETERMINE A MINIMUM SAMPLE SIZE?

A. Not entirely.

Q. PLEASE EXPLAIN.

A. The 1,000 participants pilot is the product of the Stipulation that is not an arbitrary level of participation as explained above. The Company does not believe the KY AG should be permitted to upend a settlement provision previously negotiated in good faith and approved by the Commission. However, the Company does agree to follow the results of a Power Analysis and experimental design performed by Nexant for the single treatment group. The Company agrees to reduce the number of participants as indicated by the Nexant Power Analysis to estimate the load reduction provided during summer and winter CPEs but the Company does not agree to increase the target participation of 1,000 pilot participants.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. ALVAREZ'S THIRD RECOMMENDATION TO INCREASE THE SUMMER REBATE AMOUNT?

A. No.

Q. PLEASE EXPLAIN.

A. As a DSM portfolio program, the Company looks at a reasonable incentive amount to inspire customer load reduction behavior while balancing the need to have a cost-effective program that fits in the DSM portfolio. At this time, the load reduction provided by customers is uncertain. In addition, we do not agree to set an incentive amount that is inconsistent with the intended implementation of the pilot. Specifically, the incentive amount is tied to the expected number of CPEs and the estimated load reduction provided by customers. Furthermore, as discussed above, under multiple capacity options, the Company may receive a lower capacity

resource amount than the amount of load reduction provided since it may not be fully recognized by PJM.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. ALVAREZ'S FOURTH RECOMMENDATION REGARDING THE TIMING OF CALLING A CPE?

A. No.

Q. PLEASE EXPLAIN.

A. As discussed above, emergency system conditions do not happen frequently, but they do occur. In addition, weather forecasts are not always perfect and are much higher in real time than expected day ahead. The Company believes that at least one event should be implemented with shorter notice. This is not intended to be a treatment group. It is simply intended to mimic reality and test the reasonableness of implementing such a CPE. Directional information regarding how many customers respond and what customers say when asked about such an event is valuable pilot information to collect. The Company agrees to implement only one summer CPE with shorter than day ahead notice during the first year of the pilot. Depending on the results of that CPE (*i.e.*, was there a large difference in the number of customers earning incentives and load reduction provided), another single CPE with less than day ahead notice may or may not be implemented during year 2 of the pilot.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. ALVAREZ'S FIFTH RECOMMENDATION REGARDING TIMING OF FEEDBACK AND ADDING BILL CREDIT DETAILS?

A. No.

Q. PLEASE EXPLAIN.

A. Witness Alvarez postulates that the credit calculation process is straight forward. This assumption is not correct. Creating weather response functions, dealing with estimated data, and reviewing credit results is not straight forward. Moreover, providing individual CPE billing credit data would require significant and costly reprogramming of the Company's customer information systems. The Company's current billing system is simply not able to provide individualized detail as Mr. Alvarez suggests. Such analysis would have to be performed manually and would require dedicated personnel resources to provide this information as suggested, resulting in substantial additional cost. Nonetheless, the Company agrees to provide a credit amount to the customers earning credits in an email or text message within 5 business days of an event during the term of the pilot. This will increase pilot costs but should not be material. Coupled with day after the CPE feedback of electric consumption on the Company's website, Customers will have excellent feedback on their efforts. Individual event information on the customer's bill is simply not operationally feasible with the Company's existing billing system.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. ALVAREZ'S SIXTH RECOMMENDATION REGARDING REMINDER NOTICES?

A. Yes, to a large extent.

Q. PLEASE EXPLAIN.

A. Although the Company believes directional information on the value of a reminder notice will be lost, the Company agrees to send reminder notices by 1 p.m. for all summer CPEs except CPEs providing notice the same day. This will cause a slight increase in pilot cost but should not be material.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. ALVAREZ'S SEVENTH RECOMMENDATION TO LIMIT THE NUMBER OF CPES?

A. Yes, mostly.

Q. PLEASE EXPLAIN.

A. Weather conditions are unpredictable. As discussed above, under certain capacity resource options, a higher capacity value can be obtained by implementing CPEs more frequently. Predicting when peak load weather conditions and peak loads occur and implementing a limited number of CPEs to match the peak load conditions is not an exact science. To allow flexibility with CPE implementation, the Company does not oppose limiting CPEs to 12 annually as witness Alvarez suggests with at least 4 CPEs in the summer and 4 CPEs in the winter and 4 CPEs that are flexible to be called anytime during the year.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. ALVAREZ'S EIGHTH RECOMMENDATION TO CONSIDER PJM PRICE-RESPONSIVE DEMAND PROGRAM REQUIREMENTS AS A SECONDARY OBJECTIVE?

A. For the pilot, yes.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

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

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

Bruce L. Sailers

Bruce L. Sailers, Affiant

Subscribed and sworn to before me by Bruce L. Sailers, on this 21st day of January, 2020.

Adele M. Frisch

NOTARY PUBLIC

ADELE M. FRISCH
Notary Public, State of Ohio
My Commission Expires 01-05-2024

My Commission Expires: 1/5/2024

COMMONWEALTH OF KENTUCKY

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REBUTTAL TESTIMONY OF

JOHN D. SWEZ

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

January 24, 2020

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I. INTRODUCTION AND PURPOSE

Q. PLEASE 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 SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science degree in Mechanical Engineering from Purdue University in 1992. I received a Master'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. Though my title has changed on several occasions, I assumed my current role on January 1, 2006.

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

A. The purpose of my testimony is to describe PJM's capacity market and provide an explanation of how the Company participates in PJM Interconnection LLC., (PJM). I then address recommendations made by Paul Alvarez on behalf of the Kentucky Attorney General (AG) related to the Company's status as a Fixed Resource Requirement (FRR) entity in PJM and the Company's capacity position. Finally, my testimony explains how the PTR pilot relates to the PJM capacity market.

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 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 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 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. 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 RPM 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.

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 have to submit its initial FRR Plan for the delivery period spanning June 1, 2023 through

May 31, 2024, and its final FRR plan for the delivery period spanning June 1, 2020 through May 31, 2021.

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

Q. PLEASE EXPLAIN WHAT YOU MEAN BY THE PHRASE UNIT-SPECIFIC GENERATION RESOURCES.

A. A unit-specific generation resource, as the phrase implies, simply means a specific generating resource that meets the eligibility requirements defined by PJM. PJM eligible resources include both physical and demand-side management resources. Duke Energy Kentucky must identify the specific generation resources it owns or has contracted for to provide capacity to meet its entire Delivery Year FRR obligation. Unit-specific capacity is distinguishable from the more "generic" buy-bid capacity that can be purchased through the BRA or incremental auctions of PJM. The capacity product available for purchase in those auctions is not directly tied to a specific generator, so it could not, in itself, be used to satisfy an FRR plan obligation. While sellers in the BRA identify the generation resource offered into the auction, the end product is not so specific. The entire generator performance obligation in the BRA is to PJM, not the purchaser of the buy-bid capacity. From the purchaser's perspective, buy-bid capacity has guaranteed deliverability and performance by PJM. This is distinguishable from the FRR entity where the performance obligation of generation committed to FRR plans is the responsibility of the FRR entity.

As such, Duke Energy Kentucky has similar performance risk to RPM entities, but less flexibility to adjust its plan to account for changes in its resource requirements between the BRA and the Delivery Year than an RPM participant who can simply buy and sell capacity to meet its needs through the BRA.

Q. PLEASE EXPLAIN THE RECENT CHANGES TO THE CAPACITY MARKET CONSTRUCT THAT PJM HAS IMPLEMENTED.

A. In a stated effort to improve the reliability of generating resources in the PJM footprint, PJM has redesigned the RPM construct with the newly coined "Capacity Performance" construct. In doing so, PJM is redefining its capacity products and proposing new performance-based incentives and assessments for non-performance. With Capacity Performance, PJM established two classes of capacity, "Capacity Performance" capacity and, for a limited transitional period, "Base Capacity."

Q. WHAT IS THE DISTINCTION THAT PJM HAS CREATED FOR CAPACITY PERFORMANCE RESOURCES VERSUS THE PRE-CAPACITY PERFORMANCE ANNUAL CAPACITY PRODUCT?

A. Complying capacity performance resources must be capable of sustained, predictable operation that provides energy and reserves during performance assessment hours throughout the Delivery Year. Performance assessment hours will be determined in real-time based on system conditions. They are not pre-determined, but are anticipated to occur during seasonal peak periods. Capacity performance resources are subject to non-performance assessments during emergency conditions throughout the entire Delivery Year. Base Capacity

resources are required to meet the Capacity Performance standard from June through September. Base Capacity will no longer be a Capacity Market product after the transition period. Capacity Performance resources will be required to be available to PJM during periods of high load demand or system emergency, or face substantial non-performance assessments. Conversely, over-performance will be rewarded with performance-based bonuses.

Q. WHEN WILL THE CAPACITY PERFORMANCE MODEL BECOME FULLY IMPLEMENTED IN PJM?

A. In this new construct, PJM established the goal of transitioning all capacity in the PJM footprint to Capacity Performance by the 2020-2021 Delivery Year. In other words, by June 1, 2020, all capacity purchased on behalf of load through RPM or eligible for inclusion in FRR capacity plans must meet the Capacity Performance criteria.

When PJM achieves full transition to Capacity Performance for the 2020-2021 Delivery Year, every resource in the PJM footprint that is not on a PJM-approved planned outage will be obligated to be available for PJM dispatch. The obligation extends during any hour that PJM determines there to be a compliance hour throughout the entire delivery year. Compliance hours are generally set during periods of capacity or operational stress on the PJM system; and are expected by PJM to average approximately thirty hours per year over time.

Q. PLEASE DESCRIBE MR. ALVAREZ'S OPINION AND RECOMMENDATION AS IT RELATES TO DUKE ENERGY KENTUCKY'S STATUS AS AN FRR ENTITY IN PJM.

A. In his testimony, Mr. Alvarez explains that the AG's interest in the Company's proposed Peak-Time Rebate Pilot (PTR) is, at least in part, related to the Company's participation in PJM's capacity market as an FRR entity in and its current capacity position.[1] Mr. Alvarez believes that the Company's PTR pilot rebate should be increased substantially to consider the capacity value he believes the PTR Pilot provides.

Q. HOW DO YOU RESPOND TO MR. ALVAREZ'S POSITION REGARDING THE CAPACITY VALUE OF THE PTR PILOT?

A. The PTR Pilot is only worth a fraction of its nameplate capacity, and not the value that Mr. Alvarez suggests. In order for the PTR Pilot to realize the full capacity value in terms of being useful in the Company's FRR Plan, it must meet the applicable requirements of PJM's capacity market. Otherwise, the PTR capacity provides little to no impact to the Company's FRR Plan, especially during the short term of the pilot.

Q. WHAT ARE THE APPLICABLE REQUIREMENTS OF PJM'S CAPACITY MARKET FOR THE PTR PILOT TO PROVIDE FULL CAPACITY VALUE UNDER DUKE ENERGY KENTUCKY'S FRR PLAN?

A. In order for the Company to actually receive the full (or even substantial) value of capacity in terms of MegaWatts (MWs) of load reduction in PJM that is useful in

[1] Alvarez Testimony at 10.

the Company's FRR Plan, the PTR Pilot must meet eligibility criteria under one of three programs in PJM as follows: 1) the Demand Resource (DR); 2) Price Responsive Demand (PRD); and 3) the Peak Shaving Adjustment (PSA).

Q. PLEASE EXPLAIN WHAT QUALIFIES AS A PJM DEMAND RESPONSE PROGRAM AND WHY THE PTR PILOT DOES NOT MEET THOSE QUALIFICATIONS.

A. DR in PJM is managed similar to how the Company's generators interact within the energy markets. DR must be able to be dispatched by PJM up to 10 hours at a time within at most a 2-hour notice period, be available throughout the delivery year, and are subject to PJM Capacity Performance (CP) rules. The PTR Pilot currently is a voluntary program, meaning customers elect to participate and choose whether or not to respond to a curtailment event. Thus, if PTR Pilot was utilized in the Company's FRR plan, it's possible that a customer could elect to not participate in the program on a given day, fail to curtail load, and the Company would be subject to any Capacity Performance penalties on that day if called by PJM. In addition, as noted in the testimony of Mr. Sailers, the 10-hour duration requirement could be difficult for residential customers. Therefore, any capacity that is made available through the PTR pilot, or any voluntary program where a customer may elect to not curtail, runs the risk of exposing the Company to Capacity Performance penalties if PJM declares a capacity performance event and the Company is not able to deliver the load reductions committed. The voluntary nature of the PTR pilot makes it less valuable in terms of providing capacity to meet the Company's FRR Plan.

Q. PLEASE EXPLAIN WHAT QUALIFIES AS A PRICE RESPONSIVE DEMAND PROGRAM IN PJM AND WHY THE PTR PILOT DOES NOT MEET THOSE QUALIFICATIONS.

A. Again, as detailed in the testimony of Mr. Sailers, PRD in PJM is managed on the demand side and has requirements including being linked to or based on a real-time LMP trigger, has a 1-hour or more frequent interval metering, and has supervisory control that enables the utility to capture the committed load reduction if it is not provided through the price signal. Again, due to the voluntary nature of the PTR Pilot program, the PRD option could not be utilized unless direct load control devices are incorporated into the program. Again, in order for the PTR Pilot, or any PTR program to provide the full value of capacity in terms of being useful in the Company's FRR Plan, it must meet the applicable PJM criteria. In order to provide a greater opportunity for participation in the pilot, the Company is not requiring direct load control devices.

Q. PLEASE EXPLAIN WHAT QUALIFIES AS A PEAK SHAVING ADJUSTMENT PROGRAM IN PJM AND WHY THE PTR PILOT WOULD NOT MEET THOSE QUALIFICATIONS INITIALLY.

A. The PSA mechanism allows a load reduction program to adjust the PJM load forecast for the utility and thereby serve to reduce the amount of capacity resources required. This involves a process involving an index as a trigger with PJM adjusting the historical load of the utility, resulting in a lower load forecast. In order to receive capacity from the PTR Pilot, a plan would need to be submitted to PJM detailing the trigger and how much load reduction would be expected. These items haven't

been determined under the PTR Pilot as the pilot has not yet been approved. The Company has not had any customers sign up for the service and there is no baseline data to use to even estimate with any degree of accuracy how much load reduction could or would occur on a voluntary basis. Therefore, the necessary information does not exist and cannot be submitted. That is the point of the PTR Pilot.

Q. CAN THE PTR PILOT PROVIDE ANY CAPACITY BENEFIT TO DUKE ENERGY KENTUCKY'S FRR PLAN?

A. It is possible that over a long-term planning horizon (beyond the initial pilot term), there would be some capacity benefit in terms of a reduction in load as reflected in PJM's forecast for Duke Energy Kentucky. However, the amount of capacity benefit may take several years to be realized and will likely not be a one to one MW load benefit once realized, unless the Company is able to commit sooner via the PSA approach which remains uncertain. Over time, (many years, assuming the PTR continues beyond its initial three-year pilot phase) as the load reduction is incorporated into the PJM load forecast, the PTR pilot will eventually have a capacity benefit insofar as the forecast would incorporate some impact of load reduction/curtailment from the PTR or possibly could be used as a PSA if the program continues and meets the PJM requirements. This process could take years starting from the point in time when the program is first implemented to when the load reduction is ultimately realized in the forecast. Secondly, a one to one benefit of load reduction in terms of MWs of curtailment versus FRR load may not be received. Due to the voluntary nature of the program, if a customer decides not to participate during a given event, depending on how this event lines up with the PJM

peak load, a one to one capacity benefit would not be realized. As Mr. Sailers testifies, the event hours of the PTR pilot program would have to line up perfectly with the PJM peak load and the customer must always participate, which is unlikely to always be the case. Thus, say if a customer participates in 9 out of 10 events, but the 10th event happens to be the one that lines up with the PJM peak load, the capacity value realized would be less since the customer didn't participate on this day.

Q. HOW WOULD THE PTR PILOT HAVE TO BE AMENDED TO PROVIDE A GREATER CAPACITY BENEFIT TO THE COMPANY'S FRR POSITION?

A. Ultimately, to receive the maximum amount of benefit for the Company's FRR plan and a value of capacity that is closer to one-for one in terms of MWs of load curtailment and FRR Plan obligation without using the PSA approach, both the voluntary nature of the program and the event duration would have to be changed, both of which could be quite difficult for a residential customer. The Company would likely have to incorporate a mandatory direct load control device into the program.

Q. GIVEN THE FACT THAT THE PTR PROGRAM WILL NOT LIKELY PROVIDE A ONE FOR ONE VALUE IN TERMS OF MWS OF CAPACITY REDUCED IN THE FRR PLAN, DO YOU THINK IT IS REASONABLE TO PAY A FULL VALUE FOR THE PTR CAPCITY?

A. No. Today, there are other resources that provide greater value, such as unit-specific capacity or resources that qualify under PJM's DR program that provide a much greater value in terms of the ability to be used in the Company's FRR Plan. The

PTR Program, especially in its pilot stage, should not be confused as being equal to those other resources that are directly usable in the FRR Plan. Accordingly, the Company, and in turn, customers, should not pay the same or even similar prices for the respective capacity. In general, incentives offered to customers should be consistent with the value received.

Q. PLEASE EXPLAIN HOW OFFERING THE PTR PILOT AT THE LOWEST RECOMMENDED RATE OF $1,000/MWH AS SUGGESTED BY MR. ALVAREZ COMPARES TO THE VALUE OF CAPACITY IN PJM?

A. Using the energy value as calculated by Mr. Sailers of $125/MWh ($0.125/kWh), the cost of the capacity benefit from the PTR Pilot if offered at $1,000/MWh would be $875/MWh ($1,000/MWh - $125/MWh). Next, using the 48 hours per year as suggested by Mr. Alvarez and using a 1 MW customer for comparison purposes, this equates to a payment of $42,000 per year. Since the 1 MW reduction is not realized 1 for 1 and would likely take a longer time period to be realized, only a portion of the capacity value is received. If you assumed that 10% of the value is realized in the first year though a load forecast reduction, this $42,000 payment equates to a capacity price of $1,151/MW-Day ($42,000 divided the quantity .10 MW x 365 days). This is far higher than the typical PJM capacity market clearing price of $150/MW-Day and even higher than the current Cost of New Entry (CONE) for the DEOK zone of $220.02/MW-Day. To put this into context, would need to realize 77% of the PTR Pilot capacity value to break even to the typical average capacity market of $150/MWh-Day, since this same $42,000 in payment equates to a capacity price of $150/MW-Day ($42,000 divided the quantity .77 MW

x 365 days). Mr. Alvarez's recommendation, clearly over values capacity as it relates to the PJM market.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

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

The undersigned, John D. Swez, Managing Director of Trading & Dispatch, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing rebuttal testimony, and it is true and correct to the best of his knowledge, information and belief.

John D. Swez, Affiant

Subscribed and sworn to before me by John D. Swez on this 23 day of January, 2020.

NOTARY PUBLIC

My Commission Expires:

MARY B VICKNAIR
NOTARY PUBLIC
Davie County
North Carolina
My Commission Expires Sept. 21, 2022