

# Exhibit No. 143

*Exhibit No.:*  
*Issue(s):* Customer-owned  
solar adjustment  
*Witness:* J Luebbert  
*Sponsoring Party:* MoPSC Staff  
*Type of Exhibit:* Rebuttal Testimony  
*Case No.:* ER-2022-0337  
*Date Testimony Prepared:* February 15, 2023

**MISSOURI PUBLIC SERVICE COMMISSION**  
**INDUSTRY ANALYSIS DIVISION**  
**TARIFF/RATE DESIGN DEPARTMENT**

**REBUTTAL TESTIMONY**

**OF**

**J LUEBBERT**

**UNION ELECTRIC COMPANY,  
d/b/a AMEREN MISSOURI**

**CASE NO. ER-2022-0337**

*Jefferson City, Missouri*  
*February 2023*



1           A.     My testimony addresses Ameren Missouri’s proposed customer-owned solar  
2 adjustments to billing determinants<sup>1</sup> and the resulting revenue impact.

3           Q.     Please provide a brief explanation of Ameren Missouri’s proposed  
4 customer-owned solar adjustment to billing determinants in this case.

5           A.     Ameren Missouri’s witness Dr. Nicholas Bowden states, “The customer-owned  
6 solar adjustment was made to annualize the impact of behind-the-meter solar installations made  
7 throughout the test year...”<sup>2</sup> Dr. Bowden goes on to describe that the adjustment is based upon  
8 an estimate of the electricity generated behind the meter during the test year. The estimated  
9 generation is first “removed” from the billing determinants in the test year by adding the  
10 estimated kilowatt hours (kWh) back to the actual energy sales during the test period.  
11 Dr. Bowden then uses the estimates to make an annualization adjustment that removes kWh  
12 from the billing determinants as if the total customer-owned solar capacity was installed on the  
13 first day of the test year.

14          Q.     Did Staff make a similar adjustment to billing determinants and the resulting  
15 revenue adjustment in its direct case?

16          A.     No.

17          Q.     Does Staff disagree that Ameren Missouri’s billing determinants may decrease  
18 as solar installations throughout the service territory increase?

19          A.     No.

20          Q.     Why did Staff not make an adjustment to the billing determinants for the test  
21 period in its direct case?

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<sup>1</sup> Billing determinants are the combination of components to which rates are applied to calculate the customer’s bill.

<sup>2</sup> Page 20 of the direct testimony of Nicholas Bowden.

1           A.     An adjustment to add the kWh generated in the months of the test year and  
2 update period are not necessary because the actual billing determinants already reflect the actual  
3 kWh generated from those solar installations that occurred during the test year and the update  
4 period. Dr. Bowden relied upon estimates of the “lost sales” but the accuracy of the estimate  
5 is unknown.

6           Q.     Why is the accuracy of the adjustments unknown?

7           A.     It is my understanding that Ameren Missouri does not meter the energy output  
8 of a majority of the behind the meter solar installations for the residential class. Solar output is  
9 dependent upon several variables including weather, location, tilt angle of the installation, and  
10 shade. The estimates that Dr. Bowden relies upon to adjust the billing determinants do not  
11 account for these differences in output. Rather, the estimates rely upon a solar generation  
12 estimator from the website PVWatts<sup>3</sup> and assume that all of the solar capacity is installed at  
13 Ameren Missouri’s corporate office at 1901 Chouteau Avenue, St. Louis, Missouri. The  
14 PVWatts site provides the following disclaimers for use of the estimator tool:

15                         These results are based on assumptions described in Help that  
16 may not accurately represent technical characteristics of the project you  
17 are modeling.

18                         PVWatts® is suitable for very preliminary studies of a  
19 photovoltaic system that uses modules (panels) with crystalline silicon  
20 or thin film photovoltaic cells. PVWatts® production estimates do not  
21 account for many factors that are important in the design of a  
22 photovoltaic system.

23                         Caution: Photovoltaic system performance predictions calculated  
24 by PVWatts® include many inherent assumptions and uncertainties and  
25 do not reflect variations between PV technologies nor site-specific  
26 characteristics except as represented by PVWatts® inputs.

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<sup>3</sup> [PVWatts Calculator \(nrel.gov\)](http://pvwatts.nrel.gov).

1 PVWatts® does not model self shading for the fixed or two-axis tracking  
2 option, tracker losses, or shading by nearby objects.

3 The energy value estimates may be overly optimistic if you use  
4 the default system losses value and any of the following conditions are  
5 true:

6 Nearby buildings, trees, objects, or other photovoltaic modules  
7 or supporting structures shade the modules.

8 The modules are on one- and two-axis tracking devices that do  
9 not keep the modules at the optimum orientation with respect to  
10 the sun's position.

11 Annual soiling or snow cover losses exceed 5%.

12 The system performance has degraded from new. (A photovoltaic  
13 system's output may degrade by as much as 1% per year.)

14 Q. Does Ameren Missouri's estimated solar output utilized for the customer owned  
15 solar adjustments account for differences in the numerous assumptions that the PVWatts site  
16 indicates will impact the estimated solar output?

17 A. No. Ameren Missouri's adjustment does not account for these variables which  
18 undoubtedly vary by installation and location. The Ameren Missouri service territory covers a  
19 large geographic area of Missouri and each installation is likely to have unique characteristics  
20 that will vary from the assumptions utilized to develop the customer owned solar adjustment.

21 Q. What level of solar generation has been added behind the meter during the test  
22 year?

23 A. \*\* [REDACTED] <sup>4</sup> \*\* were added in the test year.<sup>5</sup> However, the billing  
24 determinants reflected in Staff's direct case<sup>6</sup> fully reflect the energy output from the solar arrays

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<sup>4</sup> Direct current.

<sup>5</sup> 12 months ending March 31, 2022.

<sup>6</sup> Based upon updated information through June 30, 2022.

1 installed prior to July, 2021, which accounts for more than 23% of the total solar capacity  
2 installed during the test year.

3 Q. Is this level comparable to the level of generation added in Case No.  
4 ER-2014-0258 when Staff made adjustments to billing determinants and revenues to account  
5 for solar installations?

6 A. No. In Case No. ER-2014-0258, the level solar installations was nearly 35,000  
7 kW in the test year. In that case, Staff explained that:

8 There were an unusual amount of solar panel installations within  
9 the test year and update period that could affect projections of Ameren  
10 Missouri's load. The rebate on solar installations was \$2.00 per watt for  
11 applications received before December 31, 2013, and installed before  
12 June 30, 2014. Applications received after December 31, 2013, or  
13 installations completed after June 30, 2014, would receive a rebate of  
14 \$1.50 per watt, a 25% reduction... Staff expects that future rate cases are  
15 unlikely to have such a large amount of solar installations in the test year  
16 because of the reduction in solar panel installations due to the incentive  
17 reduction and other factors such as the cap on payments. However, for  
18 the current case, Staff has included an adjustment to account for the  
19 reduction in load due to solar installations.<sup>7</sup>

20 Q. Given the relative size of solar added during the test year in this case, is it  
21 reasonable to introduce the level of uncertainty associated with Mr. Bowden's adjustment?

22 A. No. While the billing determinants in the test period will not fully reflect the  
23 annual energy output of the customer-owned solar installations, they do reflect the actual output  
24 of the solar arrays for each month after installation as opposed to an estimation of the output  
25 reflected in each month of the test period. In this case, it is better to retain high accuracy for a  
26 portion of the year than to introduce uncertainty for the entire year in an effort to annualize the

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<sup>7</sup> Page 93 of the Staff Cost of Service Report in Case Number ER-2014-0258.

1 relatively small amount of generation introduced during the test year in a manner that may be  
2 inaccurate.

3 Q. Dr. Bowden's testimony indicates that a certain portion of the energy output  
4 from behind the meter solar installations is paid to those solar-owning customers at the  
5 net-metering rate. Is Staff opposed to removal of the energy production that exceeds  
6 customer-specific usage in a given month from the billing determinants in the test period?

7 A. No, because the energy production that exceeds customer usage in a given month  
8 is measurable through the meter as opposed to a generalized estimate that cannot be verified.  
9 While Staff did not make this adjustment in the direct case, Staff is not opposed to such an  
10 adjustment for the true-up period in this case.

11 Q. Is there a way to improve the accuracy of solar annualization in future cases, if  
12 warranted?

13 A. Yes. Staff recommends Ameren Missouri retain information by class and  
14 voltage as to the level of net metering in each interval over time for those net-metered customers  
15 with AMI metering equipment. Retention of this data going forward will provide additional  
16 insight for Ameren Missouri, Staff, ratepayers, and the Commission on the level of net  
17 generation from behind the meter solar installations throughout the service territory.

18 Q. Does that conclude your rebuttal testimony?

19 A. Yes.



BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI


In the Matter of Union Electric Company            )  
d/b/a Ameren Missouri's Tariffs to Adjust        )  
Its Revenues for Electric Service                )            Case No. ER-2022-0337

**AFFIDAVIT OF J LUEBBERT**

STATE OF MISSOURI    )  
                                  )  
COUNTY OF COLE     )            ss.

**COMES NOW J LUEBBERT** and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Rebuttal Testimony of J Luebbert*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

  
\_\_\_\_\_  
J LUEBBERT

**JURAT**

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 10<sup>th</sup> day of February 2023.

D. SUZIE MANKIN  
Notary Public - Notary Seal  
State of Missouri  
Commissioned for Cole County  
My Commission Expires: April 04, 2025  
Commission Number: 12412070

  
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Notary Public

**Case Participation of  
J Luebbert**

<b>Case Number</b>	<b>Company</b>	<b>Issues</b>
EO-2015-0055	Ameren Missouri	Evaluation, Measurement, and Verification
EO-2016-0223	Empire District Electric Company	Integrated Resource Planning Requirements
EO-2016-0228	Ameren Missouri	Utilization of Generation Capacity, Plant Outages, and Demand Response Program
ER-2016-0179	Ameren Missouri	Heat Rate Testing
ER-2016-0285	Kansas City Power & Light Company	Heat Rate Testing
EO-2017-0065	Empire District Electric Company	Utilization of Generation Capacity and Station Outages
EO-2017-0231	Kansas City Power & Light Company	Utilization of Generation Capacity, Heat Rates, and Plant Outages
EO-2017-0232	KCP&L Greater Missouri Operations Company	Utilization of Generation Capacity, Heat Rates, and Plant Outages
EO-2018-0038	Ameren Missouri	Integrated Resource Planning Requirements
EO-2018-0067	Ameren Missouri	Utilization of Generation Capacity, Heat Rates, and Plant Outages
EO-2018-0211	Ameren Missouri	Avoided Costs and Demand Response Programs
EA-2019-0010	Empire District Electric Company	Market Protection Provision
GO-2019-0115	Spire East	Policy
GO-2019-0116	Spire West	Policy
EO-2019-0132	Kansas City Power & Light Company	Avoided Cost, SPP resource adequacy requirements, and Demand Response Programs
ER-2019-0335	Ameren Missouri	Unregulated Competition Waivers and Class Cost Of Service
ER-2019-0374	Empire District Electric Company	SPP resource adequacy
EO-2020-0227	Evergy Missouri Metro	Demand Response programs
EO-2020-0228	Evergy Missouri West	Demand Response programs
EO-2020-0262	Evergy Missouri Metro	Demand Response programs
EO-2020-0263	Evergy Missouri West	Demand Response programs

<b>Case Number</b>	<b>Company</b>	<b>Issues</b>
EO-2020-0280	Evergy Missouri Metro	Integrated Resource Planning Requirements
EO-2020-0281	Evergy Missouri West	Integrated Resource Planning Requirements
EO-2021-0021	Ameren Missouri	Integrated Resource Planning Requirements
EO-2021-0032	Evergy	Renewable Generation and Retirements
GR-2021-0108	Spire Missouri	Metering and Combined Heat and Power
ET-2021-0151	Evergy	Capacity costs
ER-2021-0240	Ameren Missouri	Market Prices, Construction Audit, Smart Energy Plan, AMI
ER-2021-0312	Empire District Electric Company	Construction Audit, Market Price Protection, PISA Reporting
EO-2022-0193	Empire District Electric Company	Retirement of Asbury
ER-2022-0129	Evergy Missouri Metro	MEEIA annualization
ER-2022-0130	Evergy Missouri West	MEEA annualization, Schedule SIL revenue and incremental costs
EF-2022-0155	Evergy Missouri West	Customer event balancing
EC-2022-0315	Evergy Missouri West	Compliance with Stipulation and Agreement, Commission Order, and Schedule SIL
GR-2022-0179	Spire Missouri	Compressed Natural Gas
EA-2022-0244	Ameren Missouri	Huck Finn Solar CCN
EA-2022-0245	Ameren Missouri	Boomtown Solar CCN
EA-2022-0328	Evergy Missouri West	Persimmon Creek CCN