BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In re: Union Electric Company's 2017 Utility Resource Filing pursuant to 4 CSR 240 – Chapter 22.	)))	Case No. EO-2018-0038

JOINT FILING

COMES NOW Union Electric Company, d/b/a Ameren Missouri ("Ameren Missouri" or "the Company"), the Staff of the Missouri Public Service Commission ("Staff"), the Missouri Division of Energy ("DE"), Natural Resources Defense Council ("NRDC"), Renew Missouri Advocates ("Renew Missouri"), Wind on the Wires ("WOW"), National Association for the Advancement of Colored People ("NAACP"), and the Sierra Club ("SC"),[1] and state as follows:

1. Ameren Missouri made its Chapter 22 Integrated Resource Plan ("IRP") filing on September 25, 2017.

2. On or before February 28, 2018, parties in this case filed reports alleging certain deficiencies and/or raising concerns, or filed comments regarding the compliance of Ameren Missouri's September 25, 2017 filing with Rule 4 CSR 240-22. The parties filing reports or comments were the Staff, DE, NAACP, NRDC, WOW, Renew Missouri and Sierra Club. There were other parties to this case that did not file comments or a report alleging deficiencies in, or concerns with, Ameren Missouri's IRP filing.

3. Rule 4 CSR 240-22.080(9) provides:

> If the staff, public counsel or any intervenor finds deficiencies in or concerns with a triennial compliance filing, it shall work with the electric utility and the other parties to reach, within sixty (60) days of the date that the report or comments were submitted, a joint agreement on a plan to remedy the identified deficiencies and

[1] The signatories are the only parties to file deficiencies or concerns in this case.

> concerns. If full agreement cannot be reached, this should be reported to the commission through a joint filing as soon as possible, but no later than sixty (60) days after the date on which the report or comments were submitted. The joint filing should set out in a brief narrative description those areas on which agreement cannot be reached. The resolution of any deficiencies and concerns shall also be noted in the filing.

4. Ameren Missouri and the other parties, including parties that did not file comments or reports raising concerns and alleging deficiencies, have reached a joint agreement on a plan to remedy some of the alleged deficiencies and concerns, as set forth herein. Also set forth herein is a listing and brief narrative descriptions of those areas on which agreement has not been reached. There may be instances where a party has not identified a deficiency or concern similar to that of another party, does not agree with a deficiency or concern identified by another party and/or does not agree with the resolution that has been reached between that other party and Ameren Missouri. The parties are free to make such situations known in this filing. Such situations may be indicated by a footnote.

Staff Alleged Deficiencies / Concerns

5. **Staff Deficiency 1 – Resolved:** Staff alleges "Ameren Missouri provided only the 30-year PVRR for its Mid-DSM Plan and failed to comply with all other requirements of 4 CSR 240-22.070(1) concerning its Mid-DSM plan."

6. **Resolution:** Ameren Missouri did analyze Mid-DSM as a sensitivity to its preferred plan and did not consider it an alternative resource plan. Staff and Ameren Missouri resolved this alleged deficiency by Ameren Missouri agreeing to hold a meeting with stakeholders for the Company's next triennial IRP filing where stakeholders will have an opportunity to define

an additional DSM portfolio (in addition to RAP and MAP) to be used in an alternative resource plan unless the stakeholders are convinced an additional DSM portfolio is not necessary.

7. **Staff Deficiency 2 – Resolved:** Staff states "Ameren Missouri did not provide its draft of the triennial compliance filing for 4 CSR 240-22.030 at its stakeholder meeting, which is required under 4 CSR 240-22.080(5)(A) and (B)."

8. **Resolution:** Ameren Missouri commits to provide the draft report for 4 CSR 240-22.030 at a stakeholder meeting prior to commencing its integration analysis for the next triennial compliance filing.

9. **Staff Concern A – Resolved:** Staff is concerned "Ameren Missouri's 2017 IRP's MEEIA Cycle 3 implementation plan and Ameren Missouri's MEEIA Cycle 3 RFP to program implementers identifies a 6-year program life for all programs. This 6-year program life creates conflict with the 3-year or triennial compliance requirements of 4 CSR 240-22.050 which specifies the principles by which potential demand-side resource options shall be developed and analyzed for cost effectiveness with the goal of achieving all cost-effective demand-side savings as well as the requirement that demand-side candidate resource options be passed on to integrated resource analysis in 4 CSR 240-22.060."

10. **Resolution:** If the Commission approves a 6-year MEEIA Cycle 3 plan, the Company agrees to request Commission approval for the relevant changes in its approved MEEIA Cycle 3 plan to reflect new information included in its 2020 IRP and underlying DSM potential study. Ameren Missouri agrees to conduct primary market research as part of its next DSM market potential study. To prioritize and determine the scope of primary market research, the Company agrees to conduct a gap analysis of inputs and information needs for the DSM market potential

study and present the findings to interested stakeholders in a collaborative meeting. As part of the collaborative meeting, the Company will seek input and document feedback on priorities and proposed budgets for the primary market research for its next DSM market potential study, in particular primary market research scope and budget concerning saturation of energy efficiency measures and/or the influence energy efficiency has on customer behavior.

11. **Staff Concern B – Resolved:** "If a 6-year MEEIA Cycle 3 is approved and implemented, Staff is concerned that a 2019 DSM Potential Study may not be performed to comply with 4 CSR 240-22.050(2) including the performance of primary research for Ameren Missouri's marketplace to comply with 4 CSR 240-20.094(3)(A)2."

12. **Resolution:** See Resolution to Staff Concern A.

<u>DE Alleged Deficiencies / Concerns & Comments</u>

13. **DE Comment 1:** DE states that Ameren Missouri's ongoing effort to seek viable program options for plug-in electric vehicles (PEVs) is appreciated and encourages the Company to consider incorporation of time-differentiated rate designs in its DSM planning to promote both off-peak vehicle charging and load shifting of other discretionary uses.

14. **Ameren Missouri Response:** Ameren Missouri has included off-peak pricing programs for PEVs in its 2016 Market Potential Study and also is interested in revisiting its existing residential time-of-use rate in its next rate case to achieve a number of objectives, including to encourage off peak charging of PEVs.

15. **DE Concern 1 – Resolved:** DE would like to see more discussion and analysis of storage options, such as batteries and thermal storage particularly in light of the Federal Energy

Regulatory Commission's recent vote to remove barriers to the participation of electric storage in wholesale electricity markets.

16. **Resolution:** Ameren Missouri will continue to closely watch how the markets evolve and evaluate storage options as part of its on-going planning process including IRP filings and annual update reports.

17. **DE Comment 2:** DE notes that the Company is interested in 6-year MEEIA cycle and is supportive of longer MEEIA cycles.

18. **DE Deficiency 1– Resolved:** DE states that combined heat and power (CHP) is a DSM program under MEEIA statute and the Company should fully consider facilitating CHP deployment.

19. **Resolution:** The Company is willing to work with interested stakeholders to develop an agreeable cost effectiveness model of CHP that reflects using CHP as a load management and/or demand response resource under MEEIA. Symmetric treatment of costs and benefits will be explicitly discussed during the development of the cost effectiveness model.[2]

20. **DE Deficiency 2 –Unresolved:** DE states that there is room for additional DSM expenditures since the DSM Market Potential Study identifies the overall portfolio TRC as 2.04. Additionally, low-income and educational programs do not have to be cost-effective and should not be included in the portfolio TRC calculations.

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[2] The Staff is not in agreement with Paragraph 18 DE Deficiency 1 or Paragraph 19 Resolution between DE and Ameren Missouri respecting DE's identified CHP deficiency.

21. **DE Comment 3:** DE states, as there is an increased focus on grid modernization and investments in distributed energy resources (DER), Ameren Missouri will need to direct additional attention towards distribution system planning.

22. **Ameren Missouri Response:** Ameren Missouri agrees.

23. **DE Comment 4:** DE notes a difference in the TRC definition in the MEEIA statute and the National Standard Practice Manual as the latter explicitly includes participant benefits apart from and in addition to avoided utility costs while the former does not. DE also states that the inclusion of utility non-energy benefits in the TRC test is not sufficient to remedy this balance.

24. **Ameren Missouri Response:** In its sensitivity analysis, Ameren Missouri has analyzed the impact if we were to have more favorable avoided costs plus adding non-energy electric benefits, natural gas avoided costs, and non-energy natural gas benefits. This very favorable scenario increased the number of passing measures (mostly EE) by only 3%. (See Potential Study page 160 for the explanation, pages 163-164 for resulting graphs).

25. **DE Comment 5:** DE is encouraged that Ameren Missouri is taking the initiative to include more renewables in its generation portfolio. DE requests serious consideration of investing in wind resources within Missouri, which would provide local economic development benefits such as jobs, lease payments, and local tax revenues. Ameren Missouri could capitalize on the availability and interest of Missouri's workforce to have a positive impact on the state's economy and create goodwill towards the Company.

26. **Ameren Missouri Response:** Ameren Missouri is evaluating opportunities for wind generation in Missouri and neighboring states.

NAACP Alleged Deficiencies / Concerns

27. **NAACP Deficiency 1 – Resolved:** NAACP alleges Ameren Missouri's IRP is deficient because it does not prioritize or consider access to affordable renewable energy, air quality benefits or minimization of localized air pollutants & greenhouse gas emissions in low income or minority communities.

28. **Resolution:** Ameren Missouri and NAACP agree to work together to identify opportunities to provide affordable, renewable energy to persons who reside in low income or minority communities within Ameren Missouri's service territory.

NRDC Alleged Deficiencies / Concerns

29. **NRDC Concern 1 – Resolved:** NRDC is concerned that the DSM potential study underestimates MAP savings and overestimates costs.

30. **Resolution:** Parties agree to resolve all NRDC concerns by improving the next DSM potential study as outlined below:

a) For energy efficiency potential, top-down versions of MAP and RAP will be estimated by benchmarking to achieve utility performance. Top-down estimates will be reconciled against bottom-up versions of MAP and RAP (based on primary market research). Any measures or programs that are not allowed under MEEIA will be explicitly identified and reported as part of the reconciliation. Benchmarking analysis will include energy savings as well as incentive levels and administration/marketing costs. Benchmarking will be national and best efforts will be made to be comprehensive. MAP will be the average of the highest two utilities in the benchmarking analysis while RAP will be the 50^{th} percentile. Interested stakeholders may provide benchmarking data so long as the data is complete and detailed enough for the benchmarking comparison. The reconciliation of top-down and bottom-up estimation methodologies will be reported in a detailed fashion to fully explain any differences as well as an explanation of what ultimately emerges as the MAP and RAP estimations that are to be passed onto the IRP as inputs to alternative resource plans.

b) At least one scenario of potential will be calculated where all customers are transitioned to time-of-use rates.

c) A specific scenario analysis exploring the strategy of increasing incentive levels to increase participation versus the strategy of increasing marketing/high-touch administration to increase participation. The intent of such an analysis is to help inform optimal program design.

d) As compared to achievable measure level potential savings, achievable program level potential savings shall only additionally include interactive effects not already factored into individual measure characteristics. Any measures that are expected to not be implemented in a program shall be removed at the measure screening analysis and explicitly documented in the final report with accompanying explanation and detailed support for removal. All differences between achievable measure-level and achievable program-level potential shall be individually quantified and described in detail in the final report.

The Company will also:

1) Complete a comprehensive analysis of the potential for distributed energy resources (DER) in its service territory as part of its next annual IRP update.

2) Include any cost-effective DER in alternative resource plans as part of its next triennial compliance filing.

31. **NRDC Concern 2 – Resolved:** NRDC is concerned that Ameren Missouri used downwards-biased risk factors for RAP and MAP; NRDC claims risks should be symmetric.

32. **Resolution:** Please see the resolution to NRDC Concern 1.

33. **NRDC Concern 3 – Resolved:** NRDC alleges the analysis unreasonably penalizes MAP in the scorecard.

34. **Resolution:** Please see the resolution to NRDC Concern 1.

35. **NRDC Concern 4 – Resolved:** NRDC alleges the yearly PVRR requirements for MAP are exaggerated as it unreasonably compares the full costs of efficiency to only one year of benefits.

36. **Resolution:** This concern was due to a misunderstanding on NRDC's part. Ameren Missouri explained how it uses 'end-effects' period in its analysis, and NRDC now agrees that

Ameren Missouri did not, in fact, compare full cost of efficiency to only one year of benefits. Also see the resolution to NRDC Concern 1.

37. **NRDC Concern 5 – Resolved:** The cost and savings assumptions for the Mid-DSM scenario are inappropriate.

38. **Resolution:** Please see the resolution to NRDC Concern 1.

39. **NRDC Concern 6 – Resolved:** NRDC is concerned that limited scenarios were modeled with MAP and Mid-DSM portfolios.

40. **Resolution:** Please see the resolution to NRDC Concern 1.

41. **NRDC Concern 7 – Resolved:** NRDC is concerned that Ameren Missouri's analysis of time-of-use and critical peak price rates includes the assumption that the rate structures would be opt-in.

42. **Resolution:** Please see the resolution to NRDC Concern 1.

43. **NRDC Concern 8 – Resolved:** NRDC is concerned that Ameren Missouri improperly used program potential rather than the measure level potential.

44. **Resolution:** Please see the resolution to NRDC Concern 1.

WOW Alleged Deficiencies / Concerns

45. **WOW Concern[3] 1 – Resolved:** WOW is concerned that Ameren Missouri does not assume and plan for additional expected customer demand for wind energy in the near term from large customers and impending electrification. Ameren could better align wind generation and electrification, including EV charging, through time-of-use (TOU) or real-time-pricing.

[3] In its report, WOW identified four deficiencies. However, after discussions with Ameren Missouri staff and getting clarification on the definitions of 'deficiency' and 'concern' in the Commission's Chapter 22 rule, WOW agrees that some of its 'deficiencies' are 'concerns'.

46. **Resolution:** The parties agree that Ameren Missouri is working toward providing more renewable energy to its customers through its Renewable Energy Standard compliance efforts and its recently filed Renewable Choice Tariff. Ameren Missouri already has a TOU rate offering for its residential customers, but will also be working on revising that TOU rate to achieve a number of objectives including to encourage off-peak charging of EVs.

47. **WOW Deficiency 1 – Resolved:** WOW states that inputs (specifically the installed Project Cost for wind and escalator assumption for future prices (WOW Comments at 9 and 13)) used to estimate the levelized cost of energy (LCOE) for wind resources are out of date and therefore inaccurate. This data needs to be updated to account for recent technological advancements and cost competition in wind markets; installed Project Costs are down since Ameren Missouri's 2015 RFP and are likely to continue decreasing beyond what Ameren had forecasted.

48. **Resolution:** The Company agrees with Wind on the Wires statement that the Project Cost data it used in its analysis is out of date at the time stakeholders submitted comments based on the Company's continuing negotiations with wind developers. The recent change in costs is a function of market factors relative to improvements in wind technology and competitive pricing since the data was collected. The Company will continue monitoring and updating its assumptions as it continues to evaluate opportunities in renewable generation. The Company will solicit stakeholder input on future costs of potential wind resources as it prepares its IRP annual update report for 2019.

49. **WOW Deficiency 2 – Resolved:** WOW's position is that inputs (specifically the installed Project Cost for solar and escalator assumptions for the forward curve (WOW Comments

at 15-16)) used to estimate the LCOE for potential solar energy resources are out of date and therefore inaccurate, and needs to be updated to account for recent technological advancements and cost competition in solar markets. WOW alleges that the installed project cost for solar came from an updated report from 2013 and that the updated values did not match current market data. WOW further alleges that the forward looking cost curve Ameren Missouri should use for its rate of solar cost decline be the actual cost declines since the 2015 GTM report (shown in Table 6.15 of the IRP) or more recent actual market prices.

50. **Resolution:** The Company will continue monitoring and updating its assumptions as it continues to evaluate opportunities in renewable generation. The Company will solicit stakeholder input on future prices of potential solar resources as it prepares its IRP annual update report for 2019. If an analysis or data prepared by a third party is used to forecast future solar prices, the Company will seek stakeholder input and comment regarding the publication (e.g., Lazard, Bloomberg New Energy Finance or HIS) and vintage that is to be used.

51. **WOW Concern 2 – Resolved:** WOW states that Ameren Missouri should procure wind resources as soon as possible to receive the greatest benefit from Federal Production Tax Credit (PTC).

52. **Resolution:** The Company is actively investigating and evaluating opportunities for adding more wind generation to its portfolio, including consideration of the benefits of the PTC.

Renew Missouri Alleged Deficiencies / Concerns

53. **Renew Missouri Concern 1 – Resolved:** Renew Missouri shares the concerns of Wind on the Wires that Ameren Missouri did not capture current and future costs for wind and

solar resources. Renew Missouri is concerned that Ameren Missouri is behind its peers in terms of wind and solar investments, and recommends that Ameren strive to close this gap.

54. **Resolution:** The Company agrees with Renew Missouri and Wind on the Wires that the project cost data it used in its analysis is out of date at the time stakeholders submitted comments based on the Company's continuing negotiations with wind developers. The recent change in costs is a function of market factors relative to improvements in wind technology and competitive pricing since the data was collected. The Company will continue monitoring and updating its assumptions as it continues to evaluate opportunities in renewable generation. The Company will solicit stakeholder input to forecast future costs of potential wind and solar resources as it prepares its IRP annual update report for 2019.

55. **Renew Missouri Concern 2 – Unresolved:** Renew Missouri is concerned that Ameren Missouri underestimates the pace of adoption of distributed resources such as solar PV and battery storage. Renew Missouri is concerned the Company has not properly considered how adoption of such distributed resources will affect overall customer demand or displace the need for future generation.

Sierra Club Alleged Deficiencies / Concerns

56. **Sierra Club Deficiency 1 – Unresolved:** Sierra Club alleges that Ameren Missouri inadequately considers the risk of higher costs of compliance with current and possible future environmental regulations, including future required capital investments in its coal plants.

57. **Sierra Club Deficiency 2 – Unresolved:** Sierra Club alleges that Ameren inadequately considered carbon dioxide (CO_2) emission prices by failing to consider any case reflecting an effective emissions reduction policy. Sierra Club further alleges that Ameren

Missouri's CO_2 emission price is not supported by the referenced sources, and that it should consider a carbon price starting earlier than 2025.

58. **Sierra Club Deficiency 3 – Unresolved:** Sierra Club alleges that Ameren Missouri inadequately considered economic challenges for its coal units; namely low natural gas prices, competition from renewables, low or negative load growth and Ameren Missouri's high capacity position in excess of reliability requirements.

59. **Sierra Club Deficiency 4 – Unresolved:** Sierra Club alleges that Ameren Missouri inadequately considers renewables since other than RES only portfolio, there is no wind addition after 700MW and Ameren Missouri is unwilling to add solar, and is relying on 2013 information for solar costs.

60. **Sierra Club Deficiency 5 – Unresolved:** Sierra Club alleges that the IRP is deficient because Ameren Missouri has not mentioned the findings of the federal judge Rodney Sippel of the Eastern District of Missouri that it violated the PSD and Title V provisions of the Clean Air Act (42 U.S.C. § 7401 et seq.) and has not evaluated remedy costs or possible operational impacts.

61. **Sierra Club Request to PSC:** Ameren Missouri has consistently excluded broader public from participating in the IRP process and requires participants to sign draconian confidentiality agreements. Sierra Club asks the Commission to improve public involvement in utilities' long range planning including considering the implementation of one or more public hearings.

WHEREFORE, the undersigned parties to this Joint Filing ask the Commission to accept this pleading as fulfilling the requirements of 4 CSR 240-22.080(9).

Respectfully submitted,

/s/ *Wendy K. Tatro*

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing Joint Filing was served on all parties of record via electronic mail (e-mail) on this 30th day of April, 2018.

/s/ *Wendy K. Tatro*
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