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Time of Use Rates,
EV Charging,
Witness: Noah Garcia
Type of Exhibit: Rebuttal Testimony
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File No.: ER-2016-0179
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MISSOURI PUBLIC SERVICE COMMISSION

File No. ER-2016-0179

REBUTTAL TESTIMONY

OF

NOAH GARCIA

ON

BEHALF OF

NATURAL RESOURCES DEFENSE COUNCIL

JANUARY 24, 2017

1 **Introduction and Qualifications**

2

3 **Q. Please state your name and address.**

4 A. My name is Noah Garcia and my business address is 20 North Wacker Drive, Chicago,
5 Illinois 60606.

6

7 **Q. What organization are you employed at and what is your position?**

8 A. I work at the Natural Resources Defense Council (NRDC) as a Schneider Fellow. NRDC is a
9 non-profit environmental organization with more than two million members and online activists.
10 NRDC uses law, science, and the support of its members to ensure the rights of all people to
11 clean air, clean water, and healthy communities. One of NRDC's top priorities is to reduce
12 transportation sector air pollutants.

13

14 **Q. Please describe your educational background and work experience.**

15 A. My educational experience includes a Bachelor of Arts in International Relations with a
16 concentration in economics from Stanford University and a Master of Arts in Public Policy from
17 Stanford University with a concentration in energy and environmental policy.

18

19 During my time at Stanford, I was a research assistant at the Steyer-Taylor Center for Energy
20 Policy and Finance and analyzed the role of policy and market drivers behind clean energy
21 development. At NRDC, I have advocated and provided support for state-based clean energy
22 policies in various legislative and regulatory environments in Illinois. I have also advocated for
23 and collaborated with partners on utility-driven transportation electrification programs in several
24 jurisdictions in the Midwest. In Missouri, I participated in the *Working Case Regarding Electric
25 Vehicle Charging Facilities* (File No. EW-2016-0123), providing substantive comments and
26 materials on the necessity of charging stations to the development of the plug-in electric vehicle
27 (PEV) market and how utilities could beneficially engage in this space. As part of the docketed
28 proceeding, I presented at the Missouri Public Service Commission's EV workshop on May 25,
29 2016; along with Sierra Club and the Electric Power Research Institute, we expanded on the
30 environmental benefits of vehicle electrification and the need for strategic deployment of

1 charging infrastructure to realize these benefits. I have also submitted testimony in two current
2 rate cases before the Commission: ET-2016-0246 and ER-2016-0285.

3

4 **Purpose of Rebuttal Testimony**

5

6 **Q. What is the purpose of your rebuttal testimony?**

7 A. The purpose of this testimony is to respond to testimony offered by Staff and the Missouri
8 Division of Energy on PEV time-of-use (TOU) rates and TOU rates more broadly.

9

10 Based on the evidence I have submitted in direct testimony and this rebuttal testimony, I
11 recommend:

12

- 13 1) The Commission begin a process to implement a PEV-TOU rate – subject to input from
14 relevant stakeholders – without caps or restrictions to participation, that would be the
15 default rate for PEV drivers with the opportunity to opt-out ;
- 16 2) Ameren Missouri be permitted to engage in education and outreach activities associated
17 with the PEV-TOU rate;
- 18 3) Ameren Missouri report on various metrics associated with the implementation of a PEV-
19 TOU rate; and
- 20 4) The Commission consider how to feasibly expand TOU enrollment to all residential
21 customers, as those customers largely stand to gain from a well-designed TOU rate.

22

23 **Responses to Parties' Direct Testimony**

24

25 **Q. What is Staff's recommendation regarding a PEV TOU rate?**

26 A. In her testimony, Witness Dietrich recommends the following:

27

28 *Staff recommends Ameren Missouri gather data and report annually to the*
29 *Commission and interested stakeholders on the impact of EVs on grid reliability.¹*

¹ Direct Testimony of Natelle Dietrich, File No. ER-2016-0179 Filed December 23, 2016

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Witness Dietrich also explains that Ameren Missouri has an optional TOU rate for residential customers, but it is considered to be a pilot limited to 5,000 customers.²

Q. What is your response to Staff’s recommendation?

A. NRDC agrees that Ameren Missouri should gather and report data to the Commission and interested stakeholders on the impacts of PEVs on grid reliability. However, this action alone is not sufficient to encourage PEV drivers to charge in a manner that benefits the grid and utility customers as a whole. Although I know of no study that assesses the grid impacts of PEVs in Ameren Missouri’s territory specifically, I have presented in direct testimony reports and data from multiple jurisdictions showing that PEV TOU rates are effective in moving PEV load to off-peak hours, minimizing strain on the electric grid and maximizing consumer cost savings. There is no reason to expect that PEV drivers in Ameren Missouri’s service area differ in any meaningful way from PEV drivers in these other jurisdictions: thanks to timers that are already embedded in PEVs and many charging stations, drivers can simply program their cars or their stations to begin charging during the off-peak period of the TOU rate and wake up to a charged electric vehicle in the morning. For these reasons, a TOU rate is a compelling, appropriate, and feasible rate for EV drivers to adopt in Ameren Missouri’s territory to ensure the grid and utility customer benefits of vehicle electrification.

Q. What other recommendations does Staff make regarding a PEV-TOU rate?

A. In his testimony, Witness Murray states that if a PEV-TOU rate is to be offered, it should be offered on an opt-in basis, and that Ameren Missouri should report on various metrics related to the tariff such as reliability impacts and load analysis.³

Q. What is your response to these recommendations?

A. NRDC appreciates Staff’s consideration of this tariff design issue, but respectfully asks the Commission to take a more concrete approach to implementing TOU rates for residential customers with PEVs. I have demonstrated in direct testimony how TOU rates have the potential

² *Ibid.*
³ Staff’s Report Responding to Certain Commission Questions, File No. ER-2016-0179 Filed December 23, 2016

1 to benefit all residential customers, particularly those that own PEVs that are plugged in during
2 nighttime, off-peak hours. I have also illustrated that residential customers often remain on their
3 existing flat rate tariff for no other reason than that it is the default option, *even if they stand to*
4 *benefit from switching to a TOU rate.*

5
6 With this customer behavior in mind, offering a PEV-TOU rate on an opt-in basis will very
7 likely not be sufficient to achieve widespread enrollment in a rate that not only will help
8 maximize the benefits of vehicle electrification to all customers through downward pressure on
9 rates and maintain the reliability of the distribution system, but also will likely benefit the PEV
10 driver as well. Because residential PEV load is uniquely flexible – in that charging can be shifted
11 to occur at different times without significant cost to the driver – implementing a TOU rate for
12 PEV drivers should impose minimal inconvenience to those drivers (i.e. setting their charging
13 station timer to begin charging during the off-peak period) while providing grid and utility
14 customer benefits.

15
16 For these reasons, NRDC recommends that Ameren Missouri should begin identifying
17 residential customers that drive PEVs and defaulting them onto a PEV-TOU rate on an *opt-out*
18 basis. The Commission should also permit Ameren Missouri to lift any caps, barriers or
19 restrictions that residential customers may face in accessing a PEV-TOU rate. NRDC also
20 supports Witness Murray’s recommendation that Ameren Missouri report on the reliability
21 impacts of PEVs to the Commission and interested stakeholders. In addition to the topics listed
22 above, NRDC recommends that Ameren Missouri collect and report data on:

- 23
24 1) Residential load profiles of known PEV drivers;
25 2) Current and projected future sales of PEVs in Ameren Missouri territory;
26 3) Prices paid by PEV drivers at residential stations; and
27 4) Additional customer feedback on their experience on a TOU rate.

28

1 **Q. What position does Division of Energy (DE) take on PEV-TOU rates?**

2 A. While generally supportive of TOU rates and other load management structures, DE does not
3 support PEV-TOU rates because they “may a) inappropriately target a single end use and b) be
4 impractical from an infrastructure perspective.”⁴

5
6 **Q. What is your response to DE’s position?**

7 A. NRDC appreciates DE’s perspective and support for load management structures in general. I
8 would like to clarify my understanding of a PEV-TOU in order to address the concerns DE
9 shares.

10
11 First, a PEV-TOU rate would not necessarily “target” PEVs or any other specific end use: rather,
12 a PEV-TOU rate would be a “whole home” rate that would apply to all of the loads in a home
13 with a PEV. NRDC is also *not* suggesting that residential customers need to install a separate
14 meter for their PEVs – which can be relatively expensive – in order to charge their vehicles on a
15 TOU rate.

16
17 Further, NRDC strongly supports TOU rates, demand response, and other load management
18 tools in residential settings because they reduce peak demand, help maintain the reliability of the
19 grid, increase the incentive for customers to invest in energy efficiency and distributed
20 generation, and can reduce customer bills relative to flat rate offerings. For utility customers that
21 drive PEVs, these load management structures are even more critical to achieving the
22 aforementioned customer benefits. Most PEVs can have a power draw of up to 6.6 kilowatts
23 (kW) when charging in residential settings, a non-trivial increase in individual household peak
24 demand; to ensure that this additional, flexible load maintains the reliability of the grid and puts
25 downward pressure on rates to the benefit of all utility customers, PEV drivers should be
26 defaulted onto a PEV-TOU rate that applies to their full residential demand. Note that any
27 increase in a customer’s residential bill as a result of PEV charging is more than offset by the
28 reduction in fuel cost associated with filling up a gasoline vehicle. In Missouri, the cost of
29 fueling a PEV is approximately half that of an efficient gasoline vehicle. TOU rates should

⁴ Direct Testimony of Martin Hyman, File No. ER-2016-0179 Filed December 23, 2016

1 maximize those savings by encouraging PEV drivers to charge when there is plenty of spare
2 capacity on the grid and electricity is most affordable.

3

4 **Q. In conclusion what have you illustrated in your rebuttal testimony?**

5 A. I have responded to Staff and DE’s positions on PEV-TOU rates and demonstrated how TOU
6 rates are appropriate and effective for integrating beneficial PEV load onto the grid. Despite the
7 benefits these rate structures confer on PEV drivers and non-PEV drivers alike, simply ordering
8 Ameren Missouri to conduct load management studies or offering TOU rates on an opt-in basis
9 will not be sufficient to achieving widespread TOU enrollment among PEV drivers – or other
10 utility customers for that matter. However, in the realm of tariff design, nudges can be a
11 powerful tool to increase enrollment. For this reason, NRDC recommends that the Commission
12 begin to take the steps necessary to implement PEV-TOU rates for Ameren Missouri and other
13 regulated utilities in the state on an *opt-out* basis. That is, utility customers that are known to
14 drive PEVs are defaulted onto the PEV-TOU rate and may switch to Ameren Missouri’s other
15 tariff offerings at any time if they wish. Ameren Missouri should be permitted to provide
16 education and outreach to utility customers on the benefits of the PEV-TOU rate. Finally,
17 participating in the PEV-TOU rate should not be hindered in any way by caps, barriers, or
18 restrictions to customers that drive PEVs. Because utility customers that do not drive PEVs also
19 stand to benefit from taking service on TOU rates, the Commission should also remove any caps
20 associated with current or future Ameren Missouri TOU rate offerings and seriously consider
21 how to best default other residential customers onto TOU rates on an opt-out basis.

22

23 Especially as the next generation of practical and affordable PEVs hit showrooms across the
24 country, it is imperative that practical, beneficial rate structures are in place to maintain the
25 reliability of the grid and help maximize the benefits that all utility customers realize from
26 vehicle electrification.

27

28 **Q. Does this conclude your testimony?**

29 A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric)
Company d/b/a Ameren Missouri's) **File No. ET-2016-0179**
Tariffs to Increase Its Revenues for)
Electric Service)

County of Cook)
State of Illinois)

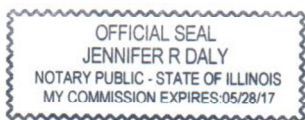
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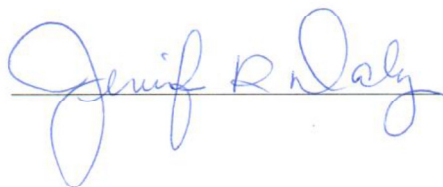
Noah Garcia, of lawful age, on his oath states: that he has participated in the preparation of the following rebuttal testimony in question and answer form, consisting of 7 pages to be presented in the above case; that the answers in the following rebuttal testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such answers are true to the best of his knowledge and belief.



Noah Garcia

24th In witness whereof I have hereunto subscribed my name and affixed my official seal this day of January, 2017.





Jennifer R. Daly