

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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

JOINT RESPONSE OF
LOUISVILLE GAS AND ELECTRIC COMPANY
AND KENTUCKY UTILITIES COMPANY
TO THE COMMENTS OF SIERRA CLUB
AND SOUTHERN RENEWABLE ENERGY ASSOCIATION

Louisville Gas and Electric Company (“LG&E”) and Kentucky Utilities Company (“KU”) (collectively “Companies”), pursuant to the Commission’s October 30, 2018 scheduling order in this proceeding, submit their response to the Comments of Sierra Club, Alice Howell, Carl Vogel, Amy Waters, and Joe Dutkiewicz (collectively “Sierra Club”) and to the public comments of the Southern Renewable Energy Association (“SREA”).

I. Overview

Sierra Club’s and SREA’s criticisms are unfounded and policy-driven. The objectives of Sierra Club and SREA sharply contrast with the long-standing least cost policy of the Commission and followed by the Companies in preparation of the Joint IRP. The submitted comments are inconsistent with the Companies’ objective in resource planning to reliably serve load in every moment at the lowest reasonable cost. The stated objective for Sierra Club and SREA is simply to retire fossil resources, install more renewables, and assume such changes impose no risk to the reliability of service.¹

¹ *Climate & Energy*, SIERRA CLUB, <https://www.sierraclub.org/climate-and-energy> (last visited Feb. 10, 2020); *Our Work*, SOUTHERN RENEWABLE ENERGY ASSOCIATION, <https://www.southernrenewable.org/about.html> (last visited Feb. 10, 2020).

Sierra Club and SREA assert three principal arguments which are addressed in turn by the Companies below.

A. The Commenters' criticisms imply that the Commission's IRP regulation and associated process should be changed.

The purpose of the IRP reporting process is for the Commission to evaluate an electric utility's plan, at a given point in the business planning process, to meet future demand with adequate and reliable supply of electricity at the lowest possible cost to customers.² As repeatedly stated in the Companies' IRP, "Even though the IRP represents the Companies' analysis of the best options to meet customer needs at this point in time, this plan is reviewed, re-evaluated, and assessed against other market available alternatives prior to commitment and implementation."³ The IRP's purpose is not to selectively optimize energy costs.

As evidenced by the Companies' recent filing for approval of a solar power purchase contract,⁴ the existing process of evaluating a range of alternatives for long-term planning scenarios in the IRP and evaluating specific alternatives through a separate request for proposals process is an effective approach.

B. Criticisms Pertaining to the Price of Renewable Generation.

In the 2018 IRP, the Companies evaluated resource costs from a common source using the Companies' cost of capital for all resources.⁵ As a result, all resources are evaluated on an equal footing. Furthermore, the Companies' analysis properly considers tax advantages for renewables.

² 807 KAR 5:058.

³ *In the Matter of: Electronic 2018 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*, Case No. 2018-00348, 2018 Joint Integrated Resource Plan, Vol. III, 2018 IRP Long-Term Resource Planning Analysis, at 5 (Oct. 19, 2018).

⁴ *In the Matter of: Electronic Application of Louisville Gas and Electric Company and Kentucky Utilities Company for Approval of a Solar Power Contract and Two Renewable Power Agreements to Satisfy Customer Requests for a Renewable Energy Source Under Green Tariff Option #3*, Case No. 2020-00016.

⁵ The Companies used the National Renewable Energy Laboratory's 2018 Annual Technology Baseline.

To the extent the market has a different cost of capital, this cost of capital will be reflected in the cost of all market available alternatives (i.e., renewable and fossil fuels).

C. The Commenters' criticisms erroneously imply that the Companies are not doing their analysis correctly.

SREA's public comments include several assertions regarding the levelized cost of energy ("LCOE") of renewables compared to the LCOE of the Companies' existing generating units. These arguments ignore the Companies' obligation to reliably serve load in every moment of the year.

Sierra Club repeats the same assertions regarding the retirement of OVEC that it asserted in the Companies' last rate case.⁶ The Companies did not evaluate the retirement of OVEC in the IRP process because the decision to retire OVEC is out of the Companies' control.⁷ Sierra Club also argues that the Companies' projected reserve margin is too high, particularly in the winter season, but it offers no alternative method to determine the optimal reserve margin range nor any specific criticism of the Companies' methodology.

II. The Integrated Resource Plan Standards and their Purpose and History

The "Necessity, Function, and Conformity" statement for the IRP regulation plainly states that its purpose is to "prescribe[] rules for regular reporting and commission review of load forecasts and resource plans of the state's electric utilities to meet future demand with an adequate and reliable supply of electricity at the lowest possible cost for all customers within their service areas"⁸ The Commission confirmed this purpose when it recently stated:

IRP filings are unique because the Commission's role under 807 KAR 5:058 is limited to addressing procedural issues and not

⁶ *E.g. In the Matter of: Electronic Application of Kentucky Utilities for an Adjustment of its Electric Rates*, Case No. 2018-00294, Redacted Testimony of Jeremy Fisher (Jan. 16, 2019).

⁷ *Id.*, Rebuttal Testimony of David S. Sinclair, at 37 (Feb. 22, 2019) ("[t]he evaluation of retiring OVEC is strictly theoretical because any such retirement decision would be effected by OVEC's governance process (not the Companies unilaterally).").

⁸ 807 KAR 5:058.

substantive issues. The specific procedures established under 807 KAR 5:058 include a procedural schedule that leads to a report prepared by Commission Staff (Staff) that is the final substantive action in an IRP. The Staff Report summarizes Staff's review of the IRP and provides recommendations and suggestions for subsequent IRP filings. The regulation does not provide for an evidentiary hearing, and the Commission does not enter findings of fact or conclusions of law.⁹

To achieve its purposes, the regulation requires the utilities to which it applies to file an IRP triennially, which includes five basic components: a plan summary, a statement of significant changes from the most recently filed IRP, a fifteen-year load forecast, a resource assessment and acquisition plan for the fifteen years covered by the IRP, and a collection of basic financial information.¹⁰ The Companies' 2018 IRP fully satisfies the Commission's requirements in all their particulars.

But in addition to recognizing what the IRP is, it is important to state what it is not. The IRP is not a declaration of what the Companies will do in the future regardless of changed circumstances; rather, it is the Companies' expectation at a moment in time of what their customers' needs will be and the least-cost means of meeting those needs. The IRP regulation does not require or even permit the Commission to approve a load forecast, a resource plan, a specific course of action to address the public convenience and necessity, or proposed revenue requirements and cost recovery. The final outcome of the IRP process is a Commission Staff report of comments and recommendations on the Companies' IRP.¹¹

Nor does the IRP regulation require or even permit the Commission to make determinations concerning the Companies' rates. As explained further below, the Companies perform additional

⁹ *In the Matter of: Electronic 2018 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*, Case No. 2018-00348, Order for Sierra Club Intervention, at 5 (Sep. 19, 2019).

¹⁰ 807 KAR 5:058 §§ 5-9.

¹¹ 807 KAR 5:058 § 11(3).

and independent analyses—analyses based on actual market and regulatory conditions at the time—before proposing any significant investment in a project to the Commission, whether by requesting a certificate of public convenience and necessity, seeking approval of environmental cost recovery plans or purchase power contracts, or other means. Such investment proposals and their associated regulatory proceedings have either immediate or eventual impacts on rates. The IRP regulation is focused not on rates but on IRP processes, data and methods.

III. Sierra Club Comments

A. OVEC

Sierra Club’s comments on the 2018 IRP simply repeat the same arguments it made in the 2018 Rate Case by attaching Dr. Jeremy Fisher’s testimony from that case and once again contending his recommendations are reasonable. Sierra Club’s comments fail to show how its rate case arguments apply to the IRP process and Sierra Club does not propose alternatives to meeting the Companies’ contractual obligations with OVEC. Rather, Sierra Club simply asks the Commission to consider a disallowance of OVEC costs, entirely disregarding the fact that Companies’ decision to extend the OVEC contract to 2040 was prudently made and the Companies have no prudent means to end their participation in the Inter Company Power Agreement with OVEC.

Sierra Club recommends the Companies include at least one scenario that excludes OVEC resources in the IRP analyses. While the Companies can certainly develop such a hypothetical scenario, Sierra Club fails to show why time and resources should be devoted to such a scenario when the OVEC contract cannot be terminated on an economic basis and the Companies cannot retire the OVEC resources without the support of other OVEC sponsors. Without showing how these significant constraints can be overcome on cost-effective basis and through a lawful means, such an exercise would not be productive.

For the reasons stated in Mr. Sinclair’s rebuttal testimony from the 2018 Rate Case, the recommendations of Dr. Fisher lack merit and should be rejected.¹² The Companies’ annual planning process is focused precisely where it should be – namely – providing reliable, low cost electric service to customers. That process has benefited customers for decades. Initiating a case to focus exclusively on hypothetical future decisions involving a single resource, e.g., OVEC, is not an efficient use of Commission resources. When there are resource planning decisions to be made that require Commission approval, the Companies will make the appropriate filings with the Commission.

B. Other Matters

1. *Capacity Reserve Margin*

Without any critique of the Companies’ process for determining the target reserve margin range, Sierra Club asserts that the upper bound of the Companies’ target reserve margin range and their projected reserve margins are too high. Contrary to Sierra Club’s arguments, several other utilities provide reserve margin targets in their Integrated Resource Plans similar to those used by Companies. For example, Sierra Club asserts that MISO’s target reserve margin is 17.1%, but recently, MISO published a target reserve margin of 18% in its publicly available Planning Year 2020-2021 Loss of Load Expectation Study Report.¹³ In its publicly available 2019 IRP, TVA published planning reserve margins of 17% in summer and 25% in winter.¹⁴ Duke Energy Carolinas’ publicly available 2019 IRP Update includes a 17% minimum planning reserve

¹² *In the Matter of: Electronic Application of Kentucky Utilities for an Adjustment of its Electric Rates*, Case No. 2018-00294, Rebuttal Testimony of David S. Sinclair, at 4, 5 (Feb. 22, 2019).

¹³ See Planning Year 2020-2021 Loss of Load Expectation Study Report, at 5, MISO, <https://cdn.misoenergy.org/2020%20LOLE%20Study%20Report397064.pdf>.

¹⁴ See 2019 Integrated Resource Plan, Volume I – Final Resource Plan, at 1-6, Tennessee Valley Authority, https://www.tva.gov/file_source/TVA/Site%20Content/Environment/Environmental%20Stewardship/IRP/2019%20Documents/TVA%202019%20Integrated%20Resource%20Plan%20Volume%20I%20Final%20Resource%20Plan.pdf.

margin.¹⁵ These examples show that other utilities' planning reserve margins have increased in recent years and are in line with the Companies' target reserve margin range. In addition, PJM published its 2019 PJM Reserve Requirement Study on October 17, 2019, showing forecast reserve margins of 30% and higher.¹⁶ The Companies thoroughly addressed their forecasted reserve margin on pages 26-29 of Mr. Sinclair's testimony to the 2018 Rate Case,¹⁷ and Sierra Club fails to offer specific criticism of the Companies' methodology.

2. *Clarification regarding the pace of development of renewable energy and storage*

Sierra Club seeks to clarify the Companies' statement that "compared to gas-fired technologies, the pace of renewable and battery technology development is far less certain" by explaining that the overnight capital costs for solar, for example, while varying to a greater degree year-over-year, are always in a decreasing direction, compared to overnight capital costs for gas-fired technology which are mostly flat year-over-year. While the overnight cost of capital for renewable technology has decreased in recent years, the 2019 Annual Technology Baseline ("ATB") published by the National Renewable Energy Laboratory ("NREL") reflects an *increase* in overnight capital costs for both solar and wind technology compared to the 2018 ATB. As shown in Table 1, NREL's 2019 ATB overnight capital costs for year 2018 in 2018 dollars (assuming 2% inflation) are \$1,122/kW for solar (an increase of 3% compared to the 2018 ATB) and \$1,579/kW for wind (an increase of 4% compared to the 2018 ATB).

¹⁵ See Integrated Resource Plan 2019 Update Report, at 10, Duke Energy Carolinas, <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=40bbb323-936d-4f06-b0ba-7b7683a136de>.

¹⁶ See 2019 PJM Reserve Requirement Study, Table 1-4 at 15, PJM, <https://www.pjm.com/-/media/planning/res-adeq/2019-pjm-reserve-requirement-study.ashx?la=en>.

¹⁷ *In the Matter of: Electronic Application of Kentucky Utilities for an Adjustment of its Electric Rates*, Case No. 2018-00294, Testimony of David S. Sinclair (Sep. 18, 2018); *In the Matter of: Electronic Application of Louisville Gas and Electric Company for an Adjustment of its Electric and Gas Rates*, Case No. 2018-00295, Testimony of David S. Sinclair (Sep. 18, 2018).

Table 1 – NREL ATB Overnight Capital Costs for Year 2018 (\$/kW)

	2018 ATB (Real 2016 \$)	2019 ATB (Real 2017 \$)	2018 ATB (Nominal 2018 \$)	2019 ATB (Nominal 2018 \$)
Solar	1,050	1,100	1,093	1,122
Wind	1,456	1,548	1,515	1,579

These figures reinforce, rather than contradict, the Companies’ assertion in the 2018 IRP that variations in overnight capital costs for renewable technologies are less predictable than for gas-fired technologies.

3. *Need for further study and support regarding replacement by renewables*

Sierra Club argues the Companies should complete a breakeven analysis regarding the price of natural gas or CO₂ emissions to further evaluate whether NGCC capacity will be the primary source of replacement capacity as coal resources are retired. The Companies are amenable to completing such an analysis in future IRPs.

IV. SREA Public Comments

SREA did not seek intervention in this proceeding, but filed public comments. As such, they should be afforded only the weight they are due and not treated as an untimely motion for intervention. The Companies address SREA’s public comments to demonstrate they lack merit and should be given no further consideration.

A. Review of LG&E/KU’s Renewable Energy Assumptions

SREA approves of the Companies’ use of the NREL ATB but asserts the Companies’ methodologies include “inherent additive costs that unnecessarily and artificially increase renewable energy cost assumptions,” and that the Companies’ published wind LCOE values are

roughly 40% higher than NREL's LCOE values.¹⁸ SREA correctly cites the Companies' published wind LCOE values of \$61/MWh for in-state wind and \$57/MWh for out-of-state wind. In doing so, however, SREA compare these values to NREL's 2019 ATB, which was not available at the time the Companies performed the resource screening analysis. A similar comparison of the Companies' published LCOE values for wind to NREL's 2018 ATB LCOE values for wind reveals that the Companies' LCOE values are roughly 20% higher than NREL's LCOE values. This disparity is attributable to differing financial assumptions. As shown in Table 11 on page 20 of the Companies' 2018 IRP Long-Term Resource Planning Analysis, the Companies used their cost of capital assuming 10.42% return on equity, 4.40% cost of debt, and capital structure of 47.16% debt. The 2018 ATB lists cost of capital assumptions of 9% return on equity, 3.7% cost of debt, and capital structure of 60% debt. To the extent the market has a different cost of capital, this difference will be reflected in the cost of all market available alternatives, including renewable and fossil fuel resources. The Companies evaluated all resource options using their cost of capital to ensure all resources were evaluated on an equal basis.

SREA next claims confusion regarding how "market-based energy purchases" are treated with relation to scarcity prices. Scarcity prices were contemplated only in the analysis to determine the optimal reserve margin range and have no impact on the analysis to assess long-term resource plans.

SREA further cites several other utilities' IRPs with more renewables and lower renewable LCOE values based on responses to RFPs. These responses have no bearing on the Companies' analysis. The Companies state several times throughout the IRP: "Even though the IRP represents

¹⁸ *In the Matter of: Electronic 2018 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*, Case No. 2018-00348, Southern Renewable Energy Association Public Comment at 2, 3 (Jan. 16, 2020).

the Companies’ analysis of the best options to meet customer needs at this point in time, this plan is reviewed, re-evaluated, and assessed against other market available alternatives prior to commitment and implementation.” The Companies use their cost of capital to evaluate resources in the IRP and then evaluate market available alternatives before making and moving forward with any decisions. The recently filed Renewable PPA is an example of the latter part of this process.¹⁹

B. Evaluation of Federal Tax Credits

SREA incorrectly claims the Companies did not consider federal tax incentives – specifically the Production Tax Credit (“PTC”) and Investment Tax Credit (“ITC”) – in evaluating renewables in the IRP. But as the schedule of the wind PTC provided in SREA’s public comments shows, the PTC is phased out by 2024, before the Companies contemplated the addition of resource alternatives in the 2018 IRP. The ITC schedule shows an ITC of 10% in 2024 and beyond, which the Companies included for solar as stated on page 9 of the 2018 IRP Resource Screening Analysis and on page 23 of the Long-Term Resource Planning Analysis.

C. Hybrid Renewable and Energy Storage Systems

SREA posits that the Companies did not evaluate hybrid systems. The Companies properly evaluated energy storage and renewables in the context of a vertically integrated utility. As stated in the Companies’ response to Sierra Club’s question 1-9, “The Companies’ long-term analysis did consider both battery storage and renewables, as the results in Table 5-15 include varying levels of wind, solar, and batteries as part of the resource mix. In addition to the long-term analysis, the Companies performed a near-term replacement analysis that evaluated replacing Brown 3 with a combination of battery storage and renewables and determined that such a combination was not

¹⁹ *In the Matter of: Electronic Application of Louisville Gas and Electric Company and Kentucky Utilities Company for Approval of a Solar Power Contract and Two Renewable Power Agreements to Satisfy Customer Requests for a Renewable Energy Source Under Green Tariff Option #3*, Case No. 2020-00016.

least-cost.” The Companies also elaborated on their analysis of battery storage in their response to Sierra Club’s question 2-1. Consideration of “hybrid” renewable and energy storage systems would be applicable only for an RTO where battery storage receives a capacity value and payments for ancillary services without merit.

D. LG&E/KU IRP Recommendations

SREA provided a number of recommendations which are addressed individually below.

1. LG&E/KU should move away from capacity-only or capacity-focused resource planning.
 - a. Response: This statement reflects a misunderstanding of the Companies’ analysis and methodology.
2. LG&E/KU should allow renewable energy to directly compete against existing generation units.
 - a. Response: The Companies do allow this.
3. NREL's ATB should be used for all renewable energy resource cost and performance assumptions.
 - a. Response: The Companies used NREL’s 2018 ATB, the latest data available at the time of the IRP, for cost and performance assumptions.
4. Energy storage resources should be allowed to access multiple revenue streams including but not limited to frequency control, voltage regulation, energy arbitrage, peaking and other value stacks.
 - a. Response: This comment applies to a utility in an RTO, not LG&E/KU which are not members of a RTO.
5. Cost projections for renewable energy and energy storage should continually decline over time, while performance projections should continually increase.
 - a. Response: The Companies used NREL’s ATB for cost and performance projections, and they plan to continue using NREL’s ATB moving forward.
6. Federal tax credits, including the PTC and ITC, should be incorporated for renewable energy and energy storage projects in relevant years, as provided in these comments.
 - a. Response: The Companies appropriately considered and included non-expiring federal tax credits.
7. Levelized cost of energy benchmarks (in \$/MWh values) should be provided for all energy resources. LCOE values should be like Lazard Associates' and NREL ATB values.

- a. Response: As noted above, LCOE can be a useful tool in comparing similar generating technologies, but it is not useful in performing the task at hand here, i.e., planning to reliably serve load at every moment at the lowest reasonable cost. When LCOE factors into the Companies' qualitative consideration of how best to achieve that objective, it may be cited in future filings.
8. Significant procurement of renewable energy and energy storage should occur across all portfolios.
 - a. Response: The Companies do not dictate any specific outcome but instead evaluate renewable energy and energy storage compared to other alternatives based on current forecasts for costs and performance.
9. Large customers should be allowed to directly procure renewable energy resources.
 - a. Response: The Companies provide several alternatives for large customers to procure renewable energy resources including net metering, Green Tariff Option #3, and Solar Share Program. These alternatives are completely voluntary.

V. Conclusion

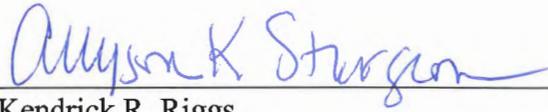
The Commission's process to periodically evaluate utility IRPs has worked well for utilities and has also served the Commonwealth and ratepayers well for over 20 years. Using the IRP process has allowed the Companies to provide continuous service at reasonable rates during that time period, never having to curtail load due to a lack of generation supply.

In their 2018 IRP, the Companies have continued to follow that process by producing a complete and thorough long-term resource plan and load forecast that fully accounts for reasonably foreseeable risks and uncertainties. Nothing in Sierra Club's or SREA's comments demonstrates the need to change that long-standing and well-functioning process. The Companies will continue to consider whether alternative analyses of possible unit retirements would improve future IRPs.

The Companies look forward to the Commission Staff's report.

Dated: February 17, 2020

Respectfully submitted,



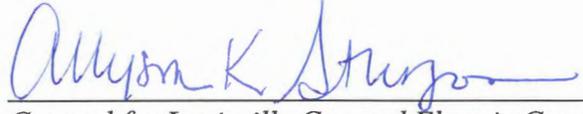
Kendrick R. Riggs
Stoll Keenon Ogden PLLC
500 West Jefferson Street
Suite 2000
Louisville, Kentucky 40202-2828
Telephone: (502) 333-6000
Fax: (502) 627-8722
kendrick.riggs@skofirm.com

Allyson K. Sturgeon
Managing Senior Counsel
Regulatory and Transactions
LG&E and KU Services Company
220 West Main Street
Louisville, Kentucky 40202
Telephone: (502) 627-2088
Fax: (502) 627-3367
allyson.sturgeon@lge-ku.com

*Counsel for Louisville Gas and Electric Company
and Kentucky Utilities Company*

CERTIFICATE OF COMPLIANCE

This to certify that Louisville Gas and Electric Company and Kentucky Utilities Company's (the "Companies") February 17, 2020 electronic filing of the Companies' Joint Response to the Comments of Sierra Club and Southern Renewable Energy Association electronic filing is a true and accurate copy of the documents being filed in paper medium; that the electronic filing has been transmitted to the Commission on February 17, 2020; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that an original paper medium of the Joint Response will be delivered to the Commission within two business days.

A handwritten signature in blue ink, reading "Allyson K. Sturges", is written over a horizontal line.

*Counsel for Louisville Gas and Electric Company
and Kentucky Utilities Company*