

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC 2020 INTEGRATED	)	CASE NO.
RESOURCE PLAN OF BIG RIVERS	)	2020-00299
ELECTRIC CORPORATION	)	

COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION  
TO BIG RIVERS ELECTRIC CORPORATION

Big Rivers Electric Corporation (BREC), pursuant to 807 KAR 5:001, is to file with the Commission an electronic version of the following information. The information requested herein is due on March 19, 2021. The Commission directs BREC to the Commission's March 16, 2020 and March 24, 2020 Orders in Case No. 2020-00085<sup>1</sup> regarding filings with the Commission. The Commission expects the original documents to be filed with the Commission within 30 days of the lifting of the current state of emergency. All responses in paper medium shall be appropriately bound, tabbed, and indexed. Electronic documents shall be in portable document format (PDF), shall be searchable, and shall be appropriately bookmarked.

Each response shall include the name of the witness responsible for responding to the 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

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<sup>1</sup> Case No. 2020-00085, *Electronic Emergency Docket Related to the Novel Coronavirus COVID-19* (Ky. PSC Mar. 16, 2020), Order at 5–6. Case No. 2020-00085, *Electronic Emergency Docket Related to the Novel Coronavirus COVID-19* (Ky. PSC Mar. 24, 2020), Order at 1–3.

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.

BREC shall make timely amendment to any prior response if BREC obtains information that indicates the response was incorrect when made or, though correct when made, is now incorrect in any material respect. For any request to which BREC fails or refuses to furnish all or part of the requested information, BREC 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. When filing a paper containing personal information, BREC shall, in accordance with 807 KAR 5:001, Section 4(10), encrypt or redact the paper so that personal information cannot be read.

1. Refer to the IRP, Chapter 1, Section 1.2.6, Figure 1.6, page 20. Confirm the increase in direct serve sales from 2019–2039 is due to the addition of Nucor Steel. If this cannot be confirmed, provide an explanation of the increased direct sales from 29 percent of total sales to 44 percent.

2. Refer to the IRP, Chapter 1, Section 1.2.6, Table 1.2, page 22. Provide an update to the table that includes the annual percent increases in the total coincident peak (CP) load.

3. Refer to the IRP, Chapter 1, Section 1.2.6, Table 1.3, page 23. Provide an update to the table that includes the annual percent increases in total system energy requirements.

4. Refer to the IRP, Chapter 1, Section 1.3, page 24. Explain why no additional solar was considered as a supply-side option beyond the 260 MW proposed in Case No. 2020-00183.<sup>2</sup>

5. Refer to the IRP, Chapter 2, Section 2.2, page 26. Provide situations when, and explain why, the price for SEPA Cumberland ZCR differs from the market clearing price in MISO Zone 6.

6. Refer to the IRP, Chapter 2, Section 2.3, page 27.

a. Provide BREC's Pay for Performance Plan.

b. Explain if this plan includes incentive pay or bonuses tied to financial performance.

7. Refer to the IRP, Chapter 2, Section 2.7, page 32. Provide any updates to BREC's credit ratings.

8. Refer to the IRP, Chapter 2, Section 2.11, page 42. Provide an update to the number of applicants for the low-income weatherization program.

9. Refer to the IRP, Chapter 3, Section 3.1 page 46. For the nonmember requirements:

a. If BREC is unable to supply this power, explain whether the nonmember contracts will then be null or void.

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<sup>2</sup> Case No. 2020-00183, *Electronic Application of Big Rivers Electric Corporation for Approval of Solar Power Contracts* (Ky. PSC Sept. 28, 2020).

b. Explain whether any of the nonmember contracts can be terminated, and if so, what instances can cause this termination and the consequences for both BREC and the nonmember.

10. Provide the calculations of all the variables used in the regression model equations in Excel spreadsheets with all cells visible, unprotected, and formulas intact.

11. Refer to the IRP, Chapter 3, Section 3.3.1, page 51. Explain the assumption that the real cost of electricity is declining during the forecast period.

12. Refer to the IRP, Chapter 3, Section 3.3.3, Table 3.7, page 55. Explain the volatility in energy sales between 2020 and 2023.

13. Refer to the IRP, Chapter 3, Section 3.3.8, page 60 and Load Forecast Study, Section 2.7, page 39.

a. BREC indicates that it optimizes the capacity and energy transactions in the day-ahead and real-time markets in order to service nonmember sales by evaluating the costs to deliver BREC's generation versus buying on the market. Provide a step-by-step explanation of how BREC accomplishes these actions for the benefit of its members.

b. In the instances when it is cheaper to purchase versus generate to service nonmember obligations, explain whether the model correspondingly adjusts its own generation levels.

c. Explain whether BREC modeled a cessation of nonmember sales after 2029, and if so, explain why.

d. Refer to table 3.12. Provide a breakdown of total sales by contract.

14. Refer to the IRP, Chapter 3, Section 3.3.4, Table 3.8, page 56. Explain why the percent change per year in consumers from 2018 to 2019 is not zero, even though the number of consumers did not change.

15. Refer to the IRP, Chapter 3, Section 3.3.9, page 61. Confirm that the voluntary interruptible and curtailable loads were excluded from the load forecast, and if so, explain why.

16. Refer to the IRP, Chapter 3, Section 3.3.9, page 61. Looking forward, explain whether BREC plans to add any direct load control programs or an interruptible or curtailable contract or tariff.

17. Refer to the IRP, Chapter 3, Section 3.7, page 78. One of the key load forecasting assumption is that electrical heating saturations levels are projected to remain flat through the forecast period. Provide an explanation supporting this assumption.

18. Refer to the IRP, Chapter 3, Section 3.8, Research and Development, page 78. Provide the most recent residential survey report.

19. Refer to the IRP, Chapter 4, Section 4.2, page 81. Explain why BREC considered budgets scenarios that were capped at \$1 and \$2 million as opposed to evaluating based on a budget that reaches the potential energy efficiency scenario.

20. Refer to the IRP, Chapter 4, section 4.2, page 83, table 4.3. Provide the inputs that BREC used to calculate Total Resource Cost benefit-cost ratio and explain how the ratio is calculated.

21. Refer to the IRP, Chapter 4, Section 4.2, pages 83–84, regarding the cost effectiveness of BREC's Demand-Side Management (DSM) programs.

a. Explain in detail how BREC determines avoided energy and capacity cost projections.

b. Identify and explain the changes in BREC's computation of avoided energy and capacity cost projections as compared to the 2017 IRP.

22. Refer to the IRP, Chapter 4, Section 4.2, page 84, regarding the allocation of the DSM incentive budget. Explain how BREC determined the 45/55 percent allocation of the incentive budget between the residential and nonresidential sectors.

23. Refer to the IRP, Chapter 4, Section 4.8, page 89. Explain the barriers that prevent BREC from implementing cost-effective demand response programs.

24. Refer to the IRP, Chapter 4, Section 4.9, page 90. Explain why BREC is evaluating industrial DSM programs when industrial customers can opt out of DSM programs.

25. Refer to the IRP, Chapter 4, generally. Explain whether and how often BREC has commissioned Clearspring Energy Advisors, LLC (Clearspring) to update its evaluation of BREC's DSM program(s). Include in the explanation what programs or reports of preliminary program evaluations, if any, Clearspring is preparing for BREC, beyond the work conducted for the IRP.

26. Refer to the IRP, Chapter 4, generally. State whether BREC has received any inquiries as to available grants, subsidies, or low-interest loans for energy conservation or energy efficiency that may help those customers remain economically stable or market competitive.

27. Refer to the IRP, Chapter 4, generally. Explain whether there has been any change, internally or externally, in the methods of evaluation, quantification, and

verification used by BREC for existing or proposed DSM programs. Identify the cost associated with such changes if they exist.

28. Refer to the IRP, Chapter 4, generally. Explain whether any DSM programs were modeled as a supply-side resource in the Plexos model. If not, explain why.

29. Refer to the IRP, Chapter 5, Section 5.4, page 97.

a. Provide a copy of Midcontinent Independent System Operator (MISO) CEO John R. Bear's testimony that is referenced on this page.

b. In Section 5.1, page 92, BREC states that the lower wholesale market prices has been advantageous, especially given its generation mix.

(1) Explain how this advantage is impacted as the amount of renewable energy grows within MISO.

(2) Explain the actions that BREC has taken over time that has allowed it to significantly lower the minimum generation limits on its generators and thereby keep its generators running as wholesale prices have fallen.

30. Refer to the IRP, Chapter 5, Section 5.5, page 100. Explain how many customers have requested or are currently working with BREC desiring to build generation for cogeneration purposes or currently have operating cogeneration facilities.

31. Refer to the IRP, Chapter 5, Section 5.5.1, page 100.

a. Provide the current net metering saturation for each Member System.

b. Provide the forecasted net metering saturation by Member System.

32. Refer to the IRP, Chapter 5, Section 5.6. On August 31, 2020, the U.S. Environmental Protection Agency (EPA) issued the prepublication final Steam Electric

Power Generating Effluent Guidelines and Standards (40 C.F.R. Part 423) (Steam Electric Reconsideration Rule). In 2015, the EPA promulgated a regulation that established effluent limitations guidelines (ELG) and pretreatment standards for wastewater discharges into surface waters and wastewater treatment plants for steam electric power plants. The Steam Electric Reconsideration Rule revises ELG limits for existing facilities and establishes new compliance dates, among other things.

a. Explain whether the Steam Electric Reconsideration Rule will materially change or impact the analyses, forecasts, or conclusions in BREC's IRP.

b. If there is a material change or impact to the analyses, forecasts, or conclusions in BREC's IRP, explain what decisions have been or will be made regarding the material change to the IRP and when decisions underlying the changes will be made, including, but not limited to, filing compliance plans related to the material changes.

33. Refer to the IRP, Chapter 6, Section 6.1, pages 110–111. Explain whether BREC is aware of any transmission system upgrades that will be necessary to accommodate anticipated new merchant solar generation facilities. Include in the explanation any anticipated operational problems as additional solar generation is connected to BREC's transmission system and brought online.

34. Refer to the IRP, Chapter 6, Section 6.1, pages 110–111. Explain how BREC is meeting each of the MISO Transmission Planning process guiding principles.

35. Refer to the IRP, Chapter 6, Section 6.1, pages 110–111. Explain the actions that BREC has taken to reduce transmission system losses. Include in the explanation the percent losses assumed in the forecasts and whether this has been reduced since the last IRP filing.



36. Refer to the IRP, Chapter 6, Section 6.2, page 111. Explain the factors affecting BREC's transfer capability and the extent to which they are controllable.

37. Refer to the IRP, Chapter 8, page 134. Explain what is meant by the risk tolerance of the board.

38. Refer to the IRP, Chapter 8 Section 8.1 page 134.

a. Explain why retirement costs were modeled at zero expense.

b. Explain whether MISO constraints are modeled, and if so, identify those constraints.

39. Refer to the IRP, Chapter 8, Section 8.1, pages 134–135, and Section 8.2.2, page 155. Provide a more detailed explanation of the ST Plan functions and how it relates to the LT Plan optimal solution. Include in the explanation whether the ST Plan solution ever indicates that a selected LT Plan solution may not be optimal, and if so, explain how that might occur.

40. Refer to the IRP, Chapter 8, Section 8.1.1, page 136.

a. Explain whether there were any additional scenarios run where additional ELG costs beyond those included in the 2019–2033 Long Term Financial Plan were required for the Green Station to be compliant and which rendered the Green Station uneconomic. If so, explain the results of the analysis, and if not, explain why not.

b. Explain what additional ELG compliance costs beyond those included in the 2019–2033 Long Term Financial Plan might be incurred that would render Green Station uneconomic and how much tolerance is there before that point would be reached.

c. If additional ELG compliance costs could render the Green Station uneconomic, then potentially, other units in MISO Region 6 or beyond could face similar fates. Explain whether BREC is aware of any studies within MISO Region 6 or beyond regarding the effects of CCR and ELG compliance that could affect forecasted energy and capacity prices and, if so, explain how those forecasted compliance cost effects could affect BREC.

d. Explain whether BREC has preliminarily explored the option of converting the Green Station to natural gas fired and why potentially constructing a NGCC at Sebree is more cost-effective.

e. If the Green Station were to be idled or retired, explain whether that would present problems satisfying nonmember contract obligations, and if not, explain how those contracts would be honored through the forecast period.

41. Refer to the IRP, Chapter 8, Section 8.1.1 and 8.1.2, pages 137–141.

a. Explain whether the cost of moving and installing the FGD scrubber from Coleman to Wilson and any degradation in MW output from operating the scrubber were included in the Wilson cost assumptions and, if not, why not.

b. Explain the circumstances under which BREC would choose to exit the SEPA contract and how that capacity and energy would be replaced.

c. Explain how BREC would make up the capacity and energy provided through the SEPA contract should it elect to exit the contract.

d. Provide the capacity values MISO assigns to utility scale solar generation facilities over the forecast period.

e. Explain all of the modeling parameters/assumptions supporting the generation option of a partnership with several other counterparties in a new 592 MW natural gas combined-cycle (NGCC) unit, including whether the new unit is located at either the Coleman or Sebree sites.

f. Explain why a partnership is necessary and the modeling option.

g. Explain how a 237 MW natural gas combustion turbine (NGCT) was selected as an option and the circumstances of BREC needing that amount of peaking capacity.

h. For both the NGCC and NGCT generation options, explain whether firm pipeline transportation cost was included as part of the option cost regardless of whether the commodity was purchased on a firm or spot basis.

i. Explain whether the PPA – Block market purchases are modeled as long-term or short-term purchases and the rationale for the assumption.

j. Explain why the PPA was marketed at only 10 MW increments.

k. Explain why additional renewable energy generation options were not included for planning purposes.

42. Refer to the IRP, Chapter 8, Section 8.1.1, page 138. Explain and provide a table showing the amount of time annually each of BREC's generation units' cost are at or below the MISO market price and hence economically dispatched, and the amount of time these units are above the market price and hence ramped down to minimum levels for the last three years. Include in the explanation whether the units are considered "must run" for transmission system support in Region 6 and how this affects the decision to run

the units at higher levels even if the unit variable cost is greater than the market clearing energy price.

43. Refer to the IRP, Chapter 8, Section 8.2, Table 8.7, page 154, and Appendix A, Load Forecast Study, Tables “Total Native System Energy Summary” and “Historical and Projected CP Demands,” pages 35 and 41, respectively.

a. Explain why the energy and peak numbers do not match between the tables.

b. The forecast periods shown between the tables are different. Explain what period covers the forecast period in the IRP.

c. Explain whether nonmember load obligations and or transmission losses are included in the Base Case forecast shown in Table 8.7, and if not, explain why not.

d. Also, refer to the Load Forecast Study, Native System Weather Scenarios table, page 51. For the Base Case, explain why winter forecast amounts do not match those in the Historical and Projected CP Demands table on page 43.

44. Refer to the IRP, Chapter 8, Section 8.1, pages 134–135, and Section 8.2.2 pages 155–156. The least cost LT Plan, in part, calls for idling both Green coal units and adding 90 MW of a new 592 MW NGCC unit at Sebree in 2024.

a. Confirm that BREC does intend to idle both Green units and provide the anticipated date when the units will be idled.

b. Explain whether there are or have been any discussions with potential partners in a joint venture to construct a NGCC unit or units at the Sebree Station, and if so, the status of those discussions. Include in the discussion whether 2024

is the date the ST Plan and LT Plan estimate that the NGCC unit will be operational, and if not, provide when BREC estimates the unit will be operational.

c. Provide a table for the entire forecast period from 2020–2043 showing the timeline for the capacity additions and idling the Green or Reid Stations for each of the ST Plan scenarios annually.

45. Refer to the IRP, Chapter 8, Section 8.2.2, pages 155–156, and Load Forecast Study, Section 5, pages 49–53. Explain how the LT Plan and ST Plan optimal results are affected by the four various weather and economic scenarios.

46. Refer to the IRP, Appendix A, Load Forecast Study, Section 2.1.1, pages 17–18, and Section 7.1, pages 57–58.

a. Provide an overview of the economic and demographic conditions currently and what is projected over the forecast period for BREC and the Member Systems.

b. Provide a more complete explanation of how county level demographic and economic data from Woods & Poole, Inc. was tailored to fit each Member System’s specific service territory.

c. Provide an explanation of why the number of residential consumers begin declining in 2028.

47. Refer to the IRP, Appendix A, Load Forecast Study, Section 2.1.1, pages 17, 19, and 62, and Appendix, pages 89, 93, and 97. AC saturation, AC efficiency, electric heat saturation, and heating efficiency are the only data relating to the effects of appliance and equipment efficiency gains that would affect load growth.

- a. Provide any studies which compare and contrast the efficacy of straight econometric models and statistically adjusted end use (SAE) models.
- b. Explain why BREC chose to forego use of SAE models in its residential and commercial class load forecasts.
- c. Explain the source of the AC and heating efficiency data.
- d. Explain the meaning of AC and heating efficiency.
- e. Explain why greater use of the data in the end use survey was not incorporated into the models.

48. Refer to the IRP, Appendix A, Load Forecast Study, Section 2.1.1, pages 17, 19, and 62, and Appendix, pages 89, 93, and 97.

- a. On pages 18–19, when comparing the historical periods in the graphs, the number of customers is increasing and the use per consumer shows substantial variability with a downward trend. However, the use per consumer projection is virtually flat.

- (1) Referring also to pages 21 and 25, the number of GCI and LCI consumers increases and holds steady respectively. Explain why the number of residential consumers declines beginning in 2028.

- (2) Provide an explanation of what is driving the variability and pronounced negative trend in the historical use per customer observations.

- (3) Provide an explanation of why the projected use per consumer is virtually flat and, essentially, a slightly negative trend line from the last historical data point.

b. Provide a table showing both the weather normalized and actual data used to calculate the use per customer for 2008–2019.

c. Explain the residential class price variable and identify the components of the residential price and the alternate fuel price including variable units. Include in the explanation why that variable appears to be the only variable that is in log form.

d. Explain the January through December variables in the models.

e. Explain the rationale for and the advantages of forecasting residential load growth directly versus as the product of forecast consumers and use per consumer and whether a comparison was conducted to demonstrate the efficacy of this method.

49. Refer to the IRP, Appendix A, Load Forecast Study, Section 2.1.1, page 18.

a. Further explain how the various weights, which were based on the number of Residential customers served by each Member System were derived and which economic and demographic variables, were modified with the weights.

b. Provide a numerical example to illustrate the process of modifying county level data to fit within a member's service territory.

c. Provide a list of economic and demographic variables taken from Woods & Poole Economics, Inc., and if known, explain how the county level data was derived.

50. Refer to the IRP, Appendix A, Load Forecast Study, Section 2.2.1.1, page 22, and Appendix pages 90, 94, and 98.

- a. Explain the region encompassed by the GRP variable prior to being modified to fit each member's service territory.
  - b. Explain how the GRP variable was modified to fit each member's service territory.
  - c. Explain why a retail sales variable was not used in the JPEC General C&I Consumer Model on page 90 and the meaning of the January 1990–July 2015 variable.
  - d. Explain the January–December variables in the use per consumer models.
  - e. Explain the components that make up the C&I price variable.
  - f. Explain whether the data is weather normalized and provide a comparison of the historical use per customer on a weather normalized and actual basis.
  - g. Referring to the graph on page 23, the historical data shows a significant decline in use per consumer while the projection is essentially a flat trend line from the last historical data point. Explain the rationale for such a flat projection.
  - h. Presumably, small commercial and industrial consumers use appliances and equipment that will experience efficiency gains over the forecast period. Explain why BREC does not include these consumers in its end use surveys.
  - i. Provide a copy of the 2019 residential end use survey and the results of the survey, and explain how the survey results are utilized by each Member System.
51. Refer to the IRP, Appendix A, Load Forecast Study, Section 7.1, page 58.
- a. For each Member System, explain which weather station data was used as a data source.



- b. Provide a detailed explanation of the following:
  - (1) What weather data was collected;
  - (2) How each variable was calculated; and
  - (3) How each variable was customized for each Member

System's service territory.

- c. Explain why a 15-year period was used as the basis for weather normalization as opposed to a 20-year or 30-year period.

- d. Explain how the data was weather normalized.

52. Refer to the IRP, Appendix A, Load Forecast Study, Section 2.2.2, pages 24–25.

- a. Explain what customer (in terms of load and energy use) is projected to come online in 2020 and what consumer load is leaving (in terms of annual load and energy use) the system in 2022.

- b. Explain how the addition of anticipated load in 2020 and the multiplier effects of that new addition were incorporated into service member models and the decision parameters regarding when an anticipated new load can be added to the load forecast. Include in the discussion whether the effects of the new load were incorporated into the residential and small commercial and industrial class models. If so, explain how the effects were incorporated.

- c. Explain how the anticipated loss of load in 2022 and the multiplier effects of that anticipated loss were incorporated into service member models. Provide the decision parameters regarding when an anticipated loss can be subtracted from the load forecast. Include in the discussion whether the effects of the lost load were

incorporated into the residential and small commercial and industrial class models. If so, explain how the effects were incorporated.

d. Provide a copy of each final forecast report presented to each member system along with any handouts and any other presentation materials.

53. Refer to the IRP, Appendix A, Load Forecast Study, Section 2.5, pages 33 and 35.

a. Explain whether the Own Use column in the table is inclusive of each Member System's use plus BREC's use.

b. Explain whether the Distribution Losses column contains losses for the Member Systems only.

c. Explain whether the Transmission Losses column contains losses for BREC only.

54. Refer to the IRP, Appendix A, Load Forecast Study, Section 2.5, page 34. Explain why only a portion of the Domtar energy use contributes to BREC's energy requirements. Include in the discussion whether and to what degree Domtar affects BREC's peak load demand requirements.

55. Refer to the IRP, Appendix A, Load Forecast Study, Section 3, Table "Big Rivers Total System Energy Summary (MWh)," page 41. For the years 2022 and beyond in the forecast period, explain whether the direct and multiplier effects of the additional jobs created by the expansion of the direct serve load was accounted for in the Total Rural Requirements forecast, and if so, explain how.

56. Refer to the IRP, Appendix A, Load Forecast Study, Section 3, Table Big Rivers Coincident Peak (kW), page 43, and Table Total System NCP (kW), page 45.

a. For planning purposes through the forecast period, explain whether BREC's reserve margin is greater than what is required to be maintained by MISO at any time during a planning year.

b. For table "Big Rivers Coincident Peak (kW)," explain why the Rural Annual CP column contains the greater Rural Winter CP amounts but is inconsistent in taking the greater amounts between Rural Summer and Rural Winter CP amounts in the forecast period.

c. Explain the causes for BREC's Rural System CP to change from winter to summer peaking beginning in year 2037.

d. Provide an update to the "Table Big Rivers Coincident Peak (kW)" and to the "Table Total System NCP (kW)" by including the amount of BREC's generating capacity, the amount required to fulfill MISO obligations, and the resulting reserve margin in each year of the forecast. In addition, include the annual balance for the years included in the Long Term Plan, 2040-2043.

57. Refer to the IRP, Appendix A, Load Forecast Study, Section 3, pages 42–43; Section 7.4, page 61; and Appendix, page 92, 96, and 100.

a. Explain each of the variables in the Load Factor Models.

b. Explain why April and October have both Cold and Hot Peaking categories.

c. Explain whether nonmember requirements are included in the peak demand calculations, and if not, why not.

d. Is it correct to interpret the historical data in the table on page 43 as:

(1) The total annual CP is the actual BREC peak demand for a given year.

(2) That either the greater of the Rural Summer CP or the Winter CP occurred at the same time as the actual BREC system peak demand.

(3) That the Direct Serve CP and transmission losses both occurred at the time of the actual BREC system peak demand.

(4) That the Rural Summer CP and the Rural Winter CP is the sum of the actual individual Member System peak demands.

e. Explain whether the data has been weather normalized.

f. Explain whether Distribution losses are inherent in the Seasonal Rural CP calculation. If not, explain why it is appropriate to include Transmission losses.

58. Refer to the IRP, Appendix A, Load Forecast Study, Section 5, page 51.

a. Explain the basis for the plus and minus one percent variation applied to the economic variables in 2020.

b. Explain whether the one percent variation was applied each forecast year for the economic variables.

c. Explain whether the initial source for the forecast economic variables also included any alternative economic variable forecasts, and if so, why those alternate forecasts were not used in BREC's analyses.

59. Refer to the IRP, Appendix A, Load Forecast Study, Section 7.5, page 62. Explain whether BREC considered using a short-term SAE model and a long-term econometric model, and then blending the two into one forecast.

60. Explain whether BREC prepared this IRP to meet its system and nonmember commitments or required MISO obligations regarding energy and capacity.

61. Explain whether any behind the meter supply-side resources were modeled, and if so, what these were.

62. Provide a table illustrating the energy forecast and generation supply. If the energy forecast is greater than the existing load, explain how the shortage will be covered.

63. Provide a table illustrating the annual demand forecast, generation capacity forecast, and the resulting reserve margin over the entire forecast period through 2043. If the demand forecast is greater than existing capacity or the forecasted generation additions and the resulting reserve margin falls below minimum levels at any time (seasonally or annually), explain how any shortages in either energy or capacity will be covered.



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DATED FEB 26 2021

cc: Parties of Record

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