COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF KENTUCKY UTILITIES COMPANY FOR AN ADJUSTMENT OF ITS ELECTRIC RATES, A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO DEPLOY ADVANCED METERING INFRASTRUCTURE, APPROVAL OF CERTAIN REGULATORY AND ACCOUNTING TREATMENTS, AND ESTABLISHMENT OF A ONE-YEAR SUR-CREDIT	)	**CASE NO. 2020-00349**
ELECTRONIC APPLICATION OF LOUISVILLE GAS AND ELECTRIC COMPANY FOR AN ADJUSTMENT OF ITS ELECTRIC AND GAS RATES, A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO DEPLOY ADVANCED METER INFRASTRUCTURE, APPROVAL OF CERTAIN REGULATORY AND ACCOUNTING TREATMENTS, AND ESTABLISHMENT OF A ONE-YEAR SURCREDIT	)	**CASE NO. 2020-00350**

RESPONSE OF
KENTUCKY UTILITIES COMPANY AND
LOUISVILLE GAS AND ELECTRIC COMPANY
TO
SUPPLEMENTAL REQUESTS OF JOINT INTERVENORS
MOUNTAIN ASSOCIATION, KENTUCKIANS FOR THE COMMONWEALTH,
KENTUCKY SOLAR ENERGY SOCIETY
AND METROPOLITAN HOUSING COALITION'S
POST-HEARING REQUEST FOR INFORMATION
DATED MAY 5, 2021

FILED: MAY 19, 2021

VERIFICATION

STATE OF NORTH CAROLINA)
)
COUNTY OF BUNCOMBE)

The undersigned, **William Steven Seelye**, being duly sworn, deposes and states that he is a Principal of The Prime Group, LLC, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

William Steven Seelye

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 17 day of May 2021.

(SEAL)
Notary Public

Notary Public ID No. 20191350120

My Commission Expires:
May 12 2024

SARAH D WELLS
NOTARY PUBLIC
HENDERSON COUNTY, NC
MY COMMISSION EXPIRES MAY 12, 2024

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **John K. Wolfe**, being duly sworn, deposes and says that he is Vice President, Electric Distribution for Kentucky Utilities Company and Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

John K. Wolfe

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 11th day of May 2021.

Notary Public

Notary Public ID No. 603967

My Commission Expires:

July 11, 2022

KENTUCKY UTILITIES COMPANY AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Supplemental Requests of Joint Intervenors Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Metropolitan Housing Coalition's Post-Hearing Request for Information
Dated May 5, 2021

Case No. 2020-00349 / Case No. 2020-00350

Question No. 1

Responding Witness: John K. Wolfe

Q-1. Has the Company incurred any costs to serve net metering customers relating to technical electrical operations of the grid? Please provide itemized details on a per-facility basis, including costs incurred, technical measures deployed, and on-going costs.

A-1. At this time, the Companies have not incurred any costs related to technical electrical operations of the grid to serve NMS customers. The Companies assume technical electrical operations include practices such as reconductoring/equipment upgrades, relay settings modifications, upgrades to the distribution management system to account for DER, or any other expenditure or grid upgrade required to maintain a high level of safety, power quality, and reliability with respect to DER interconnection.

NMS installations must be less than 45kW; therefore, until the number of NMS customers on a circuit increase, costs for hosting NMS accounts will be minimal. Currently, NMS customer DER accounts for between 0% and 3% of peak load on individual circuits. Costs are not expected to increase until concentrated groupings of DER interconnections occur, or DER penetration nears "15% of the Line Section's most recent annual one-hour peak load limit" as defined by the Kentucky Interconnection and Net Metering Guidelines.

KENTUCKY UTILITIES COMPANY AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Supplemental Requests of Joint Intervenors Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Metropolitan Housing Coalition's Post-Hearing Request for Information
Dated May 5, 2021

Case No. 2020-00349 / Case No. 2020-00350

Question No. 2

Responding Witness: John K. Wolfe

Q-2. Has the Company required net metered customers to bear any identified technical system costs when first interconnecting the facilities or on an ongoing basis? Please provide a table of all net metered facilities and costs imposed on customers relating to technical impacts on a per-facility basis.

A-2. Generally, the Companies have been able to accommodate net metering customer interconnections without making any significant modifications or upgrades to distribution system components. In a few instances, the Companies have been required to changeout and upgrade distribution system components to accommodate an interconnection request. Under certain scenarios, the net metering customer requesting interconnection was required to bear associated costs to facilitate interconnection. No net metering customers have been required to bear any costs for system upgrades or modifications on an ongoing basis. The following table lists costs assigned to net metering customers as recorded by the Company for system upgrades performed on distribution components to facilitate interconnection.

Customer Account # (Only last 4 digits shown)	Transformer upgrade cost
********2387	$1,975
********1216	$2,600
********7493	$1,300
********2305	$448
********6071	$371
********9758	$1,460
********4935, ********9706	$459
********4594	$376

KENTUCKY UTILITIES COMPANY AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Supplemental Requests of Joint Intervenors Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Metropolitan Housing Coalition's Post-Hearing Request for Information
Dated May 5, 2021

Case No. 2020-00349 / Case No. 2020-00350

Question No. 3

Responding Witness: John K. Wolfe

Q-3. Has the Company identified any technical operations issues related to the current operations of net metered generation facilities that are imminent or likely? Please provide details.

A-3. The Companies have not yet identified any technical operations issues related to operations of currently interconnected net metering generation facilities. Please see the Companies' response to PSC 6-22 for anticipated system issues which are deemed likely with increased penetration of net metering generating facilities on the LG&E and KU distribution grid.

KENTUCKY UTILITIES COMPANY AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Supplemental Requests of Joint Intervenors Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Metropolitan Housing Coalition's Post-Hearing Request for Information
Dated May 5, 2021

Case No. 2020-00349 / Case No. 2020-00350

Question No. 4

Responding Witness: John K. Wolfe

Q-4. Has the Company prepared any projections of increasing and incremental technical system costs anticipated to relate primarily or exclusively to the installation and operations of net metered generation facilities? Please provide details of such projections, including all assumptions used in developing the projections. If the Company has not prepared any such forecasts, please explain why not.

A-4. No, currently Electric Distribution Planning considers the net connected load when developing load forecasts. This net connected load accounts for any DER currently integrated on the system at the time of net load measurement. Without separate production meters for DER assets or a DERMS implementation, visibility into system production is not present to provide statistically relevant data for DER-specific forecasts. As more data becomes available and the number of DER interconnections increase, DER forecasts will serve a pivotal role.

See also the responses to PSC 6-7(b), PSC 6-9(b), PSC 6-12, and PSC 6-22 regarding the Companies' initiatives to evaluate locational effects of net metered generation facilities interconnected to their electric distribution grid.

The Companies' Sales Analysis and Forecasting team has developed companywide forecasts for DER adoption; however, this is not performed at a substation or circuit level and this forecast has not been analyzed for any effects on technical system costs. The company-wide forecast was provided in Filing Req KU LGE Attach to Tab 16 - Section 16(7)(c) - Item C Electric Forecast.pdf

KENTUCKY UTILITIES COMPANY AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Supplemental Requests of Joint Intervenors Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Metropolitan Housing Coalition's Post-Hearing Request for Information
Dated May 5, 2021

Case No. 2020-00349 / Case No. 2020-00350

Question No. 5

Responding Witness: John K. Wolfe

Q-5. Has the Company ever developed a hosting capacity analysis on any feeder in its system in order to determine the capacity of the feeder to integrate distributed energy resources? Please provide a detailed answer and copies of such analysis. If the Company has not prepared such analyses, please explain why not.

A-5. The Companies have not prepared a hosting capacity analysis on a circuit or feeder level due to relatively low levels of installed DER on individual circuits. Utilities typically do not perform DER hosting capacities until DER nears 15% of peak load on a given circuit, power quality issues arise, or if regulatory entities require such studies. The Companies are participating in a project with the Electric Power Research Institute to help guide development of a hosting capacity analysis tool (Distributed Resource Integration and Value Estimation - DRIVE) which is an extension of the OpenDSS modeling platform. This tool will allow the Companies to analyze hosting capacity on a circuit-by-circuit basis.

The Companies model and closely evaluate all net metering interconnection requests individually, before approval, to understand the local capacity of the electric distribution system to accommodate interconnection.

KENTUCKY UTILITIES COMPANY AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Supplemental Requests of Joint Intervenors Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Metropolitan Housing Coalition's Post-Hearing Request for Information
Dated May 5, 2021

Case No. 2020-00349 / Case No. 2020-00350

Question No. 6

Responding Witness: John K. Wolfe

Q-6. Has the Company evaluated the potential impact of planned grid modernization activities and investments (such as distribution automation and management, distribution system planning, and other activities) on the grid system's ability to interconnect net metering facilities in the future? If so, please provide copies of al such analysis. If no such evaluation has been conducted, please explain why.

A-6. The Companies have not formally evaluated the potential impact of grid modernization activities on the system's ability to interconnect future net metering facilities. However, the implementation of a centralized distribution management system, volt/VAR optimization, DERMS, and other DMS functions are expected to provide positive impacts on DER interconnection. SCADA expansion and further instrumentation of the distribution system, which are presently underway, provide the Companies with better visibility of the current grid state which can then be used to analyze benefits of grid modernization on grid performance and DER hosting abilities.

KENTUCKY UTILITIES COMPANY AND
LOUISVILLE GAS AND ELECTRIC COMPANY

Supplemental Requests of Joint Intervenors Mountain Association, Kentuckians for the Commonwealth, Kentucky Solar Energy Society and Metropolitan Housing Coalition's Post-Hearing Request for Information
Dated May 5, 2021

Case No. 2020-00349 / Case No. 2020-00350

Question No. 7

Responding Witness: William Steven Seelye / John K. Wolfe

Q-7.

a. What metering and monitoring equipment would be required to obtain a year's worth of statistically valid interval data from net metered customer generators?

b. What would the estimated cost of such equipment and data collection be?

c. Has the Company evaluated deployment of such equipment and collection and analysis of such data at any time over the past five years?

d. If not, why not?

e. If such evaluation was conducted and the Company decided not to deploy such equipment and collect and analyze data, why did it so decide?

A-7.

a. Because a number of the Companies' current net metering customers have AMI meters due to their participation in the AMS Customer Service Offering, the Companies have statistically valid interval data for their KU net metering customers and have data that is close to meeting the same statistical validity benchmarks for LG&E. See Seelye Rebuttal at 66-67, as well as the responses to KU PSC 5-15 and LG&E PSC 5-16.

For current net metering customers who are not AMS Customer Service Offering participants, digital meters currently installed for such net metering customers only provide kWh in and kWh out registers. Upgrading these meters to full AMI meters would provide sufficient (net) interval data on net metering customers. In order to better understand gross customer generation versus gross customer load on an interval basis, separate production and consumption meters would need to be installed for each NMS customer. An alternative to the production meter would be a DERMS implementation with

direct communications with the inverter-based generator to monitor production.

b. A cost has not been estimated for this effort. Using AMI estimates, an approximate cost for all NMS customers currently interconnected to the Companies' distribution system would be approximately $600,000.

c. The Companies continue to participate in industry committees, monitor vendor advancements, and review industry publications on related technologies, but have not yet performed a detailed evaluation of costs or specific technology alternatives.

d. A detailed evaluation of referenced technologies has not yet been conducted yet due to the relatively low rate of DER on the Companies' distribution system. Please see the responses to PSC 6-9(b) & 6-12.

e. Not applicable.