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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. EA-2019-0371

SUPPLEMENTAL DIRECT TESTIMONY

OF

REX JENKINS

ON

BEHALF OF

UNION ELECTRIC COMPANY

d/b/a Ameren Missouri

St. Louis, Missouri
November, 2019

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I. INTRODUCTION

Q. Please state your name and business address.

A. Rex Jenkins, Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "Company"), One Ameren Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63103.

Q. What is your position with Ameren Missouri?

A. I work in the Company's Innovation and Corporate Strategy Department as a Lead Analyst. My work includes support of Ameren Missouri's Integrated Resource Plan development and the calculation of the 1% Retail Rate Impact associated with the Company's compliance with Missouri's Renewable Energy Standard ("RES").

Q. Please describe your educational background and employment experience.

A I joined AmerenUE in 1997 as a power trader in the hourly and short term trading organization. In 1999, the direction and responsibilities of my role shifted to perform more of an analytical role, including production cost modeling of Ameren's generation fleet and supporting trading strategies and opportunities. My role of analytical support transitioned into long term resource planning in 2008 and I have been involved in supporting Ameren Missouri's Integrated Resource Planning ever since. In addition to long

term resource planning, I have supported and performed analysis on how Ameren Missouri would meet the Missouri RES.

I earned a Bachelor of Science degree in Mechanical Engineering from the University of Missouri-Rolla in May 1990 and a Masters of Business Administration from the University of Illinois-Chicago in May 1994. I was employed by Commonwealth Edison as an engineer in 1990 when I graduated from Rolla and received my MBA while working for Commonwealth Edison. After receiving my MBA, I took a position in the bulk power operations of Commonwealth Edison and began supporting the separation of the trading function of bulk power operations away from the dispatch desk. This role started as an analytical support function but developed into a trading role as the organizational needs evolved.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your supplemental direct testimony in this proceeding?

A. The purpose of my supplemental direct testimony is to support the approval of Ameren Missouri's application for a Certificate of Convenience and Necessity ("CCNs") for the Utica Project, which entails a solar generating facility paired with battery storage to innovatively address electric distribution system reliability problems. I will refer to it as Solar + Storage. Ameren Missouri witness, Kevin Anders, provides details of three Solar + Storage Projects — Utica, Green City, and Richwoods — in his direct testimony. Mr. Anders provides the construction cost estimate for a traditional wires solution for each. I used an early estimate of Mr. Anders' construction cost estimates as the basis of the cost effectiveness analysis I conducted for each Project.

Q. Please summarize the conclusions of your direct testimony.

A. The proposed Solar + Storage project represent the most cost effective method for meeting the distribution reliability needs of our customers. The solar generating asset provides energy and capacity market benefits, along with solar renewable energy credits ("SRECs") that may be used by Ameren Missouri to meet the Missouri Renewable Energy Standard ("RES") or sold into the market place as another source of offsetting revenue. The renewable energy also helps to transition our fleet to a more fuel diverse mix of resources. The storage component of the distribution solution is used to achieve the reliability goals of the project and is an integral part of the solution but are not expected to directly provide market based benefits.

III. ECONOMICS OF SOLAR + STORAGE

Q. Has Ameren Missouri compared the economics of Solar + Storage distribution solutions versus traditional wires only solutions?

A. Yes. In confidential Schedule RJ-SD1 UT CONF, I provide such a comparison. The NPV analysis looks at the cost of construction for the project, the anticipated operating costs, the projected level of off-system sales, the value of those off-system sales, but does not value the SRECs generated. In contrast, the traditional wires only solution described by Mr. Anders' revised direct testimony could only be compared on the bases of cost of construction and anticipated operating costs.

Q Please describe the basic operation of the model you used in your NPV analysis.

A. The model calculates the incremental net revenue requirement for each year, based on a set of input assumptions. The total revenue requirement can be considered as

the sum of three basic components: the fixed asset costs, the operating costs, and the market revenues for the project.

Q. What is included in each of those components?

A. The fixed asset costs are determined by calculating the return on net rate base in each year, the expected annual depreciation expense, and net tax expense, including the investment tax credit ("ITC"). The model applies a tax depreciation to the project overall — solar production or balance of plant, which includes battery investments for simplification of modeling. Book depreciation is calculated using straight-line depreciation based on a 25-year asset life for the solar generating facilities. Income taxes reflect the Company's combined state and federal tax rate based on the recently-enacted federal tax reform legislation. The combined income tax rate used for modeling is 25.45%.

Operating & maintenance costs are estimates based on similarly sized solar projects with comparable specifications. Property taxes for the solar portion of the investment are assumed to be 0.0%, consistent with the state law governing solar plant investment.[1] Finally, annual property insurance costs were estimated by Ameren Missouri's internal insurance experts.

Market revenues include both energy and capacity revenues. Energy revenues are determined by applying a range of power market price estimates to the expected energy production of each project. The estimated range of power market prices is taken from the Company's 2017 IRP analysis. Three scenarios from the IRP analysis were evaluated in modeling the economics of the Project: 1) the probability-weighted-average ("PWA")

[1] Section 137.100.10 of the Missouri Revised Statutes.

power price of the 15 scenarios modeled in the IRP, 2) the lowest price scenario from among the 15 IRP scenarios, and 3) the highest price scenario from the IRP.

The energy prices applied to the solar generation were adjusted to reflect a higher hourly market value expected to be captured during the hours in which solar generation is produced. The Solar + Storage projects proposed are behind the meter generation under the MISO tariff and therefore will act as a reduction to load and ultimately serve to reduce the amount of energy settled in the AMMO.UE CpNode. This is consistent with how the Company's current solar facility in O'Fallon, Missouri, is accounted for in the MISO market. Based on this expectation, I accounted for the price basis differential between the assumption used in our modeling for generation (developed for the 2017 IRP) and the price applicable to our load. The basis differential calculated using the 2018/2019 MISO FTR auction and applicable marginal losses is 2.41% (Load higher than generation). We have utilized this basis to provide an expectation going forward.

Capacity revenues are determined by applying a range of capacity price estimates to the expected capacity credit for the solar generation. Three scenarios for capacity prices from the IRP analysis have been evaluated — low, reference, and high. For modeling, the low capacity price scenario has been coupled with the low power price scenario, the reference capacity price with the PWA power price, and the high capacity price with the high power price. The expected capacity credit is determined by applying the MISO solar capacity credit value of 50% of the AC output of each project.

Q. What do you conclude from the analysis results?

A. Based on the results of my analysis, the Utica Solar + Storage project is expected to result in a significantly lower net revenue requirement than the traditional

wires solution. For this project, I compared the cost of the traditional, wires only solution with the proposed non-wires alternative. I looked at the revenue requirement impact over 25 years and this analysis shows that the non-wires solution is the less expensive option, which benefits the Company and our customers.

Q. What does your analysis show for the Utica Project?

A. My analysis is shown in confidential Schedule RJ-SD1 UT CONF. The results are summarized as follows:

		Utica		
		Solar + Storage Investment	Distribution Investment	Solar Plus Storage Savings
Total Capex		$21,700,000	$13,392,713	($8,307,287)
Cumulative NPV of Net Revenue Requirements	High Market	($29,426)	$14,403,162	$14,432,589
	PWA Market	$3,372,924	$14,403,162	$11,030,238
	Low Market	$7,802,522	$14,403,162	$6,600,641

The project has an estimated total capex cost of approximately $21.7 million, and results in a cumulative NPV of revenue requirements that ranged from an approximately $7.8 million increase to a small decrease depending on the market value of energy and capacity. The traditional distribution investment solution has an estimated capex cost of approximately $13.4 million and an associated NPV of revenue requirements of $14.4 million. Remember, the revenue requirements for the traditional distribution solution do not vary with energy and capacity markets.

Q. Why should the Commission rely on your NPV analysis instead of a simple construction cost comparison?

A. The use of the NPV analysis provides a more complete picture of the expected impact to customers by capturing both the costs and the market value benefits of both proposed distribution solutions.

Q. What action do you recommend the Commission take in this case?

A. I recommend the Commission grant the Company's request for the CCN for the construction of the Utica Solar + Storage project as described by Mr. Anders in his testimony, as it is the most cost-effective way to address distribution reliability problems.

Q. Does this conclude your supplemental direct testimony?

A. Yes, it does.

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 Certificate of Convenience and Necessity Authorizing it to Construct Solar Generation Facility(ies)	)))))	File No. EA-2019-0371

AFFIDAVIT OF REX JENKINS

STATE OF MISSOURI)
) **ss**
CITY OF ST. LOUIS)

Rex Jenkins, being first duly sworn on his oath, states:

1. My name is Rex Jenkins. I work in the City of St. Louis, Missouri, and I am employed by Union Electric Company d/b/a Ameren Missouri as a Lead Corporate Planning Analyst.

2. Attached hereto and made a part hereof for all purposes is my Supplemental Direct Testimony on behalf of Union Electric Company d/b/a Ameren Missouri consisting of 7 pages and Schedule(s) RJ-SD1 UT, RJ-SD1 RS, & RJ-SD1 GC, all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

Rex Jenkins

Subscribed and sworn to before me this 7th day of November, 2019.

Notary Public

My commission expires:

GERI A. BEST
Notary Public - Notary Seal
State of Missouri
Commissioned for St. Louis County
My Commission Expires: February 15, 2022
Commission Number: 14839811