Exhibit No.:	
Issues:	Policy Considerations
Witness:	Martin Hyman
Sponsoring Party:	Missouri Department of Economic Development – Division of Energy
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Case No.:	ET-2016-0246

MISSOURI PUBLIC SERVICE COMMISSION

UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI

CASE NO. ET-2016-0246

REBUTTAL TESTIMONY

OF

MARTIN R. HYMAN

ON

BEHALF OF

MISSOURI DEPARTMENT OF ECONOMIC DEVELOPMENT

DIVISION OF ENERGY

Jefferson City, Missouri
November 29th, 2016

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 Approval Of a Tariff Setting a Rate for Electric Vehicle Charging Stations	))))	Case No. ET-2016-0246

AFFIDAVIT OF MARTIN 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 Economic Development 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 Economic Development – 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 29th day of November, 2016.

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

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Martin R. Hyman. My business address is 301 West High Street, Suite 720, PO Box 1766, Jefferson City, Missouri 65102.

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.

Q. Have you previously filed testimony before the Missouri Public Service Commission ("Commission") on behalf of DE or any other party?

A. Yes. Please see Schedule MRH-1 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 provide an overview of the public policy considerations associated with using electric vehicles ("EVs") and regulating EV charging stations ("EVCSs").

DE recommends that the Commission approve the revised EVCS tariff sheets submitted by Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "Company"). DE supports Ameren Missouri's efforts to provide EVCSs as a way to diversify Missourians' transportation options.

III. POLICY CONSIDERATIONS

Q. Are there public policy reasons for regulating EVCSs?

A. Yes. These reasons relate to the ratepayer benefits from EVCSs, the ratepayer protections such regulation can provide, and the benefits to EV markets, EVCS markets, and the broader community of Missourians from the deployment of EVCSs by an investor-owned utility.

Q. What are the benefits of Ameren Missouri's EVCS proposal for the Company's other ratepayers?

A. EVCSs will facilitate the charging of EVs, increasing the number of customers and amount of energy consumed on the Company's system. This will spread the recovery of costs for Ameren Missouri's fixed plant investment (i.e., generation units and transmission lines) across a greater volume of energy consumption, eventually decreasing the cost recovery required from all ratepayers.

Q. Will Ameren Missouri's EVCSs require subsidization over the courses of their useful lives?

A. No. First, a "subsidy" only occurs when one type of service is charged for at less than its fully allocated incremental cost while another type of service is charged for at more than its fully allocated incremental cost as a consequence. That is not the case with the

EVCSs, which will charge $0.20/kWh[1] for Level 2-AC charging – well above the Company's summer energy charge for general residential customers ($0.1208/kWh).[2] Another consideration when evaluating alleged subsidization is whether or not customers of a given class ultimately contribute to fixed cost recovery by paying above their incremental costs of service. In such an evaluation for a new service offering, it is common practice to evaluate cost recovery over a reasonable period of time. Ameren Missouri indicates that, under its original tariff proposal, the EVCSs would actually cover their annual fixed costs in their 5th year of operation and contribute a net of $1.9 million to fixed cost recovery by the 15th year of their operation.[3] According to Ameren Missouri, while non-EVCS residential customers would pay 11.3 cents annually for four years as a result of these EVCSs, they would ultimately gain a net present value of $3.63 over 15 years from the "downward pressure" placed upon rates from EV drivers.[4]

Q. Do concerns regarding ratepayer protection and the resale of electricity by host sites support regulation of Ameren Missouri's EVCSs?

A. Yes. Absent Commission regulation of the rates charged by Ameren Missouri for EVCS use, the Company would be able to charge above cost-based rates to customers who may have few other options. Similarly, if the Commission were to allow the unregulated resale

[1] Missouri Public Service Commission Case No. ET-2016-0246, *In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval of a Tariff Setting a Rate for Electric Vehicle Charging Stations*, Schedule of Rates for Electricity, Electric Vehicle Charging Pilot Program, October 7, 2016, Sheet No. 166.
[2] Missouri Public Service Commission Tariff No. YE-2015-0325, Union Electric Company d/b/a Ameren Missouri, Schedule of Rates for Electricity, Service Classification No. 1(M) – Residential Service Rate, May 30, 2015, Sheet No. 54.
[3] Missouri Public Service Commission Case No. ET-2016-0246, *In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval of a Tariff Setting a Rate for Electric Vehicle Charging Stations*, Direct Testimony of Mark J. Nealon on Behalf of Union Electric Company d/b/a Ameren Missouri, August 15, 2016, Page 26, lines 1-3.
[4] *Ibid*, page 25, lines 17-20, and page 26, lines 8-9.

of electricity purchased at retail through EVCSs by any entity, these entities could increase the prices of charging above retail service rates with no oversight.

Q. Wouldn't a competitive market set the prices which could be levied for EV charging?

A. If such a competitive market existed, then EVCS rates would be based on prevailing market conditions. However, no evidence has been presented that there is, in fact, a competitive market that can effectively discipline the rates charged for EV charging. EVCS deployment is not yet widespread along the route proposed by Ameren Missouri; ChargePoint, an EVCS equipment provider, has no customers with publicly accessible EVCSs between Columbia and the St. Louis metropolitan area.[5] Commission oversight is therefore required to ensure that rates are just and reasonable, much as it is required to ensure just and reasonable rates for residential, commercial, and industrial customers.

Q. With respect to ChargePoint EVCSs, how are rates defined?

A. ChargePoint does not own the EVCSs, but sells them to customers. The majority of the publicly accessible ChargePoint EVCSs along Ameren Missouri's proposed corridor do not require a payment to use them.[6] None of the ChargePoint EVCSs that require a fee charge directly for the amount of energy used, but instead tend to charge by the hour or (in one case) charge the same amount per charging session.[7]

[5] ChargePoint, Inc. response to Data Request DED-DE 200.
[6] *Ibid*.
[7] ChargePoint, Inc. response to Data Request DED-DE 600, pages 1-2.

Q. How does Ameren Missouri's proposal address the lack of a competitive market for EV charging in its territory and the unmet need in Missouri?

A. Since EV charging station deployment is not widespread, Ameren Missouri will be filling a need for long-distance charging.[8] Additional providers, to the extent allowed by law, regulation, and Commission-approved tariffs, can enter the EVCS market and compete with Ameren Missouri's EVCS service offerings. Competition can be encouraged by Ameren Missouri's initiative in the future; until that competition exists, though, Ameren Missouri can meet EV drivers' needs at a reasonable cost by utilizing its economies of scale and scope in providing electric service. Competition can also be enabled by reexamining Ameren Missouri's tariff sheets to determine how third-party EV charging providers could be allowed to sell electricity to drivers, potentially by designing a wholesale service rate.

Q. What benefits will Missourians in general receive from EVCS deployment?

A. Missourians will benefit from the reduced emissions of EVs (as described below), a reduced dependence on out-of-state oil imports, and lower electricity costs (as described above).

Q. How will emissions be reduced if EVs use electricity generated by fossil fuel-fired generating units?

A. Driving EVs actually produces less greenhouse gas ("GHG") pollution than driving conventional automobiles. At the workshop held under EW-2016-0123, presenters showed that driving EVs in Missouri produces GHG emissions equivalent to those of a

[8] Nealon Direct, page 34, lines 9-11.

conventional automobile receiving 35-36 miles per gallon,[9] and that EV-related GHG emissions in Missouri are lower on average compared to emissions from conventional automobiles.[10] Driving EVs could also improve air quality by reducing ground-level ozone and particulate matter,[11] both of which can result in adverse health effects such as lung irritation, asthma, and heart problems.[12]

Q. Why is it important to diversify the sources of transportation fuel used in Missouri and reduce dependence on out-of-state fuel sources?

A. According to the Missouri Comprehensive State Energy Plan ("CSEP"), only 195,481 barrels of crude oil were produced in Missouri in 2014, and there are no petroleum refineries in the state.[13] By contrast, Missourians consumed over 121 million barrels of petroleum in 2014, including more than 73 million barrels of motor gasoline.[14] This consumption of motor gasoline cost Missourians almost $9.7 billion.[15] Reducing the state's dependence on out-of-state petroleum will reduce the amount of money sent out of Missouri, improving the state's economic security and mitigating the effects of potential supply disruptions.

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[9] Missouri Public Service Commission Case No. EW-2016-0123, *In the Matter of a Working Case Regarding Electric Vehicle Charging Facilities*, Joe Halso, "Electric Vehicles & Environmental Impacts," May 25, 2016, slide 6.

[10] Missouri Public Service Commission Case No. EW-2016-0123, *In the Matter of a Working Case Regarding Electric Vehicle Charging Facilities*, Noah Garcia, "Environmental Impacts of Electric Vehicle Charging," May 25, 2016, slide 3.

[11] Electric Power Research Institute and Natural Resources Defense Council. 2015. "Electrifying Transportation Reduces Greenhouse Gases and Improves Air Quality: Executive Summary." http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=3002006881&Mode=download. Page 2.

[12] American Lung Association. 2016. "Health Effects of Ozone and Particle Pollution." http://www.lung.org/our-initiatives/healthy-air/sota/health-risks/.

[13] Missouri Department of Economic Development – Division of Energy. 2015. "Missouri Comprehensive State Energy Plan." https://energy.mo.gov/energy/docs/MCSEP.pdf. Page 22.

[14] U.S. Energy Information Administration. 2015. "Table CT3. Total End-Use Energy Consumption Estimates, 1960-2014, Missouri." http://www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep_use/tx/use_tx_MO.html&sid=MO

[15] U.S. Energy Information Administration. 2015. "Table E9. Total End-Use Energy Expenditure Estimates, 2014." http://www.eia.gov/state/seds/data.cfm?incfile=/state/seds/sep_sum/html/sum_ex_tx.html&sid=US.

Q. Is there a state policy goal related to diversifying the state's transportation fuel mix?

A. Yes. The third recommendation of the CSEP, "Diversity and Security of Supply," states:

> Broadening the energy sources utilized and consumed in Missouri will make the state less reliant on imported energy, increase economic development, and provide a hedge against future price volatility. The state should make multiple efforts to diversify its energy portfolio, using existing processes and establishing new opportunities for discussion and planning.[16]

Diversifying the sources of energy used for transportation through EVCS deployment falls squarely within this goal. Commission approval of EVCS deployment will support transportation fuel diversification.

Q. How has the state made progress on this goal in the transportation sector?

A. Missouri recently joined a select group of states with "Alternative Fuel Corridors" designated by the Federal Highway Administration[17] under the Fixing America's Surface Transportation ("FAST") Act.[18] Corridors designated as "signage-ready" for EVs in Missouri include I-29 from Kansas City to St. Joseph, I-55 from St. Louis to Festus, I-70 from St. Louis to Wentzville and Kansas City to Oak Grove, and I-35 from Mission, Kansas to Kearney.[19] Corridors designated as "signage-pending" for EVs in Missouri include I-29 from St. Joseph to the Iowa border, I-35 from Kearney to the Iowa border,

[16] CSEP, page 227.
[17] Federal Highway Administration ("FHWA"). 2016. "Alternative Fuel Corridors." http://www.fhwa.dot.gov/environment/alternative_fuel_corridors/.
[18] FHWA. 2016. "Fixing America's Surface Transportation Act – Designation of Alternative Fuel Corridors." Federal Register. https://www.federalregister.gov/documents/2016/07/22/2016-17132/fixing-americas-surface-transportation-act-designation-of-alternative-fuel-corridors.
[19] FHWA. 2016. "Signage-Ready Alternative Fuel Corridors." http://www.fhwa.dot.gov/environment/alternative_fuel_corridors/ready/.

I-55 from Festus to the Arkansas border, I-70 from Wentzville to Oak Grove, and I-44 and I-49.[20]

Q. What does it mean for a corridor to be "signage-ready" versus "signage-pending?"

A. A "signage-ready" corridor, in the case of EVs, means that there are currently public EVCSs along the route which are 50 miles apart and five miles from the highway.[21] "Signage-pending" corridors need to develop this type of infrastructure to become "signage-ready"[22] and will ideally develop the infrastructure based on the corridor designation and subsequent FHWA support.[23] This latter class of corridors includes the I-70 route between Wentzville and Oak Grove because of the lack of EVCSs in that area. Ameren Missouri's proposal to develop EVCSs along the Columbia to St. Louis metropolitan area portion of that corridor will support state and federal goals by moving that part of the corridor from "signage-pending" to "signage-ready."

Q. Is there additional evidence of state policy supporting alternative fuel vehicles?

A. Yes. Through the tax years beginning prior to January of 2018, Missouri's Alternative Fuel Infrastructure Tax Credit allows for a tax credit of up to the lesser of $20,000 or 20 percent of total costs directly related to business purchases and installations of recharging equipment, subject to appropriations.[24] This tax credit received appropriations in 2015 and 2016. Additionally, Section 414.400, RSMo. requires state agencies to use alternative

[20] FHWA. 2016. "Signage-Pending Alternative Fuel Corridors." http://www.fhwa.dot.gov/environment/alternative_fuel_corridors/pending/.
[21] Federal Highway Administration. 2016. "Signage-Ready Alternative Fuel Corridors." Footnote 1.
[22] Federal Highway Administration. 2016. "Signage-Pending Alternative Fuel Corridors." Footnote 1.
[23] FHWA's planned initiatives for corridor expansion may be found at FHWA, 2016, "Alternative Fuel Corridors."
[24] Missouri Department of Economic Development – Division of Energy. 2015. "Missouri Alternative Fuel Infrastructure Tax Credit." https://energy.mo.gov/docs/default-source/energy_division/EE-15-034.pdf.

fuels (such as electricity) for thirty percent of their motor fuel, in gasoline gallon equivalents.

IV. CONCLUSIONS

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

A. The use of EVs is associated with public benefits such as rate reductions and reduced public health risks; Ameren Missouri's proposed EVCSs will provide benefits to Missourians and improve the diversity of transportation fuel options in this state. For all of these reasons, DE supports approval of Ameren Missouri's revised EVCS tariffs.

Q. Does this conclude your Rebuttal Testimony in this case?

A. Yes.