

*Exhibit No.:*  
*Issues:* *EV Charging*  
*Witness:* *Byron Murray*  
*Sponsoring Party:* *MO PSC Staff*  
*Type of Exhibit:* *Rebuttal Testimony*  
*Case No.:* *ET-2016-0246*  
*Date Testimony Prepared:* *November 29, 2016*

**MISSOURI PUBLIC SERVICE COMMISSION**  
**OPERATIONAL ANALYSIS DEPARTMENT**  
**TARIFF/RATE DESIGN UNIT**

**REBUTTAL TESTIMONY**

**OF**

**BYRON M. MURRAY**

**UNION ELECTRIC COMPANY D/B/A AMEREN MISSOURI**

**CASE NO. ET-2016-0246**

**Jefferson City, Missouri**  
**November 2016**

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Rebuttal Testimony of  
Bryan M. Murray

1 evaluations. On September 1, 2016, I assumed my current position as Regulatory  
2 Economist III, within the same Section, where my duties consist of coordinating highly  
3 complex activities, analyzing applications, reviewing tariffs, and making recommendations  
4 based upon my evaluations.

5 Q. Have you previously filed testimony before this Commission?

6 A. Yes. A list of cases in which I have filed testimony before this Commission is  
7 attached as Schedule BMM-r1.

8 Q. What is the purpose of your rebuttal testimony?

9 A. The purpose of my rebuttal testimony is to respond to the Direct Testimony of  
10 Ameren Missouri witness Mark Nealon. Specifically, I will respond to statements in his  
11 testimony claiming that the electric vehicle (EV) charging system is environmentally  
12 beneficial for all ratepayers as well as his claims regarding grid efficiency impacts. I will also  
13 provide an analysis of Ameren Missouri's proposed pilot program ("pilot program") for EV  
14 charging stations and its revised tariff.

15 Q. What is your understanding of Ameren Missouri's proposed pilot program?

16 A. Ameren Missouri plans to install and operate six charging islands in its service  
17 territory along the Interstate 70 ("I-70") corridor between St. Louis and Boonville, and on  
18 Highway 54 in Jefferson City. Ameren Missouri estimates a \$570,000 total capital  
19 investment for the six charging islands and approximately \$40,000 of annual on-going  
20 hardware operation and maintenance expense for access to those vendors managing the  
21 charging station network. In addition, Ameren Missouri anticipates a \$10,000 annual  
22 marketing and education expense during the first three years of the program.<sup>1</sup> No specific

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<sup>1</sup> EFIS, Case No ET-2016-0246, Mark Nealon Direct Testimony, Page 15, Lines 8-17.

1 levels for depreciation expense or property tax expense have been identified in testimony. It  
2 is Staff's understanding that Ameren Missouri intends to include all revenues collected from  
3 the charging island transactions as well as all related expense and investment in its cost of  
4 service calculations for its future rate cases.

5 Q. Has Staff previously filed a recommendation on the application and proposed  
6 tariff?

7 A. Yes. Staff filed its recommendation September 28, 2016. Staff recommended  
8 that the Commission only approve Ameren Missouri's proposed tariff sheets as they are  
9 currently filed on the condition that all revenues, expenses and investment associated with the  
10 program are recorded below-the-line in order to hold ratepayers harmless. Further, as part of  
11 its pilot program, Staff recommended Ameren Missouri be required to gather data and report  
12 annually to the Commission and interested stakeholders on the impact of EV charging stations  
13 on grid reliability.

14 Q. What claim has Ameren Missouri made about the impacts of the network  
15 charging system on the environment and the grid?

16 A. Mark Nealon makes the following claim in his Direct Testimony, "Ameren  
17 Missouri's electric grid, like most others across the nation, operates below maximum capacity  
18 for most of any given year. Aided by thoughtful load management, a considerable EV  
19 population could root itself in the service territory without the need for generation or line  
20 infrastructure upgrades, hence applying a consistent downward pressure on electric rates"<sup>2</sup>.

21 Q. Has Ameren Missouri explained the load management techniques that Mark  
22 Nealon references?

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<sup>2</sup> EFIS, Case No ET-2016-0246, Mark Nealon Direct Testimony, Page 29, Lines 1-5

1 A. No, Ameren Missouri has not specifically explained how the EV charging  
2 network will be incorporated into a demand response program or into supply-side resources.

3 Q. What other statements has Ameren Missouri made about the benefits of EVs?

4 A. Mark Nealon also states the following:

5 To the extent that EV adoption can be positively affected by enabling  
6 the long-distance end-use, the fact remains that the vast majority of the  
7 charging involved for those new vehicles – in fact, 80% to 90% of it –  
8 will still be done at home, and subject to the types of creative load  
9 management measures a well-designed TOU rate represents. Therefore,  
10 home charging will likely be an area of focus for load management  
11 programs Ameren Missouri considers”<sup>3</sup>.

12 Q. And does Mark Nealon lay out any plans Ameren Missouri has to encourage  
13 EV users to utilize public charging stations over home chargers or to charge at non-peak  
14 times?

15 A. Mark Nealon does mention load management as an area Ameren Missouri will  
16 consider as part of its pilot program. However, Ameren Missouri has not proposed a separate  
17 rate that would incent owners and operators of EVs to charge during off-peak hours.  
18 Ameren Missouri has not proposed any types of load management programs such as supply  
19 side resourcing or demand response programs specific to the EV charging network. Any  
20 impact on grid efficiency or emissions from the power plants that will be powering the EV  
21 charging stations will likely stem from proper rate design and the properly designed demand  
22 response programs. Staff recommends Ameren Missouri implement some type of demand  
23 response program or special rate during the initial three years of the pilot program to assist it  
24 in analyzing the effects of EVs on grid reliability and load management.

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<sup>3</sup> EFIS, Case No ET-2016-0246, Mark Nealon Direct Testimony, Page 32, Lines 7-13

1 **TARIFF ANALYSIS**

2 Q. What issues did Staff find in its review of the tariff for the EV charging station  
3 network?

4 A. Staff had the following issue with the tariff as it is now revised per  
5 Commission order, *Order Rejecting Tariff Filing and Directing Filing on October 6, 2016*:  
6 The revised tariff applies a per minute rate to the Level 2 charging stations and a per kW rate  
7 to the Level 3 charging stations. Staff recommends the tariff list both of the rates as either a  
8 per minute rate or as a per kW rate at an equivalent dollar amount.

9 **STAFF RECOMMENDATION**

10 Q. Does Staff recommend the approval of the tariff?

11 A. Staff recommends that the Commission only approve Ameren Missouri's  
12 revised tariff sheets on the condition that all revenues, expenses and investment associated  
13 with the program being recorded below-the-line in order to hold ratepayers harmless. Further,  
14 if approved, Staff recommends the Commission order Ameren Missouri to revise its tariff as  
15 noted in Staff's recommendation above. Finally, as part of its pilot program, Staff  
16 recommends Ameren Missouri be required to gather data and report annually to the  
17 Commission and interested stakeholders on the impact of electric vehicle charging stations on  
18 grid reliability.

19 Q. Does this conclude your direct testimony?

20 A. Yes it does.





## **BYRON M. MURRAY**

### **CREDENTIALS**

#### **PRESENT POSITION**

I am currently employed as a Regulatory Economist III in the Tariff/Rate Design Unit, Operational Analysis Department within the Commission Staff Division of the Missouri Public Service Commission. I have been employed at the Missouri Public Service Commission since October 2013.

#### **EDUCATION**

I received my Bachelor of Science in Agricultural Business from Lincoln University in Jefferson City, MO in May 1997. I completed my Master of Public Administration from the University of Missouri – Columbia in Columbia, MO in May 2004.

#### **EMPLOYMENT BACKGROUND**

Prior to joining the Commission, I worked as an Energy Planner II for the Division of Energy, Department of Economic Development. I was a Unit Chief/Fiscal and Administrative Manager, in the Water Protection Program of the Department of Natural Resources responsible for the management of fee collections. I also worked as a Management Analyst Specialist II in the Administration Division and the Solid Waste Management Program of the Department of Natural Resources. I was employed as a Planner II/State Project Manager for the Scrap Tire Unit in the Solid Waste Management Program of the Department of Natural Resources. I have approximately 23 years of professional regulatory enforcement experience with the State of Missouri.

This will be my third participation in a rate case before the commission. Please see the table below of case proceedings:

<b>Case Number</b>	<b>Company Name</b>	<b>Testimony Type</b>	<b>Type of Case</b>	<b>Issue</b>
<b>ER-2014-0370</b>	KCP&L	Direct/Rebuttal/Surrebuttal	Electric Rate Case	Tariff/Rate Design
<b>ET-2016-0246</b>	Ameren Missouri	Rebuttal	Electric Vehicle Tariff	Tariff/Rate Design for Electric Vehicle Charging Station Network
<b>EW-2016-0123</b>	Electric Vehicle Working Docket	Staff Report	Working Group	Tariff/Rate Design Electric Vehicle Charging Station
<b>EW-2016-0313</b>	A Working Case To Consider Policies To Improve Electric Utility Regulation	Staff Report	Working Group	Tariff / Rate Design to improve regulation
<b>GA-2017-0016</b>	Summit Natural Gas of Missouri	Staff Recommendation	Working Group	CCN Application

ET-2016-0246  
Schedule BMM-r1