Exhibit No.:
Issue(s): *Project Economics*
Witness: *Hari K. Poudel, PhD*
Sponsoring Party: *MoPSC Staff*
Type of Exhibit: *Rebuttal Testimony*
Case Nos.: *EA-2023-0286*
Date Testimony Prepared: *October 11, 2023*

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

TARIFF/ RATE DESIGN DEPARTMENT

REBUTTAL TESTIMONY

OF

HARI K. POUDEL, PhD

UNION ELECTRIC COMPANY,
d/b/a AMEREN MISSOURIMISSOURI

Case No. EA-2023-0286

Jefferson City, Missouri
October 2023

** Denotes Highly Confidential Information **

REBUTTAL TESTIMONY

OF

HARI K. POUDEL, PhD

UNION ELECTRIC COMPANY,
d/b/a AMEREN MISSOURI

CASE NO. EA-2023-0286

Q. Please state your name and business address.

A. My name is Hari K. Poudel, and my business address is P.O. Box 360, Jefferson City, Missouri, 65102.

Q. By whom are you employed and in what capacity?

A. I am employed by the Missouri Public Service Commission ("Commission") as an Economist in the Tariff/Rate Design Department in the Industrial Analysis Division.

Q. Please describe your educational and work background.

A. I received a Ph.D. in Public Policy and a master's degree in Public Health from University of Missouri, Columbia and another master's degree in Agricultural Economics from University of Hohenheim, Germany.

In January of 2020, I began working for the Missouri Department of Health and Senior Services as a research/data analyst. I was employed with the Division of Community & Public Health from January 2020 until October 2021. I started my career with the Commission as an Economist in October 2021.

Q. Have you previously testified in proceedings before the Missouri Public Service Commission?

A. Yes. I have provided written testimony in multiple rate cases before the Missouri Public Service Commission. Please see Schedule HKP-r1.

EXECUTIVE SUMMARY

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to respond to Ameren Missouri witness, Mr. Matt Michels' direct testimony and discuss topic regarding capacity factor ("CF") and solar cost of the four[1] solar projects discussed by Michels in his direct testimony. Both CF and solar cost are important indicators of the utility scale solar generation projects' economic outcome and the net cost of the assets to ratepayers.

CAPACITY FACTOR

Q. What is a "CF"?

A. A CF is a measure of the amount of electricity generated in a given period relative to how much electricity could have been generated if the generator was operating at full capacity for the entire period. The computation of CF for solar energy is commonly conducted over a full-year duration due to the seasonal fluctuations in solar power. If the annual solar generation would produce 5,000 MWh of electricity, its CF would be 57%. Stated simply, an annual capacity factor provides an indication of the actual generation compared to the maximum on a percentage basis.

Q. How did Ameren Missouri utilize CFs for the estimation of the net present value revenue requirement ("NPVRR") for each project in this case?

A. Ameren Missouri utilized the CF as one of the three variable assumptions that have a meaningful impact on the NPVRR modeling. The two other assumptions were power market prices and total project cost.[2] Ameren Missouri used CF as a constant factor across the four solar projects. However, solar generation capacity of individual project depends on a series of factors, including regional variation in construction and labor costs, land

[1] Savion Cass County, Invenergy Split Rail, Vandalia Solar, and Bowling Green Solar projects.
[2] Lines 10-12, Page 73, Ameren Missouri Matt Michels' Direct Testimony EA-2023-0286.

topography, solar panel quality, and inverter capacity.[3] The larger the size of the inverter, the higher the conversion of the direct current produced by solar PV panels to grid-ready AC power.[4]

Q. How did Ameren Missouri develop the capacity factors used in its annual solar generation forecast?

A. In a response to the MPSC DR0008, Ameren Missouri mentioned that Ameren Missouri used the annual solar generation forecast provided by EDF and 1898 & Co.[5] EDF and 1898 & Co are the contractors who run annual solar generation forecast for Ameren Missouri in this filing.[6]

Q. Did Ameren Missouri provide annual solar generation forecast values to all of the four solar projects?

A. No. Ameren Missouri provided annual solar generation forecast values to the Vandalia Solar and the Bowling Green Solar projects. However, the same information was missing for the Split Rail Solar and the Cass County Solar Projects.[7]

Q. Did Staff use available annual solar generation forecast values to generate capacity ratios and their impact on the revenue generation?

A. Yes. Staff used the available information of annual solar generation forecast values to generate capacity ratios to find their impacts on the revenue generation for the Vandalia Solar and the Bowling Green Solar projects.

Q. What are the annual solar generation forecast values used in the revenue requirement offsets calculation by Staff?

[3] https://www.eia.gov/todayinenergy/detail.php?id=39832.
[4] https://www.eia.gov/todayinenergy/detail.php?id=39832.
[5] MPSC DR0008, EA-2023-0286.
[6] MPSC DR0008, EA-2023-0286.
[7] MPSC DR0008, EA-2023-0286.

A. Staff used the following solar generation forecast values as provided in MPSC DR 0008 response as presented in Table 1 below.

Table 1. Annual solar generation forecast values used by Staff :

	Ameren Missouri Vandalia Solar	Ameren Missouri Bowling Green
Probability distribution at P50	121.61 GWh	122.22 GWh
Probability distribution at P75	112.15 GWh	115.65 GWh
Probability distribution at P90	103.61 GWh	113.81 GWh

Q. Explain how capacity ratios affect offsetting revenue from energy and capacity.

A. Staff used the PVsyst based capacity ratios in estimating revenue requirements offsets. Table 2 shows that the revenue requirements offsets amount are different in the given capacity ratios when compared between Ameren Missouri and PVsyst capacity ratios. The impact of the capacity ratios in offsetting revenue from energy and capacity depends on the individual solar project. Therefore, use of Ameren Missouri's one constant capacity ratio across the four solar projects can't be considered as a valid statistical estimate.

Table 2. Capacity ratios offsetting revenue from energy and capacity.[8]

***

***

SOLAR PROJECT COST

Q. How does Ameren Missouri present the solar project cost for each project?

A. Ameren Missouri's Preferred Resource Plan ("Plan") includes the addition of 5,400 MW of wind and solar generation resources, including 2,800 MW between now and 2030.[9] In order to meet 2,800 MW of renewable energy, Ameren Missouri presents the four solar projects as shown in Table 3 below with project's size (MW-AC) and base case cost ($M).

[8] Values are calculated based on the PVsyst report provided by Ameren Missouri in a response to MPSC DR0008. Capacity ratios were developed by Staff based on the PVsyst report. These capacity ratios were used to estimate the offsetting revenues based on Mr. Michels' workpaper assumptions.
[9] Lines 6-8, Page 5 Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.

Table 3. Ameren Missouri's solar projects, size, and cost of solar generation:

***

***

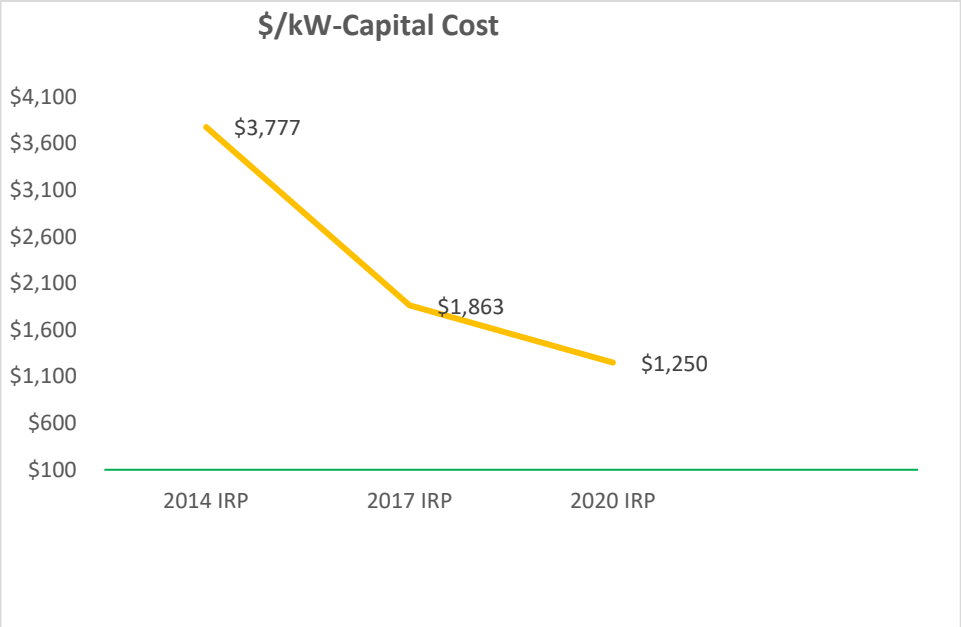
Q. What are the solar project costs ($/kW) Ameren Missouri utilized in the 2020 IRP, 2022 Updated IRP, and 2023 IRP?

A. Ameren Missouri estimated that the solar project cost was approximately $1,700/kW in the 2022 Updated IRP whereas it was only approximately $1,250/kW in the 2020 IRP.[12] However, Ameren Missouri' four solar projects proposed in this filing (EA-2023-0286) have higher solar costs.[13]

Figure 1 indicates a sharp reduction in the $/kW capital cost between 2014 IRP and 2020 IRP.[14] Ameren Missouri has argued that the Company increased solar generation cost to adjust changes in the assumptions of the cost of renewable resources in the 2022 Updated IRP.[15]

[10] Schedule MM-D14 HC, Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.
[12] Page 12, Figure 8, Schedule MM D-2, Ameren Missouri Matt Michel EA-2023-0286.
[12] Page 12, Figure 8, Schedule MM D-2, Ameren Missouri Matt Michel EA-2023-0286.
[13] EA-2023-0286 Ameren Missouri's Workpapers supporting tables 1 & 2 were provided to Staff on June 21, 2023 and these workpapers were named as follows: (1) Invenergy Split Rail ITC_Highly Confidential; (2) Savion Cass County ITC_Highly Confidential; (3) Vandalia Solar ITC_Highly Confidential; (4) Bowling Green Solar ITC_Highly Confidential.
[14] EO-2021-0021 Ameren Missouri 2020 Triennial IRP Workpaper- *New Resource Uncertainties v3*
[15] Page 12, Schedule MM-D2, Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.

Figure 1. Solar Project Cost utilized by Ameren Missouri in different IRPs: [16]



Q. What are the resources Ameren Missouri utilized to inform the assumptions for the cost of renewable resources in the 2020 IRP and the 2022 Updated IRP?

A. Ameren Missouri utilized NREL's ATB assumptions to inform the cost of the renewable resources in its IRP.[17] The ATB provides cost and performance data for electricity-generating technologies, both at present and growth projections through 2050.[18] ATB's three metrics are capital expenditure (CAPEX), operation and maintenance (O&M) costs, and CF. Ameren Missouri presented the solar project costs using the most recent ATB assumptions.[19]

The 2022 Updated IRP assumed higher solar project costs in the beginning, which wasn't assumed in 2020 IRP.[20] Therefore, Ameren Missouri estimated higher solar project costs to adjust the current market costs of solar electricity generation in the 2022 Updated IRP.

[16] EO-2021-0021 Ameren Missouri 2020 Triennial IRP Workpaper- New Resource Uncertainties v3.
[17] Page 12, Schedule MM-D2, Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.
[18] https://atb.nrel.gov/electricity/2022/index
[19] Page 12, Schedule MM-D2, Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.
[20] Page 12, Schedule MM-D2, Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.

Q. What is the estimated capital costs of solar projects included for year 2025 and 2026 in Ameren Missouri's IRP analyses?

A. The estimated capital costs per kilowatt of solar projects included for year 2025 and 2026 in Ameren Missouri's IRP filing in Ameren Missouri's updated preferred resource plan in Case No. EO-2022-0362 are $1535/kW[21] and $1478/kW respectively.

Q. How do those costs compare to the expected costs of each of the solar projects relevant to this case on a $ per kW basis and a percentage basis?

A. The solar costs ($/kW) of the 2022 Updated IRP (EO-2022-0362) were compared to the solar costs of this current filing (EA-2023-0286) by the Staff. Staff utilized the capital expenditure ($/kW) from each of the workpapers provided by Ameren Missouri in this case filing.[22] The Table 4 shows that assumed cost for Invenergy Split Rail solar project increased *** [redacted] *** between 2022 Updated IRP and this filing. Similarly, assumed cost for Savion Cass County solar project increased *** [redacted] *** between the 2022 Updated IRP and this filing. The assumed cost for Vandalia solar project increased *** [redacted] *** between 2022 Updated IRP and this filing. The assumed cost for Bowling Green solar project increased *** [redacted] *** between 2022 Updated IRP and this filing. The Table 4 below shows that the percentage change in $/kW from the current filing is at least *** [redacted] *** greater than the previous IRP filings' estimate.[23] However, the solar cost is expected to decline over time.[24]

[21] DR 129 in EA-2023-0286, Workpaper "MSPC 0129 – RR Model 2022"
[22] EA-2023-0286 Ameren Missouri's Workpapers supporting tables 1 & 2 were provided to Staff on June 21, 2023 and these workpapers were named as follows: (1) Invenergy Split Rail ITC_Highly Confidential; (2) Savion Cass County ITC_Highly Confidential; (3) Vandalia Solar ITC_Highly Confidential; (4) Bowling Green Solar ITC_Highly Confidential.
[23] Ameren Missouri's 2020 IRP assumed even lower capital costs for solar projects, resulting in larger cost changes and percentage increases.
[24] Barbose G, Darghouth N. Tracking the Sun 2021 Edition: Pricing and design trends for distributed photovoltaic systems in the United States. Berkeley, CA: Lawrence Berkeley National Laboratory (LBNL); 2021.

Table 4. Comparison of solar project cost ($/kW)

***

***

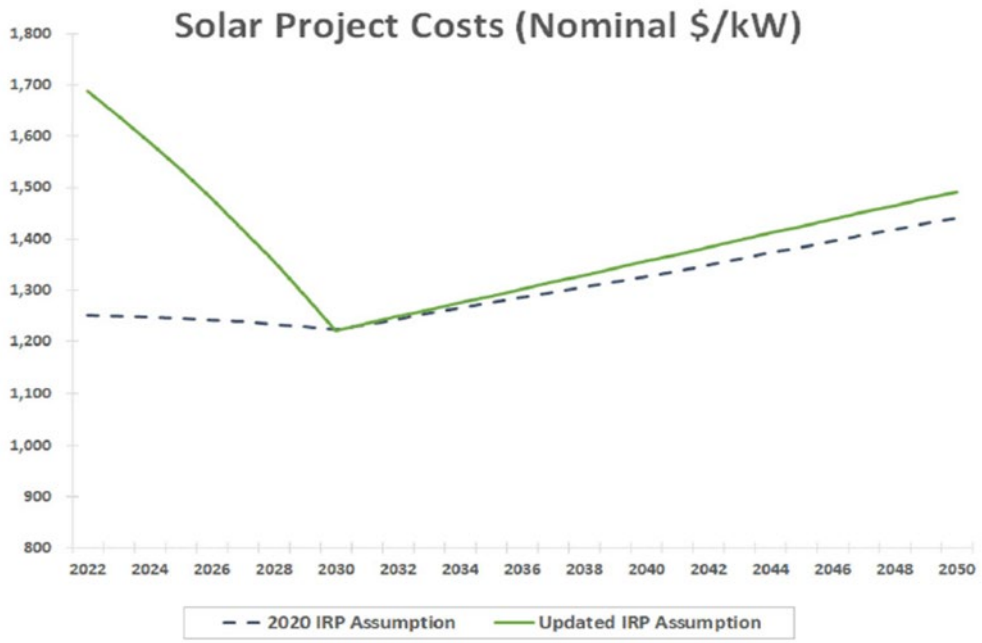
Q. Did Staff find discrepancy between the NREL and Ameren Missouri's solar cost estimation?

A. Yes. Ameren Missouri cost curve deviated from the NREL's cost curve. To put it another way, both cost curves are not identical even though Ameren Missouri used the NREL assumptions.[27] Ameren Missouri witness Mr. Michels provided Figure 2 below.[28] Figure 1 shows the solar project costs Ameren Missouri utilized in the 2020 IRP and in the 2022 Updated IRP. Mr. Michels states that Ameren Missouri used the moderate cost projection for solar cost estimation.[29] According to the NREL, the moderate projection

[25] EA-2023-0286 Ameren Missouri's Workpapers supporting tables 1 & 2 were provided to Staff on June 21, 2023 and these workpapers were named as follows: (1) Invenergy Split Rail ITC_Highly Confidential; (2) Savion Cass County ITC_Highly Confidential; (3) Vandalia Solar ITC_Highly Confidential; (4) Bowling Green Solar ITC_Highly Confidential.
[26] $/kW, Missouri's updated preferred resource plan in Case No. EO-2022-0362.
[27] Schedule MM D-2 on Page 12 Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.
[28] Schedule MM D-2 on Page 12, Figure 8 Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.
[29] Schedule MM D-2 on Page 12, Figure 8 Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.

scenario is described as "Innovations observed in today's marketplace become more widespread, and innovations that are nearly market-ready today come into the marketplace. Current levels of public and private R&D investment continue. This scenario may be considered the expected level of technology innovation."[30] The year represents the commercial online date.

Figure 2. Solar Project Cost ($/kW- AC) provided by Ameren Missouri



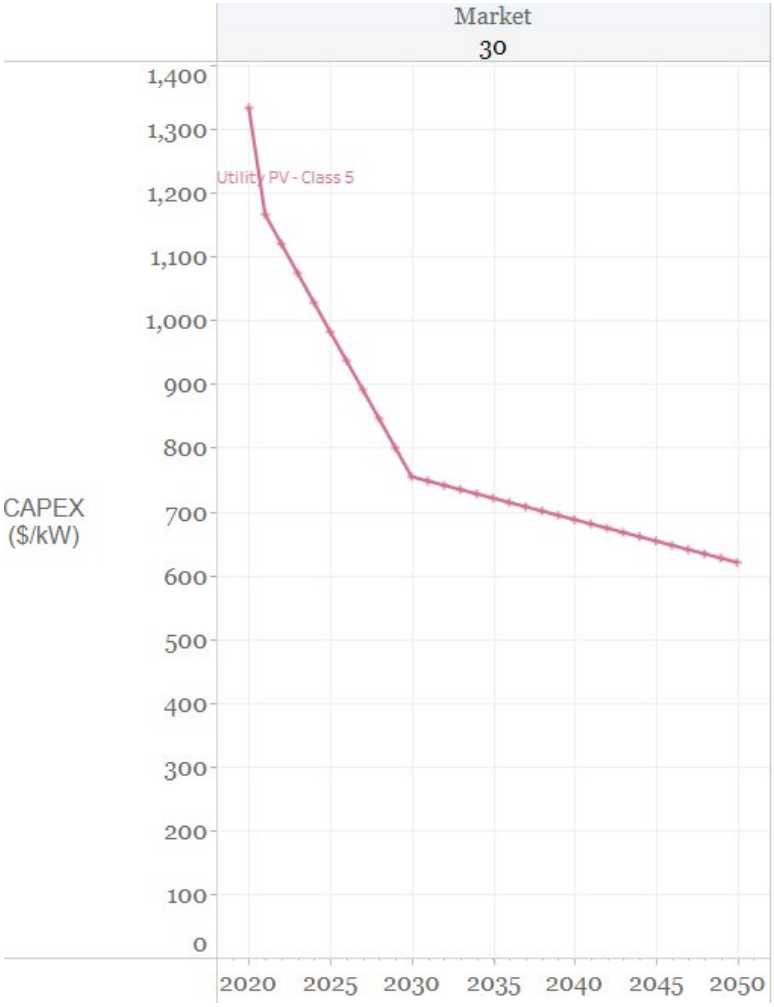
In figure 3 below, Staff used a CAPEX parameter to estimate solar cost.[31] The ATB provides cost and performance data at present and growth projections through 2050.[32] ATB's three metrics are capital expenditure (CAPEX), operation and maintenance (O&M) costs, and CF. Ameren Missouri presented the solar project costs using the most recent ATB assumptions.[33] The CAPEX is the amount of money that a company spends for solar generation at the utility-scale. The CAPEX includes a series of cost items, such as electrical infrastructure and interconnection cost, transmission substation upgrades,

[30] https://atb.nrel.gov/electricity/2022/definitions#capitalexpenditures
[31] https://atb.nrel.gov/electricity/2022/definitions#capitalexpenditures
[32] https://atb.nrel.gov/electricity/2022/index
[33] Page 12, Schedule MM-D2, Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.

generation equipment and infrastructure, installation, labor and materials, engineering, environmental studies and permitting, insurance, legal fees, property taxes, fencing, buildings for operation and maintenance, and so on.[34] Figure 2 above shows Mr. Michels' cost curve spiked higher (green colored curve) in the beginning and figure 3 below shows the higher spike did not appear in the NREL's cost curve.[35]

[34] https://atb.nrel.gov/electricity/2023/definitions
[35] https://atb.nrel.gov/electricity/2023/utility-scale_pv

Figure 3. Solar Project Cost ($/kW- AC) generated by Staff using NREL assumptions:



Mr. Michels's testimony didn't explicitly discuss the reason for a higher spike in the beginning. He briefly mentioned Ameren Missouri's cost curve was based on the moderate cost scenarios and the cost curve shifted to adjust the current market costs of the solar project.[36]

Q. How do the costs of the solar projects subject to this case compare to the NREL assumptions?

A. Ameren Missouri has updated the assumptions for solar project costs in this filing.[37] The assumptions were made based on the ATB assumptions from NREL, and

[36] Page 12, Schedule MM-D2, Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.
[37] Page 12, Schedule MM-D2, Ameren Missouri Matt Michels's Direct Testimony EA-2023-0286.

subsequently scaled up by Ameren Missouri. The Table 5 presented herein has been developed utilizing the NREL assumptions, which have been employed to determine the CAPEX ($/kW)[38] for various solar project years spanning the years 2022 to 2027. The computation of NREL's CAPEX is based on the moderate cost scenarios, which have been utilized by Ameren Missouri in the present filing. According to the data presented in Table 5, it can be observed that Ameren Missouri's $/kW is at least *** [redacted] *** more than the NREL estimate. The $/kW values assigned to the four solar projects indicate a stark contrast from NREL's assumptions regarding $/kW computations.

[38] "2022 v2 Annual Technology Baseline Workbook Corrected 7-21-2022.xlsx" retrieved from https://atb.nrel.gov/electricity/2022/data

Table 5. Comparison of capital expenditure ($/kW) between Ameren Missouri and NREL

***

***

Q. Are Ameren Missouri's solar cost assumptions consistent with the resources, Mr. Michels cites?

A. No. Staff reviewed NREL's solar cost assumptions and graphs showing different scenarios. Ameren Missouri's updated IRP cost assumptions appear to be unrealistic and misalign with NREL's solar cost assumptions. For example, NREL's CAPEX ($/kW) was estimated to be $1,119.82 in 2022, which was almost similar to the value ($1250/kW) reported in Company's 2020 IRP assumption. However, Ameren Missouri's updated IRP assumed approximately $1,700/kW in the same year. Similarly, another NREL's study, "Solar Futures" used the ATB Advanced projections. The study also reported that CAPEX

[39] % indicates percentage change between NREL and respective solar project

will fall to 50% of their 2020 values by the early 2030s.[40] Due to technology development and solar cost declines, the assumption of $1,700/kW in 2022 Updated IRP is flawed.

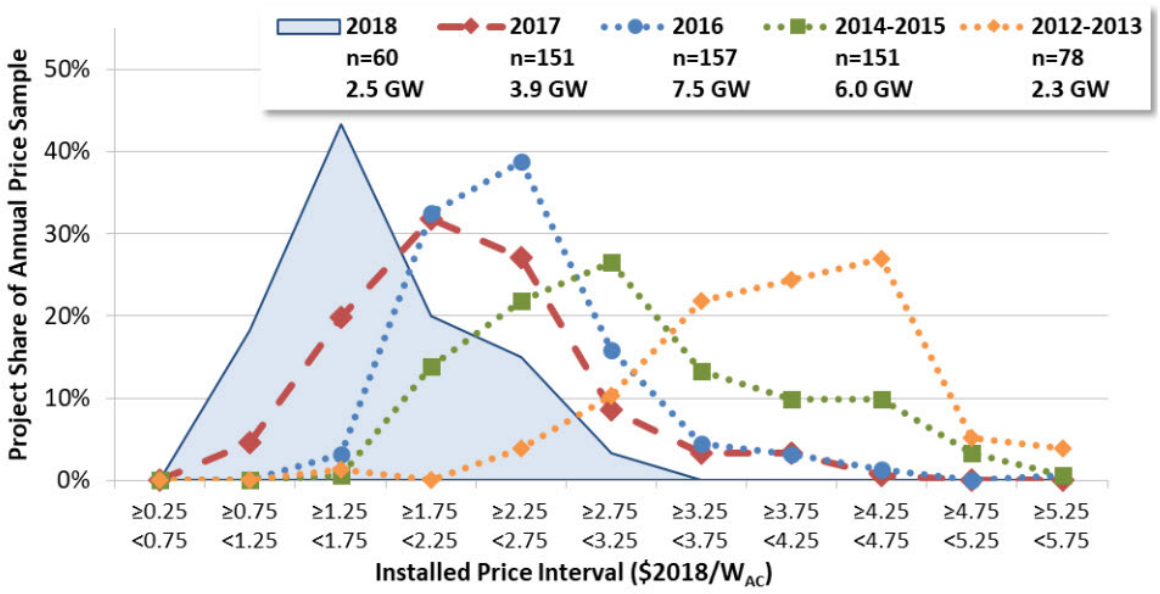
In the past ten years, there has been a substantial reduction in the cost of utility-scale PV systems, leading to the emergence of cost-effective energy generation specifically during daylight hours. Over time, there has been a consistent drop in the annual capacity-weighted average construction costs for solar photovoltaic systems in the United States. Based on a recent analysis conducted by the U.S. Energy Information Administration, it was observed that the cost experienced a decrease of slightly less than 3% during the period spanning from 2013 to 2019. In 2019, the average construction costs for utility-scale solar power generating amounted to $1,796 per kilowatt (kW), indicating a drop of 2.8% compared to the previous year (2018).[41]

A growing body of research on renewable energy suggests that there is a rapid cost decline of solar technologies over the last decade.[42] The literature supports the fact that there is a steady decline in installed solar prices over time[43]. The installed price is that value that reflects either the price at which a newly completed project was sold, or alternatively, the fair market value of a given project. Figure 4 below shows that the price bin with the most projects, which sets the peak price of each curve, shifts to the left from year to year, indicating price decreases. Additionally, the portion of the sample that falls into relatively high-priced bins (e.g., $1.75 - $5.75/$W_{AC}$) decreases[44] while the portion that falls into relatively low-

[40] https://www.energy.gov/sites/default/files/2021-09/Solar%20Futures%20Study.pdf
[41] Bolinger, M.' Seel, J; Robson, D. (2019). Utility-Scale Solar: Empirical Trends in Project Technology, Cost, Performance, and PPA Pricing in the United States. Lawrence Berkeley National Laboratory. Retrieved from https://escholarship.org/uc/item/336457p8
[42] Barbose G, Darghouth N. Tracking the Sun 2021 Edition: Pricing and design trends for distributed photovoltaic systems in the United States. Berkeley, CA: Lawrence Berkeley National Laboratory (LBNL); 2021.
[43] Bolinger, M.' Seel, J; Robson, D. (2019). Utility-Scale Solar: Empirical Trends in Project Technology, Cost, Performance, and PPA Pricing in the United States. Lawrence Berkeley National Laboratory. Retrieved from https://escholarship.org/uc/item/336457p8

priced bins (e.g., \$0.75-\$175/W_{AC}) increases. The width of the curves also narrows over time, indicating that the solar pricing become less varied, so projects are more likely to be priced similarly. The findings are based on the sample of PV projects completed between 2012 and 2018.

Figure 4. Distribution of Installed Utility-Scale Solar Prices by Installation Year



In economics, opportunities for cost reductions across the PV value chain may be diminishing as the market matures and the easiest opportunities for efficiency gains are exploited. The costs of solar generating for Ameren Missouri's solar projects show higher prices in comparison to the neighboring solar projects. Staff is aware that the cost of utility-scale solar power might differ based on factors such as project size, location, and availability to essential infrastructure like grid interconnections and network upgrades. To reflect this difference, the weighted average cost for solar PV is used to report the utility-scale solar generation construction costs. The cost assumptions made by NREL encompass a comprehensive range of cost scenarios in order to estimate the expenses associated with utility-scale solar projects. Nevertheless, Ameren Missouri's solar energy initiative has a comparatively higher cost when compared to other companies in the neighboring

communities. For example, Arevon is developing a 200-350 MW AC solar farm in Scott County, Missouri and the estimated cost is $875/kW.[45] The projects has a 35-year useful life and the power will be transmitted to the Kelso-Minor 161 kV Line (Ameren).

CONCLUSION

Q. Are the solar project costs in this filing consistent with the assumptions included in Ameren Missouri's IRP analyses??

A. No. Ameren Missouri's expected cost of the solar project subject to this case are higher than the assumptions used in Ameren Missouri's past IRP analyses. Staff analyzed capital expenditure for each of the solar project using Ameren Missouri's cost estimate assumptions. Staff performed a comparison analysis of solar project cost ($/kW) between the 2022 Updated IRP filing (EO-2022-0362) and the current filing (EA-2023-0286) using Ameren Missouri data. In this analysis, Staff found that the percentage change in $/kW from the current filing is at least *** [redacted] *** greater than the previous IRP filings.

Q. Does this conclude your testimony?

A. Yes. It does.

[45] https://www kelsosolar.com/project-details

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Permission and Approval and Certificates of Public Convenience and Necessity Authorizing it to Construct Renewable Generation Facilities	)))))	Case No. EA-2023-0286

AFFIDAVIT OF HARI K. POUDEL, PhD

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW HARI K. POUDEL, PhD and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Rebuttal Testimony of Hari K. Poudel, PhD*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

HARI K. POUDEL, PhD

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 5th day of October 2023.

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

Notary Public

Hari K. Poudel

Present Position

Currently, I work for the Missouri Public Service Commission ("Commission") as a Regulatory Economist in the Tariff/Rate Department of the Industry Analysis Division. The Department of Tariff and Rate Design takes part in and offers advice on matters filed with the Commission, such as rate, complaint, application, territorial agreements, sale, and merger. The department also handles rate design, weather variables, and weather normalization tasks and offers technical assistance. I am responsible for using quantitative economic techniques and statistical analysis to address energy-related challenges that have an effect on utility ratemaking. I am also responsible of recommendations for the Commission based on a rigorous economic analyses of the problems relating to energy.

Educational Credentials and Work Experience

I received a Doctor of Philosophy in Public Policy from the University of Missouri, Columbia, Missouri in May 2020. I graduated with a Master's in Public Health from the University of Missouri, Columbia in May 2019. Inn 2008, I received a Master's in Agricultural Economics degree from Hohenheim University in Germany.

I've been employed with the Missouri Public Service Commission since October 25, 2021, in the Tariff/Rate Department of the Industry Analysis Division as a Regulatory Economist. Prior to joining the Commission, I was a Research/Data Analyst for the Missouri Department of Health and Senior Services. I analyzed public health data that directly affects Missourians in my capacity as an analyst.

Testimonies/Memorandum

SN	Case Number	Company Name	Issue
1.	GR-2021-0320	Liberty Utilities	Tariff Compliance
2.	GR-2022-0235	Spire Missouri, Inc.	Weather Normalization Adjustment Rider (WNAR)
3.	ER-2022-0146	Ameren Missouri	Rider Energy Efficient Investment Charge (EEIC)
4.	GT-2022-0233	Liberty Utilities	Weather Normalization Adjustment Rider (WNAR)
5.	ER-2022-0129 & ER-2022-0130	Evergy Metro, Inc. & Evergy Missouri West, Inc.	General Rate Case
6.	ER-2022-0337	Ameren Missouri	365-Day Adjustment, Weather Variables, Weather Normalization, Hourly Load Requirement Energy Efficiency Adjustment
5.	GO-2023-0002	Spire	Weather Normalization Adjustment Rider (WNAR)
7.	GT-2023-0088	Liberty Utilities	Weather Normalization Adjustment Rider (WNAR)
9.	GT-2024-0054	Liberty Utilities (Midstates Natural Gas)	Weather Normalization Adjustment Rider (WNAR)
10.	GT-2024-0055	The Empire District Gas Company	Weather Normalization Adjustment Rider (WNAR)