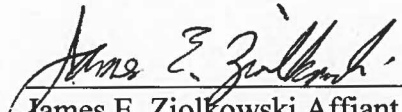


VERIFICATION

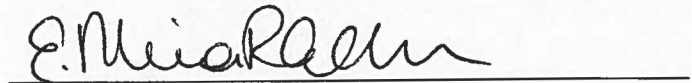
STATE OF OHIO)
) SS:
COUNTY OF HAMILTON)

The undersigned, James E. Ziolkowski, Director, Rates & Regulatory Planning, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data request and that it is true and correct to the best of his knowledge, information and belief.



James E. Ziolkowski Affiant

Subscribed and sworn to before me by James E. Ziolkowski on this 18th day of November, 2019.



NOTARY PUBLIC

My Commission Expires: July 8, 2022



E. MINNA ROLFES-ADKINS
Notary Public, State of Ohio
My Commission Expires
July 8, 2022

VERIFICATION

STATE OF OHIO)
) SS:
COUNTY OF HAMILTON)

The undersigned, Sarah E. Lawler, Director Rates & Regulatory Planning, being duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing data request and that it is true and correct to the best of her knowledge, information and belief.



Sarah E. Lawler Affiant

Subscribed and sworn to before me by Sarah E. Lawler on this 14th day of November, 2019.



NOTARY PUBLIC

My Commission Expires: July 8, 2022



E. MINNA ROLFES-ADKINS
Notary Public, State of Ohio
My Commission Expires
July 8, 2022

VERIFICATION

STATE OF FLORIDA)
)
COUNTY OF NASSAU) SS:

The undersigned, Dr. Roger A. Morin, Professor of Finance and a Principal in Utility Research International, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data requests and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

Roger A. Morin

Dr. Roger A. Morin Affiant

Subscribed and sworn to before me by Dr. Roger A. Morin on this 13 day of Nov, 2019.

Karen M. Taylor

NOTARY PUBLIC

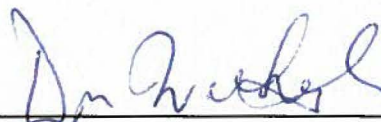
My Commission Expires:



VERIFICATION

STATE OF OHIO)
) SS:
COUNTY OF HAMILTON)

The undersigned, William Don Wathen Jr., Director of Rates & Regulatory Strategy, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data request and that it is true and correct to the best of his knowledge, information and belief.



William Don Wathen Jr., Affiant

Subscribed and sworn to before me by William Don Wathen Jr., on this 15TH day of NOVEMBER 2019.



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



NOTARY PUBLIC

My Commission Expires: 1/5/2024

VERIFICATION


STATE OF OHIO)
) SS:
COUNTY OF HAMILTON)

The undersigned, Zachary Kuznar, Managing Director CHP Microgrid & Engineer Storage Development, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing data request and that it is true and correct to the best of his knowledge, information and belief.



Zachary Kuznar, Affiant

Subscribed and sworn to before me by Zachary Kuznar, on this 14 day of November, 2019.



NOTARY PUBLIC

My Commission Expires: July 8, 2022



E. MINNA ROLFES-ADKINS
Notary Public, State of Ohio
My Commission Expires
July 8, 2022

KyPSC Case No. 2019-00271
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Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-001

REQUEST:

With respect to the Company's response to NKU-DR-01-12, please provide the following information:

- a. Please explain why the Company chose to utilize the production stacking method instead of the summer/winter method for allocating production demand related costs.
- b. Please explain how the production stacking method reflects class cost of service with respect to the allocation of production demand related costs.
- c. Has Duke Energy Kentucky previously utilized the production stacking method for allocating production demand related costs in a rate case? If yes, please identify all such instances.
- d. Has the production stacking method previously been accepted by the Kentucky Public Service Commission for allocating production demand related costs? If yes, please identify all such instances.
- e. Has any affiliate of Duke Energy Kentucky recommended the use of the production stacking method for allocating production demand related costs in a rate case before another state regulatory commission? If yes, please identify all such instances.
- f. Is Duke Energy Kentucky aware of whether the production stacking method has been approved in other state regulatory jurisdictions for allocating production demand related costs? If yes, please identify all such instances.

RESPONSE:

- a. The production stacking method more accurately allocates production costs to baseload and peak hours than does the summer/winter method, in my opinion. The NARUC Electric Utility Cost Allocation Manual discusses the production stacking method as one of several time-differentiated methods of allocating production plant costs.
- b. The NARUC Electric Utility Cost Allocation Manual states that, under this method, baseload production plant costs can be allocated to the classes on a kWh basis. Peaker production plant costs can be allocated to the classes on a peak demand basis. The Company's East Bend plant is a baseload plant, and the Woodsdale plant is a peaking plant. The production stacking method blends these two allocations into one allocator that is used to allocate costs to the rate classes.
- c. No.
- d. Unknown.
- e. Unknown.
- f. Unknown. The NARUC Electric Utility Cost Allocation Manual lists the production stacking method as one of several time-differentiated methods of allocating production plant costs.

PERSON RESPONSIBLE: James Ziolkowski

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-002

REQUEST:

With respect to the Company's response to NKU-DR-01-12, please provide the following information:

- a. Please identify all instances where Duke Energy Kentucky has recommended the allocation of production demand related costs using the 12 CP method.
- b. Please identify all instances where the Kentucky Public Service Commission has accepted the 12 CP method for the allocation of production demand related costs in Duke Energy Kentucky rate cases.

RESPONSE:

- a. In the past twenty years, Duke Energy Kentucky recommended the 12 CP method to allocate production demand related costs in Case No. 2006-00172, 2017-00321, and 2019-00271.
- b. The Commission accepted the 12 CP method for the allocation of production demand related costs in Case No. 2017-00321. Case No. 2006-00172 was settled by the parties. The Commission's order in Case No. 2006-00172 did not explicitly address this issue.

PERSON RESPONSIBLE: James Ziolkowski

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-003

REQUEST:

Regarding "Electric Vehicle/Transportation Pilot Programs," reference DEK response to NKU-DR-1-008 at the language "the Company does not expect costs to exceed revenues, based on existing utilization rates. However, if this were to happen the Company would seek recovery of these costs in a subsequent rate case." Admit that it is foreseeable DEK might seek recovery of these costs in a subsequent rate case. If DEK denies the assertion, explain in detail the reasons for the denial.

RESPONSE:

As stated in NKU-DR-1-008 and STAFF-DR-02-125 the Company does not expect costs to exceed revenues, however, it is foreseeable (although unlikely) that Duke Energy Kentucky might seek recovery of these costs in a future proceeding.

PERSON RESPONSIBLE: Sarah Lawler

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-004

REQUEST:

Admit as is evidenced by this case, and by the definition of a monopoly, DEK can seek an adjustment in its rates to capture its costs to provide service to its customers and to garner the opportunity to earn a reasonable return on its investment? If DEK denies the assertion, explain in detail the reasons for the denial.

- a. Cite to any time in DEK's history when the company did not capture its costs to serve its customers and earn a profit, regardless of whether the company considered the profit reasonable or not.
- b. Admit that a private company providing electric vehicle charging stations does not have the opportunity to seek governmental intervention to seek recovery of its costs to provide service, an adjustment in its rates, and an opportunity to earn a reasonable return on its rates. If DEK denies the assertion, explain in detail the reasons for the denial.

RESPONSE:

Duke Energy Kentucky can seek an adjustment to its rates in accordance with the provisions of KRS Chapter 278. To the extent that the question calls for Duke Energy Kentucky to offer a legal opinion construing those statutes, the case law and Commission precedent implementing them, no response is required.

- a. Duke Energy Kentucky's revenues and expenses are reported each year in an annual report filed with the Commission and are therefore a matter of public record.
- b. Non-regulated companies do not require "government intervention" to set prices for the goods or services sold, recover costs or earn a return on investment. In many – if not most – instances, private companies would eschew such limitations on their ability to operate.

PERSON RESPONSIBLE: Sarah E. Lawler

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-005

REQUEST:

Reference DEK response to Kroger-DR-01-003(d) regarding the Amazon Air Hub facility and an incentive electric rate. If DEK offers an electric incentive rate to Amazon, will DEK seek to offset any discount to Amazon by in turn allocating costs to the remaining DEK customers? If yes, explain in detail.

RESPONSE:

Objection. Calls for speculation. Assumes facts not in evidence. Duke Energy Kentucky has not entered into any such contract related to electric service for the customer.

PERSON RESPONSIBLE: Legal

**Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019**

NKU-DR-02-006

REQUEST:

Reference DEK response to OAG-DR-01-007. Is there a revenue requirement for the new Customer Connect service platform and program costs incurred or projected to be incurred in DEK's test year? If yes, please provide the number in dollars.

RESPONSE:

See AG-DR-02-012.

PERSON RESPONSIBLE: Sarah E. Lawler

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-007

REQUEST:

Reference DEK response to OAG-DR-01-010(b.). If the major storm deferral accounting treatment requested by DEK is granted, confirm that DEK will request carrying charges on its deferral balance.

- a. At what percentage rate will DEK set the carrying charge?

RESPONSE:

Confirmed. As stated on page 7 in Danielle L. Weatherston's direct testimony, the Company is requesting a carrying cost on the balance of the regulatory asset or liability at the Company's long-term debt rate approved in this proceeding. The Company has filed for a long-term debt rate of 4.073% as stated on Schedule J-1, page 2 of 2.

PERSON RESPONSIBLE: Sarah E. Lawler

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-008

REQUEST:

Reference DEK response to OAG-DR-01-039. In its answer to the question, the Company states it "inadvertently excluded \$914,966 of intercompany A&G rent expense in Account 931008, from the test period." There are other answers in which the Company states it mistakenly or inadvertently included or excluded certain costs or expenses. (See, for example, DEK response to STAFF-DR-02-086 where the company neglected to include amortization of rate case expense from the prior rate case.) Please provide a comprehensive schedule with a correction of all errors the company has identified as having been made in its Application along with the correct revenue number DEK is requesting, if different than what was originally filed. If the cost of service and revenue allocation for classes has changed as a result of these errors, please provide revised schedules with the correct class cost of service and correct class revenue allocation.

RESPONSE:

See STAFF-DR-03-085 for a revised revenue requirement calculation that incorporates all corrections or revision identified through discovery responses and lists changes made. With regards to STAFF-DR-02-085, (it appears STAFF-DR-02-086 as referenced above was referenced in error), a revised response was filed on November 8, 2019 (REVISED STAFF-DR-02-085). The Company's initial response to this data request filed on October 28, 2019 was incorrect. The test period includes \$131,813 in Account 928006 for amortization of rate case expense approved in the Company's prior rate case, Case No.

2017-00321. Please see NKU-DR-02-008 Attachment for the revised Cost of Service revenue allocation.

PERSON RESPONSIBLE: Sarah E. Lawler
James Ziolkowski

DUKE ENERGY KENTUCKY, INC.
 ELECTRIC COST OF SERVICE STUDY
 CASE NO: 2019-00271
 CALCULATION PROPOSED REVENUE DISTRIBUTION
 REFLECTING A PROPOSED REVENUE SUBSIDY/EXCESS ELIMINATION COMPONENT

Work Paper FR-16(7)(v)
 Witness Responsible:
 James E. Ziolkowski
 Page 1

| Line No. | Rate Class | Jurisdictional Electric Rate Base (A) | Present Revenues (B) | Net Operating Income (C) | Present ROR (D) | Present Revenues At Average ROR (E) | Inter Class Subsidization Overcollected (Undercollected) (F) | Inter Class Subsidization times 5.00% (G) | Rate Increase (Allocated to class based on Rate Base) (H) | Proposed Revenues 95.00% Interclass Subsidization (I) | Proposed Percent Increase (J) | ROR At Proposed Rates (K) | Proposed Less (Subsidy) Excess (L) | |
|----------|--|---------------------------------------|------------------------|--------------------------------|-----------------|--------------------------------------|--|---|---|---|-------------------------------|--|------------------------------------|--|
| | | FR-16(7)(v)-14, page 1 | FR-16(7)(v)-14, page 1 | Work Paper FR-16(7)(v), Page 2 | (C) / (A) | (E) / ((C) / (1 - CompositeTaxRate)) | (F) - (E) | (F) * 5.00% | (H) Line 5 * ((A) / (A) Line 5) | (B) - (G) + (H) | ((H) - (G)) / (B) | ((((H) - (G)) * (1 - CompositeTaxRate) + (C)) / (A)) | (H) - (G) | |
| 1 | Rate RS | \$ 466,676,587 | \$ 123,883,637 | \$ 1,095,274 | 0.2347% | \$ 141,261,632 | \$ (17,377,995) | \$ (868,900) | \$ 22,879,799 | \$ 147,511,402 | 19.073% | 4.055181% | \$ 23,748,699 | |
| 2 | Rate DS | 241,759,391 | 90,318,223 | 16,177,148 | 6.6914% | 78,528,567 | 11,789,656 | 589,483 | 11,852,754 | 101,581,494 | 12.471% | 10.189071% | 11,263,271 | |
| 3 | Rate GS-FL | 1,192,142 | 577,046 | 157,007 | 13.1702% | 416,032 | 161,014 | 8,051 | 58,424 | 627,419 | 8.730% | 16.342400% | 50,373 | |
| 4 | Rate EH | 4,675,810 | 600,937 | (432,581) | -9.2515% | 1,365,870 | (764,933) | (38,247) | 229,256 | 868,440 | 44.514% | -4.956435% | 267,503 | |
| 5 | Rate SP | 71,601 | 29,960 | 7,430 | 10.3770% | 22,953 | 7,007 | 350 | 3,516 | 33,126 | 10.568% | 13.696166% | 3,166 | |
| 6 | Rate DT - Secondary | 117,443,642 | 46,910,116 | 6,666,406 | 5.6763% | 42,770,928 | 4,139,188 | 206,959 | 5,757,905 | 52,461,062 | 11.833% | 9.224656% | 5,550,946 | |
| 7 | Rate DT-Primary | 77,557,920 | 29,943,872 | 2,965,147 | 3.8231% | 29,124,829 | 819,043 | 40,952 | 3,802,429 | 33,705,349 | 12.562% | 7.464191% | 3,761,477 | |
| 8 | Rate DP | 3,800,338 | 1,361,377 | 88,714 | 2.3344% | 1,396,606 | (35,229) | (1,761) | 186,328 | 1,549,466 | 13.816% | 6.050036% | 188,089 | |
| 9 | Rate TT | 25,565,420 | 14,062,168 | 1,766,911 | 6.9113% | 12,740,558 | 1,321,610 | 66,081 | 1,253,414 | 15,249,501 | 8.444% | 10.398029% | 1,187,333 | |
| 10 | Lighting | 4,679,176 | 1,876,470 | 110,533 | 2.3622% | 1,918,110 | (41,640) | (2,082) | 229,395 | 2,107,947 | 12.336% | 6.076153% | 231,477 | |
| 11 | Other - Water Pumping | 102,863 | 16,848 | (10,187) | -9.9035% | 34,569 | (17,721) | (886) | 5,042 | 22,776 | 35.186% | -5.576784% | 5,928 | |
| 12 | | | | | | | | | | | | | | |
| 13 | Total | \$ 943,524,890 | \$ 309,580,654 | \$ 28,591,802 | 3.0303% | \$ 309,580,654 | \$ - | \$ - | \$ 46,258,262 | \$ 355,717,982 | 14.903% | 6.711019% | \$ 46,258,262 | |
| 14 | | | | | | | | | | | | | | |
| 15 | Tax Complement | 75.0749% | | | | | | | | \$ 46,137,328 | | | | |
| 16 | | | | | | | | | | | | | | |
| 17 | Note: (E) Present Revenues at Average ROR is calculated by subtracting Present Revenue, grossed up for taxes, from Present Distribution Revenues and then adding Current Operating Income at the average rate of return, grossed-up for taxes. | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | |
| 20 | MISCELLANEOUS REVENUES: | | | | | | | | | | | | | |
| 21 | PJM AND TRANSMISSION | | 169,500 | | | | | | | 169,500 | | | | |
| 22 | BAD CHECK CHARGES | | 40,932 | | | | | | | 40,932 | | | | |
| 23 | RECONNECTION CHARGES | | 45,600 | | | | | | | 61,738 | | | | |
| 24 | POLE AND LINE ATTACHMENTS | | 215,037 | | | | | | | 319,833 | | | | |
| 25 | RENTS | | 1,058,004 | | | | | | | 1,058,004 | | | | |
| 26 | OTHER MISCELLANEOUS | | 165,980 | | | | | | | 165,980 | | | | |
| 27 | RESERVED | | 0 | | | | | | | 0 | | | | |
| 28 | TOTAL MISC | | 1,695,053 | | | | | | | 1,815,987 | | | | |
| 29 | | | | | | | | | | | | | | |
| 30 | Total Company | | 311,275,707 | | | | | | | 357,533,969 | | | | |

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-009

REQUEST:

Reference the Application in general and the United States Federal Reserve's decision to cut interest rates by 0.25%, from 2.0% to 1.75%. Will this decrease in the borrowing rate affect DEK's analysis of cost its capital performed by Dr. Morin? Explain your answer in detail with any applicable calculations needed to revise Dr. Morin's testimony, if necessary.

RESPONSE:

The impact of the Fed's decision to cut short-term rates on long-term rate forecasts has been a slight decrease in yields of 0.20%, as fully demonstrated in response to STAFF-DR-03-016. This would clearly influence the estimates which rely on the risk-free rate as an input. It is Dr. Morin's normal practice to provide a full update to his recommendation at the rebuttal phase of the proceeding or prior to formal hearings.

PERSON RESPONSIBLE: Dr. Roger Morin, PhD

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-010

REQUEST:

Reference DEK response to OAG-DR-01-086. DEK states its increase in Transmission Operations expenses since the Company's 2017 General Rate Case (\$359,568 vs. \$112,939) is due to an increase in environmental maintenance expense in account 595. Please explain.

RESPONSE:

Environmental maintenance expense in account 595 includes costs related to oil spills from overhead and underground transformers. It also includes expenses for disposal, cleanup, testing and supplies of hydraulic oil, antifreeze, diesel gasoline and waste materials such as paints, solvents, and aerosols.

These costs are budgeted based on recent historical actual costs. The budget used for this rate filing was developed based on actual expenses incurred in 2017 and 2018. The 2017 actual costs used for budget development were higher than previous years due to the timing of certain vendor invoices, resulting in an increased budget compared to the 2017 General Rate Case.

PERSON RESPONSIBLE: Christopher Jacobi

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-011

REQUEST:

Reference DEK response to OAG-DR-01-094. DEK states the increase in Sales expenses since the Company's General Rate Case (\$1,497,140 vs. \$673,076) "is due to increases in expenses for labor and consultants in the forecasted period." Provide a breakdown for the years 2014 through the forecasted test year listing the labor and consultants' expenses by cost and type of expense.

RESPONSE:

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019* |
|-------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Labor | \$222,115 | 422,242 | 445,629 | 404,204 | 510,624 | 397,880 |
| Consultant | 6,713 | 11,318 | 6,842 | 19,881 | 19,222 | 43,956 |

*2019 is through September

PERSON RESPONSIBLE: Danielle Weatherston

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-012

REQUEST:

Reference DEK response to OAG-DR-01-097 regarding the ability to produce energy from the Woodsdale units when natural gas is not available or uncertain such as during an Operational Flow Order (OFO)" or "in the event that there are natural gas pressure issues on the pipeline." In DEK's analysis, planning and forecasting, how often does the Company anticipate it will encounter problems with access to natural gas thus requiring DEK to operate Woodsdale on fuel oil? Please limit the answer to access to natural gas, irrespective to the price of same.

RESPONSE:

An Equivalent Unplanned Outage Rate (EUOR) for Woodsdale Station is calculated using past data including unplanned outage hours and equivalent unplanned derated hours. Thus, to the extent that the unit's availability was limited in the past due to a natural gas related issue, this will manifest itself in the units EUOR rate. Since the EUOR is used as an input in the forecasting tool, the forecasted generation on natural gas is impacted accordingly. After a review of NERC GADS data for the station, a limited number of low gas pressure events were recorded. This represented a relatively small impact to the stations availability and thus a similar limited impact on forecasted unit generation. During these times, the unit would be available to run on fuel oil.

PERSON RESPONSIBLE: John Verderame

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-013

REQUEST:

Reference DEK's Application in general. Does DEK intend on updating its sales forecasts based on the most recent summer month's temperatures? If no, why not?

RESPONSE:

No. The Company's sales forecasted sales volumes are based on "normal weather", the weather conditions expected to occur during the forecasted period. Duke Energy Kentucky uses a rolling thirty-year period to calculate the Normal Weather that is assumed in its electric and natural gas forecasts. See the direct testimony of Benjamin Passty Ph.D. for more details about that weather normalization calculation.

PERSON RESPONSIBLE: Benjamin Passty
William Don Wathen, Jr.

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-014

REQUEST:

Reference DEK response to OAG-DR-01-110. The question asked for “projected cost savings that will result from enhanced reliability of the proposed battery.” The answer as provided by DEK referenced DEK’s answer to STAFF-DR-02-080 and AG-DR-01-109. DEK does not provide an actual dollar amount in either reference. Can DEK quantify any cost savings? If yes, please provide the actual dollar amount.

- a. If the answer is no, please explain why DEK cannot quantify any cost savings.

RESPONSE:

As discussed in STAFF-DR-02-080 the location of the battery project has changed. At the new location the battery is not providing a reliability service. Consequently, there are no reliability cost savings to quantify.

PERSON RESPONSIBLE: Zachary Kuznar

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-015

REQUEST:

Reference DEK response to STAFF-DR-02-075 wherein DEK states nonperformance during distribution system outages could result in penalties or charges from PJM in the context of Kuznar's testimony at page 3, where he states: "If an outage occurs on the distribution circuit, the battery will be unable to participate in PJM but will be able to provide enhanced reliability by operating in island mode, maintaining power to customers for a period of time." Explain in detail the type and amount of penalties DEK could incur if it decides the battery would be offered in the Day-Ahead market.

RESPONSE:

As previously noted, the battery would be likely not be offered in the Day-Ahead market. However, in the unlikely event that the Company makes an offer in the Day-Ahead market, the primary settlement impact from clearing in the PJM Day-Ahead market and having the battery unable to meet PJM's instructions in the Real-Time market would be (1) the impact of the purchase or sale of energy at Real-Time LMP, (2) the loss of the sale of Day-Ahead Scheduling Reserves payment, and (3) potentially a Balancing Operating Reserve charge. The amount of each would be very situationally dependent. For example, if the battery sold 1 MWhr in the Day-Ahead and received \$30/MWhr payment and was unavailable in Real-Time, the battery would purchase 1 MWhr at Real-Time LMP. Thus, the Real-Time LMP would determine the amount re-purchased. A Balancing Operating Reserve charge could also be received due to the unit's unavailability in the Real-Time

market if the unit received a Day-Ahead award, with the amount of the charge dependent on the cost that PJM incurred due to the unavailability of the unit in Real-Time. Note that there would be no impact to the purchase or sale of regulation in the Real-Time market other than the lost opportunity from not selling regulation in Real-time. This is due to the fact that there is no Day-Ahead market for regulation in PJM currently. Finally, since the battery would not be a capacity resource, it would not be not subject to capacity performance penalties.

PERSON RESPONSIBLE: John Verderame

**Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019**

NKU-DR-02-016

REQUEST:

Reference DEK response to STAFF-DR-02-078. Provide the net revenues by dollar amount that DEK expects to credit to customers in Rider FAC and Rider PSM for each year of the life of the battery storage project, if approved by the PSC. Use projections if necessary

RESPONSE:

See STAFF-DR-02-079(b) Confidential Attachment and AG-DR-01-109(c) Confidential Attachment for estimated frequency regulation revenues.

PERSON RESPONSIBLE: Zachary Kuznar

Duke Energy Kentucky
Case No. 2019-00271
Northern Kentucky University's Second Set Data Requests
Date Received: November 12, 2019

NKU-DR-02-017

REQUEST:

Reference DEK response to STAFF-DR-02-083. Please describe the equipment warranty and guarantee on the battery storage system, inclusive of the costs and terms in years.

RESPONSE:

Detailed warranty and guarantee terms will be negotiated when a final vendor is selected for this project. The costs provided in STAFF-DR-02-083 are consistent with warranties and guarantees that have been purchased for other projects which are either under contract or under construction in other Duke Energy jurisdictions.

PERSON RESPONSIBLE: Zachary Kuznar