COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF LOUISVILLE GAS	)	
AND ELECTRIC COMPANY FOR A DECLARATORY	)	CASE NO.
ORDER REGARDING THE PROPER METHOD OF	)	2016-00317
MUNICIPAL FRANCHISE FEE RECOVERY	)	

SUPPLEMENTAL RESPONSE OF
LOUISVILLE GAS AND ELECTRIC COMPANY
TO
LOUISVILLE/JEFFERSON COUNTY METRO GOVERNMENT'S
REQUEST FOR INFORMATION
DATED MARCH 24, 2017

FILED: MAY 26, 2017

<div align="center">**VERIFICATION**</div>
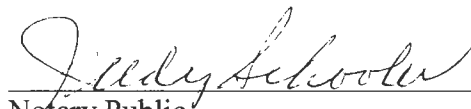
COMMONWEALTH OF KENTUCKY)
) SS:

COUNTY OF JEFFERSON   )

        The undersigned, **Lonnie E. Bellar,** being duly sworn, deposes and says that he is Senior Vice President – Operations for 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.

                                                     Lonnie E. Bellar

        Subscribed and sworn to before me, a Notary Public in and before said County and State, this 26th day of May 2017.

                                                  (SEAL)
                               Notary Public

My Commission Expires:
JUDY SCHOOLER
Notary Public, State at Large, KY
My commission expires July 11, 2018
Notary ID # 512743

LOUISVILLE GAS AND ELECTRIC COMPANY

CASE NO. 2016-00317

**Response to Louisville/Jefferson County Metro Government's
Request for Information
Dated March 24, 2017**

Question No. 1

Responding Witness: Lonnie E. Bellar

Q-1.   Refer to the Direct Testimony of Bellar, page 5, and provide the results from the network analysis model used by LG&E that shows the directions of flow and all nullity points for LG&E's entire gas distribution system in Kentucky, whether that model is based on Synergee or another software product that performs the same function, for the following time periods:

      a.   The latest peak day, and

      b.   The latest base sendout day.

A-1.   **Original Response:**

LG&E does not have a business reason to model individual historical days. Instead, the hydraulic network analysis model is used to determine operational and system requirements necessary to ensure reliable customer service. The data set forth in the attachment includes flow rates for facilities, location of nodes and direction of flow on LG&E's gas system during the individual hour that was modeled for the current planning period. This data is used to determine expected system operating conditions on LG&E's retail gas system during projected high load conditions rather than historical operating conditions.

See attached. This information is being filed under seal pursuant to a Petition for Confidential Protection. As used in the attachment, the term "facility" is any equipment transporting gas between two points, and may include pipes, valves, and fittings. Facility flow direction is indicated by the flow being positive or negative. Positive flow indicates direction from the "From Node" to the "To Node". Node flow is positive for flow into the system (supply) and negative for flow out of the system (demand). The location of the nodes is identified through the projected coordinate system WGS1984/BLM-16NftUS, which is the system used by the software.

Supplemental Response:

See attached. This information is being filed under seal pursuant to a Petition for Confidential Protection. The requested historical network analysis results are

unavailable, but LG&E has created maps showing the directions of flow using design day data. The attached maps show LG&E's high pressure transmission pipelines in Jefferson County and all distribution pipelines (excluding service lines) of any pressure crossing the Jefferson County line. The maps also include design day direction of flow and flow volumes. The map titled "LG&E High Pressure System" is a schematic of LG&E's entire high pressure system and the map titled "Jefferson County Detail" is a more detailed schematic of Jefferson County, which includes the non-high pressure distribution mains crossing the Jefferson County border and the home rule municipalities in Jefferson County.

LG&E's system planning philosophy is based on the definition of a network analysis as a simulation used to predict the behavior of a mathematical model of integrated pipe systems under various conditions. The conditions the company models are for the peak hour of a projected design day. Predicted low pressure areas are monitored to verify the network analysis results. While the conditions used for network analysis are projected conditions, they are based on actual performance data and probable operating conditions.

The following data sources, processes, and assumptions are used for building the design day model:

1.   Facility information is extracted from LG&E's GIS system into a semicolon delimited file with extension *.CID using DNV-GL's Dataprep software.

    (a)   Main: length, material, size, XY location, connectivity

    (b)   Valve: size, position, XY location, connectivity

    (c)   Regulator Station: name, XY location, connectivity

2.   The Synergi model is built using CID files and the Synergi Model Builder module.

3.   Customer demand is added to the model by:

    (a)   Importing 12 months of meter read and temperature data into the Synergi Customer Management Module ("CMM").

    (b)   CMM performs a linear regression analysis on each customer defining base load and a temperature-dependent load factor for each customer with an acceptable correlation coefficient. Customers without an acceptable correlation coefficient are given estimated base load and temperature dependent load factors based on meter size, rate code, or geographic location.

    (c)   Customer location is based on GIS location and assigned to a main by the connection of the service lateral to a main. A semicolon

delimited CID file is created during the Dataprep extract and imported into CMM.

(d) CMM further assigns customers with high design day demand to a node rather than the GIS assigned pipe.

(e) Results of the CMM analysis are exported into a comma separated values ("CSV") file formatted for import into the Synergi model.

4. Pipe efficiency is assumed to be 95% to account for the fact that the pipe in the field is not operating under ideal (100%) conditions.

5. Regulator Station object definition:

(a) Regulation equipment is defined based on the equipment of record stored in the DNV-GL Regulator Station Module ("RSM") database.

(b) Operating pressure for regulators supplying systems with a maximum allowable operating pressure ("MAOP") of 60 psig or less are defined based on the known set pressure of the equipment.

(c) Operating pressure for regulators supplying systems with an MAOP higher than 60 psig are set as close as possible to normal operating parameters. Due to the high sendout of a design day, station pressure and flow rates exceed normal parameters while maintaining MAOP compliance. The additional flow required for design day conditions is modeled based on Gas Control operating philosophy regarding use of storage gas.

The entire attachment is
Confidential and
provided separately
under seal.

LOUISVILLE GAS AND ELECTRIC COMPANY

CASE NO. 2016-00317

Response to Louisville/Jefferson County Metro Government's
Request for Information
Dated March 24, 2017

Question No. 12

Responding Witness: Lonnie E. Bellar

Q-12. Please provide the most recent schematic of LG&E's transmission and distribution system identifying all node points and the pressure at which gas received at the city gate station is injected into the Company's distribution system, for both the peak day and the base sendout.

A-12. **Original Response:**

The requested schematic of LG&E's system is not available. However, node points are identified in the response to Question No. 1 and the pressure at which gas is received at the city gates is identified in the response to Question No. 11.

Supplemental Response:

See LG&E's supplemental response to Question No. 1, which contains maps created using design day data.