Exhibit No.:	
Issues:	Beneficial Elements of Projects
Witness:	Martin R. Hyman
Sponsoring Party:	Missouri Department of Natural Resources – Division of Energy
Type of Exhibit:	Rebuttal Testimony
Case No.:	EA-2019-0371

MISSOURI PUBLIC SERVICE COMMISSION

UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI

CASE NO. EA-2019-0371

REBUTTAL TESTIMONY

OF

MARTIN R. HYMAN

ON

BEHALF OF

MISSOURI DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENERGY

Jefferson City, Missouri
December 12, 2019

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

AFFIDAVIT OF MARTIN R. HYMAN

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Martin R. Hyman, of lawful age, being duly sworn on his oath, deposes and states:

1. My name is Martin R. Hyman. I work in the City of Jefferson, Missouri, and I am employed by the Missouri Department of Natural Resources as a Planner III, Division of Energy.
2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of the Missouri Department of Natural Resources – Division of Energy.
3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge.

Martin R. Hyman

Subscribed and sworn to before me this 12th day of December, 2019.

LAURIE ANN ARNOLD
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: April 26, 2020
Commission Number: 16808714

Notary Public

My commission expires: 4/26/20

TABLE OF CONTENTS

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Martin R. Hyman. My business address is 1101 Riverside Dr., PO Box 176, Jefferson City, Missouri 65102.

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

A. I am employed by the Missouri Department of Natural Resources – Division of Energy ("DE") as a Senior Energy Policy Analyst, Planner III.

Q. Please describe your educational background and employment experience.

A. In 2011, I graduated from the School of Public and Environmental Affairs at Indiana University in Bloomington with a Master of Public Affairs and a Master of Science in Environmental Science. There, I worked as a graduate assistant, primarily investigating issues surrounding energy-related funding under the American Recovery and Reinvestment Act of 2009. I also worked as a teaching assistant in graduate school and interned at the White House Council on Environmental Quality in the summer of 2011. I began employment with DE in September 2014. Prior to that, I worked as a contractor for the U.S. Environmental Protection Agency to coordinate intra-agency modeling discussions. Since joining DE, I have been involved in a number of utility cases and other proceedings before the Missouri Public Service Commission ("Commission") as DE's lead policy witness and have assisted DE in the review of legislation and the development of the Comprehensive State Energy Plan. Topics that I address as a part of my duties include demand-side programs, in-state energy resources, renewable energy, electric vehicles, and grid modernization.

Q. Have you previously filed testimony before the Commission on behalf of DE or any other party?

A. Yes. Please see Schedule MRH-Reb1 for a summary of my case participation.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q. What is the purpose of your Rebuttal Testimony in this proceeding?

A. The purpose of my testimony is to address beneficial elements of the three solar-plus-storage projects for which Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "Company") filed Certificates of Convenience and Necessity. The proposed projects are anticipated to provide improved reliability and resilience while furthering economic development through "Missouri-made" energy resources. The projects could also take advantage of the federal Investment Tax Credit ("ITC").

III. ELEMENTS OF PROPOSED PROJECTS CAN PROVIDE BENEFITS

Q. What are the sizes of the Ameren Missouri's projects?

A. The projects consist of three 10 MW solar arrays, each paired with battery storage with capacities between 2.5 and 4 MW.[1]

Q. How would the projects support reliability, resilience, and "Missouri-made" energy?

A. Each of the projects is proposed as a "non-wires alternative" solution[2] to a subtransmission system issue, with the goal of improving reliability and resilience and the capability to be

[1] Missouri Public Service Commission Case No. EA-2019-0371, *In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Permission and Approval and a Certificate of Convenience and Necessity Authorizing it to Construct Solar Generation Facility(ies)*, Request for Leave to Amend Its Original Application and Amended Application, November 25, 2019, page 5.

[2] A non-wires alternative is, "… an electricity grid investment or project that uses non-traditional transmission and distribution (T&D) solutions, such as distributed generation (DG), energy storage, energy efficiency (EE), demand response (DR), and grid software and controls, to defer or replace the need for specific equipment upgrades, such as T&D lines or transformers, by reducing load at a substation or circuit level." Chew, Brenda, Meyers, Erika H., Adolf, Tiger, and Thomas, Ed, 2018, *Non-Wires Alternatives: Case Studies from Leading U.S. Projects*, Smart

used as microgrids.[3] The projects will also produce solar energy in Missouri[4] for use in meeting the needs of Ameren Missouri's customers.[5] The reliability and resilience of delivery infrastructure is critical to businesses and consumers that depend upon electricity; without reliable and resilient energy service, economic activity faces greater risk of disruption over a longer period of time. The projects offer reliability and resilience benefits and have been appropriately targeted to areas with reliability issues.

Q. Please provide examples of utility storage or solar and storage projects in the U.S. that are being implemented to address delivery infrastructure needs.

A. MidAmerican Energy Company is testing a one megawatt storage facility to enable the dispatch of otherwise intermittent wind energy.[6] The town of Sterling, Massachusetts installed a 2 MW battery storage system that is integrated with nearby solar facilities and has assisted with the avoidance of demand charges.[7] Green Mountain Power installed a microgrid with 4 MW of storage and a 2.3 MW solar facility in Rutland, Vermont;[8] the

Electric Power Alliance, Peak Load Management Alliance, and E4TheFuture, https://e4thefuture.org/wp-content/uploads/2018/11/2018-Non-Wires-Alternatives-Report_FINAL.pdf, page 11, citing Navigant, 2017, *Non-Traditional Transmission and Distribution Solutions: Market Drivers and Barriers, Business Models, and Global Market Forecasts*.

[3] Missouri Public Service Commission Case No. EA-2019-0371, *In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Permission and Approval and a Certificate of Convenience and Necessity Authorizing it to Construct Solar Generation Facility(ies)*, Revised Direct Testimony of Kevin D. Anders on Behalf of Union Electric Company d/b/a Ameren Missouri, November 25, 2019, pages 3-4, lines 20-23 and 1-5, pages 4-5, lines 7-22 and 1-2, page 6, lines 1-9, page 7, lines 2-14, page 8, lines 11-23, pages 9-10, lines 17-22 and 1-2, page 10, lines 4-11, pages 10-11, lines 22-23 and 1-8, and page 12, lines 1-8; Company response to Commission Staff Data Request MPSC 0008.

[4] EA-2019-0371, Request for Leave to Amend Its Original Application and Amended Application, pages 1-2.

[5] EA-2019-0371, Anders Revised Direct, page 3, lines 22-23.

[6] MidAmerican Energy Company, 2019, "Battery Storage," https://www.midamericanenergy.com/battery-storage.

[7] U.S. Department of Energy, Office of Technology Transitions, 2019, *Solving Challenges in Energy Storage*, Washington, D.C., https://www.energy.gov/sites/prod/files/2019/07/f64/2018-OTT-Energy-Storage-Spotlight.pdf, page 48.

[8] U.S. Environmental Protection Agency, 2016, *RE-Powering America's Land: Siting Renewable Energy on Potentially Contaminated Land and Mine Sites – Traditional New England City Builds a Modern Microgrid*, https://www.epa.gov/sites/production/files/2016-07/documents/re_on_cl_rutland_case_study.pdf, page 1.

microgrid can power an emergency shelter and be used for services that include frequency regulation.[9] Tucson Electric Power has a project that includes a 10 MW/2.5 MWh battery and a 2 MW solar facility. The project was built to support reliability and consider the use of solar and other renewable energy resources in combination with storage. The batteries also provide frequency regulation and voltage control.[10] Duke Energy Progress, LLC received approval from the North Carolina Utilities Commission ("NCUC")[11] for a 95 kWh battery and 10 kW solar facility on Mt. Sterling at a communications tower in the Great Smoky Mountains National Park. The NCUC noted that the project would replace a feeder line that, "…extends approximately four miles through remote and hazardous terrain inside the Park, incurs high restoration costs during outage events and is expected to require high-cost equipment upgrades beginning this year."[12]

Q. Is it possible that the projects could take advantage of the federal ITC?

A. Possibly, yes. According to the National Renewable Energy Laboratory:

> Battery systems that are charged by a renewable energy system more than 75% of the time are eligible for the ITC,[] currently 30% for systems charged by PV and declining to 10% from 2022 onward. Battery systems that are charged by a

[9] U.S. Department of Energy, Office of Technology Transitions, 2019, page 45.
[10] Edison Electric Institute, 2018, *Leading the Way: U.S. Electric Company Investment and Innovation in Energy Storage*, Washington, DC, https://www.eei.org/issuesandpolicy/Energy%20Storage/Energy_Storage_Case_Studies.pdf, page 59.
[11] North Carolina Utilities Commission Docket No. E-2, Sub 1127, *In the Matter of Application of Duke Energy Progress, LLC, for a Certificate of Public Convenience and Necessity to Construct a Microgrid Solar and Battery Storage Facility in Haywood County, North Carolina*, Order Granting Certificate with Conditions, April 6, 2017, https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=22a788a0-f820-4b52-93c8-de51d5637aff, pages 7-8.
[12] *Id.*, page 4.

renewable energy system 75%–99.9% of the time are eligible for that portion of the value of the ITC.[13]

The full ITC value (30 percent) would require construction to commence by the end of 2019, with an in-service date by the end of 2023.[14] Commencement of construction can be met if at least five percent of the total energy property costs are incurred and, "…the taxpayer makes continuous efforts to advance towards completion of the energy property…."[15] Pursuit of these tax credits now could be beneficial to ratepayers, as these credits may not be available at the same level in the future.

IV. CONCLUSIONS

Q. Please summarize your conclusions and the positions of DE.

A. The proposed projects are anticipated to provide improved reliability and resilience while furthering economic development through "Missouri-made" energy resources. The projects could also take advantage of the federal ITC.

Q. Does this conclude your Rebuttal Testimony?

A. Yes.

[13] National Renewable Energy Laboratory, 2018, *Federal Tax Incentives for Energy Storage Systems*, Golden, CO, https://www.nrel.gov/docs/fy18osti/70384.pdf.
[14] Bernardini, Jennifer C., 2018, *Beginning of Construction for the Investment Tax Credit under Section 48*, Notice 2018-59, U.S. Internal Revenue Service, https://www.irs.gov/pub/irs-drop/n-18-59.pdf, page 5.
[15] *Id.*, page 14.