Exhibit No.:	
Issues:	Residential Rate Design; Electric Vehicles; Advanced Metering Infrastructure; Peak-Time Rebate Pilot; Property Assessed Clean Energy Financing; Value of Solar; Energy Efficiency
Witness:	Martin Hyman
Sponsoring Party:	Missouri Department of Economic Development – Division of Energy
Type of Exhibit:	Rebuttal Testimony
Case No.:	ER-2016-0179

MISSOURI PUBLIC SERVICE COMMISSION

UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI

CASE NO. ER-2016-0179

REBUTTAL TESTIMONY

OF

MARTIN R. HYMAN

ON

BEHALF OF

MISSOURI DEPARTMENT OF ECONOMIC DEVELOPMENT

DIVISION OF ENERGY

Jefferson City, Missouri
January 24, 2017

(Rate Design)

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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

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 24th day of January, 2017.

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 the Missouri Department of Economic Development – Division of Energy ("DE") in September of 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 in this case before the Missouri Public Service Commission ("PSC" or "Commission") on behalf of DE or any other party?

A. Yes. I filed Direct Testimony on residential rate design, advanced metering infrastructure, off-peak electric vehicle ("EV") rates, demand-response rates, Property Assessed Clean Energy ("PACE") financing, and Pay As You Save® ("PAYS®") financing.

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 respond to proposals and statements related to residential general use rate design, including Union Electric Company d/b/a Ameren

Missouri's ("Ameren Missouri" or "Company") proposed "Energy Grid Access Charge;" EV time-of-use ("TOU") rates; a program to allow customers to elect to have their meters read manually; a peak-time rebate pilot program; PACE financing; the value of solar; and, demand-side management ("DSM")/Missouri Energy Efficiency Investment Act ("MEEIA") programs.

Q. What did you review in preparing this testimony?

A. I reviewed the Direct Testimonies of Company witness Mr. William R. Davis,[1] Commission Staff ("Staff") witness Ms. Natelle Dietrich,[2] Office of the Public Counsel ("OPC") witnesses Dr. Geoff Marke[3] and Mr. Donald Johnstone,[4] Natural Resources Defense Council witness Mr. Noah Garcia,[5] and Brightergy, LLC witness Ms. Jessica Oakley[6] as they pertain to the issues discussed below; Staff's "Rate Design and Class Cost-of-Service Report"[7] and "Report Responding to Certain Commission Questions;"[8]

[1] Missouri Public Service Commission Case No. ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Direct Testimony of William R. Davis on Behalf of Union Electric Company d/b/a Ameren Missouri, July 1, 2016.
[2] Missouri Public Service Commission Case No. ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Direct Testimony of Natelle Dietrich on Behalf of Commission Staff Division, December 23, 2016.
[3] Missouri Public Service Commission Case No. ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Direct Testimony of Geoff Marke Submitted on Behalf of The Office of the Public Counsel ("Marke Direct (PSC Issues)"), December 23, 2016.
[4] Missouri Public Service Commission Case No. ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Prepared Direct Testimony of Donald Johnstone On Behalf of Office of Public Counsel, December 23, 2016.
[5] Missouri Public Service Commission Case No. ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Direct Testimony of Noah Garcia on Behalf of Natural Resources Defense Council, December 22, 2016.
[6] Missouri Public Service Commission Case No. ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Direct Testimony of Jessica Oakley on Behalf of Brightergy, LLC, December 23, 2016.
[7] Missouri Public Service Commission Case No. ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Staff's Rate Design and Class Cost-of-Service Report ("Staff's CCOS Report"), December 23, 2016.
[8] Missouri Public Service Commission Case No. ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Staff's Report Responding to Certain Commission Questions, December 23, 2016.

the Company's current and proposed residential general use tariffs; and, the online list of St. Louis-area jurisdictions participating in residential PACE financing.

III. RESIDENTIAL RATE DESIGN

A. CUSTOMER CHARGE AND ENERGY GRID ACCESS CHARGE

Q. Is the Company proposing an increase to its residential general use customer charge?

A. No.[9]

Q. Is the Company proposing any other fixed charges for residential general use customers?

A. Yes. The Company is proposing to institute an "Energy Grid Access Charge" of $4.89 in this case for residential and small general service customers, with movement in subsequent cases to a higher Energy Grid Access Charge of $14.68.[10]

Q. What is the basis for the Company's proposal?

A. The Company claims that its proposal is based on a "minimum distribution system" study which allocates portions of the distribution system to customer-related costs, aside from those distribution costs typically allocated to a customer charge (e.g., line drop and meter). The premise of such a study is that some distribution costs are incurred regardless of demand in order to construct the minimum-sized distribution system necessary for the construction of poles, wires, and other equipment to serve customers.[11]

[9] ER-2016-0179, Davis Direct, page 12, lines 8-10.
[10] *Ibid*, page 20, lines 13-20.
[11] *Ibid*, pages 19-20, lines 19-23 and 1-3, and page 39, lines 15-23.

Q. Does DE disagree with the use of this study?

A. Yes. The study is an artificial construct which assumes that some form of distribution system would exist regardless of customer usage, which is clearly not the case. The Company only constructed a distribution system because customers use energy. Even minimal energy use indicates that the supposed minimum system would be serving a specific level of load, such that the costs of this smaller distribution system should be allocated based on energy- and demand-related factors in addition to customer-related factors.

Q. Is Ameren Missouri's proposed Energy Grid Access Charge based in cost causation?

A. No. It appears that the Company did not attempt to separate customer-related costs (typically recovered through the customer charge) from the distribution system costs included in its Energy Grid Access Charge. Instead, the Company calculated a fixed charge based on its version of fixed costs, subtracted the existing residential general use customer charge from this number, and then divided the result by three.[12]

Q. Did the Company effectively "relabel" what would otherwise have been part of an increased customer charge proposal?

A. Yes. Removing the current customer charge from the Company's calculation indicates no cost-based attempt to distinguish between true customer-related costs and the costs of a theoretical minimum distribution system. Effectively, the Company's proposal would increase fixed charges on residential customers by relabeling them.

[12] ER-2016-0179, workpapers of William R. Davis, "UE_DIR-UE_DIR_002_Davis-Att-MO ECCOS_2016 Min size_Final.xlsm," "Unbundled" tab.

Q. Are there public policy concerns with the implementation of an Energy Grid Access Charge?

A. Yes. As noted in my Direct Testimony, fixed charges reduce the efficiency-inducing price signal received by customers, improperly dissuading customers from investments in efficiency; [13] these charges also undermine fair accounting for customer-owned resources by accounting for only a portion of distribution-related costs in a static manner without considering the full variation in costs and benefits resulting from these resources. Fixed charges are inequitable from the perspective of low-use customers as well, who are required to pay more for electric service than if energy charges were raised. Since low-income customers tend to be low-use customers, the result is particularly inequitable.[14]

Q. Mr. Davis testifies that the impact of the Energy Grid Access Charge would be minimal on efficiency implementation, and that it is a fairer way to account for efficiency program cost distribution.[15] Do you agree?

A. No. Mr. Davis's calculations do not fully convey the fact that some efficiency decisions will, on the margins, not be undertaken as a consequence of higher fixed charges. Although some efficiency measures may still make some economic sense, other measures which passed a cost-effectiveness test for participating customers in the case of higher energy charges may no longer pass and would be rejected with higher fixed charges. This, in turn, would lower the overall cost-effectiveness of the Company's MEEIA programs by reducing participation.

[13] ER-2016-0179, *In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Annual Revenues for Electric Service*, Direct Testimony of Martin R. Hyman on Behalf of Missouri Department of Economic Development – Division of Energy, December 23, 2016, pages 15-16, lines 19-23 and 1-2.
[14] *Ibid*.
[15] ER-2016-0179, Davis Direct, pages 21-22, lines 8-23 and 1-2, and pages 23-26, lines 6-22, 1-22, 1-23, and 1-17.

Mr. Davis's argument that the new fixed charge would improve the equity of efficiency program cost burdens is premised on the assumption that customers who do not participate in efficiency programs are unduly burdened under the current rate structure and MEEIA program set-up. In fact, the Company's programs under MEEIA are currently designed such that all customers will benefit from energy efficiency and demand modification programs through delayed or reduced investments in electric plant.

Q. With respect to electric plant, do higher fixed charges provide appropriate signals to customers about the consequences of their energy consumption choices?

A. No. Higher fixed charges convey a message to customers that their use does not affect investments in electric plant. This may be true from a historic cost or accounting perspective of "fixed costs;" however, in the long run, virtually all of a utility's costs are variable, as they depend on long-run trends in consumption and the need to invest in plant to meet demand.[16] Lower demand results in fewer future plant investments, as recognized by the implementation of MEEIA. Additional fixed charges would not encourage lower demand, but would instead increase the likelihood of future plant investment which would not have occurred absent additional customer demand.

[16] Lazar, Jim, et al. 2016. *Electricity Regulation in the US: A Guide.* 2nd ed. Montpelier, VT: The Regulatory Assistance Project. http://www.raponline.org/wp-content/uploads/2016/07/rap-lazar-electricity-regulation-US-june-2016.pdf. Pages 185-186.

Q. Staff states that its calculated residential customer charge at the fully allocated class cost of service and equalized rates of return for all classes is $8.21,[17] but that the customer charge should only be increased up to that amount at the same percentage as the increase in other rate components.[18] Is this proposal acceptable to DE?

A. Yes. Although DE prefers to see customer charges remain the same, Staff's calculation is only somewhat above the current $8.00 customer charge at maximum. This represents a gradual movement that is unlikely to have high bill impacts or significantly deter future energy efficiency efforts.

B. VOLUMETRIC RATES

Q. Staff states that, "Rates can be blocked so that demand-related costs are recovered on an annual-average sale of energy in the first block of each season."[19] Are there other methods by which demand-related costs can be recovered?

A. Yes. Although Staff's example for a winter rate design involves declining block rates with recovery of demand-related costs in the initial rate block,[20] the summer flat or inclining block rate design that Staff describes[21] could conceivably be used to recover these same types of costs during the winter as well. Staff's statement regarding how a declining block rate design accounts for lower energy costs outside of summer[22] ignores the facts that 1) declining block rate designs encourage additional usage compared to flat or inclining block rates (e.g., additional space heating and exterior lighting), and 2) encouraging additional usage incurs both additional energy costs and additional

[17] ER-2016-0179, Staff's CCOS Report, page 41, lines 4-5.
[18] *Ibid*, page 40, lines 12-15.
[19] *Ibid*, page 32, lines 7-9.
[20] *Ibid*, lines 10-13.
[21] *Ibid*, lines 13-15.
[22] *Ibid*, lines 10-13.

requirements for plant investment. While cost causation should be considered when designing rates, the price signals sent by these rates should also be considered to avoid additional usage and investments.

Q. Is the collection of demand-related costs through the first rate block akin to a customer charge?

A. For many customers, yes. In my Direct Testimony, I provided analyses of residential customer usage data which show that average residential usage for non-electric space heating customers exceeds the Company's winter block cut-off (750 kWh) in all but two months.[23] Effectively, residential customers with average use are required to pay for demand-related costs irrespective of their total usage during peak, a practice which does not follow cost causation. Customers that use more during peak should pay for the highest share of demand related costs.

Q. Does Staff's method of cost allocation distinguish between rate blocks by month?

A. No. Staff's class cost of service study is based on monthly class coincident and non-coincident peak demand, as well as the energy used by the Company's classes; however, the study uses a Detailed Base, Intermediate, and Peak methodology which calculates class-level base, intermediate, and peak demands – not demands based on the Company's rate blocks.[24] Using the first winter rate block to recover demand-related costs does not appear to have a basis in cost causation.

[23] ER-2016-0179, Hyman Direct, pages 25-26, lines 8-9 and 1-2.
[24] ER-2016-0179, Staff's CCOS Report, page 8, lines 6-7, and page 11, lines 1-12; workpapers of Sarah L. Kliethermes, "AllocatorsRK w SK update 12_14_16.xlsx."

IV. OTHER ISSUES

A. ELECTRIC VEHICLE TIME-OF-USE RATES

Q. Both Staff[25] and OPC[26] support a TOU rate for EV drivers. Does DE agree?

A. As stated in my Direct Testimony, TOU rates should be available broadly to all customers within the applicable customer class.[27] The Commission should not single out particular end uses in designing its rates; TOU rates should be available to anyone in a particular class to encourage load shifting regardless of the end use. Participants should be free to choose which end uses to shift, whether the uses happen to be EV charging, washing clothes, or adjusting thermostats. DE would support a TOU rate if it was defined to apply to all uses and was available to all residential customers.

Q. Mr. Garcia supports "defaulting" customers with EVs onto demand response rates.[28] Does DE agree?

A. Not at this time. DE notes that even slight changes to rate designs can have substantial bill impacts, as demonstrated in my Direct Testimony.[29] Care must be taken in proposing new rate designs; in the case of substantial shifts in rate design (e.g., a move to TOU rates), such rates should ideally be implemented on a trial, opt-in basis, unless the rates are designed such that the majority of customers would not be worse-off under the new rate. DE is also concerned that the Company would not be able to distinguish between customers with EVs and customers with higher use for other reasons unless EV charging

[25] ER-2016-0179, Staff's Report Responding to Certain Commission Questions, page 7.
[26] ER-2016-0179, Marke Direct (PSC Issues), page 3, lines 2-9.
[27] ER-2016-0179, Hyman Direct, page 5, lines 18-20.
[28] ER-2016-0179, Garcia Direct, page 28, lines 24-26.
[29] ER-2016-0179, Hyman Direct, pages 32-35, lines 3-7, 1-4, 1-10, and 1-8.

was separately metered, which would impose an additional, unnecessary charge on consumers.

B. ADVANCED METERING INFRASTRUCTURE OPT-OUT

Q. Staff supports an opt-out ability for residential customers who desire manual meter reading.[30] What is DE's position?

A. DE can support allowing customers to elect to have their meters read manually, provided that, as Staff proposes,[31] all costs are borne by these opt-out customers. Customers who have their meters read remotely should not bear the costs of those who voluntarily decide to have their meters read manually.

C. PEAK TIME REBATE PILOT

Q. Staff indicates that it supports a geographically limited peak time rebate pilot program.[32] Does DE support this type of program?

A. Yes. DE is interested in the pilot, as well as in participating in future discussions between the Company and Staff over program design.

Q. Does DE have any comments on Staff's outlined approach?

A. On an initial pilot basis, DE does not necessarily disagree with limiting the geographic availability of such a program based on equipment compatibility. Generally, demand response rates should be available to all customers within a particular customer class without regard to specific customers' circumstances. Staff's recommendation for a geographically limited pilot is based on mitigating distribution system upgrades;[33] however, broadening the availability of the pilot in the future would be beneficial from

[30] ER-2016-0179, Staff's Report Responding to Certain Commission Questions, pages 4-5.
[31] *Ibid*, page 4.
[32] *Ibid*, page 10.
[33] *Ibid*.

the perspective of mitigating the need for future transmission and generation upgrades or additions (as well as the purchases of energy and capacity noted by Staff).[34]

D. PROPERTY ASSESSED CLEAN ENERGY FINANCING

Q. Dr. Marke writes, "It is OPC's understanding that PACE financing is largely unavailable to residential properties unless said property is wholly owned by the resident."[35] Does DE agree?

A. PACE financing would certainly have to be undertaken by a property owner, but the owner does not have to be the resident at the property. A landlord may have a smaller incentive to undertake PACE financing if he or she does not pay the utility bills at a property, but that does not preclude their participation in PACE financing. If the property owner does pay utility bills at a property, then they have ample incentive to participate in PACE financing, provided that the property qualifies for PACE financing.

Q. Has residential PACE financing expanded into additional areas besides those listed by Staff?[36]

A. Yes. In the St. Louis metropolitan area residential PACE has expanded to include Franklin County, unincorporated areas in St. Charles County, and the Cities of Arnold, Ballwin, Bellefontaine Neighbors, Berkeley, Black Jack, Charlack, Chesterfield, Cottleville, Crestwood, Creve Coeur, Dardenne Prairie, Ellisville, Eureka, Ferguson, Florissant, Hazelwood, Kirkwood, O'Fallon, Olivette, St. Ann, St. Charles, St. Peters, Town and Country, University City, Valley Park, and Wentzville.[37] PACE has also

[34] *Ibid*.
[35] ER-2016-0179, Marke Direct (PSC Issues), page 4, footnote 2.
[36] ER-2016-0179, Staff's Report Responding to Certain Commission Questions, page 11, footnote 11.
[37] Renovate America. 2016, "St. Louis Metro Area." Home Energy Renovation Opportunity ("HERO") Program. https://www.heroprogram.com/mo/st-louis-metro.

recently expanded into many parts of the Kansas City metropolitan area.[38] The Missouri Clean Energy District has contracted with Renovate America to administer residential PACE financing. Renovate America has financed 275 projects worth over $2.8 million, with total projected energy bill savings to date of over $1.1 million;[39] these numbers are, of course, indicative of only one of many market providers of PACE financing.

E. VALUE OF SOLAR

Q. Ms. Oakley provides support for a "value of solar" program.[40] Does the Missouri Comprehensive State Energy Plan ("CSEP") support this type of recommendation?

A. Yes. The CSEP includes a recommendation to, "Establish a 'Value of Solar' calculation **for all net-metered customers** that includes costs associated with the use of the grid as well as benefits provided by solar (or other distributed) generation" (emphasis added).[41] The value of solar should be determined comprehensively for all customers by including both the costs and associated benefits (e.g., avoided plant investment, pollution reduction) of using distributed generation.

Q. Are there reasons why a general utility rate case is not the best venue for determining the value of solar?

A. DE would caution that proceedings to determine the value of solar should occur with input from multiple utilities (and other stakeholders) rather than in cases specific to individual utilities. Separate proceedings for each individual utility would create

[38] In the Kansas City metropolitan area, the participating jurisdictions are the Cities of Kansas City (Clay, Platte, and Jackson Counties), North Kansas City, Lee's Summit, Blue Springs, Buckner, Grain Valley, Grandview, Greenwood, Levasy, Lone Jack, Lake Lotawana, Lake Tapawingo, Raytown, Sugar Creek, River Bend, Sibley, Unity Village, Oak Grove, and Pleasant Hill, as well as unincorporated Jackson County. See Renovate America, 2016, "Kansas City Metro Area," HERO Program, https://www.heroprogram.com/mo/kansas-city-metro.
[39] Handshy, Brian. 2017. Personal communication.
[40] ER-2016-0179, Oakley Direct, page 7, lines 1-15.
[41] Missouri Department of Economic Development – Division of Energy. 2015. "Missouri Comprehensive State Energy Plan" ("CSEP"). https://energy.mo.gov/energy/docs/MCSEP.pdf. Page 229.

confusion and uncertainty for solar market participants and customers, and would risk a lack of uniformity in the inputs and outputs produced.

F. ENERGY EFFICIENCY

Q. In supporting PAYS® financing, Dr. Marke makes passing reference to, "… cost shifting expenditures for families that can least afford further electric burdens."[42] Does Dr. Marke provide evidence that DSM programs shift costs onto lower-income households?

A. No. Dr. Marke's assertion assumes that lower income customers are automatically burdened by DSM programs, without regards to whether or not such customers are participants in these programs.

Q. Does the MEEIA law provide assurances that low-income customers will benefit from DSM programs?

A. Yes. Under Section 393.1075.4, RSMo., DSM programs targeted to low-income customers do not have to pass a cost-effectiveness test, ensuring that utilities can offer these customers programs from which they will directly benefit. Additionally, under Section 393.1075.6, RSMo., DSM-related charges may be reduced or eliminated for low-income customers.

V. CONCLUSIONS

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

A. DE can accept Staff's residential customer charge proposal but opposes the implementation of an Energy Grid Access Charge; additionally, DE supports movement towards inclining block rates. DE supports allowing EV drivers to opt into participation

[42] ER-2016-0179, Marke Direct (PSC Issues), page 4, lines 21-23.

in demand response rates, so long as these rates apply to all uses and are available to all residential customers. DE can support a program allowing customers to have their meters manually read so long as these customers fully bear the associated costs. A peak-time rebate program should be available to a broad group of customers, although limited geographic availability is acceptable on an initial pilot basis; DE supports the concept of a pilot offering and would be willing to participate in future discussions about the pilot. The value of solar concept should be addressed, although the forum for addressing it should be broader than that afforded by a utility rate case.

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

A. Yes.