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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO.

ET-2018-0132

SURREBUTTAL TESTIMONY

OF

PATRICK E. JUSTIS

ON

BEHALF OF

UNION ELECTRIC COMPANY

d/b/a AMEREN MISSOURI

**St. Louis, Missouri
November, 2018**

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PATRICK E. JUSTIS

FILE NO. ET-2018-0132

I. INTRODUCTION

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2 **Q. Please state your name and business address.**

2

3 A. Patrick E. Justis, Union Electric Company d/b/a Ameren Missouri
4 ("Ameren Missouri" or "Company"), One Ameren Plaza, 1901 Chouteau Avenue, St.
5 Louis, Missouri 63103.

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6 **Q. Are you the same Patrick E. Justis that filed direct testimony in this**
7 **proceeding?**

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8 A. Yes, I am.

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9 **II. PURPOSE OF TESTIMONY**

10 **Q. What is the purpose of your surrebuttal testimony in this proceeding?**

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11 A. My surrebuttal testimony in this proceeding responds to the rebuttal
12 testimonies of Dr. Geoffrey Marke of the Office of the Public Counsel ("OPC"), Byron
13 Murray of Staff, and Cherylyn Kelley of Division of Energy, specifically to their
14 testimonies on the Charge Ahead – Electric Vehicles ("Charge Ahead – EV") program as
15 proposed in the Company's filing. I shed light on factual inaccuracies and misplaced
16 comparisons that reveal the myopic perspectives of Dr. Marke and Mr. Murray and
17 highlight key areas where OPC and Staff did not disagree with Ameren Missouri's
18 conclusions. I also respond to Ms. Kelley's testimony regarding her recommendation that
19 Ameren Missouri include some intentional focus on disadvantaged communities.

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1 **Q. Are the key conclusions of your original testimony still valid after**
2 **studying the rebuttal testimony of Staff and OPC?**

3 A. Yes, their testimonies fail to effectively rebut the three key conclusions
4 presented in my direct testimony, all of which remain valid. Those key conclusions are:

- 5 • Electric vehicles ("EVs") have many benefits, and efforts to accelerate EV
6 adoption should be supported by the Missouri Public Service Commission
7 ("Commission");
- 8 • Missouri's EV adoption will continue to lag other states and Missouri will
9 not reach its potential unless there are significant efforts to increase
10 consumer awareness and strategically develop charging infrastructure; and
- 11 • Utility involvement in raising awareness of the benefits of EVs and enabling
12 a holistic charging ecosystem is essential and appropriate.

13 **Q. You state that there are key areas where Staff and OPC did not**
14 **disagree with Ameren Missouri's conclusions. What are those key areas?**

15 A. Neither Staff nor OPC witnesses took issue with utility engagement in the
16 promotion of electric vehicles in any way, and specifically, they did not claim that the
17 proposed Charge Ahead – EV program is not a reasonable approach to accelerating
18 adoption of EVs and their associated benefits. However, rather than providing constructive
19 criticism of the proposal throughout the three technical conferences and additional direct
20 communications, opposing witnesses produced rebuttal testimony that reflects inaccurate
21 conclusions and highlights a minor risk but fails to quantify that risk in any way. There
22 seems to be a knee-jerk negative reaction to Ameren Missouri's attempt to innovate and
23 proactively develop new EV programs, despite the evidence that the proposed program

1 represents a win-win-win-win through benefits for participating and non-participating
2 customers as well as the Company and our shared environment. Charge Ahead – EV
3 program also includes an appropriate balance of risks and benefits, as shown in the direct
4 and surrebuttal testimonies of Ameren Missouri witness Steven Wills.

5 **III. THE FACTS ON VOLKSWAGEN ("VW") FUNDING**

6 **Q. What inaccuracies and misplaced comparisons did you find in opposing**
7 **parties' testimonies?**

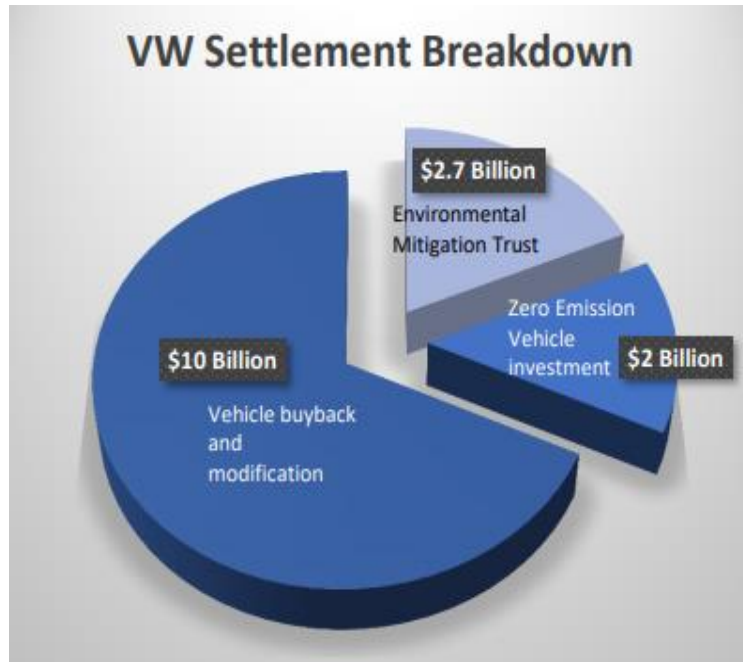
8 A. There are several to address. The most striking error is found in Mr.
9 Murray's testimony, because he conflates two separate but related EV actions that are
10 occurring in the State of Missouri. First, Mr. Murray incorrectly states that, "[T]he rebate
11 offered under the program is not necessary given other electric vehicle charging station
12 programs" (Murray Rebuttal, p. 7, lines 17-18). Mr. Murray then mischaracterizes the
13 relationship between the proposed Charge Ahead – EV program and the work of the EV
14 Collaborative related to the VW Environmental Mitigation Trust ("VW Trust")
15 administered by the Missouri Department of Natural Resources ("MDNR"). To understand
16 this mischaracterization, it is important to understand the facts.

17 **Q. What are those facts?**

18 A. As the Commission is likely aware, the litigation over VW's falsified
19 emissions testing led to an obligation on VW's part to provide substantial funds to promote
20 EVs and other measures that would reduce NOx emissions. The three activities that VW
21 agreed to fund and the associated amounts are shown in Figure 1 below.¹ Two of these
22 activities are germane to this discussion.

¹ <https://www.naseo.org/Data/Sites/1/naseo-vw-beneficiary-mitigation-plan-toolkit-final.pdf>, p. 5.

Figure 1. VW Settlement Categories



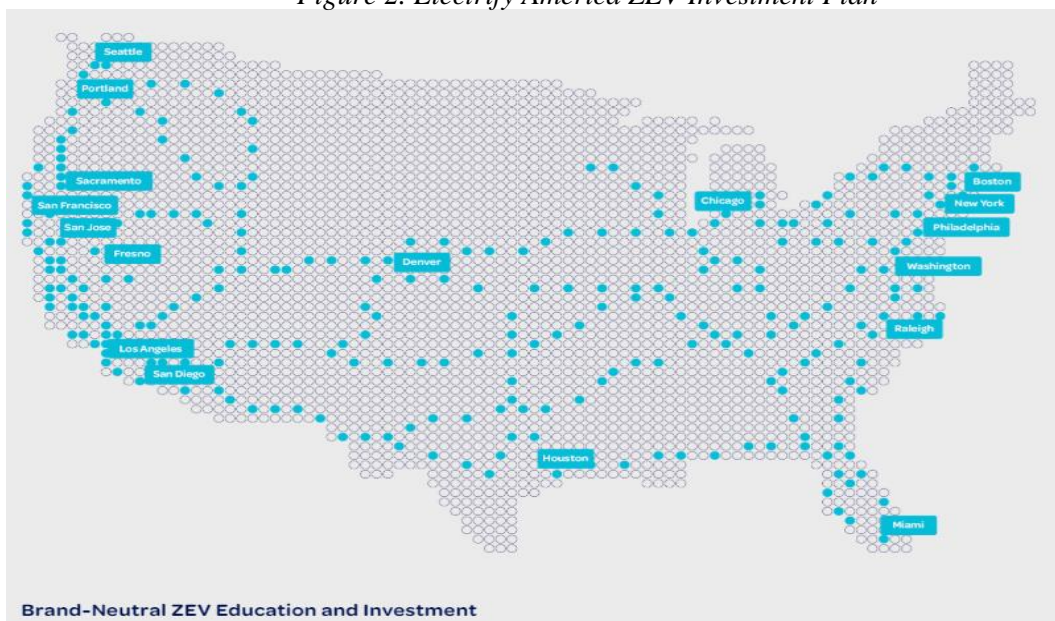
1 Table 1 below describes how the funding is managed for each of these categories.

Table 1. VW Settlement Funding Path

VW Settlement Category	Amount of Category	Funding Path	Missouri Details
Vehicle buybacks and modifications	\$10.0 Billion	Direct to affected VW vehicle owners	Not relevant to this case.
Zero Emission Vehicle ("ZEV") Investments	\$ 2.0 Billion	Through Electrify America, a for-profit subsidiary of VW	Electrify America is building charging stations and pursuing brand-agnostic marketing activities on the benefits of EVs in 17 major metro areas (none in Missouri), as well as developing a large interstate network of corridor fast charging, approximately 7 of which will be in Missouri. See Figure 2 below.
Environmental Mitigation Trust	\$ 2.7 Billion	Managed by designated beneficiary	Designated beneficiary is MDNR. Missouri receives ~\$41.2M and the trust rules allow up to 15% (\$6M) can be allocated for electric vehicle charging infrastructure.

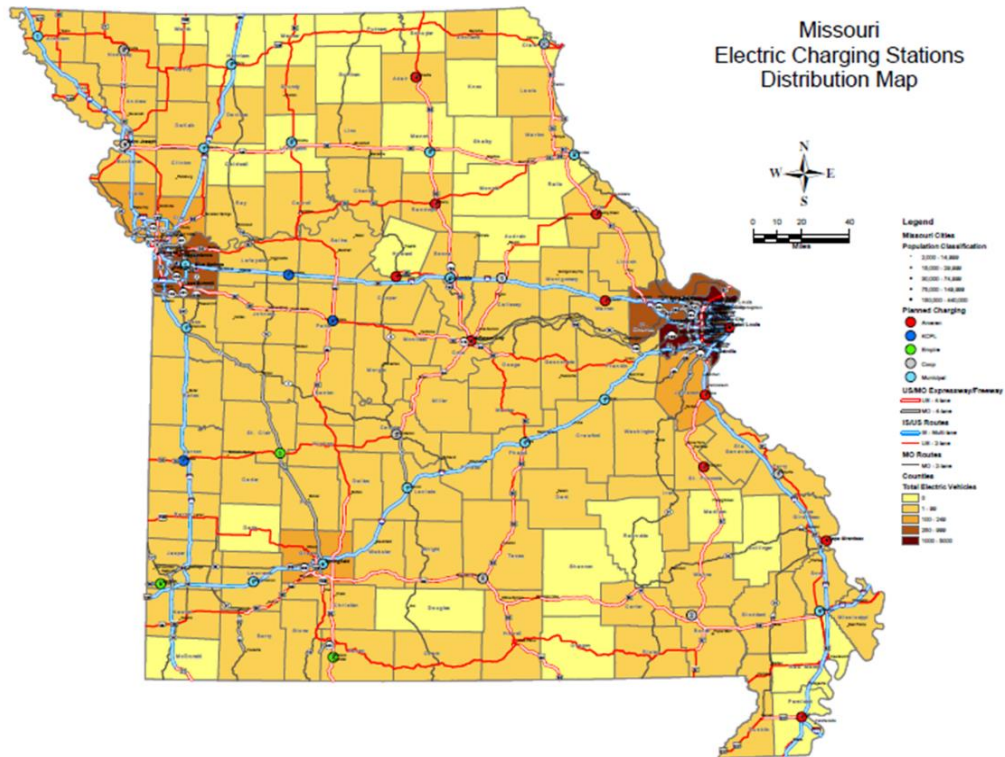
1 Electrify America is a for-profit subsidiary of VW and largely has control of its
2 activities under the Zero Emissions Vehicle Investments category. Electrify America has
3 recently shared a high level plan with the public and Figure 2 below provides a summary
4 view. Electrify America is building EV charging stations in 17 major metro areas (none in
5 Missouri) and is also in the process of developing fast charging islands across the country,
6 including approximately seven charging islands in Missouri along Interstates 70 and 44.
7 This effort has nothing to do with market forces, but instead is a consequence of VW's
8 diesel emissions scandal and subsequent settlement with the U.S. Environmental Protection
9 Agency. In other words, VW is trying to make the most of its difficult situation. VW's
10 charging stations through Electrify America are not justified by economics that support
11 building the charging stations because, as Mr. Wills discusses in his surrebuttal testimony,
12 a business case for EV charging is lacking at this time. Further, while a start, the Electrify
13 America projects in Missouri will not produce a public minimum practical network of
14 corridor fast charging (which requires approximately 40 fast charging islands) throughout
15 Missouri.

Figure 2. Electrify America ZEV Investment Plan



1 The VW settlement funding within the VW Trust category is controlled by Missouri's VW
2 Trust beneficiary, MDNR. Beginning in October 2017, MDNR began its public
3 informational meetings in which they described the process for determining how to spend
4 Missouri's portion of VW Trust funds and solicited input. The Missouri EV Collaborative
5 ("EV Collaborative"), an informal group of environmental advocates and utilities in
6 Missouri (led by Ameren Missouri), recommended that MDNR allocate the full 15% (\$6M)
7 allowable under the settlement for EV charging infrastructure and also proposed a specific
8 vision to develop the public minimum practical network for corridor fast charging, as
9 shown in Figure 3 below. In this vision, the EV Collaborative recognized that Electrify
10 America would be developing a limited number of corridor charging islands but the
11 locations had not yet been identified. Regardless of the locations, the EV Collaborative
12 proposal expected to avoid those locations where Electrify America would install charging
13 islands to avoid duplication and to better utilize the limited VW Trust funding. With the
14 seven charging islands it appears that Electrify America is building, there is still a need for
15 about 33 additional charging islands along Missouri's highways to develop a minimum
16 practical network.

Figure 3.
EV Collaborative Vision for Statewide Public Minimum Practical Corridor Charging Network



1 Based on positive public feedback about EV charging and the EV Collaborative
2 proposal, MDNR accepted the proposal and earmarked the recommended \$6 Million for
3 realizing the vision of the corridor network. However, the EV Collaborative proposal is not
4 an "application," as Mr. Murray has stated, but is simply a proposal. There still remains a
5 public process that MDNR must facilitate to determine how to best incentivize the market
6 to build, own, and operate the statewide corridor network. And, while the EV Collaborative
7 will certainly participate in the public process and offer its knowledge and leadership, Mr.
8 Murray is mistaken when he states that the EV Collaborative has "applied for funding" and
9 is ready to build EV charging stations in 2019 with MDNR's approval. Because of the many
10 benefits of accelerating EV adoption, Ameren Missouri and the EV Collaborative will be
11 engaging in MDNR's process to help identify a practical path forward to develop these
12 charging islands. And, because of the lack of business case for corridor charging islands as

1 described in this testimony and in my direct testimony, it is a virtual certainty that
2 development of the minimum practical network of corridor fast charging will require
3 funding from utilities throughout the state.

4 **Q. Will the \$6 Million funding MDNR earmarked be sufficient to build the**
5 **network that the EV Collaborative proposed and the public supports?**

6 A. No, that funding will not be sufficient. As I previously noted, to develop the
7 *minimum* practical corridor network of approximately 33 stations (40 minus the 7 that
8 Electrify America appears to be building) will require additional funding. The original
9 estimated cost of the corridor network is \$6.8M to \$14.4M. Reducing the number of
10 charging islands to 33 and assuming the higher cost per island to achieve higher speed
11 charging, the total network installation cost is estimated to be \$12 Million. To bridge the
12 gap between the available VW Trust funds and those that are needed, the EV Collaborative
13 recommended that utilities hosting the corridor network provide matching funds. The
14 rationale for utility responsibility for gap funding is based on the many benefits utilities
15 and their customers will capture from accelerating EV adoption. At a total estimated cost
16 of \$12 Million, utilities funds would match the VW Trust funds. In the case of Ameren
17 Missouri, Charge Ahead – EV, with a budget of \$4.4 Million for corridor charging, is the
18 program through which Ameren Missouri would provide those match funds.

19 The bottom line is that while the VW Trust funds are certainly helpful and should
20 cover half of the cost of the public statewide minimum practical network for corridor fast
21 charging, they are insufficient and utility involvement is necessary.

22 **Q. Is your testimony then that Mr. Murray's claim that a statewide**
23 **corridor charging network will happen "without cost to ratepayers" is incorrect?**

1 A. Yes, Mr. Murray does not appear to understand the facts. As explained in
2 my direct testimony and above, the statewide minimum corridor network needed won't
3 happen at all unless utilities are able to provide the financial support and project leadership
4 needed to make it happen. Charge Ahead – EV is Ameren Missouri's financial support for
5 its portion of that statewide project.

6 **IV. THE DEFINITION OF MAKE-READY**

7 **Q. Are there any other problems with Mr. Murray's testimony?**

8 A. Yes, there are. First, on page 11 of his testimony, Mr. Murray makes an
9 issue of the cost breakdown that I provided in response to Staff Data Request No. 0015,
10 which I have attached to my testimony as Schedule PEJ-S1, contending that several of the
11 items listed are costs "outside of what the Commission had contemplated as a 'Make-Ready'
12 model in File No. ER-2016-0285." Mr. Murray's concern is not relevant. Ameren Missouri
13 simply used the term "Make-Ready" in the tariff to acknowledge the many cost components
14 that comprise charging island development and to make easier reference to the tariff
15 eligible costs covered by the proposed incentives, not to claim the program fits any
16 particular definition of a "Make-Ready" program. The bottom line is that Ameren Missouri
17 is happy to change the name of the activities and costs that are eligible under the proposed
18 EV program incentives and drop the term "Make-Ready" altogether. What we call various
19 activities is unimportant. What is important is that we must participate in development of
20 a holistic charging network in order to accelerate EV adoption and to then bring the benefits
21 of EVs to the state.

22 Second, also on page 11 of his testimony, Mr. Murray contends that the corridor
23 network islands "...could have the potential to double the electricity consumption of the

1 existing commercial business and require significant distribution system upgrades." In
2 theory, Mr. Murray is correct. However, in the Company's responses to Staff Data Request
3 No. 0018, in which Staff requested Ameren Missouri to quantify the number of EVs that
4 could be served on various circuits, we confirmed that there is plenty of capacity on
5 Ameren Missouri's system to accommodate a large number of electric vehicles charging at
6 several locations. While we have not performed the same analysis for the proposed corridor
7 locations, there are two cogent facts to consider: 1) The lowest available capacity identified
8 in the above-referenced data request was 3.7 MW at peak in July, which is almost 12 times
9 the capacity needed for one of the corridor charging islands; and 2) corridor network
10 incentives will be provided using a competitive process that will include provisions
11 restricting installation to sites deemed to have sufficient capacity and that do not, due to
12 the Charge Ahead – EV development, require upgrades beyond the local site. The bottom
13 line is that capacity constraints that would trigger additional distribution system upgrades
14 are highly unlikely.

15 Finally, and still on page 11 of Mr. Murray's testimony, he correctly notes the fact
16 that the Corridor Charging Sub-Program tariff language does not include details on the
17 operational performance criteria requirements tied to the Corridor Charging Sub-Program
18 incentive. There are many details for those criteria that will need to be developed in
19 conjunction with both the development of the Request for Proposal ("RFP") and the
20 responses from bidders. Ameren Missouri anticipates that the criteria bidders will agree to
21 be part of the scoring process, such that those bidders agreeing to better operational
22 performance guarantees would score higher on that scoring category. Additionally, since
23 there may be cost savings to Ameren Missouri by collaborating on a larger RFP process

1 through MDNR or the Missouri EV Collaborative, it is important to maintain as much
2 flexibility in implementing the Corridor Sub-Program as possible. This flexibility is the
3 best way to realize the public statewide corridor fast charging network vision for the best
4 overall cost to Missouri and its electric customers.

5 **V. OTHER CLARIFICATIONS AND CORRECTIONS**

6 **Q. What are the issues you would like to highlight in Dr. Marke's rebuttal**
7 **testimony?**

8 A. Let me restate my positions that Dr. Marke challenged:

- 9 • Proliferation of EV charging stations does result in demonstrably higher
10 levels of EV adoption than without such charging stations, including the
11 example of Kansas City Power & Light Company's ("KCPL's") Clean
12 Charge Network that was cited in my direct testimony;
- 13 • Performing market intelligence research about the private business case for
14 EV charging station development by having direct discussions with leading
15 companies engaged in charging station development was appropriate and
16 valuable;
- 17 • Highlighting states that have more EV-supportive policies, as demonstrated
18 by the "ZEV states," is relevant to our proposal by showing that proactive
19 efforts increase EV adoption growth rates;
- 20 • Spire Missouri's choice not to include its compressed natural gas fueling
21 stations into its regulated business and cost recovery has no bearing on
22 Ameren Missouri's Charge Ahead – EV proposal, which will result in

1 benefits for all customers which, like the costs of the program, will be
2 reflected in the revenue requirement that is used to set customer rates.

3 **Q. Dr. Marke asserts that stimulating the installation of EV charging**
4 **stations will not accelerate adoption of EVs. How do you respond?**

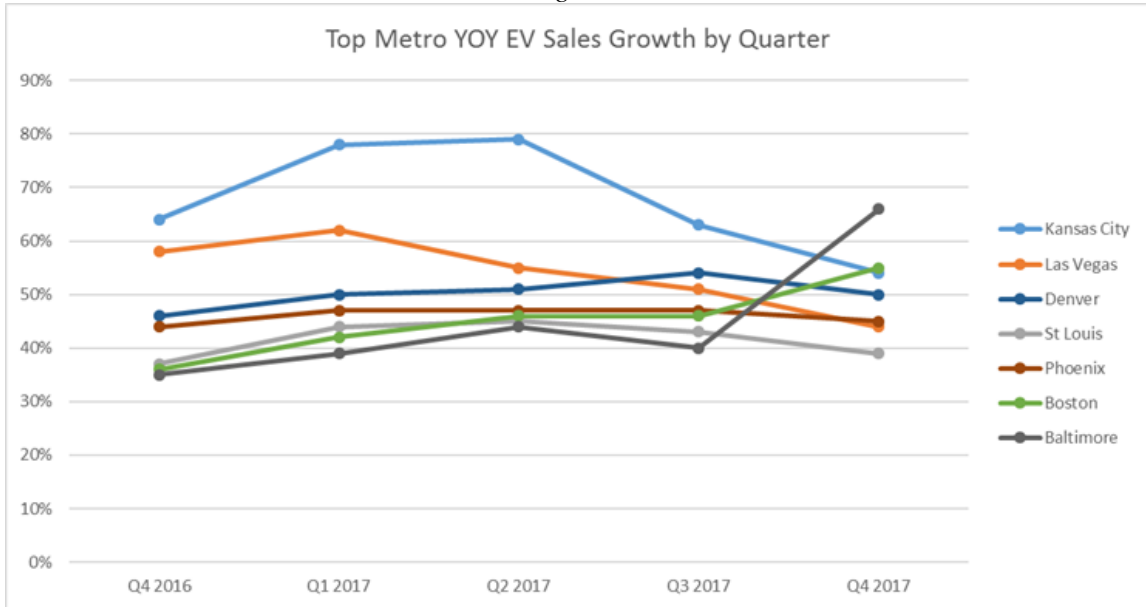
5 A. At pages 20 – 27 of my direct testimony, I detail the importance of the
6 various categories of EV charging stations and cite two surveys demonstrating that the
7 perceived and real lack of charging stations is a primary barrier to EV adoption. Dr. Marke
8 does not dispute this information; instead he simply cites his own opinions on the topic by
9 citing to his previous testimony in KCPL cases.² Dr. Marke stated in those cases that,
10 "...the early returns are not encouraging"³ when discussing levels of EV adoption in KCPL
11 territories. He tries to support that statement by citing registrations of EVs compared to
12 conventional vehicles (non-plug-in type). The problem with Dr. Marke's analysis is that he
13 is not comparing adoption levels "before" and "after" the Clean Charge Network and
14 associated efforts to raise EV awareness were initiated and under way. Rather, his
15 comparison only includes registrations of conventional vehicles against EVs since 2010 in
16 total. We already know the number of EVs in Missouri is low, especially compared to most
17 other states. However, contrary to Dr. Marke's opinion, the early indications are that KCPL
18 have seen significant EV growth since they installed a significant number of charging ports
19 in their metro area. A more accurate and revealing comparison is EV growth in major cities.
20 Looking at Figure 4 below, provided by KCPL, you can see that the sales growth rate has
21 been much higher in Kansas City than in St. Louis and several other major cities. It makes

² Dr. Marke cites OPC DR- No. 2032 in previous KCPL File Nos. ER-2018-0145 and ER-2018-0146.

³ Dr. Marke Rebuttal, File No. ET-2018-0132; p. 17, l. 1.

- 1 perfect sense that this promising increase in growth rate is due in large part to KCPL's
- 2 activities to stimulate the market.

Figure4.



3 Dr. Marke also attempts to diminish the value of the charging stations KCPL
4 constructed as part of its Clean Charge Network ("CCN") by making a statement related to
5 the number of EV drivers that have never used the Network's ports: "This means that, at
6 least, more than 700 of the registered EV drivers who reside in the three KCPL service
7 territories have never utilized the CCN."⁴ It is perfectly natural and expected that there
8 would be more EVs in an area than there are publicly available chargers. We have always
9 contended that proliferation of EV chargers raises both awareness and curiosity about EVs,
10 and the presence of chargers also reduces range anxiety, thereby stimulating increased EV
11 adoption. The number of public charging sessions/users should not match the number of
12 vehicles in an area because we expect most of the charging to occur where it is most
13 convenient - at home. Additionally, as some of the Clean Charge Network host sites begin

⁴Ibid. p.17, l. 9-11.

1 to require a fee for charging service, if the fee is above the residential retail rate, we would
2 expect more EV drivers to charge at home whenever they can. It is logical that only those
3 EV drivers who need to supplement their home charge, or do not have access to charging
4 at home at all, will pay for charging. This is a sign of success for the charging stations, not
5 a failure. They have raised awareness and reduced range anxiety, resulting in more EVs in
6 the Kansas City area, beneficial load growth for the grid, and downward pressure on
7 customer rates.

8 **Q. In his testimony, Dr. Marke stated that seeking information from a**
9 **third-party EV charging station provider is analogous to asking a barber if you**
10 **needed a haircut. Is the analogy and its suggestion that the market intelligence**
11 **research you performed cannot be trusted on point?**

12 A. No it is not. Dr. Marke has mischaracterized how Ameren Missouri
13 approached the third-party EV charging station providers. Keeping with the barbershop
14 analogy, we never asked whether we needed a haircut. We asked the barbers, "When are
15 you coming to set up barbershops?" And they all indicated they are *not* coming to set up
16 barbershops because there are not enough haircuts needed in Missouri to sustain their
17 businesses. We did not ask charging station manufacturers and developers *if* we should buy
18 their equipment. We asked them "if" and "when" they will be coming to Missouri to set up
19 highway corridor fast charging services. The general response we received was one of
20 skepticism about whether they could start and profitably sustain charging services in
21 Missouri. Mr. Wills addresses the likely negative return such a provider would face unless
22 and until the EV market is transformed in Missouri.

1 It was not only a valuable endeavor to engage the EV marketplace for information,
2 it was the right thing to do for our customers and our business. After all, we *want* the
3 competitive private sector EV charging station developers, the group that holds the most
4 knowledge about the business case (or lack thereof) to build the charging infrastructure in
5 this state. So of course Ameren Missouri took the very pragmatic approach of asking, rather
6 than guessing, what is required for private sector charging infrastructure investment in
7 Missouri. We asked the charging station developers, "What would it take for you to set up
8 charging stations along Missouri's highways?" And they all indicated it would take very
9 substantial incentives, far beyond just a line extension. Once we had this answer, we crafted
10 our proposal to entice those businesses to the state.

11 At the same time, we have acknowledged that these stations should be reasonably
12 priced and strategically located. That is why, for the Corridor Charging Sub-Program, we
13 have proposed a competitive process through which we would award incentives for
14 strategically located charging. The existing or new customer that has the strongest overall
15 proposal, including best pricing as a scoring element, would be awarded substantial
16 incentives of up to \$360,000 for a single site. That customer will have the responsibility of
17 owning and operating the equipment to the operational performance standards as indicated
18 earlier in this testimony.

19 Dr. Marke also mentioned the lack of a business case for EV charging on page 17
20 of his rebuttal in this case, although he was specifically referencing Level 2 charging rather
21 than corridor fast charging. Specifically, he refers to KCPL's Clean Charge Network,
22 stating, "The likelihood of generating enough revenues to cover the cost of the capital (and

1 O&M) investments will be a challenge."⁵ I agree this is true and that the business case for
2 private sector ownership of charging stations is not strong. Once again, however, this
3 narrow view does not take into consideration the value of additional and proportionally
4 larger revenues from residential charging on the grid. This is why utilities are uniquely
5 positioned to stimulate the market for EVs through awareness-building and support of the
6 charging infrastructure. In this way, Missouri will realize the many benefits of EVs sooner
7 and in greater amounts.

8 To further highlight this point, which I addressed in my direct testimony, consider
9 again the California Public Utility Commission ("CPUC") and its recent history related to
10 determining the proper role for utility activity to support EV adoption. The CPUC
11 determined that utilities *were necessary* to support EV charging infrastructure:⁶

12 The situation in California may be the most telling example due to the reversal of
13 CPUC's earlier decision. Even in California, where there have been strong
14 incentives to encourage consumers to purchase EVs and where there is the highest
15 level of sales and number of EVs, there is still a lack of sufficient EV charging
16 infrastructure. In Decision 14-12-079, the CPUC overturned its 2011 prohibition
17 against electric company-owned EV charging infrastructure and allowed an
18 expanded role for utilities. In fact, in the decision, CPUC stated:

19
20 The Scoping Ruling in this proceeding asked parties to consider
21 whether there should be an increased role for the utilities in
22 development of EV infrastructure. The parties' comments represent
23 near unanimity that the utilities should have an expanded role in EV
24 infrastructure support and development in order to realize the
25 potential benefits of widespread EV adoption. There was
26 disagreement in the appropriate degree of increased utility
27 participation, with some parties advocating for limited utility
28 activity, with stringent criteria applied to approval of utility program
29 proposals, while others strongly promoted a swift and aggressive
30 turn to utility participation and funding.

31
32 We agree with the majority of comments received, and endorse an
33 expanded role for utility activity in developing and supporting PEV

⁵ Ibid. p. 17, l. 18-21.

⁶ Patrick Justis Direct, File No. ET-2018-0132; p. 18, l. 1-22.

1 charging infrastructure. However, in doing so, we decline to
2 prescriptively determine the appropriate level of utility activity at
3 this time. Instead, we will evaluate utility proposals on a case-
4 specific basis.

5 For Missouri, even more than in California, *utilities are necessary* to stimulate the
6 market to develop charging infrastructure. In short, we firmly believe that our proposal will
7 alleviate third-party charging infrastructure investment barrier, which itself has proven a
8 barrier to EV adoption in the state of Missouri.

9 **Q. What is the relevance of the discussion of the 2013 State Zero Emission**
10 **Vehicle Programs' Memorandum of Understanding ("ZEVMOU") in your**
11 **testimony?**

12 A. My testimony related to the ZEVMOU simply demonstrates that those
13 states that are more proactive in promoting electric vehicles are having greater success in
14 accelerating EV adoption and gaining associated benefits. While Missouri is not a
15 ZEVMOU state at this time, it is nonetheless relevant to understand that state agency
16 decisions, such as the one before the Commission in this case, will impact the levels of EV
17 adoption we will see in Missouri. It may be that Missouri simply does not have the political
18 alignment to become a ZEVMOU state any time soon. Regardless, approval of the Charge
19 Ahead – EV program would be a great step forward for Missouri in thoughtfully and
20 appropriately leveraging utility engagement to accelerate EV adoption.

21 **Q. Should stranded assets be a concern in this case?**

22 A. Of course the *risk* of stranded assets should always be something to
23 consider. In the context of the Charge Ahead – EV proposal, however, stranded assets are
24 not a substantive risk. First, we are not proposing to own equipment, but simply to provide
25 incentives to customers so that they can own and operate the equipment. The only time

1 utility ownership or operation may play a role is in the event that a customer receives an
2 incentive under the Corridor Charging Sub-Program and that customer is unable to meet
3 the operational requirements that ensure a "practical" and highly reliable corridor network
4 for customers. In that case, because the charging equipment is part of the public statewide
5 minimum practical corridor network, the customer would have to relinquish control of that
6 equipment and Ameren Missouri would have the option to directly operate the equipment
7 or hire a third party to restore the equipment to meet operational requirements.
8 Additionally, though charging technology is developing rapidly, both the corridor network
9 equipment and equipment under the other sub-programs would be able to service both
10 today's vehicles as well as tomorrow's vehicles. There is no substantial risk that the
11 equipment would become obsolete.

12 **Q. Do you think it is relevant that Spire Missouri does not have cost**
13 **recovery for any compressed natural gas fueling stations it owns and operates?**

14 A. I find that interesting, but not very relevant. I suspect that Spire Missouri
15 has never put together a case that justifies that the benefits to its natural gas customers of
16 the compressed natural gas fueling stations justify cost recovery of them in natural gas
17 rates, but that does not surprise me. One of the key reasons that the Charge Ahead – EV
18 proposal is both logical and practical is that it has the benefit of an EV marketplace that
19 already has a good number of desirable automobile choices. Although there are some work
20 vehicles, school and city buses, and trucks that are fueled by compressed natural gas and
21 available in the marketplace, I was unable to identify any passenger vehicles currently
22 produced and available. This fact, alone, makes a similar program opportunity for
23 compressed natural gas impractical. If there were more models, or possibly more available

1 larger vehicles, Spire Missouri, or other natural gas utilities, could look into program
2 development in a similar way to determine if there are practical and cost-effective
3 opportunities and, if so, propose such before the Commission.

4 **Q. Dr. Marke raised a concern about cobalt mining in the Democratic**
5 **Republic of the Congo ("DRC") and the associated supply chain risk. Is this concern**
6 **relevant to this case?**

7 A. Only marginally, if at all. I do not dispute that the great majority of cobalt
8 is located in the DRC. But the supply chain risk that Dr. Marke points to has certainly not
9 deterred the major automakers from putting their money where their mouth is by making
10 bold investments in EV development, despite the current dependence on the DRC as a
11 source of cobalt. These large investments have been cited in my direct testimony as well
12 as that of Mr. Wills and in the rebuttal testimony of Ms. Kelley. Simply put, the supply
13 chain concern is a manageable risk for the automakers as evidenced by massive levels of
14 investment in EVs.

15 Additionally, natural advances in EV battery technology are expected as the
16 relatively new market for EVs develops. It is a fact that a lot of research is underway
17 worldwide to not only reduce the cobalt content of lithium-ion batteries but also to develop
18 cobalt-free battery technologies⁷ that have even better performance, are less costly, and
19 have lower environmental and human impacts than today's technology.

⁷<https://www.greentechmedia.com/articles/read/11-lithium-ion-battery-makers-that-dont-need-cobalt#gs.njhAluA>

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VI. DISADVANTAGED COMMUNITIES

Q. Ms. Kelley has recommended that Ameren Missouri allocate 10% of the Charge Ahead - EV program resources to underserved area and disadvantaged communities. What do you think about that suggestion?

A. Ameren Missouri is supportive of ensuring that our programs are inclusive and we are open to this suggestion. While our proposed program and tariff was not constructed specifically with disadvantaged communities as a focus, we believe there are opportunities to encourage the utilization of the charging station incentives within disadvantaged communities. Although low income residents may not be able to afford a car, they would benefit from the reduced emissions of electric vehicles that charge in their neighborhoods, as well as the downward pressure on electric rates that all customers will enjoy. While it is not yet clear if we will be able to accomplish the recommended 10% target, we can embrace that goal and monitor our progress.

Q. Does this conclude your surrebuttal testimony?

A. Yes, it does.

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