

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

<b>ELECTRONIC APPLICATION OF LOUISVILLE</b>	)	
<b>GAS AND ELECTRIC COMPANY FOR</b>	)	
<b>APPROVAL OF ITS 2020 COMPLIANCE PLAN</b>	)	
<b>FOR RECOVERY BY ENVIRONMENTAL</b>	)	<b>CASE NO. 2020-00061</b>
<b>SURCHARGE</b>	)	

**RESPONSE OF**  
**LOUISVILLE GAS AND ELECTRIC COMPANY**  
**TO COMMISSION STAFF'S INITIAL REQUEST FOR INFORMATION**  
**DATED MAY 6, 2020**

**FILED: MAY 22, 2020**


VERIFICATION

COMMONWEALTH OF KENTUCKY )  
 ) SS:  
COUNTY OF JEFFERSON )

The undersigned, **Robert M. Conroy**, being duly sworn, deposes and says that he is Vice President, State Regulation and Rates 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 foregoing 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.

  
Robert M. Conroy

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19<sup>th</sup> day of May 2020.

  
Notary Public  
Notary Public, ID No. 003967

My Commission Expires:  
17/11/2022

VERIFICATION

COMMONWEALTH OF KENTUCKY )  
 ) SS:  
COUNTY OF JEFFERSON )

The undersigned, **Andrea M. Fackler**, being duly sworn, deposes and says that she is Manager, Revenue Requirement/Cost of Service for Louisville Gas and Electric Company and an employee of LG&E and KU Services Company, and that she has personal knowledge of the matters set forth in the foregoing responses for which she is identified as the witness, and that the answers contained therein are true and correct to the best of her information, knowledge and belief.

*Andrea M. Fackler*

Andrea M. Fackler

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 18th day of May 2020.

*Judy Schork*

Notary Public

Notary Public, ID No. 603967

My Commission Expires:

7/11/2022

VERIFICATION

COMMONWEALTH OF KENTUCKY )  
 ) SS:  
COUNTY OF JEFFERSON )

The undersigned, **Gary H. Revlett**, being duly sworn, deposes and says that he is Director, Environmental Affairs for 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 foregoing 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.

Gary H. Revlett  
Gary H. Revlett

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 20th day of May 2020.

Judy Schott  
Notary Public

Notary Public, ID No. 003967

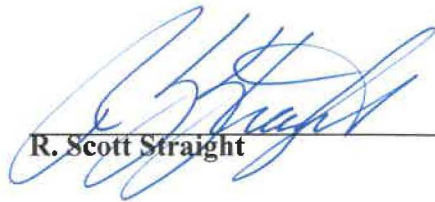
My Commission Expires:

7/14/2022


VERIFICATION

COMMONWEALTH OF KENTUCKY )  
 ) SS:  
COUNTY OF JEFFERSON )

The undersigned, **R. Scott Straight**, being duly sworn, deposes and says that he is Vice President, Project Engineering for 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 foregoing 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.

  
\_\_\_\_\_  
R. Scott Straight

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19<sup>th</sup> day of May 2020.

  
\_\_\_\_\_  
Notary Public  
Notary Public, ID No. 003967

My Commission Expires:  
7/11/2022

**Louisville Gas and Electric Company  
Response to Commission Staff's Initial Request for Information  
Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 1**

**Witness: Gary H. Revlett**

Q-1. Refer to the application, page 4, and application Exhibit 1, page 1 of 2. For Project 31, provide a chart of necessary permits including the issuing authority, status, and actual or estimated dates filed and received.

A-1. Please see the chart below:

Project No.	Description	Permit Type	Issuing Authority	Status	Date Filed	Date Received
31	Mill Creek ELG Water Treatment & Wastewater Diffuser	KPDES	Kentucky Division of Water	Current Permit		Effective 7/1/2019
				Permit Modification	Est. 4 <sup>th</sup> Qtr. 2020	Est. 2 <sup>nd</sup> Qtr. 2021
		Construction Across or Along a Stream <i>-KYDOW permit requires local floodplain coordinator approval (MSD) and public notice in local newspaper - (4-8 weeks to obtain permit)</i>	Kentucky Division of Water	Permit Needed	Est. 4 <sup>th</sup> Qtr. 2020	Est. 2 <sup>nd</sup> Qtr. 2021
		Development in Floodplain	MSD	Permit Needed	Est. 4 <sup>th</sup> Qtr. 2020	Est. 1 <sup>st</sup> Qtr. 2021
		Nationwide Permit (NWP) #7-Outfall Structure	Army Corps of Engineers	Permit Needed	Est. 4 <sup>th</sup> Qtr. 2020	Est. 1 <sup>st</sup> Qtr. 2021

**Louisville Gas and Electric Company  
Response to Commission Staff's Initial Request for Information  
Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 2**

**Witness: Gary H. Revlett**

Q-2. Refer to the application, page 6, and application Exhibit 1, page 1 of 2. For Project 32, provide a chart of necessary permits including the issuing authority, status, and actual or estimated dates filed and received.

A-2. Please see the chart below:

Project No.	Description	Permit Type	Issuing Authority	Status	Date Filed	Date Received
32	Trimble County ELG Water Treatment	KPDES	Kentucky Division of Water	Current Permit		Effective 4/1/2018
				Permit Modification	Est. 4 <sup>th</sup> Qtr. 2020	Est. 2 <sup>nd</sup> Qtr. 2021

**Louisville Gas and Electric Company  
Response to Commission Staff's Initial Request for Information  
Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 3**

**Witness: Gary H. Revlett / R. Scott Straight**

- Q-3. Refer to the Direct Testimony of Robert M. Conroy (Conroy Testimony), page 3, regarding LG&E's expectations in 2016 of future compliance expenditures related to the 2015 Effluent Limitations Guidelines Rule (2015 ELG Rule). State whether LG&E anticipates any additional 2015 ELG Rule related compliance expenditures beyond those proposed in the instant matter.
- A-3. Mr. Revlett's and Mr. Straight's testimony reference the implementation of the projects in this ECR filing that are required to comply with the 2015 ELG regulations and the 2019 proposed amendment. The rulemaking process is anticipated to be finalized in the summer of 2020. The amendments clarify the requirements to treat FGD wastewater and bottom ash transport water. However, the EPA suspended its rulemaking on landfill leachate water treatment. This pending filing does not account for any potential capital or O&M associated, if any are required, to comply with the rulemaking on landfill leachate water if the EPA proposes new requirements in the future.



**Louisville Gas and Electric Company  
Response to Commission Staff's Initial Request for Information  
Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 4**

**Witness: Robert M. Conroy**

- Q-4. Refer to the Conroy Testimony, page 9. Describe in more detail the plans to finance the projects, including estimates on the debt and equity mix.
- A-4. The Company does not engage in project financing. LG&E plans to finance the proposed projects with a mix of debt and equity that will allow it to maintain its strong investment grade bond ratings. The Company's target capital structure is 53% equity and 47% debt using FERC basis financial statements that do not include goodwill. Specifically, during construction, the Company expects to utilize existing short-term lines of credit and commercial paper until outstanding balances are significant enough to justify issuing a long-term first mortgage bond. The first mortgage bonds will have a minimum size of \$300 million to allow the bonds to be "index eligible" making the bonds more marketable and therefore more attractive to investors. However, the Company will monitor the bond markets and will issue somewhat in advance if market conditions are favorable or will wait to issue if market conditions are particularly unattractive.

The Company does not expect any of the costs associated with the projects will qualify to be funded with tax-exempt bonds as there is no solid waste component to the projects. Ongoing analysis of this will continue.

**Louisville Gas and Electric Company  
Response to Commission Staff’s Initial Request for Information  
Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 5**

**Witness: Gary H. Revlett**

- Q-5. Refer to the Direct Testimony of Gary H. Revlett (Revlett Testimony), pages 6–7, regarding the 2019 proposed revisions to the flue gas desulfurization (FGD) wastewater limits and the bottom ash transport water (BATW) wastewater limits.
- a. Provide the current daily and monthly effluent discharges of arsenic, mercury, selenium, and nitrates/nitrites in FGD wastewater for the Trimble County Generating Station (Trimble County) and the Mill Creek Generating Station (Mill Creek).
  - b. Provide the current daily discharge for BATW wastewater at Trimble County and the Mill Creek.
- A-5. a. Under the existing Trimble County and Mill Creek KPDES permits, the facilities are not required to monitor the FGD effluent until after all ELG required wastewater treatment equipment is installed and operating. In the current permits, this date is late 2022 for Mill Creek and late 2023 for Trimble County. However, to respond to the request, provided below are the results of performance testing that was conducted shortly after the installation of the physical/chemical treatment system. These effluent discharge test results of the physical/chemical FGD Process Water System (“PWS”) were conducted in 2019 in accordance with the contractual requirements and were performed at steady-state conditions.

<b>Trimble Co. Station Process Water System Commercial Performance Tests</b>					
Test Period	Results Type	Arsenic (µg/l)	Mercury (ng/l)	Selenium (µg/l)	Total Nitrate & Nitrite (mg/l)
June 2019	Average	1.0	5	50	40
	High	1.0	5	66	40
	Low	1.0	5	41	40
July 2019	Average	1.0	5	76	40
	High	1.1	7	89	40
	Low	<0.1	5	58	40
August 2019	Average	<0.1	9	106	40
	High	<0.1	10	134	40
	Low	<0.1	7	82	40

<b>Mill Creek Station Process Water System Commercial Performance Tests</b>					
Test Period	Results Type	Arsenic (µg/l)	Mercury (ng/l)	Selenium (µg/l)	Total Nitrate & Nitrite (mg/l)
March 2019	Average	2.4	140	134	52.9
	High	3.0	242	246	95.3
	Low	2.0	63	87	29.1
May 2019	Average	3.0	11	123	45.7
	High	4.0	32	155	60.5
	Low	2.0	5	93	25.1
June 2019	Average	3.6	23	114	41.6
	High	5.0	36	159	44.3
	Low	3.0	13	79	40.0

- b. Both the Trimble County and Mill Creek Stations do not utilize Bottom Ash Transport Water (“BATW”) systems and thus have no discharge.

**Louisville Gas and Electric Company**  
**Response to Commission Staff's Initial Request for Information**  
**Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 6**

**Witness: Gary H. Revlett / R. Scott Straight**

- Q-6. Refer to the Revlett Testimony, pages 11–12, and the Direct Testimony of Stuart A. Wilson, pages 7–8.
- a. Explain what additional expansions would be needed to increase the water treatment systems for Mill Creek to 750 gallons per minute (gpm).
  - b. Explain why further limitations on nitrogen oxide (NO<sub>x</sub>) emissions could effectively eliminate the ability to simultaneously operate Mill Creek Units 1 and 2.
  - c. Explain whether both Mill Creek Units 1 and 2 would operate simultaneously from November to March and, if so, whether the 600-gpm capacity of the proposed Effluent Limitations Guidelines (ELG) water treatment system would be sufficient.
  - d. State when LG&E expects a determination to be made by the Kentucky Energy and Environment Cabinet and the Louisville Metro Air Pollution Control District to limit the NO<sub>x</sub> emissions at Mill Creek for the months of April through October. If further NO<sub>x</sub> limitation is imposed, explain how this will impact the current engineering design of treating 600 gpm of effluent from the PWS at Mill Creek.
- A-6.
- a. The biological treatment capacities are primarily driven by tank capacities to allow volume for residence time for the biological treatment process. Given this, the two ELG technology vendors increase/decrease process capacities by increasing/decreasing the treatment tank capacities through changing the number of tanks. To clarify LG&E's testimony on Mill Creek's ELG treatment capacity, LG&E's contract specification and instruction to bidders included requesting pricing for the process (tank treatment capacities and control capacities) for 600 gpm and 750 gpm, with the common facilities (building layout, sumps, small chemical meter pumps, associated support systems) for the ELG system being capable of supporting 750 gpm. By doing this, LG&E will obtain through the competitive bidding process the actual incremental cost to implement tank treatment capacities from 600 to 750 gpm without limiting LG&E's future options.
  - b. An Agreed Order with the Louisville Metro Air Pollution Control District was executed on April 23, 2020 (copy attached). It placed a station limit on NO<sub>x</sub> emissions from Mill Creek during the Ozone Season. This limitation is essentially the same as limiting

the generation from Mill Creek Units 1 and 2 to 50 percent, which can be met with either load limiting both units or not operating one of the units so that the total generation from these two units does not exceed the generation of either unit (both units are equal in generating capacity). Any decreases in utilizing Units 1 and 2 to limit NOx emissions directly impact the amount of FGD process water bled off the FGD which is a common FGD that serves both Units 1 and 2.

- c. As discussed in the response to part b, due to Units 1 and 2 having the same generating capacity and sharing a common FGD, the combination of utilizing Units 1 and 2 cannot exceed the generating capacity of half of the total. Regardless of which Unit(s) at Mill Creek have generation curtailed to comply with the Agreed Order, the ELG treatment system processes the combined FGD waters of the entire station as it treats the combined FGD waters coming from the common gypsum dewatering and PWS treatment systems.
- d. See the response to part b.

**RECEIVED**

APR 28 2020

A.P.C.D.  
ADMINISTRATION**ENFORCEABLE BOARD AGREEMENT**

This Enforceable Board Agreement is entered into by and among Louisville Gas and Electric Company (LG&E), the Louisville Metro Air Pollution Control Board (Board), and the Louisville Metro Air Pollution Control District (District).

**WHEREAS**, the U.S. Environmental Protection Agency (EPA) on April 30, 2018, designated the Louisville Metropolitan Statistical Area (MSA), consisting of Jefferson, Bullitt, and Oldham Counties in Kentucky and Clark and Floyd Counties in Indiana, as non-attainment for the 2015 8-hour Ozone National Ambient Air Quality Standard (NAAQS) of 70 ppb; and

**WHEREAS**, District Regulation 3.01 Section 4 prohibits the emission of an air contaminant that would violate or interfere with the attainment or maintenance of, an ambient air quality standard; and

**WHEREAS**, ground level ozone is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC); and

**WHEREAS**, LG&E owns and operates the Mill Creek Electric Generating Station (Mill Creek), a coal-fired power plant, located at 14660 Dixie Hwy, Louisville, KY 40272, which emitted more than 7,958 tons of NOx in 2018, and is the largest single source of NOx emissions in the MSA; and

**WHEREAS**, the District has not determined which sources violate or interfere with the attainment or maintenance of an ambient air quality standard under District Regulation 3.01, but LG&E has agreed to take measures to reduce its emissions of NOx at Mill Creek consistent with the objectives of District Regulation 3.01;

**NOW, THEREFORE**, this Agreement reflects the commitment of LG&E and the approval of the Board and the District, to implement the following:

**1. Project Description**

From May 1, 2020, to October 31, 2020, the sum of Mill Creek Units 1, 2, 3 and 4 NOx emissions shall be equal to or less than 15 tons per calendar day. Compliance with the daily limit shall be determined through review of data generated by the plant's Continuous Emissions Monitoring System in accordance with 40 CFR Part 75.

This daily limit shall not apply to the following events in 1.A or 1.B:

- A. To hours when Mill Creek Units 3 or 4 have experienced an outage, unit derate including operation of unit below minimum operating load for SCR operation, startup/shutdown, or SCR outage or derate at any time during the hour.
- B. To hours when forecasted high demand due to extreme weather or system

demand concurrent with other unit outages in the LG&E-KU system require, in the reasonable judgment of LG&E, Mill Creek Units 1 or 2 to operate at any time during the hour to ensure system reliability in accordance with North American Electric Reliability Corporation (NERC) requirements.

- C. Nothing in this agreement shall obligate LG&E to purchase wholesale power from third-party power generation sources in response to the above events, but LG&E may undertake such purchases based on LG&E's determination of prudent utility practice.

For any calendar day when plant-wide emissions of NOx exceed 15 tons, including the hours specified in paragraph 1.A or 1.B, LG&E shall inform the District in writing within 24 hours, or the next business day if the due date falls on a weekend or holiday.

The written notification to the District shall include: (1) the reason for the event; (2) the anticipated duration; (3) all actions taken to prevent or minimize the delay or prevention of performance; (4) an explanation of why the delay or prevention of performance was necessary; and (5) the steps LG&E shall take to ensure that the performance of its obligations under this Agreement will be reinstated as early as practicable after cessation of the event causing the delay.

## **2. Verification and Reporting**

Within 30 days after the end of the calendar month, LG&E shall submit a monthly report to the District identifying daily plant-wide emissions of NOx. The reports shall be certified by a responsible official, as defined in Regulation 2.16 Title V Operating Permits, Section 1.35, at the facility. This certification shall include the statement, "Based on information and belief formed after reasonable inquiry, I certify that the statements and information in this document are true, accurate and complete." The District reserves its right to inspect the facility as provided in applicable law to verify compliance with LG&E's commitment set forth in Paragraph 1. All reporting and verification requirements under this agreement shall terminate upon submittal of the monthly report for October 2020.

## **3. Effect on Permits**

Nothing in this Agreement affects, limits or waives any permitting requirement to which LG&E is subject. If any of the measures that LG&E has undertaken or will undertake in accordance with this Agreement are subject to any permit requirement under federal or state law or District regulations, such measures shall remain subject to such permitting requirements.

## **4. Legal Effect of the Agreement**

LG&E agrees to fully implement the projects set forth in Paragraph 1 above. Nothing in this Agreement shall constitute evidence of any admission of liability, law or fact, a waiver of any right or defense, or estoppel against the parties to this Agreement.

**5. Reservation of Rights and Legal Remedies**

Nothing in this Agreement affects, limits or waives the District's legal rights, remedies or causes of action based on statutes, regulations or permit conditions within the jurisdiction of the District, and LG&E reserves its rights and defenses thereto. The District expressly reserves its right to seek enforcement of this Agreement or to take further action through administrative orders or other means at any time and to take any other action it deems necessary, including the right to order all necessary remedial measures and assess penalties for proven violations of applicable laws or regulations, and LG&E reserves its defenses thereto.

Nothing in this Agreement affects, limits or waives LG&E's legal rights, including LG&E's right to administrative or judicial review of any action by the District.

**6. Amendments or Modifications**

No modification or amendment to the terms or conditions of this Agreement shall be effective until reduced to writing and executed by LG&E and the Board.

Louisville Metro Air Pollution Control Board

By: Carl E. Hilton  
Carl E. Hilton  
Chairman

Date: 4/23/20

Louisville Gas and Electric Company

By: Lonnie E. Bellar  
Lonnie E. Bellar  
Chief Operating Officer

Date: 4/9/20

Louisville Metro Air Pollution Control District

By: Keith Talley, Sr.  
Keith Talley, Sr.  
Executive Director

Date: 4/15/2020

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ADMINISTRATION



**Louisville Gas and Electric Company  
Response to Commission Staff's Initial Request for Information  
Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 7**

**Witness: Gary H. Revlett**

- Q-7. Refer to the Revlett Testimony, page 8. Describe the differences between biological and chemical treatment methods, including the costs, benefits, and effectiveness of each method.
- A-7. It is important to note that the PWS treatment facilities installed as part of the Companies' 2016 ECR Plan were physical/chemical processes. The discharged treated waters from those facilities is the influent to the biological treatment in the proposed 2020 ECR Plan.

The Environmental Protection Agency (EPA) Effluent Limitations Guidelines (ELG) regulate discharges of arsenic, mercury, selenium and nitrates/nitrites constituents in Flue Gas Desulfurization (FGD) wastewaters. The proposed limits were based upon treatment systems employing a combination of biological and chemical treatment methods. Differences between biological and chemical treatment methods primarily occur in how the dissolved metals and nitrates/nitrites constituents are converted to precipitated solids and removed from treated wastewaters. Commercially available biological systems also include ultrafiltration equipment which significantly improve the removal of fine solids and colloidal particles such as selenium and mercury compounds from treated wastewaters. Use of chemical treatment systems without the addition of biological systems can significantly reduce arsenic, but cannot adequately reduce mercury, selenium, and nitrates/nitrites to the proposed ELG compliance levels.

Practical installations of commercially available biological treatment systems are configured so that FGD wastewaters are sequentially treated by:

1. solids physical filtration/settling/removal systems;
2. chemical treatment to precipitate dissolved metals;
3. biological systems to use microorganisms to remove selenium and nitrates/nitrites; and
4. a final ultrafiltration step to remove extremely fine particles or colloidal solids.

For both biological and/or chemical treatment systems, pre-treatment steps of influent streams ideally reduce suspended solids to less than 2% which minimizes solids handling and formation of scale in the final stages of process treatment equipment. After pretreatment removal of suspended solids, the conversion and removal of dissolved metals (or fine metal particulates) is the designed function of both biological and chemical treatment methods. Simply stated, chemical systems use chemical reagents to convert dissolved constituents into compounds which precipitate and are subsequently

filtered/removed from treated wastewaters. Biological systems use microorganisms to convert dissolved pollutants to compounds which precipitate or are absorbed into the organisms' bodies (biomass), and final removal of targeted pollutants by biomass rejection (filter backwash) or ultrafiltration of fine solids from treated wastewaters.

For chemical treatment influent flows, gypsum ( $\text{CaSO}_4$ ) desaturation occurs in the first stages of the equalization, neutralization and reaction process tanks followed by clarification/filtration of precipitated solids. With the addition of reagent chemicals, precipitation of dissolved solids occurs by oxidative/reduction reactions which transform the form or oxidative state of targeted pollutants into other compounds which precipitate (i.e., do not remain dissolved). Oxidation-reduction potential (ORP) measurements are used to predict the state of an aqueous environment and the tendency for specific chemical species to be reduced or oxidized. ORP levels are also affected by the predominant constituents of FGD wastewaters which include gypsum ( $\text{CaSO}_4$ ), unreacted limestone ( $\text{CaCO}_3$ ), sulfate/chloride salts, and other trace metals. Concentrations of these constituents result from coal type burned, unit load, FGD conditions, etc.

Chemical treatment systems can significantly reduce dissolved arsenic and mercury within the conditions and chemistry matrix of typical FGD wastewaters. But, alone, they are inadequate systems to achieve compliance with ELG-FGD limits for selenium, proposed reductions in mercury, and nitrates/nitrites. Forced-oxidation FGD wastewater dissolved selenium compounds are predominately selenate ( $\text{SeO}_4^{2-}$ ) oxidation state compounds (>50% of total selenium in typical FGD wastewaters); the ORP ranges within a typical chemical treatment system prevents conversion of the selenate compounds into a solid/precipitate. Mercury exists in elemental, oxidized, and particulate/colloidal forms; the particulate/colloidal mercury compounds that remain after chemical and biological treatments require ultrafiltration systems to achieve the low limits of the proposed ELG revision. Nitrates/nitrites compounds cannot be converted to insoluble compounds by chemical treatment; thus, chemical systems are inadequate and an inappropriate method to attempt compliance with both the existing and proposed revisions to the ELG limits.

Biological treatment systems use microorganisms to reactively transform, precipitate, metabolically incorporate, or otherwise produce solids containing targeted pollutants for removal from wastewater. Generally, biological systems use reduction/oxidation reactions to change the form or oxidative state of compounds to remove them, including by absorption into the organisms' bodies, from wastewaters. Specifically, biological systems are operated at controlled ORP levels which allow microorganisms to metabolically convert the selenate compounds to precipitate as a solid or be incorporated into the microorganisms body (colony growth biomass) with subsequent solids removal by filtration backwashes (biomass rejection) or by ultrafiltration capture/backwashes of fine precipitated particles. Nitrates/nitrites removal occurs by denitrification reactions in biological systems where sequential aerobic and anaerobic respiration stages allow the microorganisms to metabolize/consume the nitrates/nitrites compounds for biomass growth and ultimate removal by filtration backwashes (biomass rejection).

Ultrafiltration equipment installed for capture of fine selenium particles also capture fine/colloidal mercury particles. The solids removed from filtered/backwash solids containing selenium, mercury and nitrates/nitrites pollutants are ultimately landfilled.

**Louisville Gas and Electric Company  
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Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 8**

**Witness: R. Scott Straight**

- Q-8. Refer to the Direct Testimony of R. Scott Straight (Straight Testimony), page 6–7.
- a. Explain the method and timing for issuing requests for proposals in relation to the proposed projects.
  - b. State whether the two vendors referenced in the Straight Testimony will be preferred for the purposes of these projects.
  - c. State whether international vendors will be considered for the proposed projects.
  - d. Regarding the benefits in moving forward with the proposed projects now rather than waiting, state whether LG&E has performed any analysis to quantify the reduction in risks and costs. If so, provide a copy of that analysis.
- A-8.
- a. With the assistance of the Companies' Owner's Engineer (Burns & McDonnell), the Companies prepared a technical specification and contract similar in format and content to those successfully used on the recent PWS treatment systems placed into service at Ghent, Mill Creek and Trimble County. This contract format was also successfully used on the PJFF baghouse projects, FGD projects, and the selective catalytic reduction projects implemented throughout the Companies' coal-fired fleet over the last 15-plus years. Project Engineering issued the Request for Quotation ("RFQ") to five bidders during the week of May 17, 2020.
  - b. The two technology suppliers referenced in Mr. Straight's testimony will be the only microbiological treatment vendors allowed to be supplied by the Engineering, Procurement and Construction ("EPC") bidders.
  - c. The two technology suppliers are considered U.S. vendors given the technology was developed in the U.S.; however, Suez's corporate headquarters are located in Paris, France. The systems built for the Companies would be designed and constructed in the U.S.
  - d. The ELG regulation and the proposed amendment thereto require the ELG technology to be implemented "as soon as possible." This requirement is more direct than past regulations that required compliance on an "as soon as practicable" or "as soon as

reasonable” basis. Regardless of this “as soon as possible” requirement, the Companies know from past major compliance projects and from the actions listed below that execution and cost risk are reduced by being on the front of the execution curve across the U.S. instead of on the back of the curve.

While the Companies have not performed a detailed analysis to quantify the reduction of risk, the Companies’ Project Engineering department has extensive market knowledge, held detailed discussions with the technology vendors’ management, toured operating biological treatment systems for FGDs and visited with those station management/engineering teams, and reviewed the technology vendors’ abilities to perform a limited number of projects simultaneously. In addition to the technology vendors, the Companies’ Project Engineering management has held numerous discussions with the available EPC contractors that can perform projects of this scale and that are familiar with the industry. Thus, the Companies have a very good understanding of the EPC’s senior management teams, field construction management teams and availability, labor availability, and engineering capabilities of the EPC bidders.

These reviews and discussions indicate that there are a limited number of field and engineering execution teams throughout the U.S. Being on the front-end of the industry to contract for the EPC contractor’s best management and engineering teams for the Companies’ three sites has proven numerous times to be a significant contributing factor in reducing execution risk in the field, and thus cost. Being on the front of the execution curve also allows the acquisition of all engineered equipment that the EPC contractor will supply on the projects early in each equipment/technology vendor’s plans to support the industry’s compliance with the ELG regulation throughout the U.S., thus allowing for better management and controlling of project cost. The Companies have a successful history of reducing these execution risks on major scale environmental projects. Examples include the Companies’ SCR projects installed under the 2001 ECR plan, the FGD and PJFF projects installed under the 2011 ECR plan, and the PWS projects recently installed under the 2016 ECR plan.

**Louisville Gas and Electric Company  
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Dated May 6, 2020**

**Case No. 2020-00061**

**Question No. 9**

**Witness: R. Scott Straight / Andrea M. Fackler**

- Q-9. Refer to the Straight Testimony, pages 22, 23, and 25.
- a. Explain whether the ELG water treatment systems will require LG&E to hire additional personnel.
  - b. Refer also to the Direct Testimony of Andrea M. Fackler, page 5, lines 21–23. Explain whether LG&E is seeking to recover incremental expense associated with additional personnel through the Environmental Cost Recovery Surcharge.
- A-9.
- a. As mentioned in Mr. Straight's testimony on pages 22-23 and 25, additional personnel will be required to operate and maintain the ELG biological treatment systems. LG&E has not made a determination on whether the incremental operating personnel will be LG&E employees or contractors.
  - b. Yes, as stated in Mr. Straight's testimony on pages 22-23 and 25, LG&E is seeking to recover the incremental expenses associated with the additional personnel through the Environmental Cost Recovery Surcharge.