COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

JOINT APPLICATION OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY FOR THE CONSTRUCTION OF A COMBINED CYCLE COMBUSTION TURBINE AT THE GREEN RIVER GENERATING STATION AND A SOLAR PHOTOVOLTAIC FACILITY AT THE E.W. BROWN GENERATING STATION	)	**CASE NO. 2014-00002**

RESPONSE OF
LOUISVILLE GAS AND ELECTRIC COMPANY
AND KENTUCKY UTILITIES COMPANY
TO THE THIRD SET OF DATA REQUESTS OF
KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.
DATED SEPTEMBER 5, 2014

FILED: SEPTEMBER 19, 2014

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) **SS:**
COUNTY OF JEFFERSON)

The undersigned, **David S. Sinclair**, being duly sworn, deposes and says that he is Vice President, Energy Supply and Analysis 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.

David S. Sinclair

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of September 2014.

Notary Public (SEAL)

My Commission Expires:

SHERI L. GARDNER
Notary Public, State at Large, KY
My Commission expires Dec. 24, 2017
Notary ID # 501600

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) **SS:**
COUNTY OF JEFFERSON)

The undersigned, **John N. Voyles, Jr.**, being duly sworn, deposes and says that he is Vice President, Transmission and Generation Services 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 foregoing testimony, and that the answers contained therein are true and correct to the best of his information, knowledge and belief.

John N. Voyles, Jr.

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of September 2014.

(SEAL)
Notary Public

My Commission Expires:

SHERI L. GARDNER
Notary Public, State at Large, KY
My Commission expires Dec. 24, 2017
Notary ID # 501600

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) **SS:**
COUNTY OF JEFFERSON)

The undersigned, **Edwin R. Staton**, being duly sworn, deposes and says that he is Vice President, State Regulation and Rates, 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.

Edwin R. Staton

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of September 2014.

Notary Public (SEAL)

My Commission Expires:

SHERI L. GARDNER
Notary Public, State at Large, KY
My Commission expires Dec. 24, 2017
Notary ID # 501600

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Third Set of Data Requests of
Kentucky Industrial Utility Customers, Inc.
Dated September 5, 2014

Case No. 2014-00002

Question No. 1

Witness: David S. Sinclair/ John N. Voyles, Jr.

Q.3-1. With respect to Supplemental Exhibit DSS-3, please provide the following information:

a. All workpapers (in electronic format with formulas intact) that support the Exhibit.

b. The documents that support the REC price forecast.

c. The documents that support the avoided energy cost forecast.

d. If the avoided energy cost forecast used in DSS-3 is different than the avoided energy cost forecast used in Case No. 2014-00003, please explain the difference. Specifically, refer to Response to Sierra Club Question 12 Attachment 1, page 1 of 1.

e. Please reproduce Exhibit DSS-3 using the avoided energy cost forecast from Case No. 2014-00003.

f. If Exhibit DSS-3 assumes that RECs from the project will be sold over the life of the project, then please explain how the 10 MW Brown Solar Facility can be used to meet Kentucky's statewide CO2 emission reduction requirements under the EPA's proposed Section 111(d) rule.

A.3-1.

a. See redacted attachment. The information requested is confidential and proprietary, and is being provided under seal pursuant to a Joint Petition for Confidential Protection on a CD in Excel format.

b. Exhibit DSS-3 is not based on a specific forecast of solar REC prices. Since solar REC prices may vary over the long-term based on state laws, regulations, and policies governing renewable portfolio standards, Exhibit

DSS-3 presents the levelized annual revenue requirement for the Brown Solar facility over a range of possible solar REC prices.

c. Exhibit DSS-3 is not based on a specific forecast of avoided energy costs. Since the hourly avoided energy cost depends on future coal and gas prices, the units operating in a given hour, as well as the impact of environmental regulations, Exhibit DSS-3 presents the levelized annual revenue requirement for the Brown Solar facility over a range of avoided energy costs.

d. See response to part c. The avoided energy cost in Case No. 2014-00003 is consistent with the avoided energy cost in the "base load, mid gas, zero carbon" scenario in Case No. 2014-00002. The avoided energy cost forecast provided as an attachment to Sierra Club Question 12 in Case No. 2014-00003 is summarized by peak type and reflects the avoided energy cost in all hours of the day. Only the avoided energy costs in daylight hours is applicable in the analysis of the Brown Solar Facility.

e. See response to part c. The average avoided energy cost from Case No. 2014-00003 closely corresponds to the $40/MWh avoided energy cost in Exhibit DSS-3. Based on Exhibit DSS-3 ($3,600/kW Capital Cost), the levelized annual revenue requirement for the Brown Solar facility ranges from $0.2 to $1.5 million, depending on the value of solar RECs.

f. The sale of RECs and the CO_2 emission reductions to meet the requirements of the Section 111(d) proposed rule are effectively two separate and distinct programs which would not necessarily be required to be tied together. If RECs are used by one state to meet their state's requirements under a RPS program, they could count them in that program without necessarily applying the energy produced as a result of their purchase to that state's 111(d) approved compliance plan.

Until such time as the EPA issues a final GHG regulation for existing sources and the state of Kentucky receives approval of their compliance plan from the EPA, it is not clear how the Brown Solar Facility would be incorporated into such plan. That said, based on the Companies' current understanding of the proposed rule, the EPA will not permit renewable energy sources to be double counted by more than one state in a 111(d) compliance plan (assuming the plan is not a regional plan). If RECs are sold over the life of the facility to an entity outside of Kentucky, then as long as the energy from the Brown Solar Facility is not double counted in more than one state's 111(d) compliance plan, it may be possible to meet both objectives. With respect to the Brown solar facility and RECs, the Companies will choose the course of action which results in the most value and least cost for customers.

Capacity (MW)	10
Annual Generation (MWh)	15,216
June-December Generation (MWh)	9,302
Capital Cost - Base ($/kW, $2018)	3,627
Investment Tax Credit (ITC)	30%
Fixed O&M ($000/yr, $2016)	125
Variable O&M ($/MWh, $2016)	0.80
REC Price ($/REC, $2016)	26
Avoided Energy Cost ($/MWh, Daylight Hours, $2016)	50
Capital Escalation Rate	2.4%
O&M Cost Escalation Rate	2.0%
REC Price Escalation Rate	2.0%
RR Discount Rate	6.75%
Construction Start Year	2015

	Low1	Low2	Base	High
Capital Cost - Base ($/kW, $2018)	2,400	3,477	3,627	4,127

Capital Cost w/ ITC ($000, $2016)	[redacted]

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Years	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Capital Revenue Requirements	[redacted]																
Fixed O&M																	
Variable O&M																	
Sale of RECs																	
Avoided Energy Cost/Fuel Savings																	
Total	[redacted]																
NPVRR ($000s, $2014)	[redacted]																
Annual Levelized RR ($/Year)																	

Avoided Energy Cost - Daylight Hours ($/MWh)

REC Prices ($/REC)	[redacted]	40	50	60	70	80	90	100
0		[redacted]						
16								
26								
57								
62								
79								

Capacity (MW)	
Annual Generation (MWh)	
June-December Generation (MWh)	
Capital Cost - Base ($/kW, $2018)	
Investment Tax Credit (ITC)	
Fixed O&M ($000/yr, $2016)	
Variable O&M ($/MWh, $2016)	
REC Price ($/REC, $2016)	
Avoided Energy Cost ($/MWh, Daylight Hours, $2016)	
Capital Escalation Rate	
O&M Cost Escalation Rate	
REC Price Escalation Rate	
RR Discount Rate	
Construction Start Year	

Capital Cost w/ ITC ($000, $2016)

	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Years	1	1	1	1	1	1	1	1	1	1	1
Capital Revenue Requirements											
Fixed O&M											
Variable O&M											
Sale of RECs											
Avoided Energy Cost/Fuel Savings											
Total											

NPVRR ($000s, $2014)

Annual Levelized RR ($/Year)

CONFIDENTIAL INFORMATION REDACTED

6.75% Discount Rate

Capital RR for Base Solar 6/2016

36.270 Capital Cost ($M, $2018)

[redacted] Capital Cost ($M, $2016) after ITC

	NPV	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Accumulated Deferred Taxes Adjustment ($000)		[redacted]												
Book Depreciation and Operating Expenses Annual ($000)		[redacted]												
Current Income Taxes Annual ($000)		[redacted]												
CWIP in Project Rate Base ($000)		[redacted]												
Deferred ITC Adjustment for Project Amortization ($000)		[redacted]												
Fuel Inventory and Other ($000)		[redacted]												
Net Plant in Rate Base ($000)		[redacted]												
Present Worth of Project Revenue Requirements ($000)		[redacted]												
Project Rate Base ($000)		[redacted]												
Return on Rate Base ($000)		[redacted]												
Revenue Requirements for Project ($000)	[redacted]													

RR Profile (20 yr book life, 5 yr tax life, tax depreciation based on 85% of total cost) [redacted]

Capital RR for Base Solar 6/2016

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Accumulated Deferred Taxes Adjustment ($000)	[redacted]													
Book Depreciation and Operating Expenses Annual ($000)														
Current Income Taxes Annual ($000)														
CWIP in Project Rate Base ($000)														
Deferred ITC Adjustment for Project Amortization ($000)														
Fuel Inventory and Other ($000)														
Net Plant in Rate Base ($000)														
Present Worth of Project Revenue Requirements ($000)														
Project Rate Base ($000)														
Return on Rate Base ($000)														
Revenue Requirements for Project ($000)														
RR Profile (20 yr book life, 5 yr tax life, tax depreciation based on 8	[redacted]													

Capital RR for Base Solar 6/2016

	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
Accumulated Deferred Taxes Adjustment ($000)														
Book Depreciation and Operating Expenses Annual ($000)														
Current Income Taxes Annual ($000)														
CWIP in Project Rate Base ($000)														
Deferred ITC Adjustment for Project Amortization ($000)														
Fuel Inventory and Other ($000)														
Net Plant in Rate Base ($000)														
Present Worth of Project Revenue Requirements ($000)														
Project Rate Base ($000)														
Return on Rate Base ($000)														
Revenue Requirements for Project ($000)														
RR Profile (20 yr book life, 5 yr tax life, tax depreciation based on 8														

Capital RR for Base Solar 6/2016

	2054	2055	2056	2057	2058	2059	2060	2061
Accumulated Deferred Taxes Adjustment ($000)	[redacted]							
Book Depreciation and Operating Expenses Annual ($000)								
Current Income Taxes Annual ($000)								
CWIP in Project Rate Base ($000)								
Deferred ITC Adjustment for Project Amortization ($000)								
Fuel Inventory and Other ($000)								
Net Plant in Rate Base ($000)								
Present Worth of Project Revenue Requirements ($000)								
Project Rate Base ($000)								
Return on Rate Base ($000)								
Revenue Requirements for Project ($000)								
RR Profile (20 yr book life, 5 yr tax life, tax depreciation based on 8	[redacted]							

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Third Set of Data Requests of
Kentucky Industrial Utility Customers, Inc.
Dated September 5, 2014

Case No. 2014-00002

Question No. 2

Witness: Edwin R. Staton

Q.3-2. Explain why the ratepayers of KU and LG&E should be required to pay for the 10 MW Brown Solar Facility if the zero carbon renewable energy from the project will assist in meeting Kentucky's statewide CO2 requirements under the EPA's proposed Section 111(d) rule.

A.3-2. KU and LG&E customers should be required to pay for the Brown Solar Facility under the longstanding ratemaking concept that the facility will be used and useful to them as customers. Furthermore, the Companies are not proposing the Brown Solar Facility on the basis of meeting the EPA's proposed Section 111(d) rule. As a low CO_2 emitting resource, the facility will marginally reduce the Companies' and the state's CO_2 emissions. Any resources, including NGCC units, emitting less than the EPA's CO_2 target rate for Kentucky will likely assist the state in meeting the statewide requirements. However, until the EPA issues a final GHG regulation for existing sources and the state of Kentucky receives approval of its compliance plan from the EPA, it is not clear how the Brown Solar Facility will be incorporated into such plan.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Third Set of Data Requests of
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Dated September 5, 2014

Case No. 2014-00002

Question No. 3

Witness: Edwin R. Staton

Q.3-3. Do the Companies agree that the proposed Brown Solar Facility will provide state-wide benefits by reducing Kentucky's carbon intensity under EPA's proposed Section 111(d) rule? Please explain.

A.3-3. It depends on whether the facility is included or excluded in Kentucky's compliance plan. See the response to Question 2 above.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Third Set of Data Requests of
Kentucky Industrial Utility Customers, Inc.
Dated September 5, 2014

Case No. 2014-00002

Question No. 4

Witness: Edwin R. Staton

Q.3-4. Are KU's all-requirements FERC wholesale customers going to be allocated their proportional share of the costs and benefits of the Brown Solar Facility? Please explain.

A.3-4. The costs and benefits of the Brown Solar Facility, like all other generating resources, will be allocated to all jurisdictions, including KU's all-requirements FERC wholesale customers.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Third Set of Data Requests of
Kentucky Industrial Utility Customers, Inc.
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Case No. 2014-00002

Question No. 5

Witness: Edwin R. Staton

Q.3-5. Is KU's Virginia jurisdictional utility going to be allocated a proportional share of the costs and benefits of the Brown Solar Facility? If yes, then for purposes of Section 111(d) compliance, will its proportional share of REC's be awarded to Virginia or Kentucky? Please explain.

A.3-5. Please see the Companies' response to Q3-1(f) and Q3-4 with regard to the REC outlook and the jurisdictional cost allocations. It is not clear how the state's 111(d) compliance plan will account for emissions from generation that supplies customers in other states.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Third Set of Data Requests of
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Case No. 2014-00002

Question No. 6

Witness: Edwin R. Staton

Q.3-6. Does Exhibit DSS-3 assume Kentucky retail load will pay for 100% of the Brown Solar Facility, or does it assume a cost assignment to KU's wholesale and Virginia loads?

A.3-6. See response to Question No. 4.