

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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

COMMISSION STAFF'S INITIAL REQUEST FOR INFORMATION
TO KENTUCKY POWER COMPANY

Kentucky Power Company ("Kentucky Power"), pursuant to 807 KAR 5:001, is to file with the Commission the original and 10 copies of the following information, with a copy to all parties of record. The information requested herein is due by February 20, 2014. Responses to requests for information shall be appropriately bound, tabbed and indexed. Each response shall include the name of the individual responsible for responding to questions related to the information provided.

Each response shall be answered under oath or, for representatives of a public or private corporation or a partnership or association or a governmental agency, be accompanied by a signed certification of the preparer or the person supervising the preparation of the response on behalf of the entity that the response is true and accurate to the best of that person's knowledge, information, and belief formed after a reasonable inquiry.

Kentucky Power shall make timely amendment to any prior response if it obtains information which indicates that the response was incorrect when made or, though correct when made, is now incorrect in any material respect. For any request to which Kentucky Power fails or refuses to furnish all or part of the requested information, it shall

provide a written explanation of the specific grounds for its failure to completely and precisely respond.

Careful attention shall be given to copied material to ensure that it is legible. When the requested information has been previously provided in this proceeding in the requested format, reference may be made to the specific location of that information in responding to this request. When applicable, the requested information shall be separately provided for total company operations and jurisdictional operations.

1. Refer to the second paragraph on page ES-3 of the Executive Summary which states in part that “the *Plexos*® modeling was performed through the year 2040 so as to properly consider various cost-based ‘end-effects’ for the resource alternatives being considered.”

a. Explain what is meant by “properly consider various cost-based ‘end-effects’.”

b. Identify and explain what changes the various cost-based end effects had on the assumptions and conclusions made for the 15-year period of the IRP.

2. Refer to Section 1.1, General Remarks, at page 2 of Kentucky Power’s 2013 Integrated Resource Plan (“IRP”). Describe the current status of the proceeding at the Federal Energy Regulatory Commission regarding the agreements discussed in footnote 6.

3. Refer to Section 1.2, Planning Objectives, at page 4 of Kentucky Power’s 2013 IRP, specifically, the objective of “encouraging the wise and efficient use of energy.” In recent years, several of East Kentucky Power Cooperative’s distribution cooperatives located in eastern Kentucky have implemented prepay metering programs

that produced substantial energy conservation results. Given that much of Kentucky Power's service territory is similar to that of such cooperatives, explain in detail what consideration has been given to implementing a prepay metering program.

4. Refer to page 34 of Kentucky Power's 2013 IRP, Section 2.3.2, Short-term Forecasting Models. Explain how and why January 2003 through January 2013 was chosen as the estimation period for the short-term models.

5. Refer to Section 2.3.2.2, Industrial Energy Sales, at page 34 of Kentucky Power's 2013 IRP, section 2.3.3.4.2, Mine Power, at page 40 of IRP, and Exhibit 2-2 at page 56 of the IRP. The text on pages 34 and 40 indicates that the mining load is treated separately in both the short- and long-term forecasting models. In the exhibit all industrial load is aggregated. For the exhibit's forecasted years, provide a breakdown of industrial sales showing mining-sector sales separately from other industrial sales.

6. Refer to Section 2.3.3.2.2, Residential Energy Usage Per Customer, at page 38 of Kentucky Power's 2013 IRP, specifically, the first sentence of the partial paragraph beginning at the bottom of the page. Explain how January 1995 through February 2013 was chosen as the period for the Statistically Adjusted End-Use ("SAE") model used to estimate residential usage.

7. Refer to Section 2.3.3.3, Commercial Energy Sales, of Kentucky Power's 2013 IRP, specifically, the last paragraph on page 39.

a. Explain why the saturations and related items are from "DOE's 2012 Annual Energy Outlook" when regional U.S. natural gas price forecasts referenced on page 36 were obtained from the more recent 2013 Annual Energy Outlook.

b. At the top of page 40 in the same section, the first sentence reads, "The SAE is a linear regression for the period January 2000 through February 2013." Explain why this period differs from the period for the SAE model used for residential energy sales.

8. Refer to Section 2.3.3.6, Blending Short- and Long-Term Sales, at page 41 of Kentucky Power's 2013 IRP.

a. Explain whether the reference to "one of the wholesale customers" in the last sentence of the section refers to one of the two municipal customers served by Kentucky Power.

b. If the response to part a. of this request is affirmative, explain in greater detail the reasons for using the long-term forecast throughout the forecast period for one of the municipal customers.

9. Refer to page 45 of Kentucky Power's 2013 IRP, the last paragraph of Section 2.6, Impact of Conservation and Demand-Side Management. Explain why the SAE models reflect the "EIA assessment of efficiency trends as provided in the 2012 Annual Energy Outlook" when regional U.S. natural gas price forecasts referenced on page 36 were obtained from the more recent 2013 Annual Energy Outlook.

10. Refer to the second full paragraph on page 48 of Kentucky Power's 2013 IRP in Section 2.8, Forecast Uncertainty and Range of Forecasts. Confirm that "3% per year for the base case" in the last sentence of the paragraph should be 0.3%.

11. Refer to Section 2.9.1, Energy Forecast, at page 49 of Kentucky Power's 2013 IRP. Provide a general explanation for why the losses forecast decreased by as much as 46 percent compared to Kentucky Power's 2009 forecast.

12. Refer to Section 2.9.3, Forecasting Methodology, at page 50 of Kentucky Power's 2013 IRP, which states that Kentucky Power explores opportunities to enhance forecasting methods on a continuing basis.

a. State whether the forecasts in this IRP reflect any changes from the methods used in developing the forecasts included in Kentucky Power's 2009 IRP.

b. If there were changes in methods since the 2009 IRP, identify and describe all such changes and explain why they were made.

13. Refer to Section 2.10, Additional Load Information, at page 51 of Kentucky Power's 2013 IRP, the last full paragraph of the section.

a. Confirm that the reference to the most recent residential customer survey conducted in the winter of 2013 refers to the 2012-2013 winter.

b. State when the previous survey, which was relied upon for this IRP, was conducted.

14. On page 51 of Kentucky Power's 2013 IRP, in Section 2.12.1, Residential Energy Sales Forecast Performance, reference is made to the number of residential customers declining from 2009 to 2012. On page 52, Section 2.12.2, Peak Demand Forecast Performance, contains the statement that "the residential customer base has eroded. . . ." A review of Exhibit 2-19 on page 73 of the IRP shows that residential heating customers slightly increased over the 2009-2012 period, while residential non-heating customers declined 3,146, roughly 5.4 percent. Given that it has been and is expected to continue to be a winter-peaking system, describe how Kentucky Power's residential forecasts reflect and/or incorporate the fact that the decline in customers has occurred within the non-heating sub-group of the residential customer class.

15. Refer to Exhibit 2-25 at page 77 of Kentucky Power's 2013 IRP, which indicates that data from the National Oceanographic and Atmospheric Administration ("NOAA") is used for average daily temperatures at the time of daily peak loads.

a. The interval shown for the NOAA data is 1982-2012. State when Kentucky Power began using NOAA data and how long it has used a 30-year interval.

b. NOAA publishes 30-year weather "normals" every 10 years with the most recent covering the 30 years ending in 2010. Explain whether Kentucky Power relies on data from NOAA or develops internal weather data to update the 30-year normals.

c. Explain why Kentucky Power uses a 30-year interval and describe what consideration, if any, it has given to using an interval other than 30 years.

16. Refer to page 81 of Kentucky Power's 2013 IRP, Section 3.1.1, Changing Conditions. Kentucky Power states that since the last IRP, the size of its DSM programs has increased, spending on the program has effectively tripled, and claimed energy savings, as measured by "first year" energy savings, have quadrupled.

a. Provide the spending level at the time of last IRP.

b. Provide the anticipated level of spending reflected in the last IRP.

c. Describe the reasons for the increase in spending.

17. Refer to page 85 of Kentucky Power's 2013 IRP, Section 3.4.1, Overview, which indicates that industrial customers were initially members of the DSM Collaborative, but that currently there are no industrial members in the Collaborative. Explain why there are currently no industrial customers in the Collaborative.

18. Refer to the last paragraph on page 86, Section 3.4.2 Existing Program Screening Process, of Kentucky Power's 2013 IRP regarding the major supply-side benefits used in the cost-benefit analysis of Demand-Side Management ("DSM") programs: avoided energy (production) costs and avoided demand/capacity costs (for generation, transmission and distribution).

a. Explain how the avoided energy and demand/capacity costs were determined for peak and off-peak periods by season in the cost-benefit analysis.

b. Provide the avoided energy and demand/capacity costs for peak and on non-peak periods by season used in the cost-benefit analysis in each year from 2014 through 2028.

19. Refer to the first full paragraph on page 87, Section 3.4.2 Existing Program Screening Process, of Kentucky Power's 2013 IRP, which states that, "the analysis considered the benefits of SO₂ emission credits, NO_x market price, estimates for CO₂ costs based on expected legislation, and expected additional system sales, thereby improving the cost effectiveness of each DSM measure." Explain in detail how each benefit was determined, as well as the amount of cost used for each benefit in each year from 2014 through 2028.

20. Refer to the last paragraph on page 87, Section 3.5.1 Assessment of Achievable Potential, of Kentucky Power's 2013 IRP, which states, "Barriers such as lack of access to capital and lack of information are addressed with utility-based EE and DR programs." In Case No. 2012-00484,¹ the Commission approved the Kentucky

¹ Case No. 2012-00484, Joint Application of Big Sandy Rural Electric Cooperative Corp., Fleming-Mason Energy Cooperative, Inc., Grayson Rural Electric Cooperative Corp. for an Order Approving KY Energy Retrofit Rider Permanent Tariff (Ky. PSC Aug. 26, 2013).

Energy Retrofit Rider for several eastern Kentucky distribution cooperatives to establish an on-bill financing program to encourage customers to implement energy-efficiency measures. Given that much of Kentucky Power's territory is similar to that of such cooperatives, explain in detail what consideration Kentucky Power has given to seeking Commission approval for an on-bill financing program for energy-efficiency measures.

21. Refer to page 90, Section 3.5.1.2, Smart Meters, of Kentucky Power's 2013 IRP. For each class of retail customers, provide the number and percentage of customers with smart meters.

22. Refer to the continuation paragraph on page 92, Section 3.5.1.3, Demand Response, of Kentucky Power's 2013 IRP, which states, "Given Kentucky Power's current and expected capacity position within PJM, it is not necessary to aggressively pursue all available demand response at this time."

a. Provide any research or analysis relied upon by Kentucky Power in making this statement.

b. Describe all research and analysis Kentucky Power has performed with respect to bidding Energy Efficiency ("EE")/DSM and demand response into the PJM markets.

c. State whether any of Kentucky Power's American Electric Power affiliates have participated in bidding EE/DSM or demand response into the PJM markets. If the response is yes, describe such participation in detail.

d. Identify the circumstances under which Kentucky Power's capacity position would be such that it would aggressively pursue bidding demand response into PJM.

23. Refer to pages 92-93 of Kentucky Power's 2013 IRP, Section 3.5.1.4, Volt VAR Optimization (VVO), Table ES-1 on page ES-7. Describe in detail what actions Kentucky Power will undertake to achieve the 4 MW of VVO reduction in end-use consumption from 2014 through 2020 and 8 MW reduction from 2021 through 2028.

24. Refer to page 93, Section 3.5.1.5, Distributed Generation ("DG"), of Kentucky Power's 2013 IRP.

a. With respect to DG, state whether Kentucky Power intends to request Commission approval of any changes in its net metering tariff as a result of accommodating any of the multiple forms of DG listed in the discussion.

b. If yes, identify and describe all such changes.

25. Refer to page 96, Section 3.5.2, Determining Expanded Programs for the IRP – Energy Efficiency, of Kentucky Power's 2013 IRP, which states, "In the recent Mitchell Transfer Stipulation and Settlement Agreement, Kentucky Power agreed to increase spending on cost-effective (energy efficiency) programs from the current level of approximately \$3 million annually to \$4 million in 2014, \$5 million in 2015, and \$6 million thereafter."

a. Explain how Kentucky Power will determine which programs will be expanded as a result of the additional funding.

b. Identify any changes Kentucky Power anticipates with its evaluation, measurement, and verification procedures related to energy and peak-demand savings related to existing and expanded EE/DSM programs.

26. Explain whether there has been any change, internally or externally, in the methods of evaluation, measurement and verification used by Kentucky Power for

existing, or proposed, DSM programs. Identify the cost associated with such changes, if they exist.

27. 807 KAR 5:058, Section 8(2), states:

The utility shall describe and discuss all options considered for inclusion in the plan including:

(a) Improvements to and more efficient utilization of existing utility generation, transmission, and distribution facilities;

(b) Conservation and load management or other demand-side programs not already in place;

(c) Expansion of generating facilities, including assessment of economic opportunities for coordination with other utilities in constructing and operating new units; and

(d) Assessment of nonutility generation, including generating capacity provided by cogeneration, technologies relying on renewable resources, and other nonutility sources.

The Cross Reference Table at pages 23-28 of the 2013 IRP reflects that the above requirement is addressed in Section 4.3.2.2, Retrofit or Life Optimization of Existing Facilities. At page 173, in Section 4.11, KPSC Staff Issues Addressed, Item 6 indicates that Section 4.4.1.1, General Description, includes discussion regarding improvements to and more efficient utilization of transmission and distribution facilities. Section 4.3.2.2 provides only a short broad discussion of Retrofit or Life Optimization of Existing Facilities and Sections 4.4.1.1 through 4.4.1.9 address transmission, but not distribution.

a. Provide a detailed discussion of any improvements to or steps taken to ensure more efficient utilization of Kentucky Power's distribution facilities. If there are none, explain why not.

b. Provide a detailed discussion of the impact of greater customer net metering on the distribution or transmission system.

c. Explain whether the increased amount of net metering load will require improvements or additions to the transmission and/or distribution system.

d. Explain whether the increased amount of net metering load will result in improvements to the transmission and/or distribution system.

28. Refer to page 110 of Kentucky Power's 2013 IRP, Section 4.2.2, Generation Reliability Criterion. Identify the commission referenced in relation to Cause Nos. 42350 and 42352.

29. Refer to page 110 of Kentucky Power's 2013 IRP, Section 4.2.2, Generation Reliability Criterion, which contains a discussion of the decision made by American Electric Power ("AEP") in 2007 to join PJM under the FRR construct when Kentucky Power was part of the AEP-East power pool.

a. Historically Kentucky Power has been a capacity-short utility at the time of its system peak. State whether it is currently capacity short at its winter peak and whether it will be similarly capacity short during the planning period of this IRP.

b. If the answer to a. is yes, explain how the 2007 FRR decision will affect the ratepayers of Kentucky Power during this IRP planning period.

c. Explain whether the 2007 FRR decision holds Kentucky Power, as a stand-alone company, to a reserve margin which is higher than that to which it would currently be held under the RPM construct.

d. Explain at what management level and how the future evaluation and decision on whether to remain in the FRR market will be made.

30. Refer to page 111 of Kentucky Power's 2013 IRP, Section 4.2.2, Generation Reliability Criterion. Kentucky Power states that it will meet PJM's installed reserve margin ("IRM") of 15.6 percent.

a. Explain how the fact that Kentucky Power and PJM peak in winter and summer, respectively, affects the calculation of the 15.6 percent IRM under the Fixed Resource Requirement ("FRR") construct in PJM.

b. Explain how the different peaking seasons would affect calculation of the IRM under PJM's Reliability Pricing Model ("RPM") construct.

31. Refer to page 111 of Kentucky Power's 2013 IRP, Section 4.2.2, Generation Reliability Criterion. Provide a detailed explanation regarding the difference between the PJM Installed Reserve Margin ("IRM"), PJM Unforced Capacity, and PJM Installed Capacity. Identify and correlate the PJM requirements for Kentucky Power for each.

32. Refer to page 112 of Kentucky Power's 2013 IRP, Section 4.2.3.1, Interconnection Agreement. Kentucky Power was aware of the AEP pool's breakup prior to December 2010. Provide any records of discussion concerning the future impacts the pool's breakup would have on the PJM market, specifically the choice to remain as a FRR participant and the five-year notice to abandon the FRR or RPM construct.

33. Refer to pages 113-122 of Kentucky Power's 2013 IRP, Section 4.2.4, Environmental Compliance. This section does not appear to address the cost of environmental compliance. For all different compliance requirements and strategies

Kentucky Power has modeled, provide its most recent estimates of the cost of environmental compliance to Kentucky Power and its ratepayers.

34. Refer to page 123 of Kentucky Power's 2013 IRP, Section 4.3.2.3, Renewable Energy Plans. Kentucky Power states that renewable-energy options are expected to compete economically with traditional supply-side options in the future.

a. When does Kentucky Power expect renewables to be competitive?

b. By capacity type, identify and describe the drivers of Kentucky Power's projection that renewables are expected to compete economically with traditional supply-side options in the future.

35. Refer to page 124 of Kentucky Power's 2013 IRP, Section 4.3.2.4, Demands, Capabilities, and Reserve Margins – Going In, which states that Exhibit 4-7 provides a projection of its reserve margins for the summer season from 2014 – 2028. Provide the calculations used to determine these margins.

36. Refer to pages 129-131 of Kentucky Power's 2013 IRP, Section 4.3.4.5, Renewable Alternatives. Other than for solar, explain what consideration Kentucky Power gave to other forms of net metering (wind, biomass, biogas, or hydro).

37. Refer to page 131 of Kentucky Power's 2013 IRP, in Section 4.3.4.5, Renewable Alternatives, Sub-section a., Utility-Scale Solar. Kentucky Power projects distributed and utility scale solar proposals becoming economically justifiable. Define "economically justifiable" and discuss the drivers which would make this possible.

38. Refer to page 134 of Kentucky Power's 2013 IRP, in Section 4.3.4.5, Renewable Alternatives, Sub-section b.1, Modeling Wind Resources. Explain the differences in the values noted in the references concerning wind power: "A variable

source of power in most non-coastal locales, with capacity factors ranging from 30 percent (in the eastern portion of the U.S.) to 50 percent (largely in more westerly portions of the U.S. . . .” and the statement further along in that paragraph, “In the PJM region, wind is credited with 13% useful capacity. . . .”

39. Refer to page 136 of Kentucky Power’s 2012 IRP, in Section 4.3.4.5, Renewable Alternatives, Sub-section c., Hydro. Kentucky Power states that there was no consideration given to incremental hydroelectric power production resources due to environmental issues, permitting time length, and high initial construction costs. Explain why there are no analyses or explanations supporting this dismissal. Explain also why smaller-scale, more reasonably priced, less intrusive, run-of-the-river systems were not investigated or given any consideration.

40. Refer to pages 136-137 of Kentucky Power’s 2013 IRP, in Section 4.3.4.5, Renewable Alternatives, Sub-section e. Cogeneration. Kentucky Power notes the small amount of cogeneration or combined heat and power (“CHP”) in its system. Explain why this source of electric power production has not been more aggressively pursued when there are chemical, primary metal, etc., industries in Kentucky Power’s service territory, the types of customers which typically make use of CHP opportunities.

41. Refer to page 152 of Kentucky Power’s 2013 IRP, in Section 4.6.3, Capacity Modeling Constraints, which describes limits agreed to by the AEP East Fleet under the Modified New Source Review Consent Decree. As Kentucky Power is no longer a member of the AEP-East Power Pool, describe the effects and demands that remain for Kentucky Power.

42. Refer to page 153 of Kentucky Power's 2013 IRP, in Section 4.6.3, Capacity Modeling Constraints, which discusses supply-side options and lists them per technology type. Explain how a gas-fired Big Sandy Unit 1 would be modeled and in which group it would reside.

43. Refer to page 159 of Kentucky Power's 2013 IRP, Section 4.7, Modeling Results. Kentucky Power states that, although it has sufficient capacity to satisfy the PJM summer capacity criterion reserve margin, the *Plexos* optimization model will continue to add resources that are economic based. Explain the impact on Kentucky Power's reserve margin and its importance/value in the decision to add the capacity. Provide the discussion for both FRR and RPM scenarios.

44. Refer to page 160 of Kentucky Power's 2013 IRP, Section 4.7, Modeling Results. Explain the statement that the addition of non-traditional resources would then serve as a hedge to reduce exposure to PJM energy markets.


45. Refer to page 161 of Kentucky Power's 2013 IRP, Section 4.7.1, Construction of the Preferred Portfolio. Kentucky Power states that its supply-side resources are relatively firm and the outcomes from five different economic scenarios modeled leave a rather muted picture. Explain in detail what is meant by the statement, "that result in itself, is valuable information in that it helps to solidify the path forward."

46. Refer to page 162 of Kentucky Power's 2013 IRP, Section 4.7.1, Construction of the Preferred Portfolio. Clarify the relationship between the winter-peaking nature of Kentucky Power and the cost-effectiveness of solar investment.

47. Refer to page 163 of Kentucky Power's 2013 IRP, Section 4.7.1, Construction of the Preferred Portfolio. Define and clarify "net metering economics."

48. Refer to page 173 of Kentucky Power's 2013 IRP, Section 4.11, KPSC Staff Issues Addressed, Item 4, which refers to Sections 4.3.5.2 and 4.7.1 for the discussion regarding the specific identification and description of the net metering equipment and systems installed and a detailed discussion of the manner in which such resources were considered in its IRP. It does not appear that the specific identification and description of the net metering equipment and systems installed on the Kentucky Power system were provided in those sections. Provide the requested information.

49. Refer to Exhibit 4-6, page 3 of 3, at page 183 of Kentucky Power's 2013 IRP. Explain why there is a consistent difference in the projected average heat rates of the two Mitchell generating units throughout the forecast period.



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cc: Parties of Record

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