Exhibit No.:	
Issues:	Support for Programs; Savings Targets; Cost-Effectiveness Testing; Portfolio Design
Witness:	Martin R. Hyman
Sponsoring Party:	Missouri Department of Economic Development – Division of Energy
Type of Exhibit:	Rebuttal Testimony
Case No.:	EO-2018-0211

MISSOURI PUBLIC SERVICE COMMISSION

UNION ELECTRIC COMPANY d/b/a AMEREN MISSOURI

CASE NO. EO-2018-0211

REBUTTAL TESTIMONY

OF

MARTIN R. HYMAN

ON

BEHALF OF

MISSOURI DEPARTMENT OF ECONOMIC DEVELOPMENT

DIVISION OF ENERGY

Jefferson City, Missouri
August 30, 2018

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In The Matter of Union Electric Company d/b/a Ameren Missouri's 3rd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA	)))))	**File No. EO-2018-0211**

AFFIDAVIT OF MARTIN R. 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

Martin R. Hyman

Subscribed and sworn to before me this 30th day of August, 2018.

LAURIE ANN ARNOLD
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: April 26, 2020
Commission Number: 16808714

Laurie Ann Arnold

Notary Public

My commission expires: 4/26/20

TABLE OF CONTENTS

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. By whom and in what capacity are you employed?

A. I am employed by the Missouri Department of Economic Development – Division of Energy ("DE") as a Planner III.

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 DE in September, 2014. Prior to that, I worked as a contractor for the U.S. Environmental Protection Agency to coordinate intra-agency modeling discussions. Since joining DE, I have been involved in a number of utility cases and other proceedings before the Missouri Public Service Commission ("Commission") as DE's lead policy witness and have assisted DE on legislative issues and the development of the Comprehensive State Energy Plan. Topics that I address as a part of my duties include rate design, demand-side programs, in-state energy resources, renewable energy, electric vehicles, and grid modernization.

Q. Have you previously filed testimony before the Commission on behalf of DE or any other party?

A. Yes. Please see Schedule MRH-Reb1 for a summary of my case participation.

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 describe why DE generally supports Union Electric Company d/b/a Ameren Missouri's ("Ameren Missouri" or "Company") proposal under the Missouri Energy Efficiency Investment Act ("MEEIA") for a third cycle of programs ("Cycle 3"), as well as to support the following suggested modifications:

1. The Company should strive to recognize and quantify non-energy benefits ("NEBs"), particularly those related to participant savings (e.g., based on natural gas and water bill savings), and include them in the Total Resource Cost ("TRC") test; if necessary, the Company should evaluate a waiver of the Commission's rules in order to do so.
2. Ameren Missouri should strive to recognize and quantify other NEBs for inclusion in the Societal Cost Test ("SCT") and should provide SCT results, at the very least through the use of a lower discount rate.
3. The Company should also provide its portfolio-level TRC test and Utility Cost Test ("UCT") results to the Commission while excluding low-income and general education programs from the tests' calculations.
4. Based on these revised cost-effectiveness calculations and an examination of potential changes to marketing practices, measure incentives, and

eligible measure and program types, the Company should amend its application to recognize and include additional savings opportunities.

5. Ameren Missouri should include multiple on-bill tariff ("OBT"), on-bill financing ("OBF"), and/or on-bill repayment ("OBR") products in its portfolio to meet the varying needs of its residential customers, including low-income customers and renters.
6. The Company should create a way to evaluate new program options or modified programs.

I also recommend that the Commission amend its rules regarding demand-side programs to clarify that the TRC test should include participant benefits.

DE's proposals are consistent with the statutory goal of achieving all cost-effective demand-side savings (Section 393.1075.5, RSMo.), as well as with providing Ameren Missouri customers with enhanced opportunities to improve the management of their utility bills.

III. SUPPORT FOR PROPOSAL

Q. In general, does DE support the Company's proposal?

A. Yes, and I recommend some improvements to the proposal. Ameren Missouri's proposal includes a number of initiatives that DE supports – a "circuit rider" program to improve building code compliance,[1] a "concierge" service to guide customers towards savings opportunities,[2] benchmarking of building

[1] Missouri Public Service Commission Case No. EO-2018-0211, *In the Matter of Union Electric Company d/b/a Ameren Missouri's 3rd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA*, Appendix B – Program Templates, June 4, 2018, page 42.
[2] Missouri Public Service Commission Case No. EO-2018-0211, *In the Matter of Union Electric Company d/b/a Ameren Missouri's 3rd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency*

performance,[3] and creating competitions out of savings opportunities ("gamification").[4] The proposed six-year portfolio[5] could also provide greater market certainty by offering a more-or-less fixed set of programs for customers.

Additionally, Ameren Missouri proposes to use a modified version of the Statewide Technical Reference Manual.[6] Without speaking as to specific aspects of Ameren Missouri's proposed modifications, DE supports the use of the Statewide Technical Reference Manual as a basis for evaluating programs; the Statewide Technical Reference Manual was the culmination of a year-long collaboration between utilities, regulators, and advocates.[7]

As the lowest-cost resource in Ameren Missouri's *2017 Integrated Resource Plan* ("IRP"),[8] demand-side programs provide key savings opportunities compared to supply-side alternatives; offering programs under MEEIA helps to satisfy the statutory goal of achieving all cost-effective demand-side savings (Section 393.1075.4, RSMo.). Additionally, demand-side programs are critical to providing utility customers with greater means to control their energy consumption, manage their bills and save money, and provide greater energy security.

---

as Allowed by MEEIA, Ameren Missouri 2019-24 MEEIA Energy Efficiency Plan ("MEEIA 3 Plan"), June 4, 2018, pages 16, 28, and 30-31.

[3] *Ibid*, pages 17, 18, 28, and 30-31.

[4] *Ibid*, page 23, and EO-2018-0211, Appendix B, page 42.

[5] EO-2018-0211, MEEIA 3 Plan, page 5.

[6] *Ibid*, page 42.

[7] Missouri Department of Economic Development – Division of Energy. 2017. *The Missouri Technical Reference Manual*. "Origin and Next Steps." https://energy.mo.gov/sites/energy/files/MOTRMOrigins.pdf. Page 3.

[8] Missouri Public Service Commission Case No. EO-2018-0038, *In the Matter of Ameren Missouri's 2017 Utility Resource Filing Pursuant to 4 CSR 240 – Chapter 22*, 2017 Integrated Resource Plan, "Executive Summary," September 25, 2017, page 8.

Q. Does DE support the process used by the Company to design its portfolio?

A. Yes. There are two notable aspects of this process. First, the Company solicited bids from program implementers in order to identify savings options. This approach provided Ameren Missouri with market-based assessments of realistic achievable potential ("RAP"), as opposed to strict reliance on the theoretical estimation found in the IRP process. The Company also consulted extensively with stakeholders in the months leading up to the filing, vetting its initial proposal based on feedback received and modifying it in certain respects.

Q. Is energy efficiency important from an economic development perspective?

A. Yes. A recent report from the National Association of State Energy Officials and the Energy Futures Initiative indicates that there are 40,166 jobs in the energy efficiency sector in Missouri. Most of these jobs are in traditional heating, ventilation, and air conditioning companies, but a significant number of Missouri energy efficiency jobs are also with companies involved in high efficiency and renewable heating and cooling. There are more jobs in the energy efficiency sector than in the electric power sector or the transmission, distribution, and storage sector.[9] Energy efficiency and other demand-side programs therefore do more than just save money for customers – they provide jobs for Missourians.

[9] National Association of State Energy Officials and Energy Futures Initiative. 2018. *Energy Employment by State*. https://static1.squarespace.com/static/5a98cf80ec4eb7c5cd928c61/t/5af72033562fa7deeeb50451/1526145078893/USEER2018_StateFacts.pdf. Pages Missouri-1 and Missouri-4.

Q. Does the proposed portfolio achieve all cost-effective demand-side savings?

A. Probably not. There are likely to be additional cost-effective savings opportunities. This position is based on a number of observations:

- Ameren Missouri's filing includes somewhat fewer energy and demand savings than contained in its 2017 triennial IRP, but at a cost that is 40 percent lower than in the same IRP;[10]
- The portfolio- and program-level TRC test and UCT results are generally well in excess of 1.0, and there are notable problems with the Company's cost-effectiveness testing that likely resulted in downward bias; and,
- There are additional savings opportunities (or processes to determine such opportunities) that Ameren Missouri could pursue.

I address each of these issues below, along with other considerations related to the Company's proposed "check-in" process.

IV. SAVINGS TARGETS

Q. What is the difference between energy and demand savings?

A. Energy savings involved reducing the amount of energy used, e.g., through using a lightbulb that requires less electricity. Demand savings reduce demand, e.g., through load shifting to off-peak periods. Both are important in the context of MEEIA, which states, "… a goal of achieving **all** cost-effective demand-side savings" (Section 393.1075.4, RSMo.; emphasis added). "Demand-side programs" includes a broad spectrum of options that are, "… conducted by the utility to modify

[10] EO-2018-0211, MEEIA 3 Plan, page 12.

the net consumption of electricity on the retail customer's side of the electric meter, including but not limited to energy efficiency measures, rate management, demand response, and interruptible or curtailable load …" (Section 393.1075.2(3), RSMo.) – i.e., programs that may result in a change or shift in load, not just programs that reduce load.

Q. How do the Company's proposed savings compare to MEEIA Cycle 2?

A. Both the proposed energy and demand savings are higher than those found in its current, second cycle of programs ("Cycle 2"); while the Company indicates that the demand savings are almost three times those found in Cycle 2, it states that the energy savings are only 60 percent higher.[11] This suggests a disproportionate weighting towards achieving demand savings.

Q. How do the Company's anticipated savings compare to its 2017 triennial IRP filing?

A. The Company states that it is proposing four percent lower energy savings and two percent lower demand savings than found in its 2017 triennial IRP filing,[12] meaning that Ameren Missouri believed there were greater potential savings. Combined with the fact that this MEEIA filing has forty percent lower costs than those provided in the 2017 triennial IRP filing,[13] circumstances suggest that there is the potential for additional savings opportunities through the modification of the Company's offered proposals and the addition of other savings initiatives. Again,

[11] *Ibid*, page 2.
[12] *bid*, page 12.
[13] *Ibid*.

there also seems to be a greater emphasis on achieving demand savings over achieving energy savings.

Q. How does the Company's Cycle 3 proposal compare to the targets found in the MEEIA rules?

A. Ameren Missouri indicates that its proposal would not meet the incremental or cumulative energy savings targets found at 4 CSR 240-20.094(2)(A) and (B). However, the Company's planned demand savings would exceed the incremental and cumulative targets found in those same subsections of the Commission's rules.[14] Yet again, a disproportionate focus on demand savings is evident. Showing progress towards meeting both the energy and demand savings targets is an important part of comparing utility-proposed savings plans to nationally based benchmarks, even if – as the Company asserts in a variance request – the targets are "'soft' goals."[15]

Q. Why is DE concerned about the Company's apparent focus on demand savings as compared to energy savings?

A. The MEEIA statute states that, "The commission shall permit electric corporations to implement commission-approved demand-side programs proposed pursuant to this section with a goal of achieving **all cost-effective demand-side savings**" (Section 393.1075.4, RSMo.; emphasis added). Ameren Missouri's focus on demand savings suggests that the Company may be excluding other cost-effective

[14] *Ibid*, pages 12-14.
[15] Missouri Public Service Commission Case No. EO-2018-0211, *In the Matter of Union Electric Company d/b/a Ameren Missouri's 3rd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA*, Application to Approve DSIM and Demand-Side Management Portfolio and Plan, Request for Variances, and Motion to Adopt Procedural Schedule, June 4, 2018, page 7.

options for energy savings. While peak savings are important for purposes of avoiding investments in capacity-related plant (such as peaking natural gas units), energy savings are important as well because they directly result in lower customer bills. Moreover, customers' energy needs – and the Company's statutory obligations to serve its load reliably – are not met solely by peaking capacity. Note, for example, that Ameren Missouri cites avoided compliance investments in Renewable Energy Standard ("RES") resources within its plan;[16] the RES requires a demonstration of compliance based on sales (i.e., energy), not demand (see Sections 393.1025(4) and 393.1030.1, RSMo.).

V. COST-EFFECTIVENESS TESTING

Q. How cost-effective is the Company's proposal?

A. Based on TRC test and UCT results, the proposal is very cost effective. Every program but the Multifamily Low-Income Program passes the TRC test when considered over the entire timespan proposed for Cycle 3, and even that program passes the UCT. The portfolio-level TRC test result is 1.68, while the portfolio-level UCT result is 2.44.[17] Anything with a cost-effectiveness test result above 1.0 is cost-effective.

Q. Please explain why these results concern DE.

A. Even with DE's concern about the calculation of the TRC test results (discussed further below), these results indicate the potential for additional investments in

[16] EO-2018-0211, MEEIA 3 Plan, pages 60-61.
[17] Missouri Public Service Commission Case No. EO-2018-0211, *In the Matter of Union Electric Company d/b/a Ameren Missouri's 3rd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA*, Appendix A – Portfolio and Program Summary, June 4, 2018, pages 9 and 10.

cost-effective demand-side savings. When these high scores are considered along with the fact that the Company plans to spend 40 percent less than what was contained in its 2017 triennial IRP filing, it is reasonable to assume that there could be additional spending to improve participation rates or offer additional measures or programs without resulting in a non-cost-effective portfolio. Again, the policy of the state – as expressed through the MEEIA statute – is a goal of achieving **all** cost-effective demand-side savings, not the "most" cost-effective savings. The Commission's rules at 4 CSR 240-20.094(4)(I) recognize this policy in stating that:

> For demand-side programs and program plans that have **a TRC test ratio greater than one (1)**, the commission shall approve demand-side programs or program plans, budgets, and demand and energy savings targets for each demand-side program it approves …. (Emphasis added.)

Q. Did Ameren Missouri calculate Societal Cost Test ("SCT") results?

A. No. Ameren Missouri's purported reason for not doing so is that the Company did not calculate NEBs.[18] However, even without NEBs, the Company could have calculated SCT results based on a lower discount rate.

Q. What are NEBs, and how do they relate to the TRC test and the SCT?

A. NEBs are essentially the benefits associated with an action that are not directly captured in avoided utility costs, i.e., they acknowledge the positive and negative "externalities" that are not captured in calculations of benefits from avoided energy usage or avoided capacity. Examples include reduced water and natural gas

[18] EO-2018-0211, MEEIA 3 Plan, page 10.

usage, improved comfort, security, and safety, economic development impacts, and health benefits due to reduced air pollutant emissions as well as keeping homes at appropriate temperatures during heating and cooling seasons. The Commission's recently revised MEEIA rules only allow NEBs to be included in the TRC test if they are related to avoided utility costs and can be quantified with reasonable certainty, but the rules allow NEBs to always be included in the SCT (4 CSR 240-20.092(1)(II)4). Technically, this is not the correct way to use NEBs – certain participant-related NEBs should be included in the TRC test as well, such as avoided water and natural gas usage.[19] However, as is evident when comparing the benefits and costs included in the TRC test and the UCT, the Company did not include any participant benefits in the TRC test; instead, Ameren Missouri included only additional costs, artificially lowering the TRC test results.[20] The inclusion of participant benefits in the TRC is consistent with national leading practices, as found in the *National Standard Practice Manual*.[21, 22]

Q. Why is DE concerned by the lack of SCT results or NEB calculations?

A. These deficiencies raise several concerns. The SCT is required by Commission rule as a part of Ameren Missouri's MEEIA application (4 CSR 240-20.094(4)(C)2), yet the Company sought no variance from the Commission's rules in order to be

[19] Woolf, Tim, Neme, Chris, Kushler, Marty, Schiller, Steven R., Eckman, Tom, and Michals, Julie. 2017. *National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources*. 1st ed. National Efficiency Screening Project. https://nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf. Pages 111 and 113.
[20] See, e.g., EO-2018-0211, MEEIA 3 Plan, page 11.
[21] Woolf et al., 2017, pages 111 and 113.
[22] This manual was drafted by nationally recognized experts on energy efficiency and has been cited by stakeholders around the country; see National Efficiency Screening Project, 2018, "NSPM References," https://nationalefficiencyscreening.org/state-references/.

relieved from submitting a filing with an SCT calculation. Given the problems associated with calculating the TRC test in the Missouri context, providing alternative measures of cost-effectiveness – particularly those related to societal benefits – is crucial.

Technically, the SCT could be calculated without NEBs, despite Ameren Missouri's assertion in its MEEIA application; one need only lower the "discount rate" (i.e., the time value of money) to do so. However, the SCT would not be complete without an attempt to quantify NEBs. Certain NEBs should also be included in the TRC test, as discussed above. Failing to include NEBs in any cost-effectiveness tests lowers cost-effectiveness results, particularly in the case of the TRC test, and creates a distorted view of program success and customer impacts. No utility should be permitted to avoid attempting to quantify NEBs (especially those that should be used in the TRC test) just because the Commission's rules only allow NEBs to be included in the TRC test if they, "… may be calculated with a reasonable degree of confidence" (4 CSR 240-20.092(1)(II)4). Ameren Missouri should make good faith attempts to quantify the NEBs that are undoubtedly present in its deployment of MEEIA programs.

Q. Are there any reasons why the Commission should adhere to considering cost-effectiveness tests other than the Ratepayer Impact Measure ("RIM") test?

A. Yes. According to the *National Standard Practice Manual*:

> The RIM test should not be used for purpose of determining which efficiency resources are cost-effective – i.e., have benefits that exceed their costs –

> because, like the Participant test, it **does not measure changes in net economic costs across a population**; rather, it is a measure of distribution equity. Even in that context, **the RIM test only considers one of the three factors regulators should consider when exploring distributional equity concerns: rate impacts, bill impacts, and efficiency program participation rates that affect the portion of customers who will experience net increases or decreases in their bills**. (Emphases added.)[23]

More specifically, the *National Standard Practice Manual* notes concerns including that the RIM test does not provide information about the level of rate or bill increases, may not reduce system costs, is affected by the consideration of unavoidable sunk costs (i.e., lost revenues), and do not result in an evaluation equivalent to that used for other types of resources.[24] This last concern calls into question whether the RIM test satisfies the statutory direction at Section 393.1075.3, RSMo. to value demand- and supply-side resources on the same basis.

Q. Does this mean that the Commission should ignore rate impacts when evaluating equity?

A. No. Rather than attempting to evaluate cost-effectiveness and equity at the same time, DE recommends that the Commission separately evaluate cost-effectiveness and equity, with the latter evaluation involving the consideration of rate impacts in

---

[23] Woolf et al., page 114.
[24] *Ibid*, pages 122-123.

conjunction with changes in participating customers' bills and how many customers participate in programs that can reduce their bills.[25] This comprehensive approach would better satisfy the requirement at Section 393.1075.4, RSMo. that, among other considerations, MEEIA programs must be, "… beneficial to all customers in the customer class in which the programs are proposed, regardless of whether the programs are utilized by all customers." Ultimately, as indicated in the *National Standard Practice Manual*, "Many equity concerns driven by rate impacts can be mitigated or even eliminated by promoting widespread customer participation in efficiency programs."[26]

Q. Were low-income or general education programs subjected to portfolio-level cost-effectiveness tests by the Company?

A. Yes.[27] I would note that the MEEIA statute states, "Programs targeted to low-income customers or general education campaigns do not need to meet a cost-effectiveness test, so long as the commission determines that the program or campaign is in the public interest" (Section 393.1075.4, RSMo.). To be clear, DE agrees with using cost-effectiveness tests to guide the design of low-income and general education programs; however, DE does not agree with "screening" such programs to determine their size via cost-effectiveness tests, either individually or as part of an overall portfolio. The inclusion of these programs in portfolio-level testing risks lowering total portfolio cost-effectiveness, which could lead to the incorrect conclusion that certain programs (which may or may not be low-income

[25] *Ibid*, page 123-124.
[26] *Ibid*, page 125.
[27] Company response to Data Request DED-DE Nos. 204 and 204s1.

or educational programs) should be reduced in size or eliminated in order to improve overall cost-effectiveness test results. The Company claims that it did not modify its portfolio because of the cost-effectiveness testing of these programs;[28] nonetheless, the programs' inclusion in portfolio-level testing is a potential barrier to effectively considering Ameren Missouri's entire package of programs.

Q. What do you recommend in this case to remedy the above concerns?

A. DE recommends that Ameren Missouri undertake the following remedies:

1. The Company should attempt to quantify NEBs, particularly those related to participant savings (e.g., based on natural gas and water bill savings), and include them in the TRC test. If necessary, the Company should seek a waiver of the Commission's rules in order to do so.
2. Ameren Missouri should attempt to quantify other NEBs for inclusion in the SCT and should provide SCT results, at the very least through the use of a lower discount rate.
3. The Company should also provide its portfolio-level TRC test and UCT results to the Commission while excluding low-income and general education programs from the tests' calculations.
4. Based on these revised cost-effectiveness calculations and an examination of potential changes to marketing practices, measure incentives, and eligible measure and program types, the Company should amend its application to include additional savings opportunities.

[28] Company response to Data Request DED-DE No. 204.

5. The Company should also create a way to evaluate new program options or modified programs, as described below.

Q. Do you have any additional recommendations regarding cost-effectiveness testing?

A. Yes. DE recommends that the Commission revise its rules on demand-side programs to clarify that the TRC test should include participant benefits. This is not only consistent with national leading practices, but with the text of the MEEIA statute. That statute not only describes the components of the TRC test, but also indicates that the TRC test compares these components, "… as defined by the commission in rules" (Section 393.1075.2(6), RSMo.). It is therefore within the Commission's power to remedy the currently imbalanced TRC test calculation requirements. Absent such clarification, DE would recommend greater reliance on the SCT and UCT in utility and Commission decision-making in order to avoid the incorrect conclusions provided by the current Missouri TRC test methodology.

VI. ON-BILL PROGRAMS

Q. What is on-bill financing ("OBF"), and how is it distinct from on-bill tariffs ("OBT") and on-bill repayment ("OBR")?

A. OBF can refer to a number of different types of mechanisms through which a utility customer is provided an energy efficiency loan to install energy efficient equipment or measures, with the loan repaid through the utility bill. While both OBF and OBR use the utility bill to collect the loan repayment as a separate line item, OBF is capitalized from utility shareholders, ratepayers, or public funds (such as taxpayer money), but OBR is financed through a third-party capital provider.[29] OBT is also distinguishable from OBF more broadly in that it involves a tariffed program, which is inherently tied to particular meters. Table 1 below, reproduced from a paper written by experts from Lawrence Berkeley National Laboratory, compares the different types of OBF options. While Pay-As-You-Save ® ("PAYS®") financing is a well-known example of OBT, this table shows that there are other mechanisms for OBF.

Table 1. Comparison of OBF mechanisms and program models.[30]

Feature	Line Item Billing	On-Bill Loan	On-Bill Tariff
Debt of Utility Meter or Customer/Property?	Customer/Property	Customer/Property	Meter
Consequences of On-Bill Financial Product Non-Payment	No Threat of Utility Service Disconnection	Utility Service Disconnection	Utility Service Disconnection
Survives Bankruptcy/Foreclosure?	No	Unlikely	Maybe
Transferable?	Yes, with consent (if program rules allow)	Yes, with consent (if program rules allow)	Yes, automatic
Garners Off-Balance Sheet Treatment?	No	Maybe	Maybe

Q. How are OBF, OBT, and OBR complementary to other demand-side program offerings?

A. While traditional demand-side programs (e.g., rebates) can enable customers with opportunities to manage utility bills and reduce costs, some customers still face barriers to accessing cost-effective energy savings. This is particularly true for low-

[29] Zimring, Mark, Leventis, Greg, Goldman, Charles, Borgeson, Merrian, Thompson, Peter, and Hoffman, Ian. 2014. "On-Bill Finance: From Policy to Promise to Practice." *2014 ACEEE Summer Study on Energy Efficiency in Buildings*. Lawrence Berkeley National Laboratory. http://aceee.org/files/proceedings/2014/data/papers/2-660.pdf. Page 2-435.
[30] *Ibid*, page 2-433.

and moderate-income customers, who may lack the capital needed for major investments (see below). OBF, OBT, and OBR reduce this barrier by providing customers with a loan to cover upfront capital costs.

Q. Has Ameren Missouri evaluated on-bill programs?

A. Yes. In June of 2018, Ameren Missouri released a feasibility study on PAYS®; I have included the non-confidential version of the study as Schedule MRH-Reb2. The study found that, "For low-income customers, especially those with poor credit, the PAYS program could provide a more affordable alternative to available private sector options, both overall and from the perspective of the monthly payment."[31] Depending on assumptions regarding net-to-gross savings and eligible measures, the study found that such a program would be cost-effective with somewhere between 42 and 238 participants.[32] For comparison, Ameren Missouri has over one million residential customers.[33]

Q. Did the study identify any limitations to PAYS® or on-bill programs more generally?

A. Yes. The study states:

> PAYS severely limits the savings to cost ratio of eligible products, and provides limited funding for measures that do not provide high savings relative to total measure cost. As a result, this option is not well suited to the

---

[31] Colby, Jane, James, Laura, Lyons, Kenneth, and Richmond, Morgan. 2018. *PAYS Feasibility Study*. Prepared for Ameren Missouri. Page A-1.
[32] *Ibid*, page 32.
[33] Missouri Public Service Commission. 2017. *2017 Annual Report*. Page 40. https://psc.mo.gov/CMSInternetData/Annual%20Reports/PSC%20Annual%20Reports/2017%20PSC%20Annual%20Report.pdf.

typical borrower. On-bill financing also severely restricts project eligibility to only those measures that the utility selects based on high benefit-cost ratios.[34]

This limitation can be a particular concern in the context of health and safety improvements, which may be needed as a part of energy efficiency upgrades.[35]

Q. Are there any other concerns related to PAYS® or on-bill programs?

A. Yes. To the extent that any on-bill program relies on disconnection for non-payment, low- and moderate-income customers – particularly the elderly and those dependent on electricity because of medical needs – can be placed at risk.[36]

Q. Is it possible that the Ameren Missouri on-bill program study will need revisions?

A. Yes. Both Ameren Missouri's feasibility study and the feasibility study produced for The Empire District Electric Company ("Empire")[37] were produced by The Cadmus Group LLC, and the two studies share three of the same authors. This is notable because after Empire filed its study in Case No. ER-2016-0023, the Office of the Public Counsel provided its *Response to Notice of Completion of PAYS Study*, in which the Energy Efficiency Institute, Inc. outlined a number of concerns with the

[34] Colby et al., page 34.
[35] State and Local Energy Efficiency Action Network. 2017. *Energy Efficiency Financing for Low- and Moderate-Income Households: Current State of the Market, Issues, and Opportunities*. Prepared by: Greg Leventis, Chris Kramer, and Lisa Schwartz of Lawrence Berkeley National Laboratory. https://emp.lbl.gov/sites/default/files/news/lmi-final0811.pdf. Page 38.
[36] *Ibid*, page 40.
[37] Missouri Public Service Commission Case No. ER-2016-0023, *In the Matter of The Empire District Electric Company for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area*, The Empire District Electric Company PAYS Feasibility Study, May 31, 2018.

Empire study.[38] The Energy Efficiency Institute, Inc. is, "… the proprietary owner of PAYS[®] …."[39] Given that both the Ameren Missouri and Empire studies were released by the same firm – and share a number of authors – it is reasonable to question whether Ameren Missouri's study would raise concerns similar to those found with Empire's study.

Q. Based on these considerations, what are DE's recommendations?

A. DE recommends that, either in its MEEIA portfolio or in conjunction therewith, the Company offer multiple on-bill programs as a suite of financing options, including OBF, OBT, and OBR mechanisms, in order to meet customers' diverse financial needs. The OBF, OBT, and/or OBR mechanisms chosen should be malleable enough to accommodate a variety of measures, as well as any needed health and safety improvements; this could be accomplished through flexible repayment terms and supplementary funding sources (such as MEEIA rebates). For all of these offerings, DE also recommends robust consumer protections to prevent adverse outcomes, such as prevention of service shut-offs to vulnerable customers due to loan non-payment. Lastly, DE recommends that the Company re-examine its on-bill program study to address any issues that the study may share with that produced for Empire.

[38] Missouri Public Service Commission Case No. ER-2016-0023, *In the Matter of The Empire District Electric Company for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area*, Response to Notice of Completion of PAYS Study, June 27, 2018.
[39] *Ibid*, page 1.

VII. MID-CYCLE CHECK-IN AND NEW PROGRAMS

Q. How does Ameren Missouri address the potential uncertainties associated with a six-year portfolio?

A. Up until now, MEEIA portfolios have typically lasted for around three years. In order to address the market uncertainties and opportunities that could arise with a longer implementation period, the Company proposes that the 2020 triennial IRP serve as the basis for a "check-in" on MEEIA Cycle 3. Certain "triggers" based on 2020 triennial IRP results could lead to the consideration of modifications to MEEIA Cycle 3. These triggers are as follows:

- A change in timing for Ameren Missouri's expected 2034 capacity need;
- A 20 percent or higher change in per unit avoided costs; or,
- A 20 percent or greater change in RAP.[40]

Q. What types of modifications would be considered?

A. Ameren Missouri proposes that the program budgets, the savings targets, and/or the earnings opportunity could change based on stakeholder discussions and Commission approval.[41]

Q. What is DE's position on this proposed check-in process?

A. DE is not opposed to a reasonably constructed check-in process. While DE appreciates Ameren Missouri's attempt to structure such a process in response to stakeholder concerns, DE encourages flexibility in the process. DE's ability to agree to such a process is also predicated on avoiding the possibility of complete

[40] EO-2018-0211, MEEIA 3 Plan, pages 70-73.
[41] *Ibid*, pages 71, 73, and 74.

cycle termination due to changes in the market. Avoiding such a dramatic change is a reasonable request given the certainty provided by a longer implementation period, as well as the fact that the estimations contained in IRP filings are uncertain and often rapidly outdated.

Q. Is there an explicit process for adding new programs within Cycle 3?

A. There are a few relatively limited processes available; the Company states in response to one of DE's data requests that:

> The MEEIA 2019-24 Plan proposed the continuation of the 11-Step Change Process to make modifications to existing programs. Modifications to existing programs can be driven by several factors including changes in market conditions and/or evaluation recommendations. The IRP Check-in process provides an avenue for considering new programs and, as relevant and appropriate, new programs could be part of the updated potential study. New programs could also be identified through other forums such as ongoing stakeholder discussions at the utility level or the state level.[42]

Q. Does DE have a recommendation to address concerns related to implementing new savings opportunities?

A. Yes. DE recommends that the Company meet with members of its utility energy efficiency collaborative once per year in order to discuss potential opportunities for new programs. This process would be similar to that approved as a part of MEEIA Cycle 2; the MEEIA Cycle 2 collaborative resulted in additional programs and

[42] Company response to Data Request DED-DE No. 202.

program modifications, with some other ideas (such as gamification) proposed for implementation in Cycle 3.[43] To reduce the additional administrative burden associated with such collaboration, DE suggests that the discussion of new programs involve a "lighter" approach for most years, with a more in-depth discussion as a part of the mid-cycle check-in process. Any new programs or program modifications resulting from the mid-cycle discussion would be considered along with the potential changes proposed by Ameren Missouri in the event of meeting one of the triggers, although such new or modified programs should not be contingent on meeting these same triggers.

Q. Would this annual process encourage movement towards the goal of achieving all cost-effective demand-side savings?

A. Yes.

VIII. CONCLUSIONS

Q. Please summarize your conclusions and recommendations.

A. DE generally supports Ameren Missouri's proposed MEEIA Cycle 3 and also recommends the following:

1. The Company should strive to quantify NEBs, particularly those related to participant savings (e.g., based on natural gas and water bill savings), and

[43] See:
(1) Missouri Public Service Commission Case No. EO-2015-0055, *In the Matter of Union Electric Company d/b/a Ameren Missouri's 2nd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA*, Energy Efficiency Collaborative Report, October 7, 2016;
(2) Missouri Public Service Commission Case No. EO-2015-0055, *In the Matter of Union Electric Company d/b/a Ameren Missouri's 2nd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA*, Non-Unanimous Stipulation and Agreement Regarding Use of R&D Funds and Modification of Measure Incentives, March 16, 2017.

include them in the TRC test; if necessary, the Company should evaluate a waiver of the Commission's rules in order to do so.

2. Ameren Missouri should strive to recognize and quantify other NEBs for inclusion in the SCT and should provide SCT results, at the very least through the use of a lower discount rate.
3. The Company should also provide its portfolio-level TRC test and UCT results to the Commission while excluding low-income and general education programs from the tests' calculations.
4. Based on these revised cost-effectiveness calculations and an examination of potential changes to marketing practices, measure incentives, and eligible measure and program types, the Company should amend its application to recognize and include additional savings opportunities.
5. Ameren Missouri should include multiple OBF, OBT, and/or OBR products in its portfolio to meet the varying needs of its residential customers.
6. The Company should create a way to evaluate new program options or modified programs.

In addition, I recommend a clarification of the Commission's rules with regards to the TRC test.

These changes would further the stated policy goal of achieving all cost-effective demand-side savings, as well as provide Ameren Missouri customers with enhanced opportunities to improve the management of their utility bills.

Q. Does this conclude your Rebuttal Testimony?

A. Yes.