COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matters of:

ELECTRONIC APPLICATION OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY FOR THE JOINT INTEGRATED RESOURCE PLAN	))))	CASE NO. 2021-00393

SOUTHERN RENEWABLE ENERGY ASSOCIATION'S FINAL WRITTEN COMMENTS UPON LOUISVILLE GAS AND ELECTRIC COMPANY'S AND KENTUCKY UTILITIES COMPANY'S JOINT INTEGRATED RESOURCE PLAN

Comes now the Southern Renewable Energy Association (also "SREA"), by and through counsel, and files its Final Written Comments upon Louisville Gas and Electric Company's ("LG&E") and Kentucky Utilities Company's ("KU" collectively "Companies") Joint Integrated Resource Plan ("IRP") into the record in the instant case. SREA submits these comments consistent with Section 807 KAR 5:058 ("IRP Regulations") and the Kentucky Public Service Commission ("Commission") Order of July 15, 2022 directing comments regarding Commission Staff's Report by October 7, 2022.

SREA appreciates being able to participate in this IRP process. SREA agrees with much of the Staff's Report, especially the sentiment that integrated resource planning can be a useful planning tool, but only if taken seriously.[1] Unfortunately, it seems this IRP has not been taken seriously by the Companies. At this point in the process, there are at least three paths for the Commission to take regarding this IRP. First, the Commission could continue the instant IRP or order a new IRP be filed as soon as reasonable. Additionally,

[1] Order, (Ky. P.S.C. Sept. 16, 2022), Appendix ("Staff's Report") at page 70.

the Commission could promulgate new regulations or revise its existing IRP regulations, including, for example, a mechanism for conducting an independent IRP analysis at the Companies' expense. (On this point, even in the absence of revisions to its administrative regulations, the Commission currently has plenary authority to conduct whatever investigations, audits, and/or studies it deems necessary.) The final option is that the Commission can set this IRP aside and prepare for an almost certain Certificate of Public Convenience and Necessity ("CPCN") docket for potentially several natural gas units that could cost billions of dollars and will expose customers to volatile natural gas prices. None of these options are mutually exclusive, and each has its own set of costs and benefits.

Option 1 – Continue this IRP or require the initiation of a new IRP

There is no statutory deadline establishing a date by which the instant matter must be concluded. Until the Commission enters a final Order closing the instant case and removing it from the Commission's docket, the Commission retains plenary jurisdiction to take any procedural steps the Commission deems necessary or appropriate including, but not limited to, additional discovery, hearings, briefs upon the matter, and a revised or amended report by Commission Staff.

Further, under Kentucky's IRP regulation, Section 2(c), the Commission confirms its plenary authority for determining the schedule for when a utility must file an IRP. "The schedule [established in 807 KAR 5:058, Section 2] shall remain in effect until changed by the commission on its own motion or on motion of one (1) or more electric utilities for good cause shown. Good cause may include a change in a utility's financial or resource conditions." Given the drastic changes in resource conditions from the beginning of the IRP process to today, the Commission is warranted on its own motion to (1) continue the proceedings in the instant case or to, alternatively, (2) order the Companies to submit their next IRP as soon as reasonable in view of facts and circumstances.

First, the passage of the federal Inflation Reduction Act[2] drastically changes nearly all of the capital cost assumptions used by the Companies for all zero-carbon generation technologies including wind, solar, energy storage, nuclear, hydrogen, and carbon capture sequestration. Many of these technologies were not evaluated in the instant IRP. However, as Staff notes:

> [T]he AG and KIUC seem to tentatively support the construction of an NGCC unit without CSS to meet 2028 demand, and LG&E/KU appear to be moving in that direction as well, despite excluding that resource from the IRP's resource expansion model. Conversely, other parties support additional renewable and DSM/EE resources or at minimum believe that the plan did not fairly evaluate those resources.[3]

Next, liquid natural gas ("LNG") exports have caused natural gas price spikes that were unable to be priced into the data sources used by the Companies,[4] exposing ratepayers to higher-cost natural gas resources. Staff recognizes the significant increase in natural gas prices in Footnote 223, highlighting that, "given the significant increases in natural gas prices since LG&E/KU made their high fuel cost assessment in the IRP, the cost of nuclear now likely compares very favorably to NGCC with CCS."[5] While the Companies redacted their natural gas fuel assumptions, they did provide citations to the Energy Information Administration's 2021 Annual Energy Outlook "High Oil and Gas Resource" case; this latter data publicly available via EIA. Comparing the 2021 data to

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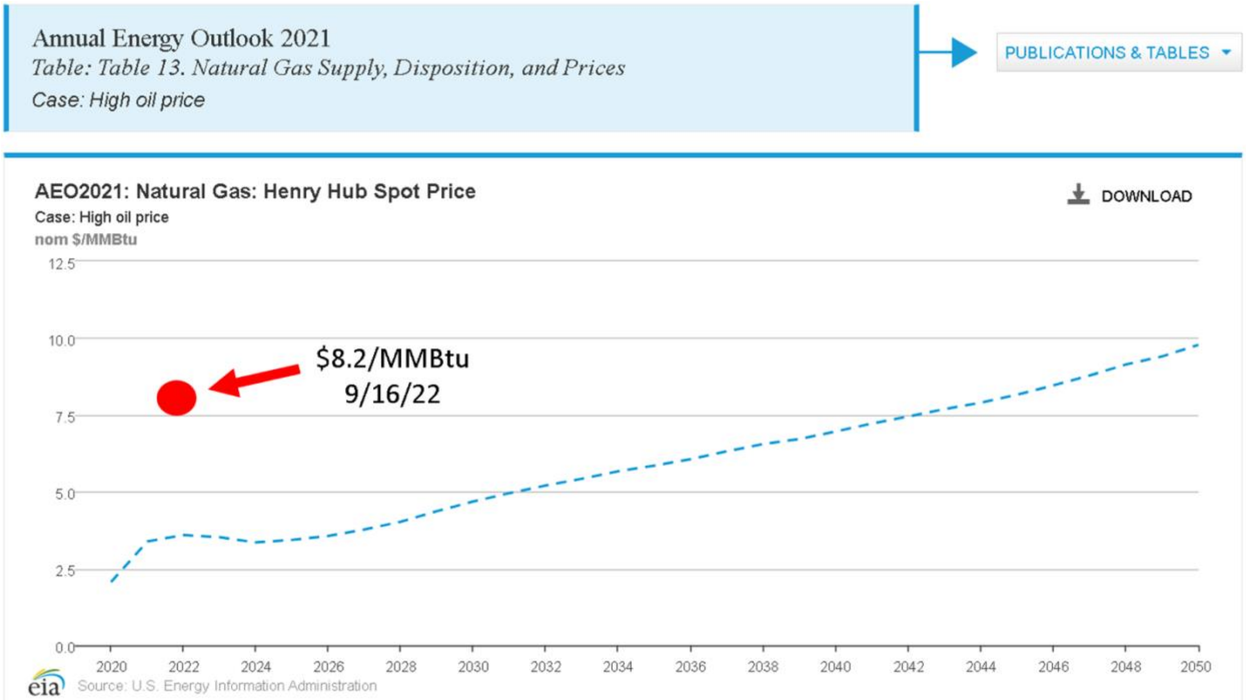
[2] Public Law No. 117-169 (Aug. 16, 2022).
[3] Staff's Report, page 67, footnote 268.
[4] IRP (filed Oct. 19, 2021), Volume I, pages 5-20.
[5] Staff's Report, page 56, footnote 223.

current natural gas prices (depicted below) clearly shows that as Bob Dylan said, "things have changed."[6]



Source: EIA AEO 2021[7], EIA 2022[8]

Further, on June 21, 2022, the Companies filed requests for NGCC generation interconnection evaluations for two 645 MW units with initial application commercial operation dates of 2027, the first step to construction of new generation units.[9] The very

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[6] Bob Dylan, Things Have Changed, on Wonder Boys – Music from the Motion Picture (Columbia Records/Sony BMG Music Entertainment), lyrics available at https://www.bobdylan.com/songs/things-have-changed/.

[7] EIA AEO 2021. [https://www.eia.gov/outlooks/aeo/data/browser/?src=-f1#/?id=13-AEO2021&region=0-0&cases=highprice&start=2019&end=2050&f=A&linechart=highprice-d113020a.72-13-AEO2021~&ctype=linechart&sid=highprice-d113020a.60-13-AEO2021~&sourcekey=0]

[8] https://www.eia.gov/dnav/ng/ng_pri_fut_s1_d.htm

[9] Louisville Gas and Electric and Kentucky Utilities (LG&E and KU) Generation Interconnection Queue Updated as of 09/06/2022 (Sorted by Queue Date) [https://www.oasis.oati.com/woa/docs/LGEE/LGEEdocs/LGE_and_KU_GI_Queue_Posting_September_06,_2022_v1.0_VS_090822.pdf]

next day, the Companies issued a vague request for proposals[10] ("RFP") with less than one month turnaround for projects to submit proposals. That RFP, like this IRP, was conducted and concluded prior to the electric industry's full understanding of the impact of the Inflation Reduction Act. More importantly, nothing in this IRP indicated the Companies were planning on constructing NGCC units or issuing an RFP for such units.

From SREA's standpoint, it appears that the Companies plan to ignore their IRP and conduct a haphazard RFP process designed primarily to build a record to justify self-build NGCC units in a later docketed proceeding. Based on Staff's Report, and the comments filed by various intervening parties, it seems that SREA's observations are shared, that a CPCN docket for NGCC units is likely and imminent. As highlighted in Staff's Report, there is a not a single party in this IRP, LG&E/KU included, who is likely to support the final IRP base case.[11] The unfortunate result is an IRP for the Companies that fails to meet the intent, the purpose, of the pertinent administrative regulation. That is a strong justification, a demonstration of good cause, to continue the current proceedings or order a new IRP to be filed as soon as reasonable.

Continuing the current IRP docket is not without risk. Given that the Companies have already shown bad faith in failing to produce an earnest IRP[12] through, among other

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[10] See Companies' Response to SREA's Post Hearing Requests for Information, Dated July 18, 2022, Item 1. "The Companies do not have a maximum size for procurement of capacity and energy in the June 2022 RFP. This will ultimately depend on the evaluation of the economics of the RFP responses along with any developments in environmental regulations that could affect retrofit versus replace decisions for existing generation assets."
[11] Staff's Report, pages 66 and 67.
[12] SREA agrees with the Companies. "No process is easy if one does it well." TE July 12, 2022 (13:39:20 to 12:41:30) (D. Sinclair, Day 1). The instant IRP, though, was not done well. Comfort and convenience to the Companies are not objectives of an IRP.

things, omitting from the IRP filing the identification and discussion of material developments in their actual internal resource planning, there is little evidence to suggest that further proceedings or a new IRP result in improvement. Further, a new IRP would have no more force of law than the current IRP and could potentially waste valuable Commission, Staff, and intervenor time and effort. However, by continuing or restarting the IRP process, the Commission would, in either scenario, use a legitimate regulatory mechanism available to ensure the IRP process in the instant and/or in future proceedings is earnest. If Commission and Staff time is consumed with an ongoing IRP *instead* of a CPCN docket, perhaps the Companies will work more earnestly and in good faith on the next IRP, or, in lay terms, do it well.

Option 2 – Revise Administrative Regulations for Implementing the IRP Requirement

If the Commission chooses not to exercise its right to continue or restart the IRP process, good cause notwithstanding, the Commission could exercise its authority under KRS 278.040(3) to adopt administrative regulations and/or revise existing regulations to further the implementation of the existing IRP framework to, among other things, cause electric utilities (that are not already doing so) to produce an IRP that contains all material information relevant to the utility's actual planning. As stated in Staff's Report, this IRP is not consistent with the Companies' expectations and is less rigorous than required by the IRP regulation.[13] One such reasonable administrative regulation to fulfill the IRP regulation would be for hiring an independent consultant to conduct a supplemental

[13] Staff's Report, page 65.

alternative IRP under the direction of and for the Commission's benefit; and recoup the cost from LG&E/KU.

The Commission has plenary authority to conduct whatever investigations that it deems necessary in carrying out its mandates under KRS Chapter 278. Expressly included is the power, pursuant to KRS 278.255, to periodic management an operations audits as well as the power to conduct any other investigation it deems necessary to determine compliance with KRS Chapter 278, the Commission's administrative regulations, and its Orders, including those pertaining to IRPs.

As an example from another jurisdiction, in the Georgia Power Company 2022 IRP, the Georgia Public Service Commission Staff independently hired consultants to run models.[14] Exercise of this type of option would provide the Commission with the ability to, for example, compare and contrast LG&E/KU's analyses against an independent evaluator's and provide unbiased advice to adequately fulfill the required IRP Rule. LG&E and KU have not in this instance provided a sufficiently reliable or meaningful IRP, and additional regulatory measures for more granular supervision of the Companies' production of an IRP appear warranted.

Further, the Commission may consider new rules that use the IRP process as an initial phase before approval of certain types of power resource contracts. Table 1 summarizes the contract oversight practices in Minnesota, Utah, Colorado, Arizona, Virginia and North Carolina and their processes for reviewing energy plans with regards to evaluating affordability and clean energy targets. These states were selected to

[14] Direct Testimony & Exhibits of Tom Newsome, Philip Hayet, Stephen J. Baron and Leah Wellborn, Georgia Power Company 2022 IRP, Docket No. 44160, May 6, 2022. [https://psc.ga.gov/search/facts-document/?documentId=190006]

compare with Kentucky based upon their having similar general commission jurisdictional authority over energy procurement of Investor-Owned Utilities (IOUs). A commission reasonableness review of IOU costs occurs before the initial commission utility contract or procurement cost authorization in all of the sampled states with the exception of Arizona; three out of the six states in the sample use the IRP process to vet contracts; while five of the six use the RPS process to evaluate power contracts. And contrary to the Companies' assertion that it is "unrealistic to incorporate actual supply-side bids"[15] into the IRP process, Colorado uses Phase 2 of its IRP proceeding to issue an RFP, to model the bids, and to get approval of those bids.[16]

Table 1. Comparative Matrix on IOU Reasonable Review Processes by State[17]

State	Approver of Contracts	Is it an IRP-related process?	Is it an RPS-related process?	Other Requirements for Approval
Arizona	Commission	Yes	Yes	Numerous requirements detailed in the text
Colorado	Commission	Yes	Yes	CPCN for some projects
Minnesota	Commission	Yes	Yes	CPCN for large projects
North Carolina	Commission in some cases	No	Yes	CPCN
Utah	Commission	No	No	Approval of the significant energy resource decision under Section 54-17-501
Virginia	Commission	No	Yes	CPCN

15 LG&E-KU Post-Hearing Response Comments (filed Sept. 6, 2022), page 3
16 4 Colo. Code Regs. § 723-3-3613(h).
17 EQ Research (May 2021). IOU Reasonableness Reviews and Exit Fees by State

Option 3 – Conclude this IRP

Of course, the Commission can choose to conclude this IRP and set the date for the next IRP in three years. However, prior to the next IRP, it is highly likely that the Companies will file an application for a CPCN later this year or early in 2023, seeking permission to construct new natural gas power plants that were not identified in the Companies' IRP as filed. It is highly likely that parties like SREA will be unable to intervene in the CPCN docket due to the high costs and extreme opposition faced from LG&E/KU for intervening, as in this docket. If the Commission chooses to conclude this IRP and close this proceeding, the Commission could adopt many of SREA's recommendations made in this IRP docket in a future CPCN docket to protect Kentucky ratepayers, such as, requiring a new IRP in a CPCN docket, hiring an independent IRP consultant in a CPCN docket, and adding conditions to CPCN approvals.

SREA Final Written Comments Upon Review of Staff's Report

SREA broadly supports Staff's Report on the Companies' IRP, specifically that:

- The IRP should include solar, wind, batteries, and hybrid resources, sited in and outside of the Companies' service area, and in several aspects[18]
- For resources that are imported into Kentucky, transmission costs should be taken into consideration[19]
- New generation resources should be allowed to compete against existing generation resources[20]

[18] Staff's Report, page 54.
[19] Staff's Report, page 55.
[20] Staff's Report, pages 62 and 63.

- Natural gas prices have increased significantly since this IRP began[21]
- The Companies' explanation around modeling carbon capture sequestration is vague and not adequately justified[22]
- Additional discussion regarding transmission transfer capabilities is warranted[23]
- Generation assumptions beyond 15 years or more can be useful[24]
- The Companies should re-issue their most recent RFP to capture the benefits of the Inflation Reduction Act[25]
- Resource acquisition plans in future IRPs should be developed as if they would actually be implemented[26]

High Reserve Margins Reflect Overreliance on Natural Gas

The Staff's Report observation that the Companies' projected Reserve Margins diverge between the winter and summer as the Companies begin to invest more in natural gas and solar over time[27] highlights a problem with overreliance on natural gas and underutilization of batteries and wind energy resources. Wind energy resources have higher capacity values during winter peak periods and lower summertime capacity values;

[21] Staff's Report, page 56, footnote 223.
[22] Staff's Report, page 54.
[23] Staff's Report, page 58.
[24] Staff's Report, pages 59 through 62.
[25] Staff's Report, page 66.
[26] Staff's Report, page 70.
[27] Staff's Report, page 64. "Despite the Companies' intent to maintain reserve margin targets of 17-24 percent in the summer and 26-35 percent in the winter, the base case plan reserve margin climbs to 45 percent in the summer by 2036; double the summer target. This is driven by the planned retirement of coal-fired baseload units, the addition of 1,600 MW of solar capacity, and the need to account for the intermittency of solar generation. Nonetheless, although the winter reserve margin is at the lower end of the winter target, a 45 percent summer reserve margin appears to be excessive and could present an excessive burden on ratepayers."

a concept recently accepted at FERC via MISO's four-season capacity accreditation construct.[28] Solar, wind, and batteries, when combined could provide a more reasonable year-round Reserve Margin than provided by the Companies in this IRP; however, because the Companies did not adequately allow the models to optimize resources, or allow resources to be imported, perhaps that is why the results skew towards a 45 percent summer reserve margin solution heavily dependent on natural gas. An independent IRP analysis that tests multiple portfolios of generation mixes to optimize the reserve margin would be helpful in determining least cost planning and reliability goals.

Transfer Analysis Needs Additional Parameters

Staff's Report recommends that, "LG&E/KU should include additional discussion of transfer capabilities in the next IRP, including a discussion of any known, significant conditions that restrict LG&E/KU's ability to import energy to serve projected load."[29] SREA broadly agrees with this recommendation; however, SREA encourages the recommendation to be more specific. LG&E/KU have already made several requests in SERTP processes that show that flows of up to 300 MW of energy from MISO, PJM, and/or TVA, would require zero additional upgrades at zero additional transmission costs.[30] The studies performed during the SERTP process were completed assuming summertime peak conditions in 2025, suggesting limited to no problems associated with

[28] Order Accepting Proposed Tariff Revisions Subject to Revision re Midcontinent Independent System Operator, Inc. under ER22-495. Commissioners Danly and Christie are concurring with separate statements attached. Commissioner Clements is dissenting etc. [https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220831-3093&optimized=false]
[29] Staff's Report, page 69.
[30] Southeastern Regional Transmission Planning 2021, Economic Planning Studies Final Results, November 17, 2021. [http://www.southeasternrtp.com/docs/general/2021/2021-SERTP-Economic-Study-Results-Final.pdf]

importing power into Kentucky during grid periods under high stress. SREA recommends that LG&E/KU evaluate multiple tiers of wind energy and solar energy imports from MISO and PJM during summer and winter peak conditions to identify least-cost energy and/or capacity import opportunities.

RTO Analyses Should Be Unbiased

Staff's Report notes that, "Finally, the Companies noted, as discussed in their 2021 RTO Membership Analysis, that they do not recommend RTO membership at this time."[31] However, Staff's Report does not discuss the various underlying motivations the Companies may have to remain outside of an RTO, such as maintaining monopoly status and opposing competition, and thus have a strong inclination to oppose RTO membership. Asking the incumbent utilities to study whether additional competition is a good thing predictably come to one conclusion: RTO membership is not recommended at this time. Still, Staff's Report should continue to recommend that the Companies conduct such an analysis.

Staff's Report also summarizes SREA expert testimony from Dr. Jennie Chen as follows:

> Dr. Chen stated that the Commission could invite the RTOs to consider assisting in evaluating the benefits and costs of an Energy Imbalance Market or Energy Imbalance Service, which are extensions of RTO energy markets for voluntary participation by non-RTO member utilities. She stated that the Commission could request that the RTO provide its modelling assistance free of charge or in the alternative could potentially obtain funding from the Department of Energy's state energy office for the RTO study.[32]

[31] Staff's Report, page 34.
[32] Staff's Report, page 45.

SREA strongly recommends that the Commission consider alternative, unbiased sources of information regarding market reform for Kentucky.

Conclusion

Kentucky is not immune to national trends and global economics. Renewable energy prices have plummeted over the past twenty years and states across the country are adding more and more clean energy to their generation mixes. While inflation and supply chain issues have recently increased renewable energy prices, such increases should be temporary and are not indicative of long-term price forecasts. Renewables will also continue to guard ratepayers from fluctuating fuel costs which are currently causing ratepayers across the country to experience significantly higher power bills. In 2021, the Southwestern Power Pool (the grid operator covering the middle portion of the country) received nearly 36 percent of its annual power from wind energy – more than any other single source, and reached an instantaneous peak of 79 percent wind powered.[33] The Midcontinent Independent System Operator forecasts that by 2030 the area that includes Indiana and Western Kentucky[34] is likely to receive approximately 30 percent of its power from wind and solar resources and only 9 percent from coal resources. By 2041, MISO forecasts that this zone may be 60 percent renewable.[35] Meanwhile, LG&E/KU's IRP has

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[33] Southwest Power Pool 2022. [https://cdn.misoenergy.org/20220922%20ERSC%20WG%20Item%2003%20SPP%20Resource%20Adequacy626395.pdf]

[34] Also known as Local Resource Zone 6

[35] Midcontinent Independent System Operator 2022. LRZ Level Assumptions and Results. Resource Assessment Workstream 2022 Regional Resource Assessment. [https://cdn.misoenergy.org/2022%20RRA%20LRZ-level%20Assumptions%20and%20Results626061.pdf]

not been a good faith effort to plan for the future, has squandered a lot of extremely valuable time, and puts Kentuckians at risk of higher rates and less reliable power.

As already described, LG&E/KU's IRP assumptions regarding natural gas prices are substantially below today's natural gas prices, even under the Companies' highest gas cost scenarios. In those high gas cost scenarios, the Companies did not assume that the Inflation Reduction Act would be available for wind, solar, batteries, hydrogen, and other zero-emission generation technologies for the next decade. Still, LG&E/KU's analysis shows a need to add 1,000-1,500 MW of solar soon under "high" gas prices (which are low compared to today's prices), with an addition 2,200-2,400 MW of solar, and up to 1,900 MW of wind, plus 2,000 MW of batteries by 2036.[36] Staff's Report notes that the Companies will have difficulty balancing more than 1,000 MWs of solar, despite some scenarios showing that to be the economically best option.[37] Effectively the Companies' report shows they are unable to adequately run the transmission system economically without the assistance of a more experienced grid operator.

The Companies are likely to file an application requesting approval for self-build natural gas units. The CPCN docket will likely include two new NGCC units for up to 1,200 MWs. The Companies will likely include the recently run RFP results as "proof" that the NGCC units are the best options available; however, as SREA notes, the RFP was rushed to completion and failed to reflect the full benefits of the Inflation Reduction Act. If the RFP is not rerun, the submissions to the prior RFP will reflect suboptimal bids for a proper comparison in a CPCN proceeding. In a world with high natural gas prices and the

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[36] IRP Volume I, Table 5-19.
[37] Staff's Report, page 49.

Inflation Reduction Act, natural gas power plants cannot compete against lower cost renewable resources with batteries.

The expected CPCN application will likely focus heavily on capacity-only benefits, instead of energy benefits, to make the case that the gas units are most needed, and the Companies will likely focus on winter-only capacity accreditation which will ignore much of the benefits associated with solar. Perhaps because "there are many gatekeepers who must be placated"[38] the Companies may propose some level of solar resources alongside the natural gas resources in the CPCN docket. In that scenario, the IRP analysis supports adding at least 1,000 MWs of solar resources. A condition of approving the CPCN application should also include that LG&E/KU join an RTO so that Kentuckians can gain the benefit of a more experienced grid operator. As a final provision of a CPCN docket, the Commission should order that an independent long-range transmission analysis be paid for by LG&E/KU, to achieve PPL's long-term goal of becoming carbon neutral.

WHEREFORE, SREA respectfully submits these Final Written Comments and requests, in the event that Staff issues a revised or amended report, that these comments be incorporated into any revised or amended report prior to the closing of the case and the removal of this case from the Commission's docket.

[38] Comments of PPL Services Corporation under RM21-17, August 17, 2022 [https://elibrary.ferc.gov/eLibrary/filedownload?fileid=B0E40865-8C2A-C865-A7DC-82AC80B00000], pg. 25-26

Respectfully submitted,

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NOTICE AND CERTIFICATION FOR FILING

Undersigned counsel provides notice that the electronic version of the paper has been submitted to the Commission by uploading it using the Commission's E-Filing System on this 7th day of October 2022. Pursuant to the Commission's Order in Case No. 2020-00085, *Electronic Emergency Docket Related to Novel Coronavirus Covid-19*, the paper, in paper medium, is not required to be filed.

/s/ Randal A. Strobo

NOTICE CONCERNING SERVICE

The Commission has not yet excused any party from electronic filing procedures for this case.

/s/ Randal A. Strobo