

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE 2018 INTEGRATED RESOURCE PLAN)	
OF LOUISVILLE GAS AND ELECTRIC)	
COMPANY AND KENTUCKY UTILITIES)	CASE NO. 2018-00348
COMPANY)	

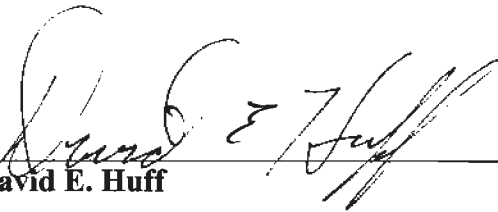
RESPONSE OF
LOUISVILLE GAS AND ELECTRIC COMPANY
AND
KENTUCKY UTILITIES COMPANY
TO ATTORNEY GENERAL'S SUPPLEMENTAL REQUEST
FOR INFORMATION
DATED NOVEMBER 25, 2019

FILED: DECEMBER 17, 2019

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **David E. Huff**, being duly sworn, deposes and says that he is Director of Advanced Meter Initiatives for 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 that the answers contained therein are true and correct to the best of his information, knowledge and belief.


_____ **David E. Huff**

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 17th day of December 2019.


_____ (SEAL)
Notary Public

My Commission Expires:
Judy Schooler
Notary Public, ID No. 603967
State at Large, Kentucky
Commission Expires 7/11/2022

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, Thomas A. Jessee, being duly sworn, deposes and says that he is Vice President, Transmission for Louisville Gas and Electric Company and Kentucky Utilities 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.

Handwritten signature of Thomas A. Jessee above a horizontal line, with the printed name Thomas A. Jessee below the line.

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 12th day of December 2019.

Handwritten signature of Notary Public above a horizontal line, with the printed name Notary Public below the line.

My Commission Expires:

Handwritten date 4/1/2020 above a horizontal line.

VERIFICATION

COMMONWEALTH OF KENTUCKY)
)
COUNTY OF JEFFERSON)

The undersigned, **Stuart A. Wilson**, being duly sworn, deposes and says that he is Director, Energy Planning, Analysis & Forecasting for 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.



Stuart A. Wilson

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 17th day of December 2019.



(SEAL)
Notary Public

My Commission Expires:
Judy Schooler
Notary Public, ID No. 603967
State at Large, Kentucky
Commission Expires 7/11/2022

**Louisville Gas and Electric Company and Kentucky Utilities Company
Response to Attorney General's Supplemental Request for Information
Dated November 25, 2019**

Case No. 2018-00348

Question No. 1

Witness: Stuart A. Wilson / Counsel

- Q-1. Refer to the Companies' response to AG DR 1-3(c). Provide the responses to the referenced RFP.
- A-1. The Commission's scope in an IRP proceeding is limited to the processes used in the IRP by the utility to prepare the resource assessment and adequacy under review. The Commission's role under 807 KAR 5:058 is limited to addressing procedural issues and not substantive issues. As discussed on page 5-6 of Volume I of the IRP, the Companies evaluate all market available alternatives before committing to a particular course of action. The adequacy of the Companies' evaluation of the market alternatives is considered in connection with a request for a certificate of public convenience and necessity and not in the course of reviewing the Companies' processes for load forecasting and resource assessment. The IRP under review in this case was filed on October 19, 2018 and does not reference this RFP or rely upon it for any of the least-cost, most reasonable options considered in the 2018 resource planning process.

As indicated in the response to AG 1-3 (c) the Companies' anticipate a filing in January 2020 that will commit to particular course of action based upon the results of RFP. Negotiations associated with the anticipated particular course of action are on-going and not yet complete. Disclosure even with confidential protection can possibly impair the Companies' negotiations at this time. The Companies will supplement this response at that time.

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Question No. 2

Witness: Stuart A. Wilson

- Q-2. Refer to the Companies' response to AG DR 1-4(a), wherein the response states that "when a need for capacity is identified, the Companies will issue a public Request for Proposals for any and all sources of generating capacity and will evaluate all responses." Does the Companies' current IRP identify any capacity needs for either Company?
- A-2. No. As stated in Volume I, Section 6, page 6-18 of the IRP, "absent further retirements, the Companies do not have a need for new capacity through the 15-year planning period."

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Question No. 3

Witness: Stuart A. Wilson

- Q-3. Refer to the Companies' response to AG DR 1-9(C) & AG DR 1-10. Do the Companies agree that actual, or expected, generation retirement decisions are an integral basis to its long-term resource planning?
- A-3. Yes. The 2018 IRP Reserve Margin Analysis evaluated retiring the Companies' marginal resources and determined that no retirements are warranted.

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Question No. 4

Witness: Stuart A. Wilson

- Q-4. Reference the Companies' response to AG DR 1-13, wherein it is stated, in pertinent part: "This analysis considered the availability of investment tax credits but did not assign a value to renewable energy credits. The Companies' IRP analysis did not consider gas-firing of Brown 3."
- a. Explain whether the Companies would be able to sell solar renewable energy credits (SRECs) into voluntary markets / states.
 - b. Explain whether the Companies have sold, or hold, SRECs based on the Brown Solar unit's generation output.
 - c. Are the Companies aware of any clearinghouses that report REC and SREC values?
 - d. Given the availability of gas supply lines at Brown Station, do the Companies believe that gas firing of Brown 3 could be a viable option?
- A-4.
- a. The Companies would expect to sell solar renewable energy certificates in the future if the market for such solar RECs accepts RECs produced in Kentucky, the market remains adequately liquid, and the REC value is above zero. However, each state's legislation regarding renewable portfolio standards and RECs is continually subject to change and there is no liquid market for RECs to cover the 15-year period of the IRP.
 - b. The Companies have sold and continue to sell the solar RECs associated with the generation from Brown Solar.
 - c. The Companies are aware of broker published sources for current and near-term prices for RECs, including solar RECs. The REC market is currently a fragmented, over-the-counter market, not an exchange-based market, and the Companies are not aware of a widely used "clearinghouse" source of prices.
 - d. Yes. In 2016, the Companies evaluated converting Brown 3 to burn natural gas as a means of complying with the final federal rule concerning the disposal of coal combustion residuals ("CCR") from electric utilities ("CCR Rule") but the conversion

project was not least-cost.¹ While gas supply lines exist at Brown, conversion of Brown 3 to run on natural gas would require upgrades to the existing pipeline infrastructure to accommodate increased gas flow, as well as modifications to the boiler and related equipment. It would also result in an increased fuel cost, as the Companies' expected delivered cost of coal at Brown is less than that of natural gas.

¹ *In the Matter of: The Application of Kentucky Utilities Company for Certificates of Public Convenience and Necessity and Approval of its 2016 Compliance Plan for Recovery by Environmental Surcharge*, Case No. 2016-00026.

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Question No. 5

Witness: Thomas A. Jessee / Stuart A. Wilson

Q-5. Reference the response to AG DR 1-14, Attachment.

- a. Explain the meaning of the acronym "EFFATC."
- b. Explain the numerical values provided in the cells.

A-5.

- a. "EFFATC" stands for "Effective Available Transfer Capability" or "Effective ATC" for short. The Effective ATC is the commercially available ATC value that is posted on OASIS for each path. It is derived as the minimum of:
 - 1) ATC derived from the limiting flowgate calculation,
 - 2) ATC derived from limiting Available Share of Total Flowgate Capability ("ASTFC") for flowgates that are shared via the Congestion Management Process ("CMP"), and
 - 3) the contract path limit for the flowgate, which is generally the rating of the flowgate.
- b. The numerical values represent the firm Effective ATC for each specific point of receipt – point of delivery combination for the given month. Negative values indicate no ATC available on the specific path for the given month.

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Question No. 6

Witness: David E. Huff / Stuart A. Wilson

- Q-6. Reference the response to AG DR 1-19.
- a. When was the last time the Companies called a load control event?
 - b. Given the many temperature records broken during the summer of 2019, would it not have been cost-effective to have called a load control event?
 - c. Have the Companies considered re-canvassing the customers who no longer have viable switches to ascertain their willingness to continue in the program? If not, why not?
- A-6.
- a. The last load control event for large commercial customers was called on August 28, 2018; the last event for all load control participants was July 13, 2017. Please note that all load control events since 2011 are posted to the Company's website at <https://lge-ku.com/demand-conservation/cycling>.
 - b. A load control event was not an economic resource in the summer of 2019. The Companies pay Residential and Small Nonresidential Demand Conservation Program participants an end-of-season bill credit only if a load control event is called. The bill credit is \$5 per participant or approximately \$1 million in total.

The table below contains maximum temperature records for Louisville and Lexington for the months when a load control event can be called (June through September, Tariff Sheet No. 86.6). No temperature records were set for these months.

Louisville and Lexington Temperatures (2019 High vs. Record High; Source: Monthly Climatological Report²)

Month	Record High		2019 High	
	Temperature	Date	Temperature	Date
Louisville				
June	105	6/29/2012	94	6/29-30/2019
July	107	7/14/1936	96	7/19-20/2019
August	105	8/16/2007	98	8/19-20/2019
September	104	9/6/1954	99	9/10/2019
Lexington				
June	104	6/29/1936	92	6/30/2019
July	108	7/15/1936	94	7/20/2019
August	105	8/19/1936	99	8/19/2019
September	103	9/5/1954	100	9/10/2019

- c. Yes. However, first the Companies would need to ascertain exactly which switches at the customer’s premise remain operational (installed, disconnected, damaged, etc.). Without AMI, this is a completely manual process. A field visit would be required to determine the viability of switches since it is unlikely customers would be able to determine if the switch was operating correctly. The foregoing efforts would need to be completed to determine which customers to canvass and these efforts increase program costs for a program that is marginally beneficial based upon current economics. The Companies have chosen to not incur these expenses on behalf of all customers given the current situation but may conduct such activities in the future as the need for capacity or energy changes.

² <https://w2.weather.gov/climate/index.php?wfo=lmk>

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Question No. 7

Witness: David E. Huff

- Q-7. With regard to the Companies' Demand Conservation Program for small and large non-residential customers, explain whether the Companies have considered utilizing Intelligent Motor Controllers (IMCs) for use with business customers' air conditioning and refrigeration systems.
- a. Confirm that at least some IMCs are designed to produce 25% reductions in electricity consumption, on a permanent basis.
 - b. Explain in detail whether the Companies believe the use of IMCs might be feasible for use through a pilot DSM program.
- A-7. As part of LG&E/KU Large Nonresidential Demand Conservation Program, customers determine what equipment and areas are controlled (and ultimately impacted) so as to achieve their desired demand reduction. The Companies note that small and large non-residential customers can receive rebates through the DSM Non-Residential Rebate program for installing devices that save energy. As such, customers are incented to install devices specific to their process and equipment requirements. The Companies have not considered utilizing IMCs outside of the rebate process.
- a. The Companies have not conducted independent research on IMCs utilized with demand response to confirm any savings assumptions.
 - b. The Companies do not know how feasible IMCs related to demand response would be.

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Question No. 8

Witness: John K. Wolfe

- Q-8. Refer to the Companies' response to AG DR 1-40 & AG DR 1-43.
- a. Have the Companies identified specific circuits of issue in regard to power factor?
 - b. Explain the process by which the Companies identify and address power factor issues on particular circuits, including how the Companies determine the most cost-effective solutions.
- A-8.
- a. Yes.
 - b. The Companies assess power factor performance of all distribution substations and associated circuits on an annual basis. Where power factor corrections are determined to be needed, substations are prioritized based on the worst performing power factor. Capacitor banks are utilized at the individual circuit level to correct substation power factors, as they have been identified as the least-cost solution.

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Question No. 9

Witness: Stuart A. Wilson

- Q-9. Refer to the Companies' response to AG DR 1-80. What is the difference between UCAP, and ICAP used in conjunction with forecasted outage rates?
- A-9. ICAP (installed capacity) was used in conjunction with forecasted outage rates to simulate resource availability in the Companies' reserve margin analysis. UCAP is the product of ICAP and $(1 - \text{forecasted outage rate})$. UCAP may be used to represent a resource's average availability over a month or year but is not appropriate for use in the Companies' reserve margin analysis where the focus is on serving load in every hour. See the response to AG 1-80(a) for how forecasted outage rates were used in the IRP.

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Question No. 10

Witness: Stuart A. Wilson

- Q-10. Reference IRP vol. 3, "2018 IRP Reserve Margin Analysis," p. 20, and the Companies' response to AG DR 1-91. Explain how the Companies used the scarcity price curve in the creation and conclusion of the instant IRP.
- A-10. As discussed on page 9 of the 2018 IRP Reserve Margin Analysis, the Companies used two models to determine their target reserve margin range: ELDC Model and SERVVM. The scarcity price curve is an input in SERVVM and is used to determine the market price of power in hours when market power is available and available reserve capacity is less than or equal to 16% of hourly load. In these hours, the market price of power is the sum of the scarcity price and the marginal cost of supply. As noted in the Companies' response to AG DR 1-91, the scarcity price is assumed to be zero in hours when available reserve capacity is greater than 16% of hourly load.

The analysis results for the ELDC Model and SERVVM are summarized in Table 13 and Table 14, respectively, on page 22 of the 2018 IRP Reserve Margin Analysis. Both models produce similar results even though the ELDC Model does not consider a scarcity price.

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Question No. 11

Witness: Stuart A. Wilson

- Q-11. Reference the response to AG DR 1-24, and IRP Vol. 3, § 2.1.2. Explain why land use requirements for pumped hydroelectric facilities render pumped storage technologies unsuitable for the Companies' territory.
- A-11. To be economically effective, pumped storage technology typically requires a large amount of land with a specific topography and geology for developing a large-scale reservoir system with an appropriate height differential between reservoirs. The Companies are not aware of any sites in their service territories that could economically support pumped storage; and no pumped storage proposals have been received in response to at least the last two of the Companies' requests for proposals for generation capacity.