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May 14, 2014

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HAND DELIVERED

Jeff R. Derouen
Executive Director
Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602-0615

RECEIVED

MAY 14 2014

PUBLIC SERVICE
COMMISSION

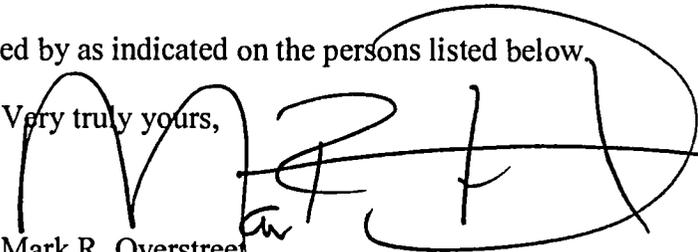
RE: Case No. 2013-00475

Dear Mr. Derouen:

Enclosed please find and accept for filing the original and ten copies of the Kentucky Power Company's response to Sierra Club's April 30, 2014 Comments on the Company's 2013 Integrated Resource Plan .

Copies of the response are being served by as indicated on the persons listed below.

Very truly yours,


Mark R. Overstreet

MRO

cc: Michael L. Kurtz (first class mail)
Kristin Henry (electronic transmission per request)
Shannon Fisk (electronic transmission per request)
Joe F. Childers (electronic transmission per request)

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

RECEIVED

MAY 14 2014

PUBLIC SERVICE
COMMISSION

In the Matter of:

INTEGRATED RESOURCE PLANNING REPORT)
OF KENTUCKY POWER COMPANY TO THE)
KENTUCKY PUBLIC SERVICE COMMISSION,) CASE NO. 2013-00475
DECEMBER 20, 2013)

* * * * *

**KENTUCKY POWER COMPANY'S RESPONSE TO COMMENTS FROM SIERRA
CLUB ON THE COMPANY'S INTEGRATED RESOURCE PLANNING REPORT**

Kentucky Power Company ("Kentucky Power" or the "Company") submitted its 2013 Integrated Resource Planning Report ("IRP Report") to the Commission on December 20, 2013. The IRP Report identified a resource plan that will allow the Company to meet the projected demand and energy requirements of its approximately 173,000 customers in eastern Kentucky at the lowest reasonable cost. This resource plan was developed utilizing the Company's thoroughly prepared forecasts of customer load requirements, commodity prices, supply-side resource costs, and demand-side resource costs and availability.

Kentucky Power, along with much of the electric generating industry, is in the midst of a sea-change in its generation portfolio. Historically, the Company has relied almost exclusively on coal-fired generation to meet its customers' needs. As shown in the IRP Report, however, Kentucky Power's planning process produced a preferred resource plan that represents a dramatic shift from the past and includes the following:

- An undivided 50% ownership interest in the environmentally-controlled Mitchell generating station in West Virginia (780 MW);

- The Big Sandy Unit 1 plant, converted to burn natural gas instead of coal (268 MW);
- The continued purchase of power from the Rockport generating station (393 MW);
- A significant expansion of the Company's demand side management (DSM) programs;
- The purchase of the output of the ecoPower Hazard, LLC biomass plant starting approximately in 2017 (58.5 MW);
- Entry into a power purchase agreement for wind power (100 MW) in 2015;
- Increased deployment of customer-owned solar generation by 2020; and
- Installation of utility-scale solar generation (10 MW) by 2020.

This resource plan is based on the Company's evaluation of the best available information at the time it was prepared, and it is not a commitment to acquire any resource or undertake any course of action. Dramatic shifts in the power generating sector due to advancements in technology and emerging regulations make resource planning on this scale critical, but also challenging. Kentucky Power constantly monitors regulatory and technology developments as well as customer need and will use the most current information to make any resource acquisition decisions.

Kentucky Power appreciates Sierra Club's interest and participation in the IRP process. Nevertheless, a number of its comments miss the mark, are without legal basis, or otherwise should not guide the Commission Staff's review of the IRP Report. Kentucky Power acted reasonably and in compliance with 807 KAR 5:058 in preparing the IRP Report.

I. LEGAL STANDARD

In its comments, Sierra Club suggests that the Commission's review of the Company's IRP should be "guided by the overall requirement that utility rates are 'fair, just, and

reasonable.”¹ Sierra Club’s attempt to conflate the Commission’s review of the Company’s IRP report with that of an application for rate adjustment finds no support in Chapter 278 of the Kentucky Revised Statutes, the Commission’s regulations, or its precedent. Sierra Club relies on two statutes, KRS 278.030 and KRS 278.040, relating generally to a utility’s right to “demand, collect, and receive fair, just, and reasonable rates” and the Commission’s exclusive and plenary jurisdiction over utility rates.² Neither statute addresses the Commission’s review of a utility’s IRP report, nor requires that such review should “be guided by,”³ much less turn on, whether the rates that would result if the plan identified in the IRP are “fair, just, and reasonable.”⁴

More fundamentally, an IRP is a planning document. It is not an application for a certificate of public convenience and necessity to construct the identified resources, much less an application by the utility to recover the costs of the identified resources through rates.

Traditionally, a utility’s rates are adjusted by reviewing the utility’s complete finances – revenues, expenses, and capital costs – and not simply an isolated aspect thereof.⁵ Indeed, it is unclear how the Commission would determine in an IRP proceeding whether a particular resource plan would produce “fair, just, and reasonable rates” given the significantly different information required to be filed with the IRP⁶ and with a general rate application.⁷

¹ Sierra Club Comments at 4.

² *Kentucky Public Service Commission v. Commonwealth ex rel. Conway*, 324 S.W.3d 373, 377 (Ky. 2010), which Sierra Club also cites, likewise recognizes the Commission’s plenary ratemaking authority.

³ Sierra Club Comments at 4.

⁴ *Id.*

⁵ *In The Matter Of: Big Rivers Electric Corporation’s Proposed Mechanism To Credit Customers Amounts Recovered In Judicial Proceedings Involving Fuel Procurement Contracts*, Case No. 94-453 at 5-6 (Ky. P.S.C. February 21, 1997). *See also*, *Kentucky Public Service Commission v. Commonwealth ex rel. Conway*, 324 S.W.3d 373, 382 & n. 23 (Ky. 2010).

⁶ 807 KAR 5:058.

⁷ 807 KAR 5:001, Section 16; 807 KAR 5:001; 807 KAR 5:011.

Commission precedent is clear that when reviewing a utility's IRP report, the Commission must determine whether the utility's actions in preparing the IRP were reasonable,⁸ and whether the IRP provides for "an adequate and reliable source of electricity to meet forecasted electricity requirements at the lowest possible cost."⁹ Thus, for example, the Commission must evaluate whether the assumptions and procedures used by the utility in preparing the IRP report were reasonable, not whether the rates that would result if the plan were implemented would be "fair, just, and reasonable." Kentucky Power did just that.

II. RESPONSES TO COMMENTS

Kentucky Power's resource plan provides for an adequate and reliable supply of electricity at the lowest possible cost given current regulations and reasonable expectations and assumptions of future costs and regulations. Because there is no need to make decisions regarding the purchase or disposition of any Kentucky Power capacity resources prior to the next IRP cycle, many of the arguments that Sierra Club makes in their comments, in addition to being factually incorrect and made without proper context, are premature. Kentucky Power's responses to Sierra Club's specific comments are included below.

A. **Kentucky Power Properly Considered its Obligations Under the Unit Power Agreement for the Rockport Plant.**

1. Kentucky Power Cannot Terminate the Rockport Agreement.

The Sierra Club suggests that the Company's IRP is "a disappointing return to business as usual"¹⁰ with the Company planning long-term overreliance on coal generation. The portion

⁸ See, Staff Report on the 2009 Integrated Resource Plan of Kentucky Power Company, Case No. 2009-00339 (2009 Staff Report) at 17, 24, and 45 (discussing the reasonableness of the Company's 2009 IRP forecasting, DSM analysis, and supply-side assessment).

⁹ 807 KAR 5:058, Section 8 (1).

¹⁰ Sierra Club Comments at 2.

of Kentucky Power's preferred portfolio fired by coal includes a 50% undivided interest in the Mitchell generating station and the unit power agreement to purchase 393 MW from AEP Generating Company's (AEG) Rockport Plant. Sierra Club's comments fail to consider that Kentucky Power receives its power from the Rockport facility through a unit power agreement with AEG that remains in effect through December 2022. The unit power agreement is a "take or pay" contract meaning that even if Kentucky Power were to find another source for the power it receives from Rockport, it would still be obligated to pay for the Rockport power. Kentucky Power cannot simply terminate the agreement.

As the Company discussed during the informal conference on April 15, 2014, any decisions about future contractual relationships relating to the Rockport plant will be better addressed in the Company's next (2016) IRP filing when there is likely to be more certainty about key variables, notably potential restrictions on greenhouse gas emissions.

2. Environmental Compliance Costs were Properly Considered.

Sierra Club also asserts that the Company ignored or understated environmental compliance costs associated with the coal-fired generation resources in the preferred portfolio.¹¹ Any environmental compliance cost associated with the Mitchell generating station were made available during Case No. 2012-00578 and included in the Company's analysis. Based on that analysis, the Commission concluded that the transfer of a 50% undivided interest in the Mitchell generating station was the least cost alternative for the Company.¹² With regard to Rockport,

¹¹ *Id.* at 6-8.

¹² Order, *In the Matter of: The Application of Kentucky Power Company For: (1) A Certificate of Public Convenience And Necessity Authorizing The Transfer To the Company Of A Fifty Percent Undivided Interest In The Mitchell Generating Station And Associated Assets; (2) Approval Of The Assumption By Kentucky Power Company Of Certain Liabilities In Connection With The Transfer Of The Mitchell Generating Station; (3) Declaratory Rulings; (4) Deferral of Costs Incurred In Connection With The Company's Efforts To Meet Federal Clean Air Act And Related Requirements; And (5) For All Other Required Approvals And Relief*, Case No. 2012-00578 at 24-27 (Ky. P.S.C. October 7, 2013).

only costs after 2022 are relevant for decision making because, as described above, Kentucky Power cannot simply terminate the unit power agreement early. Even so, as the Company explained during the informal conference, filings in Indiana regarding compliance costs for the Rockport Plant clearly favor continued operation of that facility.¹³

The Sierra Club also brings up potential costs associated with future implementation of the Cross State Air Pollution Rule (“CSAPR”).¹⁴ On April 29, 2014 – four months after the IRP was filed – the Supreme Court reversed a lower court decision vacating CSAPR and remanded the case to the D.C. Circuit for further proceedings consistent with the Court’s opinion.¹⁵ The decision does not automatically “reinstate” CSAPR, and the Clean Air Interstate Rule remains in effect. As noted by the Supreme Court,¹⁶ and acknowledged by counsel for EPA during oral argument, this case must return to the D.C. Circuit for further proceedings, which could take a substantial period of time and may impact the reductions required by any final rule. Moreover, if the program is reinstated with the allowance allocations included in the version of CSAPR reviewed by the Supreme Court, the inherent flexibility offered by an allowance-based approach and the emissions reductions that will result from installation of controls and unit retirements that will be necessary to meet MATS requirements are anticipated to achieve compliance.

¹³ In *Cause 44331*, the Indiana Utility Regulatory Commission approved the application of Indiana & Michigan Power Company, Kentucky Power’s sister company within AEP, for a certificate of public convenience and necessity for the installation of dry sorbent injection systems on Rockport Units 1 & 2. A copy of the order in that case is available at the following link: https://myweb.in.gov/IURC/eds/Modules/Ecms/Cases/Docketed_Cases/ViewDocument.aspx?DocID=0900b631801a45f5

¹⁴ Sierra Club Comments at 10-11.

¹⁵ *Environmental Protection Agency v. EME Homer City Generation, L.P.*, No. 12-1182, 572 U.S. ___ (2014).

¹⁶ *Id.*, slip op. at 32.

Sierra Club further expresses concern, based upon modeling performed by Ms. Sears, about the Rockport Plant not being able to meet future emission limitations arising from the recently promulgated 1-hour SO₂ NAAQS.¹⁷ As Sierra Club notes, state implementation plans for the SO₂ NAAQS will not be required until 2019 or 2022.¹⁸ Moreover, prior to the modification of the NSR Consent Decree, AEP critiqued the modeling analysis prepared by Ms. Sears. That analysis demonstrated that actual air quality monitoring data collected in the immediate vicinity of the Rockport Plant have not recorded an annual design value in excess of the one-hour standard since 2005, that continued improvements in air quality in the region have been recorded since that time due to reductions in the SO₂ emissions from other nearby significant sources, and that the additional reductions achieved through the installation of DSI systems at the Rockport Plant will only continue to improve air quality near the plant.

3. Any Evaluation of Not Renewing the Rockport Agreement Would Be Speculative at this Point.

Sierra Club states that the Company should have evaluated scenarios where the AEG unit power agreement is not renewed after 2022.¹⁹ There is little practical reason to do so for at least three reasons. First, because Kentucky Power cannot simply terminate the Rockport unit power agreement, there is nothing the Company can do in the near-term to replace the power from the Rockport units. Next, any evaluation would be based on assumptions that will likely change over the next 3-5 years; and finally, until the terms of a replacement contract can be reasonably estimated, the result of any such evaluation would be to wait and see whether a future contract would result in a least-cost solution. Finally, the Sierra Club notes that the cost of environmental

¹⁷ Sierra Club Comments at 11-13.

¹⁸ *Id.* at 12.

¹⁹ *Id.* at 9.

retrofits at Rockport to meet various regulatory and Modified Consent Decree requirements will be approximately \$81 million over the next five years which equates to approximately \$206/kW.²⁰ Considering that the most likely alternative for the baseload generation provided by Rockport would be a new, efficient natural gas combined cycle plant with costs in the \$1200-\$1300/kW range, and with higher variable costs than from Rockport, it is clear that the continued operation of Rockport will likely continue to be the lowest cost alternative.

B. Kentucky Power Considered a Reasonable Range of Resource Portfolio Options.

In its comments, Sierra Club asserts that Kentucky Power has failed to consider a reasonable range of resource portfolio options.²¹ The IRP Report refutes this claim. Kentucky Power analyzed the practical spectrum of resources with reasonable cost assumptions. These included natural gas-fired generation, wind, utility and distributed solar, demand response, and energy efficiency (EE).

Kentucky Power is not a large utility, and as such, its portfolio of generating assets is relatively small. Considering the long-term investments the Company has already made in its generating portfolio, the opportunities for variation is limited. Accordingly, Kentucky Power's generating portfolio will be similar under all economic scenarios. Sierra Club's comments appear directed at the perceived need to evaluate Kentucky Power's share of the Rockport Plant's generation at the end of its current contract with AEG. Because the earliest the Company would undertake such an evaluation is beyond even the next IRP, and because an evaluation of Rockport's long-term viability before the Indiana Utility Regulatory Commission showed that it remained the lowest cost alternative,²² the assumption of a continuation of that contract is

²⁰ *Id.* at 10.

²¹ *Id.* at 6.

²² *See*, f.n. 13, *supra*.

reasonable. Similarly, the long-term economics of the Mitchell Plant transfer, including the required compliance costs, were thoroughly reviewed in Case No. 2012-00578, and Kentucky Power's reliance on the continued operation of the Mitchell generation station is reasonable. Considering this, the additional alternatives evaluated by the Company in the IRP Process represent a reasonable range of resource alternatives.

C. Kentucky Power Utilized a Reasonable Proxy for Carbon Prices.

Sierra Club claims that the CO₂ prices Kentucky Power used in developing its preferred resource plan are deficient.²³ It does so by relying on the proposed carbon pricing regime promoted by Synapse, claiming that the Synapse forecast is more reliable.²⁴ Kentucky Power's carbon pricing is based on a thorough analysis of the likely economic impacts of potential greenhouse gas regulations and has been used in numerous recent proceedings before the Commission.²⁵ In addition to input from AEP-internal subject matter experts, Kentucky Power receives insight from energy consultancies such as Cambridge Energy Research Associates, Wood Mackenzie and others which support the current forecast of carbon pricing.

EPA is scheduled to promulgate draft rules on greenhouse gas emissions from existing sources under Section 111(d) of the Clean Air Act this summer. When EPA promulgates the rules, the debate over the form and potential impact of greenhouse gas regulations will be narrowed. Until that occurs, Kentucky Power's considered assumptions about carbon prices are reasonable.

²³ Sierra Club Comments at 15-18.

²⁴ *Id.* at 16.

²⁵ *See*, Case No. 2012-00578 (application for approval of transfer of an undivided 50% interest in the Mitchell generating station) and Case No. 2013-00430 (application to for approval to convert Big Sandy Unit 1 to natural gas).

D. Kentucky Power Reasonably Evaluated Energy Efficiency in Developing the IRP Report.

Sierra Club raises two issues with Kentucky Power's analysis of energy efficiency resources as part of its IRP process. First, Sierra Club contends that Kentucky Power modeled energy efficiency resources incorrectly.²⁶ Second, Sierra Club argues that Kentucky Power failed to properly evaluate energy efficiency because vast amounts of energy efficiency exists for Kentucky Power to use as a resource and that it costs almost nothing to implement.²⁷ Neither of Sierra Club's arguments have merit.

1. Kentucky Power Properly Modeled Energy Efficiency.

Sierra Club argues that EE resources must be modeled on a levelized cost basis and criticizes the use of using a first-year savings metric to describe costs.²⁸ To be clear, Kentucky Power modeled these resources based on their initial cost to implement ("acquisition cost") and their useful life.²⁹ This is the most practical way to model the costs of these resources within the *Plexos LP* long-term optimization model. Additionally, because the costs of non-lighting measures are significantly higher than those of lighting measures, it is not surprising that the cost of a portfolio excluding or limiting lighting is higher than the costs of portfolios that are constituted primarily with lighting measures, such as Vermont's or virtually all other programs.

²⁶ Sierra Club Comments at 20-23.

²⁷ *Id.* at 23-25.

²⁸ *Id.* at 22-23.

²⁹ IRP Report at 108, Table 12.

For example, the four-year acquisition cost of \$330/first-year MWh quoted by Sierra Club³⁰ for Vermont breaks down in the following manner:³¹

	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>Average</u>
Lighting Savings (MWh gross)	48,538	67,742	67,394	77,885	65,390
Non-Lighting Savings (MWh gross)	20,211	30,741	25,090	35,787	27,957
Lighting Program Costs (\$000)	11,607	17,471	18,790	18,148	16,504
Non-Lighting Costs (\$000)	12,325	14,324	13,441	13,852	13,486
Lighting Acquisition Costs \$/MWh	239	258	279	233	252
Non-Lighting Acquisition Costs \$/MWh	610	466	536	387	500
Total	\$ 348	\$ 323	\$ 349	\$ 282	\$ 325

Sierra Club also described Kentucky Power's acquisition cost as \$873/MWh and \$545/MWh for commercial and residential programs, respectively.³² However, that is incorrect. If that were the case, the resources would likely not have been added. The Preferred Portfolio adds incremental EE resources in the following schedule:

³⁰ Sierra Club Comments at 23.

³¹ Data from Efficiency Vermont annual reports, available at <https://www.encyvermont.com/About-Us/Oversight-Reports-Plans/Annual-Reports-and-Plans>. Gross values used as that matched closest the \$330/MWh acquisition costs quoted.

³² Sierra Club Comments at 23.

	Incremental Cost (\$)	Incremental Energy Savings (MWh)	Acquisition Cost (\$/MWh)
2014	1,894,000	5,000	379
2015	3,660,000	9,000	407
2016	4,625,000	10,000	463
2017	4,687,000	10,000	469
2018	4,769,000	10,000	477
2019	4,861,000	10,000	486
2020	4,958,592	10,000	496
2021	5,059,176	10,000	506
2022	5,165,320	10,000	517
2023	5,274,583	10,000	527
2024	5,391,096	10,000	539
2025	5,512,715	10,000	551
2026	5,642,231	10,000	564
2027	5,776,398	10,000	578
2028	5,919,750	10,000	592

Simply put, Kentucky Power properly modeled the costs associated with implementing and maintaining EE programs.

2. Sierra Club's Reliance on Other Utility Energy Efficiency Programs is Misguided.

Regarding the apparent abundance and cost of energy efficiency resources, Sierra Club mistakenly relies on the reported face-value accomplishments of utilities that are not directly comparable and extrapolates those results onto Kentucky Power and out into the future.³³ There are multiple problems with this approach. In particular, it fails to recognize the high prevalence of manufactured homes in Kentucky Power's service territory and the statutory ability of industrial customers (who constitute a large portion of Kentucky Power's load obligations) to opt out of programs. The unique challenges facing Kentucky Power and problems with Sierra Club's reliance on other utilities' EE programs are described in greater detail in the Company's

³³ Sierra Club Comments at 24.

May 8, 2014 Response to the Comments of Sierra Club in Case No. 2013-00487, which is incorporated by reference.

E. Kentucky Power is Pursuing Cost-Effective Energy Savings Opportunities.

Sierra Club argues that Kentucky Power is failing to pursue cost-effective energy savings, in particular lighting programs, and contends that, “federal standards alone will not eliminate inefficient lighting.”³⁴ Perhaps that is true in the short-term, but by 2020 all screw-in lighting will be required to be 75% more efficient than traditional incandescent bulbs.³⁵ Most importantly, Kentucky Power’s load forecast reflects this eventuality.³⁶ Any amount of lighting “savings” on top of a forecast that assumes compliance with the law is double-counting. Further, there is mounting evidence that CFL programs’ effectiveness is less than is touted.

For example, Massachusetts, which has claimed over 2% per year in annual energy savings in the years 2010-2012, relying primarily on lighting programs, conducted a thorough study of CFL saturations. During this period, CFL socket saturations actually declined (to something less than 30%) posing the question, “where have all the program CFLs gone?”³⁷ Its study concluded that as the program funded CFLs burned out (after periods that were less than the stated average lights of the bulbs), they were replaced with new, non-program CFLs meaning that the reductions were not solely attributable to the lighting programs. In essence, a state that claims outsized savings related primarily to lighting programs seems to hew to the national

³⁴ *Id.* at 25-27.

³⁵ IRP Report at 81.

³⁶ *Id.* at 38-39.

³⁷ Results of the Massachusetts Onsite Compact Fluorescent Lamp Surveys, NMR Group, 10/23/2012, at IV and 7, Table 2-4, available at http://www.ma-eeac.org/Docs/8.1_EMV%20Page/2012/2012%20Residential%20Studies/Lighting%20Onsite%20Report%2010.23.12%20Final.pdf.

averages despite very large program expenditures. There may be debate about whether efforts should be increased or decreased in light of these findings, but it is certainly true that reported savings from other states can neither be taken at face value nor automatically applied to Kentucky.

As part of the Stipulation and Settlement Agreement in Case No. 2012-00578, Kentucky Power has committed to a considerable expansion of its DSM/EE programs. As part of this expansion, Kentucky Power is preparing a market potential study. This study will provide the Company with valuable information on the types of cost-effective opportunities available within Kentucky Power's service territory. With the information from the market potential study, the Company will be able to ensure that the expansion of its programs occurs in the most cost-effective manner possible.

F. The Company Reasonably Considered the Value of Solar Resources.

Sierra Club attempts offers arguments made on behalf of the solar industry in other parts of the country, with different solar potentials, regarding the value of solar generation installed in the service territory of Kentucky Power.³⁸ The flaws in this one-size-fits-all approach are obvious: Kentucky Power is a winter-peaking utility in a summer-peaking RTO in a region of the country where costs are low and the sun doesn't shine as much as it does in parts of the country where solar power is better suited. Sierra Club's expert, Mr. Karl Rábago, begins his critique by pointing to a North Carolina report which is very similar methodologically to how Kentucky Power valued distributed solar resources.³⁹ However, critical distinctions exist between Kentucky Power's methodology and that used in the North Carolina report:

³⁸ Sierra Club Comments at 34-36.

³⁹ Comments of Karl. A. Rábago, Rábago Energy LLC, on Behalf of Sierra Club ("Rábago Comments") at 3.

1. Kentucky Power, unlike the utilities in North Carolina, is a winter-peaking utility. This difference negates the value associated with avoided transmission and distribution capacity. In fact, the Crossborder Report states that, [distributed solar] “can avoid transmission capacity costs, but only to the extent that solar is producing during the peak demand periods that drive load-related transmission investments.”⁴⁰
2. Avoided emissions costs from CO₂ are included in Kentucky Power’s cost of energy at a reasonable value.⁴¹ The Crossborder Report adds a range of \$4-22/MWh (levelized) for CO₂ costs.⁴² The upper end of the range includes a CO₂ cost of \$34/ton beginning in 2013, and increasing to \$61/ton by 2034.⁴³
3. In the Crossborder Report, avoided generation capacity is valued at a combustion turbine, or “peaker”, cost.⁴⁴ Kentucky Power correctly uses the (currently considerably lower) cost of capacity in the PJM market.⁴⁵ There are minor differences in the assumed capacity value (KPCo uses 38% as prescribed by PJM where 42%, also prescribed by PJM for the North Carolina region, is assumed in the Crossborder Report).

If the values associated with these non-applicable and/or non-monetized “benefits” are stripped away, and PJM market capacity prices are substituted for combustion turbines, this is the exact methodology followed by Kentucky Power.

Mr. Rábago devotes several pages of his report to describe what, in his view, a full “value of solar” analysis should include.⁴⁶ The IRP Report and Kentucky Power’s response to discovery requests shows that the solar options modeled as part of the IRP process included many of the components of Mr. Rábago’s preferred approach. In particular, it included

⁴⁰ Crossborder Energy, the Benefits and Costs of Solar Generation for Electric Ratepayers in North Carolina, October 18, 2013 (“Crossborder Report”) at 5.

⁴¹ IRP Report at 154-58.

⁴² Crossborder Report at 3.

⁴³ *Id.* at 15.

⁴⁴ *Id.* at 8.

⁴⁵ Kentucky Power’s Response to Sierra Club Data Request 2-19.

⁴⁶ Rábago Comments at 4-5.

provisions for line losses,⁴⁷ accounted for the hourly load characteristics of solar generation and the capacity value within PJM,⁴⁸ valued the contributions to avoiding transmission and distribution investment (at \$0 because of the winter peaking nature of Kentucky Power's customers' demand),⁴⁹ included the value of dispatching fossil units less (which is extremely limited when modeling within a large RTO that dispatches units based on their relative dispatch costs),⁵⁰ and included costs for CO₂ compliance.⁵¹ The only piece missing in Kentucky Power's analysis, according to Mr. Rábago, is a value associated with the reduced price volatility. Yet Mr. Rábago himself admits that quantifying such a value is "challenging."⁵² Because there is not an accepted way to assign value for avoiding price volatility, utilities typically perform risk analysis to evaluate the potential volatility impact. Kentucky Power reasonably performed such a risk analysis.⁵³

Mr. Rábago further states, incorrectly, that Kentucky Power employed a 15% discount rate to evaluate solar.⁵⁴ Nowhere is a 15% discount rate used. The Company reasonably used its weighted-average cost of capital (WACC) of 8.66% in all calculations.⁵⁵

⁴⁷ Kentucky Power's Response to Sierra Club Data Request 2-28.

⁴⁸ *Id.*

⁴⁹ IRP Report at 162; Kentucky Power's Response to Sierra Club Data Request 2-34.

⁵⁰ Kentucky Power's Response to Sierra Club Data Request 2-35.

⁵¹ Kentucky Power's Response to Sierra Club Data Request 2-36.

⁵² Rábago Comments at 6.

⁵³ IRP Report at 166-70.

⁵⁴ Rábago Comments at 7.

⁵⁵ Kentucky Power's Response to Sierra Club Data Request 1-9, Attachment 1.

Mr. Rábago also challenges Kentucky Power's conclusions that the rate of solar adoption decreases or is flat over time, even as prices decline.⁵⁶ What he has, perhaps, omitted to factor into his analysis is the fact that Kentucky Power expressly and reasonably included in its analysis the expiration of the investment tax credit in 2016.⁵⁷ As for the rate of solar adoption continuing to grow into the future, in the face of any price scenario, declining or otherwise, it is mathematically impossible for adoption rates to continue to escalate as there are a finite number of customers willing to install distributed solar generation.

Mr. Rábago also criticizes Kentucky Power's use of the net metering rate as its cost of distributed solar generation.⁵⁸ Kentucky Power's use of the net metering rate as a value for the cost of distributed solar is consistent with the methodology used in the Crossborder Report Mr. Rábago cites for support.⁵⁹ In addition, Mr. Rábago seems to insist that as the costs for customers to install solar panels decline, Kentucky Power should then use those costs to evaluate those resources but continue to pay for the resource at the net metering rate, or higher.⁶⁰ This proposal only serves to artificially inflate the value of distributed solar generation within Kentucky in order to justify paying not only the net metering rate but some undetermined amount above that, all at the expense of Kentucky Power's other customers. Regardless of the costs paid by the customers to install and operate solar panels, Kentucky Power is required to

⁵⁶ Rábago Comments at 7.

⁵⁷ IRP Report at 163.

⁵⁸ Rábago Comments at 8.

⁵⁹ Crossborder Report at 21.

⁶⁰ Rábago Comments at 12.

pay the retail rate for net metering customers.⁶¹ Kentucky Power reasonably used the net metering rate as its costs of distributed solar generation.

Finally, Mr. Rábago mischaracterizes Figure 23 of the IRP Report, which compares solar output and the Kentucky Power system load, as “hypothetical.”⁶² Figure 23 very readily shows Kentucky Power’s actual load and the actual output of a solar resource located in neighboring Ohio.⁶³ It is unnecessary and unreasonable for Kentucky Power to conduct a study of site-specific solar locations in Kentucky to understand the difference between the generating capability of a solar panel in winter and summer. There simply is no significant (or otherwise) avoided transmission and distribution investment as a result of installing solar panels when a utility is winter-peaking. Kentucky Power’s use of data from a nearby solar facility for this analysis was reasonable.

G. Kentucky Power Cannot Reasonably Offer Energy Efficiency Resources into the PJM Base Residual Auction (“BRA”).

Sierra Club also argues that “the Commission should implement a process now to ensure that Kentucky Power Company is effectively bidding 75% of all planned efficiency resources into the Annual BRAs.”⁶⁴ Imposing such a requirement as part of the IRP process is contrary to the Commission’s own regulation, which identifies the contents of the Commission Staff’s report of its review of the IRP:

⁶¹ KRS 278.466.

⁶² Rábago Comments at 8.

⁶³ IRP Report at 163, Figure 23; Kentucky Power’s Responses to Sierra Club Data Requests 1-9, Attachment 1 and 2-3 (identifying the Wyandot Solar Facility in Ohio as the basis for evaluating solar resources in the IRP).

⁶⁴ Sierra Club Comments at 33.

Based upon its review of a utility's plan and all related information, the commission staff shall issue a report summarizing its review and offering its suggestions and recommendations to the utility for subsequent filings.⁶⁵

Sierra's Club's suggestion, if adopted by the Commission in this proceeding, would alter the Commission's regulation and violate KRS 13A.130(1)(a) and KRS 13A.130(1)(b).

In addition, Kentucky Power does not operate on the scale that the large Ohio utilities do, which makes the sale of EE capacity in the BRA risky. If capacity prices settle at \$59/MW-day, as in the latest (DY 2015/2016) auction, Kentucky Power would assuredly lose money.

Additionally, the Ohio utilities have been subject to de-regulation and are "unbundled," meaning they must purchase all of their capacity in the PJM market. Any capacity that is generated from energy efficiency assets cannot be earmarked for use by the load serving entity and, therefore, selling at any price (as long as it covers their costs to measure and evaluate the resources) helps to reduce rate-payer costs. In a vertically integrated utility such as Kentucky Power that participates in PJM as a FRR entity, energy efficiency assets can be used to meet part of the Company's capacity obligations and may serve as a valuable hedge in the event of an unforeseen outage at one of its generating plants. If the energy efficiency resources are "sold" at auction, Kentucky Power loses that capability. Compelling Kentucky Power, whose situation is completely different from an unbundled Ohio distribution company, to sell energy efficiency assets into a PJM auction is not advisable and would deprive Kentucky Power management of the flexibility it requires in planning.

Adding demand-side resources for the sole purpose of selling capacity, and in turn, relinquishing title to that capacity such that it cannot be used to satisfy the utility's own capacity requirements, is at best speculative. However, as indicated during the informal conference,

⁶⁵ 807 KAR 5:058, Section 11(3). The utility is required to "respond to the comments and recommendations in its next integrated resource plan filing." 807 KAR 5:058, Section 11(4).

Kentucky Power will continue to evaluate the opportunity for bidding any excess capacity into the BRA.

H. Kentucky Power Reasonably Considered Demand Response as a Resource.

Sierra Club criticized Kentucky Power's evaluation of demand response resources claiming that the Company did not thoroughly evaluate demand response resources and did not include any resources in its plan.⁶⁶ Kentucky Power currently has time-of-day/demand response tariffs available to residential, commercial, and industrial customers. Additional options only adds to the cost for rate-payers. Adding additional capacity in the form of demand response will further increase the long-capacity position of Kentucky Power. Selling demand response capacity in the PJM auction, so that it can no longer be used to satisfy one's own capacity requirements, amounts to speculating in the capacity market and exposes Kentucky Power's customers to unnecessary risk. Kentucky Power reasonably evaluated demand response resources in its IRP Report.

I. Kentucky Power Reasonably Considered Wind Resources in its IRP Report.

Sierra Club cites a 2012 DOE Wind Technologies Market Report to suggest that Kentucky Power did not fully evaluate wind resources. Sierra Club makes this claim despite Kentucky Power's inclusion of 100 MW of production tax credit ("PTC")-eligible wind in its preferred resource plan. Carefully selecting phrases out of the DOE report, Sierra Club makes its argument without the proper context. Citing figures such as "the average levelized prices for long-term wind energy power purchase agreements dropped to \$40/MWh in 2011-2012"⁶⁷ and that "wind power produced more than 12% of energy generation in nine states,"⁶⁸ Sierra Club

⁶⁶ Sierra Club Comments at 28-30.

⁶⁷ *Id.* at 36.

⁶⁸ *Id.*

attempts to leave the impression that cheap wind is plentiful, everywhere. Of course, on the very same pages of the cited report, phrases more relevant to the situation in Kentucky are found: “Relative Interest in Wind May Be Declining,”⁶⁹ “low wholesale electricity prices continued to challenge the relative economics of wind power,”⁷⁰ the “windy Interior of the country was the lowest cost region,”⁷¹ and that in 2012, 83% of the wind capacity built was in states with a Renewable Portfolio Standard (RPS).⁷²

Because there were no utility-scale projects built in the Southeast U.S. in 2012,⁷³ cost data does not exist. However, in the nearby “Great Lakes” region, costs ranged from \$50-70/MWh.⁷⁴ The expiration of the Federal PTC in 2013 only exacerbates this situation. Accordingly, Kentucky Power’s decision to exclude non-PTC wind resources in Kentucky’s IRP, which does not even require additional capacity, was reasonable.

J. Kentucky Power Reasonably Considered Future Demand from the Mining Sector in its Load Forecast.

Sierra Club comments that the Company overstated future demand from the coal mining sector in the load forecast used in the IRP process.⁷⁵ Kentucky Power strives to provide the most reasonable and accurate forecast possible, given the information at the time the forecast is developed. In its comments, Sierra Club states, “Despite these ongoing (and accelerating) declines, the load forecast assumes that energy use from the coal mining sector will remain

⁶⁹ U.S. Department of Energy, 2012 Wind Technologies Market Report (Aug 2013) at v.

⁷⁰ *Id.* at viii.

⁷¹ *Id.* at vii.

⁷² *Id.* at ix.

⁷³ *Id.* at 8, Figure 4.

⁷⁴ *Id.* at vii.

⁷⁵ Sierra Club Comments at 37.

steady throughout the IRP planning period and beyond, with only minor changes to the sector expected all the way through 2042.”⁷⁶

In reality, the Company’s forecast correctly projected a steep decline in 2013 and additional decline in 2014.⁷⁷ The longer term forecast projects some stabilization in the mining activity, but mine power sales are forecast to remain nearly 30 per cent below 2011 levels for the duration of the forecast period.⁷⁸ Due to the date it was prepared, the 2013 forecast was based on two months of actual data and ten months of forecast data. In developing this forecast, Kentucky Power utilized Eastern Kentucky coal production as the driver in mine power model. As there was no readily available forecast for Eastern Kentucky, the Company developed its own forecast using the EIA history and forecast of Eastern coal production.

Sierra Club references the decline in coal production as grounds for claiming that Kentucky Power’s mining demand forecast is too high.⁷⁹ The anticipated coal production decline was included in Kentucky Power’s forecast;⁸⁰ however, it is important to note that the relationship between coal production and mine power sales are not necessarily one-to-one. In other words, a one percent decline in coal production does not necessarily represent a one percent decline in mine power sales. Mine power sales depend in large part on the type of mining activity and what resources the mine operators use to power their equipment.

In recent years, mine power sales have comprised an increasingly smaller portion of the Company’s total energy requirements and this is reflected in the load forecast. In 2012, mine

⁷⁶ Sierra Club Comments at 38.

⁷⁷ Kentucky Power’s Response to Staff Data Request 1-5.

⁷⁸ *Id.*

⁷⁹ Sierra Club Comments at 37.

⁸⁰ Kentucky Power’s Response to Staff Data Request 1-5.

power represented about 11 percent of total internal energy requirements. By 2028, mine power sales are projected to be about 9 percent of total energy requirements.⁸¹ If the mine power forecast is 25 percent too high in 2028 it will result in the peak demand being over-forecasted by only 40 MW – a 2.8 percent forecast error 15 years out.

As noted above, the Company strives for as accurate of a forecast as is reasonably possible. The question of if and how quickly coal production declines in the future is an area the Company will continue to monitor. It will utilize the best information available at the time a forecast is developed in order to get as accurate and reasonable a forecast possible. Kentucky Power's forecast of mine power sales used in the IRP process was reasonable.

III. CONCLUSION

As required by 807 KAR 5:058, Kentucky Power evaluated its future resource planning obligations building on reasonable load forecasts, demand side resource options, as well as supply side alternatives. Following its review and evaluation, Kentucky Power included in its preferred resource plan that represents a dramatic shift in its generation portfolio away from a nearly 100% coal-fired portfolio to one that also includes natural gas, biomass, wind, solar and expanded DSM/EE programs. Kentucky Power's IRP Report demonstrates that it complied with the requirements of 807 KAR 5:058. Sierra Club's factually inaccurate and out-of-context comments to the contrary should not guide Commission Staff's review of this IRP Report.

⁸¹ *Id.*

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'MRO', enclosed within a large, loopy oval shape.

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing was served by first class mail and by electronic mail, this 14th day of May, 2014.

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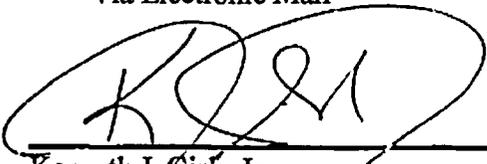
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