Exhibit No: _____
Issue: Electric Vehicle Charging Pilot
Witness: Douglas Jester
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Sponsoring Party: Sierra Club
Case No. ET-2016-0246
Date testimony prepared: Dec 19, 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	))))	**File No. ET-2016-0246**

SURREBUTTAL TESTIMONY OF DOUGLAS JESTER

ON BEHALF OF SIERRA CLUB

DECEMBER 19, 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	)	**File No. ET-2016-0246**
Of a Tariff Setting a Rate for Electric Vehicle	)	
Charging Stations	)	

County of Ingham)
State of Michigan)

MARIE E. WICKS
Notary Public, State of Michigan
County of Ingham
My Commission Expires Oct. 28, 2017
Acting in the County of INGHAM

AFFIDAVIT OF DOUGLAS B. JESTER

Douglas B. Jester, of lawful age, on his oath states: that he has participated in the preparation of the following surrebuttal testimony in question and answer form, which is attached hereto and made a part hereof for all purposes, and is to be presented in the above case; that the answers in the following surrebuttal testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such answers are true to the best of his knowledge and belief.

Douglas B. Jester

In witness whereof I have hereunto subscribed my name and affixed my official seal this 14th day of December, 2016.

Marie E. Wicks

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SURREBUTTAL TESTIMONY OF DOUGLAS JESTER

QUALIFICATIONS AND PURPOSE OF TESTIMONY

Q. State your name, business name and address.

A. My name is Douglas B. Jester. I am a principal of 5 Lakes Energy LLC, a Michigan limited liability corporation, located at Suite 710, 115 W Allegan Street, Lansing, Michigan 48933.

Q. Are you the same Douglas B Jester who filed rebuttal testimony on behalf of Sierra Club in the instant case on November 29, 2016?

A. Yes.

Q. What is the purpose of your testimony?

A. I am responding to certain issues raised in the Rebuttal Testimony filed by other witnesses in this case on November 29, 2016. I specifically respond to: the testimony of OPC witness Dr. Geoff Marke concerning carbon emissions reduction through use of electric vehicles; the testimony of witness Marke and ChargePoint witness Ms. Anne Smart concerning the current availability of fast charging stations along the I-70 corridor in Ameren Missouri's ("Ameren") territory; and the testimony of KCP&L witness Mr. Tim Rush and witness Smart concerning the role of third party charging service providers.

CARBON EMISSIONS REDUCTION THROUGH USE OF ELECTRIC VEHICLES

Q. What is your response to witness Marke concerning the potential for carbon emissions reduction through the use of electric vehicles?

A. Witness Marke testifies[1] that vehicle electrification in Missouri will be minimally effective in reducing carbon emissions and therefore should not be pursued as a carbon mitigation strategy. Unfortunately, Marke's view of this issue is both short-term and marginal.

In the short term, due to the high carbon intensity of Missouri's electric power system, vehicle electrification here provides less immediate carbon mitigation than vehicle electrification in other parts of the country, as illustrated by graphs[2] in Marke's testimony. The Commission should note, nonetheless, that in Missouri in the short term all electric and plug-in electric vehicles produce about 1/3 less carbon emissions than conventional gasoline vehicles. Further, Marke criticizes the analyses he cites because they use average electric power system carbon intensity when, in his opinion, carbon emissions should be calculated using the carbon intensity of marginal generation. However, it is likely that natural gas is the marginal resource in serving Missouri's electric power system significantly more hours of the year than its average contribution to generation. The MISO[3] Independent Market Monitor reports[4] that natural gas was the marginal power generation fuel 76% of the time in 2015, which would imply that an analysis based on carbon emissions of marginal generation would likely conclude that the

[1] Direct testimony of Geoff Marke, page 15, line 10 through page 23.
[2] Direct testimony of Geoff Marke, page 19.
[3] Ameren Missouri is a MISO market participant.
[4] Potomac Associates. 2015 MISO State of the Market Report, page ii, available from https://www.misoenergy.org/Library/Repository/Report/IMM/2015%20State%20of%20the%20Market%20Report.pdf.

carbon emissions from an all-electric or pluggable hybrid car would be much less than in the information he cites.

All analyses of strategies to mitigate climate change that I have read conclude that nearly complete reduction of greenhouse gas emissions from vehicles is a necessary step[5], and that the path to do so using existing or reasonably foreseeable technologies is vehicle electrification[6] in combination with reductions in the carbon intensity of electric power production. It is important that in the short term, transition to electric vehicles should not exacerbate carbon emissions, but Marke's testimony is only that they provide only modest mitigation in the short term. The important strategic issue to mitigate climate change is transformation of the vehicle market. The average life of a vehicle purchased in the United States is about 12 years and is increasing, such that the average vehicle purchased in 2017 will likely be in use in 2030; thus, the carbon mitigation due to an electric vehicle purchase in 2017 is not measured by the carbon intensity of power generation in 2017 is much less important than the path of carbon intensity going forward into the 2030s.

Further, development of the electric vehicle market will not be a step change. Rather, vehicle manufacturers will gradually replace conventional models as market demand for electric vehicles grows. Since manufacturers typically reengineer a model on a seven-year or slower cycle, market penetration by electric vehicles would have to grow by about 12-14% of the market per year to support transition to electric vehicles in one engineering cycle. Even when electric vehicles are clearly superior to conventional

[5] E.g., Williams, J.H. et al. 2012. The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity. Science 335: no 6064, pp 53-59.

[6] On-board energy storage can be in the form of voltaic energy in batteries or hydrogen for use in fuel cells, either of which would be charged using electric power.

vehicles, consumer adoption is unlikely to be this rapid. If we assume that two engineering cycles will be necessary to substantially electrify new vehicle production, then it will be approximately 2035 before all new vehicles are electric and approximately 2050 before essentially all vehicles in use are electric. Meanwhile, electric vehicle charging infrastructure must support and even lead the adoption of electric vehicles for this transition to occur in a timely way[7]. This is the optimistic transition that is necessary to accomplish deep greenhouse gas emissions cuts by 2050. The Commission should therefore view the current effort to enable growth of the electric vehicle market by providing minimal infrastructure as an essential step in this longer-term transition.

EXISTING FAST CHARGING STATIONS ALONG I-70 IN MISSOURI

Q. What is your response to witness Marke concerning the presence of fast charging stations along I-70 in Missouri?

A. Witness Marke testifies[8], based on a screen shot from the website plugshare.com, that there are a substantial number of fast charging stations within 5 miles of I-70 in Missouri. It is accurate that there are some fast charging stations along this corridor, but his presentation of this information could be misleading.

The single charging station at the western end of his route map is a Tesla Supercharging station, as are two of the stations near St. Louis. Tesla Supercharging stations are proprietary for use only by Tesla cars.

[7] See ET-2016-0246 Rebuttal Testimony of Douglas Jester, page 19, line 1 through page 21, line 16.
[8] Rebuttal testimony of Geoff Marke, page 8, lines 1-7.

All of the non-Tesla fast charging stations shown are in the St Louis area. There are a number of duplicate entries on Plugshare.com, with the net effect that there appear to be just nine non-proprietary fast charging stations along I-70 in the St. Louis area.

Q. What is your response to witness Smart concerning the presence of fast charging stations in Missouri?

A. Witness Smart testifies[9], based on data from the Alternative Fuels Data center that there are 75 DC Fast Chargers in Missouri. I simply note that she did not attempt to isolate those charging stations that are near I-70, public, and non-proprietary so these data are consistent with my immediately preceding testimony that there are nine non-proprietary fast charging stations along I-70 in the St. Louis area. Witness Smart nonetheless holds the view that "there is need for more charging stations in Ameren's territory", a view with which I concur.

ROLE OF THIRD PARTY ELECTRIC VEHICLE CHARGING SERVICE PROVIDERS

Q. What is your response to witness Rush concerning the role of third party charging services?

A. Witness Rush testifies[10] that "…at the right time and under the right conditions, entities other than Missouri electric utilities should be permitted to provide and charge for EVCS in the service territory of Commission-regulated electric utilities." Witness Rush does not specify when the "right time and under the right conditions" will occur but implies that it is not in the present, nor does he explain a delay in defining the role for third-party charging service providers to this market. It is my view that the right time to define the

[9] Direct testimony of Anne Smart, page 7 lines 14-18.
[10] Direct testimony of Tim Rush, page 5, lines 9-13.

role and regulatory treatment for third parties to provide and charge for electric vehicle charging services is now. Further, the Commission should ensure that outcome and that the terms under which Commission-regulated utilities offer these services do not prevent market entry by other parties.

Other jurisdictions have found it possible to support both utility engagement and development of a competitive market for electric vehicle charging. The Washington Utilities and Transportation Commission authorized[11] Avista to undertake a pilot program that included seven DC fast chargers while maintaining a policy that will promote "fair market competition". The California Public Utilities Commission asserted jurisdiction over electric vehicle charging stations owned and operated by electric utilities and over electric services provided to the owners of third-party charging stations[12], and has subsequently approved electric vehicle charging programs for each of California's major regulated utilities[13] that in various ways provided a utility role and meaningful provisions for competitive third-party participation in the electric vehicle charging marketplace. The Oregon Public Utilities Commission concluded[14] that "utilities may legally recover EVSE installation and operation costs in rates", while also framing limits on doing so that appear to ensure a significant role for competitive third-party electric vehicle service providers and finding non-utility electric vehicle service providers to not

[11] Washington Utilities and Transportation Commission. Order 01 in Docket UE-160082.
[12] *Decision in Phase 1 On Whether a Corporation or Person That Sells Electric Vehicle Charging Services To the Public Is a Public Utility* at 40, D.10-07-044, Order Instituting Rulemaking on the Commission's own motion to consider alternative-fueled vehicle tariffs, infrastructure and policies to support California's greenhouse gas emissions reduction goals (filed July 29, 2010), California Public Utilities Commission, pp 23-29.
[13] California Public Utilities Commission, Decisions 16-01-045 (Decision Regarding Underlying Vehicle Grid Integration Application and Motion to Adopt Settlement Agreement), 16-01-023 (Decision Regarding Southern California Edison Company's Application For Charge Ready and Market Education Programs), and A.15-02-009, *available at* http://docs.cpuc.ca.gov/DecisionsSearchForm.aspx
[14] *Order No. 12-013* at 10, In the Matter of Investigation of Matters Related to Electric Vehicle Charging (filed January 19, 2012), Public Utility Commission of Oregon.

be "public utilities" under Oregon law. Utility regulators in Massachusetts[15] have likewise articulated a role for utility investment in EV infrastructure while finding that non-utility owners and operators of EV charging stations were not subject to Commission regulation. In 2013, the New York Public Service Commission reached the same result regarding jurisdiction over third party electric vehicle service providers. [16]

Q. What is your response to witness Smart concerning the role of third party charging services in Ameren's proposed pilot?

A. Witness Smart testifies[17] that certain changes could be made to Ameren's proposal to support competition. I am broadly in agreement with her intent and testimony, but differ on certain points.

Witness Smart recommends "1) qualifying multiple RFP respondents to provide charging station equipment and network services in this pilot; 2) customer (site host) choice in equipment and services…". In principle I agree with both recommendations, but consider these to be undue complications for a six-station pilot, that are likely to increase the costs of the pilot with limited benefit. I therefore recommend, in the alternative, that the Commission allow the pilot to be equipped based on selection of a single vendor but that if there is any future expansion of the pilot, such expansion should consider witness

[15] Order on Department Jurisdiction Over Electric Vehicles, The Role of Distribution Companies in Electric Vehicle Charging and Other Matters, DPU 13-182-A, Investigation by the Department of Public Utilities upon its own Motion into Electric Vehicles and Electric Vehicle Charging (filed August 4, 2014), Massachusetts Department of Public Utilities.

[16] Declaratory Ruling on Jurisdiction Over Publicly Available Electric Vehicle Charging Stations at 4, Case 13-E-0199, In the Matter of Electric Vehicle Policies (filed November 22, 2013), New York Public Service Commission.

[17] Direct testimony of Anne Smart, page 8 line 18 through page 11, line 12.

Smart's recommendation in this regard.

Witness Smart also recommends site host control over pricing to drivers. These charging stations will be supported by Ameren Missouri, so should not be allowed unfettered pricing above the tariffs authorized by this Commission such that there is an effective windfall for a site host. On the other hand, witness Smart's case for host discretion appears to be primarily about the opportunity for site hosts to charge drivers less than the Ameren tariff. This can be accomplished through my own recommendation in Rebuttal Testimony that any or all of the tariff could be paid by the site host instead of the driver.

Q. Does that complete your testimony?

A. Yes.