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Exhibit No: _____
Issue: Demand Side Resources
Witness: Philip Mosenthal
Type of Exhibit: Surrebuttal testimony
Sponsoring Party: NRDC
Case No. EO-2018-0211
Date testimony prepared: September 17, 2018

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

Union Electric Company d/b/a Ameren Missouri

File No. EO-2018-0211

**SURREBUTTAL TESTIMONY OF
PHILIP MOSENTHAL**

ON BEHALF OF

NRDC

September 17, 2018

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Q. Please state your name and business address.

A. Philip H. Mosenthal, Optimal Energy, Inc., 10600 Route 116, Hinesburg, VT 05461.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Natural Resources Defense Council (NRDC). All work developing my testimony has been completed by me or under my direction.

Q. How are you employed?

A. I am the founding partner in Optimal Energy, Inc., (“Optimal Energy”) a consultancy specializing in energy efficiency and utility planning. Optimal Energy advises numerous parties including utilities, non-utility program administrators, government, and environmental groups.

Q. Tell me about your qualifications and experience?

A. I have 30 years of experience in all aspects of energy efficiency, including facility energy management, policy development and research, integrated resource planning, cost-benefit analysis, and efficiency and renewable program design, implementation and evaluation. I have developed numerous utility efficiency plans, and designed and evaluated utility and non-utility residential, commercial and industrial energy efficiency programs throughout North America, Europe and China.

1 I have also completed or directed numerous studies of efficiency potential and
2 economics in many locations, including China, Colorado, Kansas, Maine, Massachusetts,
3 Michigan, Minnesota, New England, New Jersey, New York, Quebec, Texas, and
4 Vermont. These studies ranged from high level assessments to extremely detailed,
5 bottom-up assessments evaluating thousands of measures among numerous market
6 segments. Recent examples of the latter are analyses of electric and natural gas efficiency
7 and renewable potential along with the development of suggested programs for New
8 York State, on behalf of the New York State Energy Research and Development
9 Authority (NYSERDA).

10 I have served as a lead advisor for business energy services in Rhode Island and
11 Massachusetts on behalf of the Energy Efficiency Resource Management Council and the
12 Energy Efficiency Advisory Council, respectively, overseeing and advising on utility
13 program administrators' plans, program designs, implementation and performance, in
14 these leading states.

15 I have been actively engaged in the Illinois Stakeholder Advisory Group (SAG)
16 since its inception, representing the People of Illinois on behalf of the Illinois Office of
17 the Attorney General. I have also been involved in the past few years on issues in
18 Missouri related to KCP&L's and Ameren's IRP and MEEIA filings, as well as a witness
19 on behalf of NRDC, the Sierra Club and Renew Missouri in various Ameren and
20 KCPL&L dockets.

21 Prior to co-founding Optimal Energy in 1996, I was the Chief Consultant for the
22 Mid-Atlantic Region for XENERGY, INC. (now DNV-GL). I have a B.A. in

1 Architecture and an M.S. in Energy Management and Policy, both from the University of
2 Pennsylvania.

3
4 **Q. Have you previously testified before this Commission?**

5 A. Yes. I have submitted direct and rebuttal testimony in numerous Ameren and
6 KCP&L-MO and GMO dockets related to IRP's and MEEIA Plans.

7
8 **Q. Please summarize your Testimony.**

9 A: My testimony is designed to rebut Staff's Rebuttal Report and explain that
10 Ameren's MEEIA Plan is cost effective as defined by the MEEIA legislation. I
11 demonstrate that since the MEEIA Plan passes the total resource cost (TRC) test and has
12 been shown to be a scenario resulting in the lower net present value of future revenue
13 requirements for Ameren than any scenario with less efficiency investment, the proposed
14 MEEIA III Plan will benefit all Ameren's customers. First, I give a brief description of
15 the MEEIA Legislation, Ameren's MEEIA III plan, and how the two fit together. Second,
16 I show that Ameren's avoided costs are not overstated despite Ameren's current situation
17 of excess capacity, and, if anything, underestimate MEEIA's full range of benefits to
18 Ameren ratepayers. Finally, I demonstrate that Staff is in fact arguing to use the ratepayer
19 impact measure (RIM) test as the de facto metric to assess whether the Commission
20 should approve efficiency programs. I discuss why the RIM test is inappropriate, against
21 the intent of the MEEIA legislation, and would represent a significant policy change from
22 the philosophy that allowed MEEIA I and MEEIA II to be approved. I further show how
23 all customers will indeed benefit from the MEEIA III Plan even if short term rates

1 increase for non-participants. I also describe how the MEEIA III Plan includes expanded
2 benefits for Ameren’s low-income customers through new and improved low-income
3 programs. I conclude by recommending that the Commission approve Ameren’s MEEIA
4 III plan, given the cost-effectiveness and significant benefits to all customers.

5 **Introduction**

6 **Q: Describe the MEEIA Legislation**

7 A: The MEEIA Legislation encourages the adoption in Missouri of energy efficiency
8 investments that are cost-effective using the Total Resource Cost test (TRC).
9 Specifically, it states that “The commission shall permit electric corporations to
10 implement commission-approved demand-side programs proposed pursuant to this
11 section with a goal of achieving all cost-effective demand-side savings.” Further, the
12 programs should “result in energy or demand savings that are beneficial to all customers
13 in the customer class in which the programs are proposed, regardless of whether the
14 programs are utilized by all customers.” Finally, the legislation states that, in determining
15 how to determine whether efficiency programs are beneficial to all customers, “the
16 commission shall consider the total resource cost test a preferred cost-effectiveness
17 test.”¹

18 **Q. Describe the current Ameren MEEIA Proposal**

19 A: Ameren’s MEEIA III Proposal sets a six-year goal of 1,958,132 MWh reduction,
20 a peak demand reduction of 985 MW, at a program budget of \$551 million. The savings
21 goals are approximately the same as those found in the Realistically Achievable Potential
22 (RAP) scenario in Ameren’s latest IRP, while the budget is 40% lower than the budget in

¹ Missouri Revised Statutes. Section 393.1075.4

1 the RAP scenario². The proposal has a portfolio TRC benefit-cost ratio of 1.96 without
2 the earnings opportunity, or 1.75 with the Earnings Opportunity³. This means that for
3 every dollar invested in the efficiency programs (including all Ameren-leveraged
4 customer contributions), Missourians will enjoy roughly two dollars in benefits.

5 **Q. Does Ameren’s MEEIA III meet the requirements and intent of the MEEIA legislation?**

6 A. Yes. Ameren’s MEEIA III Plan is a significant step towards capturing all cost-
7 effective energy efficiency as envisioned by the MEEIA legislation. With a TRC ratio of
8 1.75, the legislation’s stated preferred test shows that the avoided marginal costs from
9 running existing power plants would be almost twice as much as achieving the same
10 results through the MEEIA III Plan efficiency programs⁴. Further, Ameren’s latest IRP
11 shows that the RAP scenario results in a total revenue requirement of \$3.1 billion lower
12 than the lowest cost scenario with no DSM⁵. This confirms that all ratepayers will be
13 better off with proposed levels of efficiency, even given the current growth rates and
14 excess capacity in Ameren’s service territory. Finally, since the actual MEEIA III Plan
15 calls for similar levels of savings as the RAP scenario but 40% lower spending, these
16 numbers would presumably look even better when applied to the numbers in the MEEIA
17 III Plan, resulting in a present value revenue requirement savings of substantially greater
18 than the \$3.1 billion estimated improvement compared to not pursuing efficiency
19 programs.

² MEEIA III Portfolio 5-14-2018 Meeting

³ MEEIA III Portfolio 2-28-2018 Meeting

⁴ MEEIA III Portfolio 2-28-2018 Meeting

⁵ Ameren 2017 Integrated Resource Plan. Chapter 10.

1 **Q. If this is the case, why does Staff argue that the increased efficiency is not beneficial**
2 **to all ratepayers?**

3 A: Staff has two main arguments as to why Ameren’s proposed MEEIA Plan does
4 not meet the statutory requirements of MEEIA. These are:

- 5 • Avoided costs are exaggerated, largely because Ameren currently has excess
6 capacity.⁶
- 7 • Energy efficiency programs do not benefit *all* customers, including non-
8 participants.⁷

9 I contend that these points are based on a fundamental misunderstanding of energy
10 efficiency resources and integrated resource planning. Below I go through each concern.

11 **Avoided Costs are Not Inflated**

12 **Q. What are the benefits to energy efficiency if it does not explicitly allow Ameren to**
13 **avoid an immediate need for a supply side capital investment?**

14 A: Energy efficiency has many benefits that aren’t related to the explicit avoidance
15 of an imminently needed additional new supply side investment in capacity. Avoided
16 energy benefits, for example, also include marginal costs related to generating additional
17 electricity at existing facilities, or the opportunity cost of having to provide electricity or
18 electric capacity to its own customers rather than selling it back to the Midcontinent ISO.
19 Generating electricity incurs variable costs, such as fuel, operation and maintenance, that
20 would not be incurred if that unit of electricity were not produced. Some types of plants
21 have higher marginal costs than others – for example peaker plants only run a few hours
22 per year because the marginal costs associated with generating electricity from these

⁶ Staff Rebuttal Report, pp. 8–10, 20–35.
⁷ Staff Rebuttal Report, pp. 1–2, 11–19, 38–9.

1 plants are higher than the market cost of power for all but the hours with the highest load.
2 This is despite the fact that significant fixed costs have been incurred in building the
3 power plant and will continue to be incurred whether or not the plant actually generates
4 any electricity. Efficiency, by displacing the need for the power plants with the highest
5 marginal costs, thus saves ratepayers significant money even when not explicitly
6 avoiding a new power plant.

7 Both MEEIA⁸ and the Commission's IRP rules⁹ call for valuing efficiency on an
8 equal basis with supply-side investments. This does not mean that efficiency can only be
9 implemented if it reduces large near-term supply side capital investments, but that the
10 utility should procure electricity from demand-side efficiency measures if it can do so for
11 less than the cost of procuring electricity from existing facilities. By reducing the need
12 for electricity, Ameren's MEEIA III portfolio will allow it to either reduce costs of
13 procuring electricity from existing power plants or sell additional power back to MISO.
14 In either case, total revenue requirements are lower with the MEEIA portfolio in place,
15 and all consumers, regardless of whether they participate in the programs, will benefit
16 since Ameren is procuring lower cost power.

17 **Q. What are the demand (as compared to energy) benefits of energy efficiency when**
18 **there is forecasted excess capacity?**

19 A: The demand reduction associated with energy efficiency creates significant benefits even in
20 situations of excess capacity for several reasons. First, as described above, power
21 purchased during peak periods is often several times more expensive than power
22 purchased during off-peak periods. This is because the power plants with the lowest

⁸ Sec. 393.1075.3.

⁹ 4 CSR 240-22.010(2)(A).

1 marginal cost largely serve the base load, and as the load increases, more and more
2 expensive plants are brought on-line to meet the additional power plant requirements. In
3 many jurisdictions, some plants are needed for only a few hours a year, with costs that are
4 an order of magnitude higher than average electric costs. By reducing the system peak
5 load, the MEEIA III Plan will allow Ameren to avoid purchasing this highly expensive
6 electricity, or allow it to sell this excess capacity into the MISO market when costs are
7 particularly high.

8 Second, lower peak demand can allow Ameren to retire existing plants earlier
9 than planned. If the MEEIA III Plan successfully produces its forecasted demand
10 reduction, it seems very likely that this retirement schedule could be significantly
11 accelerated. This would result in considerable additional present value benefits to
12 ratepayers compared to those shown in the IRP, which has the Sioux plant retiring in
13 2034.

14 Third, reduction in peak demand can result in reduced Transmission and
15 Distribution (T&D) costs. While these impacts are highly dependent on location, the need
16 for T&D investments are a significant and growing cost in the U.S. – U.S. utilities
17 invested \$37.7 billion in their T&D systems in 2013, and T&D costs have been growing
18 significantly faster than inflation since the early 2000s¹⁰. By reducing its system-wide
19 peak, Ameren’s MEEIA III Plan will by its nature reduce the peak in substations that
20 might otherwise need capacity upgrades. Reduced loading on substations can also
21 provide maintenance cost savings, even when major capital investments are not
22 necessary. Ameren can even target energy efficiency and demand response initiative in
23 certain areas to best maximize the T&D benefits.

¹⁰ <http://kms.energyefficiencycentre.org/sites/default/files/ie1502.pdf>

1 Staff appears to dismiss any theoretical economic value of MEEIA until the point
2 they believe a new power plant might be needed. This fundamentally misunderstands
3 resource cost-effectiveness and avoided costs, and does not recognize there is a present
4 value today from the avoidance or deferral of future investments even when they are may
5 be far out into the future. This is exactly what Ameren's IRP estimated when it
6 determined that the Plan will in fact reduce overall present value costs of meetings its
7 customer's energy needs when compared to any supply-side only alternative.

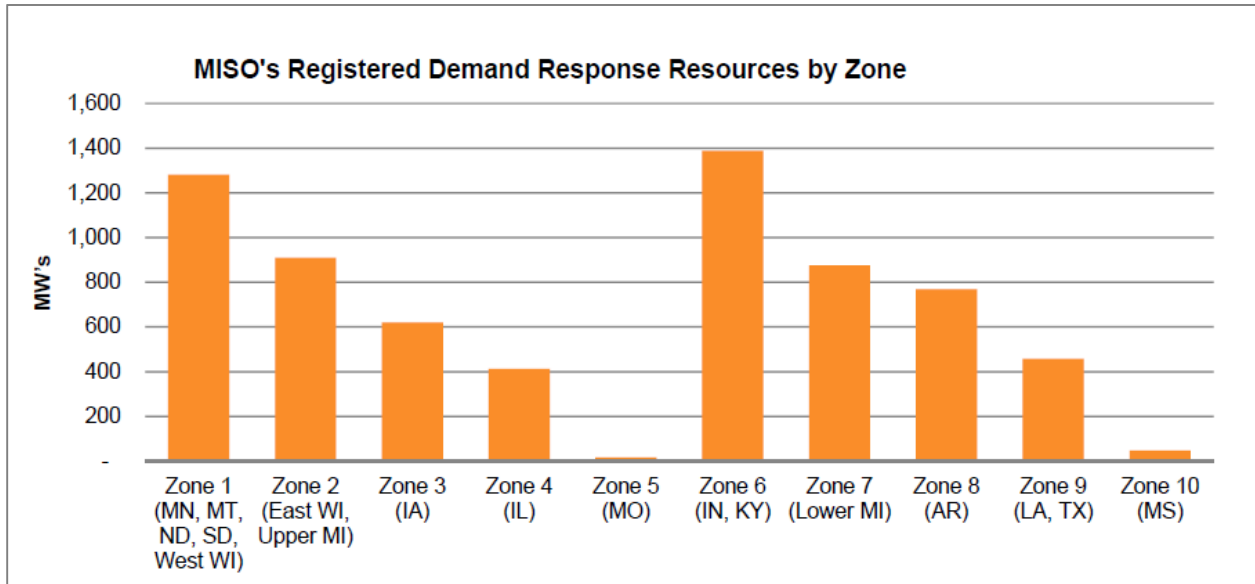
8
9 **Q. Do MEEIA's proposed demand response programs benefit consumers?**

10 A: Yes. As discussed above, peak reduction is valuable even if doesn't explicitly
11 avoid new short term investments, since Ameren can still sell its excess to other parties
12 within MISO on a bilateral basis or through the formal MISO market and those potential
13 revenues should be recognized as an additional benefit to customers. Indeed, I believe
14 Ameren itself has sold excess capacity into this auction in the past.

15 Staff witness J. Luebbert criticizes the proposed demand response by stating that
16 they have little persistence and short measure lives¹¹. In fact, 3rd party administrators
17 commonly sign long-term contracts for DR programs of 10 years or more, and other
18 Public Service Commissions in the MISO region consider DR programs to have useful
19 lives of 19 years or greater.

¹¹ Staff Rebuttal Report, Page 57, lines 18–27

1 Finally, Missouri significantly lags other states in MISO in the amount of demand
2 response resources available. The table below shows the registered demand response
3 resource by MISO Load Zone¹².



4
5 As seen, Missouri has significantly fewer DR resources than any other part of
6 MISO, with the possible exception of Mississippi. Ameren's MEEIA III Plan takes a
7 large step towards allowing Ameren's customers to enjoy similar benefits from robust
8 DR programs as their peers in the MISO region.

9 **Q. Do efficiency investments have additional benefits that aren't captured in Missouri's**
10 **current avoided costs?**

11 A: Yes. Energy efficiency investments have many significant additional benefits that
12 are hard to quantify or are otherwise not included in the TRC cost-effectiveness analysis
13 of the MEEIA Portfolio. These include, but are not limited to:

- 14 • Job Creation and other Economic Benefits
- 15 • Reduced Risk and Price Volatility

¹² Chart from presentation given by Melissa Seymour at the 2017 MARC conference. Available at <http://www.marc-conference.org/2017/MARC2017Presentations/SeymourMARC2017.pdf>

- 1 • Health and Safety Benefits
- 2 • Ancillary Grid Benefits

3 Taken together, these factors mean that the MEEIA programs will provide
 4 benefits above and beyond what is included in the TRC analysis.

5 **Q. What are the job creation and other economic benefits of efficiency?**

6 A: A 2018 Report on clean jobs in the Midwest found that Missouri has 40,166 full
 7 time jobs related to energy efficiency. This an important and growing sector of
 8 Missouri’s economy, representing 1.4% of the state’s entire workforce¹³. These jobs are
 9 significantly driven by the MEEIA programs, and will continue to grow in importance if
 10 MEEIA is continued and expanded, as Ameren has proposed.

11 The numbers found in this report agree with many other studies looking at jobs
 12 and efficiency. According to 2009 study done by the University of Massachusetts,
 13 Amherst, a \$1 million investment in supply-side resources will create 5.3 jobs, while an
 14 equivalent investment in efficiency can be expected to create 16.7 jobs.¹⁴ The table below
 15 shows estimates of the jobs effect of efficiency spending.¹⁵ The multipliers are based on
 16 modeling by ACEEE, with multipliers adapted from a regional economic modeling tool.
 17 Typically, studies have found that around 10–20 net jobs are created per million dollars
 18 spent on efficiency.

19 **Effect of Efficiency Spending on Jobs¹⁶**

Spending Category	Impact	Amount	Job	Job Impact
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¹³ <https://www.cleanjobsmidwest.com/state/missouri>

¹⁴ Throughout the report, one “job” represents one full time equivalent job for one year.

¹⁵ ACEEE. *Potential for Energy Efficiency, Demand Response, And Onsite Solar Energy in Pennsylvania*. April, 2009.

¹⁶ This study uses the same job multiplier as was found in the PA ACEEE study, or 15 jobs per million dollars spent. This number is actually on the low side of multipliers found in the economic literature. When this paper references jobs created, it is referring to a job as one full time job for one year.

		(Millions)	Multiplier	(job-years)
Installation	Upfront payment for efficiency measures	\$100	13	1,300
Consumer Spending	Because of efficiency spending, consumers spend less in the short term	-\$100	12	-1,200
Consumer Savings	Because of energy savings, consumers spend more in the long term	\$200	12	2,400
Lost Utility Revenues	Utility revenues decrease because of energy savings	-\$200	5	-1,000
Net effect of a \$100 million investment in efficiency measures				1,500

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12 **Q.**

What are benefits to efficiency related to reduced risk and price volatility?

13 **A:**

Efficiency can also decrease the risk related to the electric system. First, costs related to efficiency are largely controllable and paid up front, while costs from fossil fuel plants are ongoing, correlated with commodity prices, and suffer from greater volatility. In other words, increases in coal or gas prices that would have a negative impact on electric prices from coal and gas power plants have no impact on the cost of efficiency. By helping diversify Ameren’s electric supply, MEEIA programs will help mitigate ratepayer risk of resulting from increases in commodity prices and volatility

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1 related to unexpected weather or other shocks to the system. This may be a growing
2 concern, as evidenced last summer when multiple days of hot weather caused increased
3 electricity demand and costs.

4 Second, energy efficiency consists of many small and widely dispersed individual
5 resources, as opposed to a few centralized large resources. This makes efficiency
6 resources far more robust than supply-side resources, which can have a single point of
7 failure. Any failure or needed maintenance on large power plants can have a large impact
8 on electric prices in a way that failure of a single, or even a single type of efficiency
9 resource would not.

10 Finally, efficiency potential tends to follow loads and is the largest during the
11 times of day and year that the load is largest. In this way, energy efficiency can smooth
12 the load curve and reduce the system load factor, and any surprise increase in load and
13 therefore prices.

14 **Q. What are the health and safety benefits from MEEIA programs?**

15 A: The health benefits related to less air pollution have been extensively studied. Air
16 pollution such as sulfur dioxide, nitrogen oxides, and particulate matter emitted during
17 electricity generation causes health effects that damage both public well-being and the
18 economy. In fact, there is reason to believe that increased health costs due to air
19 emissions effectively double the price of coal-fired electricity. For example, a recent
20 study from Harvard University finds that adverse health impacts from coal generation
21 cost the public an average of 9.3 cents per kWh of power generated.^{17,18} A study for the
22 European Union estimates direct externalities at between 4 and 15 euro cents per kWh for

¹⁷ This is an average. The actual value varies widely from plant to plant based on its age, type of pollution controls, and downwind population.

¹⁸ Epstein et al. Page 86. http://solar.gwu.edu/index_files/Resources_files/epstein_full%20cost%20of%20coal.pdf

1 coal generation, between 3 and 11 euro cents per kWh for oil, and between 1 and 3 cents
2 per kWh for gas, consistent with the Harvard study.¹⁹ Another study found that Ontario's
3 electric generation produces 668 premature deaths, 928 extra hospital admissions, 1,100
4 extra emergency room visits, and 333,600 minor illnesses. The financial impact of these
5 health effects is estimated to be over \$3 billion per year. The study estimates total Ontario
6 consumption at 26.6 TWh/year, implying health costs for Ontario of over \$0.11 per kWh.

7 According to the Green and Healthy Homes Initiative, energy efficiency can also
8 lead to improvements in indoor air quality.²⁰ As defined by the EPA, indoor air quality
9 refers to the air quality within and around buildings and structures, especially as it relates
10 to the health and comfort of building occupants.²¹

11 Additionally, there is mounting evidence that efficiency programs can have
12 significant health benefits in low-income households. Such benefits of efficiency include
13 reduced incidences of asthma, respiratory, and cardiac diseases; lower mortality rates,
14 and reduced medical and hospitalization spending. These types of positive health benefits
15 in low-income households can lead to additional non-energy benefits to those same
16 households and society, such as fewer missed school and work days, and lower health
17 care system costs.²²

18
19 **Q. What are the ancillary benefits that efficiency has on the electric grid?**

20 A: Efficiency also allows the utility to better manage the electric grid, and balance
21 renewable energy and distributed generation. This is partly because, as described earlier,

¹⁹ Page 13. <http://www.externe.info/externpr.pdf>

²⁰ https://www.greenandhealthyhomes.org/wp-content/uploads/AchievingHealthSocialEquity_final-lo.pdf

²¹ www.epa.gov/iaq

²² https://www.greenandhealthyhomes.org/wp-content/uploads/AchievingHealthSocialEquity_final-lo.pdf

1 efficiency tends to follow the load, and thus typically improves the system load factor.
2 Also, as more smart thermostats, smart appliances, and other internet-connected energy
3 consuming devices are installed, it will allow the utility to more closely monitor and
4 control when and where demand can be lowered. Strategically deploying demand
5 response resources as needed, as well as generally lower loads from efficiency, can
6 provide Ameren more flexibility and “head room” to deal with any system abnormalities.

7 **MEEIA Will Benefit All Customers**

8 **Q. Why does Staff say that MEEIA programs will not benefit all customers?**

9 A: It is not perfectly clear why Staff thinks that not all customers will benefit from
10 MEEIA, besides the contention that the avoided costs in the cost-effectiveness analysis
11 are overstated. However, Staff seems to argue that the Ratepayer Impact Measure (RIM)
12 Test should be used when determining whether or not the Commission should approve
13 MEEIA, and that the throughput disincentive should be included as a cost of the MEEIA
14 III Plan.

15 **Q. What is the Ratepayer Impact Measure (RIM) Test?**

16 A: The RIM test compares the avoided capacity and energy costs to the utility to the
17 efficiency program costs and costs associated with lost revenue from efficiency. In this
18 way, RIM basically indicates whether or not short-term rates will increase as a result of
19 efficiency. The RIM test is generally negative (resulting in a small increase in rates) for
20 efficiency programs because utility retail rates are almost always higher than the marginal
21 avoided costs because there are fixed costs built into utility rates. As a result, not only
22 does the utility need to recover its program costs, but the bill savings that customers
23 enjoy result in reduced revenue collected by the utility. Using the RIM test for MEEIA 1

1 and 2 would have meant that Missouri would have made none or hardly any investments
2 in energy efficiency. Using it now would mean a significant change in policy compared
3 to the last six years, as well as clearly undermining the intent of MEEIA to pursue all
4 cost-effective efficiency based on the TRC test.

5 **Q. Why do you say Staff Argues for the RIM Test?**

6 A: Page 35 of Staff’s Rebuttal Report states that “Ameren Missouri witness, Bill
7 Davis, testifies that Ameren Missouri's 2017 IRP is the most relevant tool to define all
8 cost-effective demand-side savings. Staff agrees.” However, despite ostensibly agreeing
9 that the IRP scenario with the lowest present value revenue requirement (but for
10 scenarios with even greater efficiency investments reflecting Maximum Achievable
11 Potential) reflects the cost-effective efficiency potential, it goes on to state that “the Plan
12 fails to deliver benefits to customers who do not participate in the Plan’s programs,
13 failing to meet the requirements of the MEEIA statute.” Staff proceeds to recommend
14 that the MEEIA Plan be rejected, on this basis that there are no short-term benefits to
15 non-participants, presumably because their rates would increase in the short-term.
16 Despite their earlier statements supporting, in principle, the TRC as the primary test, Staff
17 is in effect making the RIM test the metric for approving a MEEIA Plan. As stated above
18 most broad-based efficiency programs will fail the RIM test, and this metric is clearly
19 rejected by the MEEIA legislation as the overriding factor, which explicitly states that the
20 TRC should be used as the primary cost-effectiveness metric.²³

²³ Sec. 393.1075.4, RSMo.

1 **Q. What sorts of activity will typically result in lowering rates?**

2 A: Essentially wasting energy is an effective way to reduce rates because it will
3 spread the system's fixed costs over greater sales. This is clearly contrary to State policy
4 and the intent of MEEIA to encourage pursuit of all cost-effective efficiency.

5 **Q. Do any jurisdictions use the RIM test as a primary cost-effectiveness screen?**

6 A: No. If Missouri were to reject Ameren's MEEIA proposal on the basis a RIM test,
7 it would be the only state to use such a metric.

8 **Q. What is the order of magnitude of the rate impact from the proposed MEEIA III
9 Plan?**

10 A: The MEEIA Plan shows the maximum rate impact for a residential consumer to
11 be 2% in 2022, which then drops quickly to -2% in 2025 and -4% in 2029²⁴. Even at the
12 highest short-term 2% rate increase in 2022, the average Ameren residential customer
13 would be more than able to make up the additional cost by participating in a minor way.
14 For example, according to the Missouri Technical Resource Manual (TRM), one year of
15 savings from one LED screw-in and one advanced power strip would more than
16 compensate for the 2% rate increase. And, of course in subsequent years the savings from
17 these measures would continue to accrue even as the rate impact drops and becomes
18 negative.

19 **Q. Are lost revenues a true new "cost" to customers?**

20 A: No. The revenue that is "lost" reflects fixed costs that are already spent, are PSC
21 approved, and are embedded in Ameren's current rates. Ameren's payments from its
22 throughput incentive are simply a reallocation of these already incurred costs to

²⁴ Ameren MEEIA III Plan, p. 68, Figure 37.

1 compensate for the efficiency improvement that results in lower electricity consumption.
2 They do not impact overall cost-effectiveness of efficiency for Missouri’s economy.

3 **Q. How may some of the impacts for non-participants be mitigated?**

4 A: The best way to reduce the impacts of efficiency for non-participants is simply to
5 ensure that the program offerings are broad enough that everyone can easily participate.
6 The proposed MEEIA portfolio takes significant steps in this direction – by minimizing
7 the number of non-participants, the plan further reduces Ameren’s total revenue
8 requirements while minimizing short-term negative impacts to Ameren customers who do
9 not participate. Through things like its upstream products program, most Ameren
10 customers will participate in some way, even if just to buy a few discounted lightbulbs,
11 which by itself will offset their rate impacts.

12 **Q. How else does energy efficiency benefit Ameren’s customers?**

13 A: The benefits of efficiency are aptly demonstrated by a recent article in the Kansas
14 City Star. This article discusses a recent surge of customer complaints due to higher bills
15 from the particularly hot weather this summer (there were over 50 days with weather over
16 90 degrees - more than double the number in 2017). Although the article discussed
17 KCP&L, the lesson is applicable across the state – robust MEEIA programs can help
18 provide customers with some degree of control over their electric bills, and mitigate risk
19 of unexpected outside events rendering their electricity unaffordable.²⁵ Quite simply,
20 customers care most about the magnitude of their bills, not their rates. And as Ameren’s
21 IRP shows, overall customer bills will go down as a result of the MEEIA III Plan.

²⁵ <https://www.kansascity.com/opinion/readers-opinion/guest-commentary/article217671510.html>

1 **Q: Do you think the cost of energy efficiency resources is especially burdensome on**
2 **low-income customers?**

3 A: No. High energy bills are what is especially burdensome for low-income
4 customers, but energy efficiency can serve as a solution for reducing the energy burden
5 those customers face. A 2016 report by Energy Efficiency for All and the American
6 Council for an Energy Efficient Economy (ACEEE) which covered 48 major U.S.
7 metropolitan areas, including St. Louis, found that low-income households devote up to
8 three times as much income to energy costs as average households in the same city. The
9 report also found that one quarter of low-income multifamily households in St. Louis
10 spend over 12.87% of their income on energy utility costs.²⁶

11 Energy assistance programs that help with bill payment are often thought of as the
12 main solution to energy burden, and while those programs are important, they are only a
13 small piece of burden relief for customers. Utility bill assistance programs don't help
14 with the larger energy inefficiency problem that many low-income customers face in their
15 homes. Utilities can help pay a portion of a bill, but if a low-income customer is living in
16 an old, energy inefficient home, their bills are going to remain high and so is their energy
17 burden. Energy efficiency gets at the root of the problem, to help make homes efficient,
18 reduce bills overall, and make low-income residents comfortable and healthy. Energy
19 efficiency also has utility system-wide, long-term benefits that can help all customers, as
20 discussed above.

21 In a recent National poll by Energy Efficiency for All, 76% of participants from
22 the Midwest stated that they would support utilities being required to “provide financial

²⁶ Ariel Dreihobl and Lauren Ross, Lifting the High Energy Burden in America's Largest Cities, Energy Efficiency for All and American Council for an Energy Efficient Economy, April 2016.

1 incentives to help customers with limited incomes cover the cost of energy-saving
2 improvements to their homes.” And the majority of Midwest participants even supported
3 paying a surcharge on their own bills to “help low-income and working-class households
4 make their homes more energy efficient”.²⁷ Energy efficiency is a key solution in
5 reducing energy burden and is not a burden itself to low-income customers.

6 **Q: What would be the impact of a rejection of Ameren’s application for its MEEIA III**
7 **Plan on Ameren’s low-income customers?**

8 A: Either an extension of the MEEIA II Plan programs, or a rejection of MEEIA III
9 Plan, will be harmful to Ameren’s low-income customers. Ameren’s MEEI III programs
10 contain a significant increase in energy efficiency investments targeted to low-income
11 customers. The MEEIA III low-income portfolio includes new programs and deeper,
12 more comprehensive program design. The Company is offering a Residential Single
13 Family Low-Income Program and a Business Social Services Program in its low-income
14 portfolio for the first time. Additionally, the portfolio includes a significant expansion
15 and improvements for the Company’s Residential Multifamily Low-Income Program.
16 Overall, the low-income portfolio spend increases in Cycle 3 over Cycle 2 by 143%, and
17 the low-income multifamily program spend increases by 21.78%.^{28,29}

18 If the MEEIA III Plan is rejected, or even if the Company is asked to extend the
19 MEEIA II Plan for a year, low-income single family customers will lose the newly
20 designed comprehensive Residential Single Family Low-Income Program.³⁰ The program
21 is intended to provide energy assessments and/or diagnostic testing, as well as a

²⁷ <http://www.energyefficiencyforall.org/resources/energy-efficiency-alls-2018-poll-findings>

²⁸ Ameren Missouri, “Appendix B - MEEIA 2016–2018 Summary,” File No. EO-2015-0055, February 5, 2016.

²⁹ Ameren Missouri, “Appendix A – MEEIA Portfolio and Program Summary,” File No. EO-2018-0211, June 4, 2018.

³⁰ Ameren Missouri, “2019-24 MEEIA Energy Efficiency Plan,” File No. EO-2018-0211, June, 4, 2018, p. 15–21.

1 comprehensive package of whole house energy saving measures at no or low cost to low-
2 income single family customers. The program has a low-income efficiency housing
3 grants component, and a free LEDs program to be distributed at food banks and other
4 qualifying organizations.

5 Social service agencies will also lose out on the newly created Business Social
6 Services Program³¹, which is intended to deliver, install and complete paperwork for low-
7 cost and/or no-cost energy efficiency measures in business social services facilities so
8 they can better serve low-income individuals. The new program would help businesses
9 such as food banks, food pantries, soup kitchens, homeless shelters, employment
10 services, worker training, job banks, and childcare that all serve low-income customers.

11 Low-income multifamily customers will not have access to the newly expanded
12 Residential Multifamily Low-Income Program³² offerings in the MEEIA III Plan if it's
13 rejected or postponed. These new offerings and the expansion of the low-income
14 multifamily budget are critical in helping address the needs of this traditionally hard-to-
15 serve customer type. The Company will be offering a one-stop approach to its low-
16 income multifamily program. The goal of this newly expanded program is to “move
17 beyond initial measures to investments in standard and/or custom measures for common
18 areas, building shell, and whole-building systems in order to benefit from deeper energy
19 savings.”³³

20 ACEEE puts out an energy efficiency scorecard every year comparing how utility
21 programs across the country stack up against one another. ACEEE recently started
22 evaluating how low-income programs compare as well. In their 2017 scorecard, Ameren

³¹ Ibid

³² Ibid

³³ Ameren Missouri, “2019-24 MEEIA Energy Efficiency Plan,” File No. EO-2018-0211, June 4, 2018, p. 18

1 Missouri fell into the lower 40% of utility low-income programs based on the Company's
2 MEEIA II Plan program data from 2016.³⁴ Ameren's MEEIA II Plan does not fully serve
3 the Company's low-income customers. They should not be back-tracking or doing less,
4 especially when they are proposing a way to do more with their MEEIA III Plan.

5 Finally, I am supportive of the arguments made by National Housing Trust, and
6 the details they lay out on why Ameren needs to serve the low-income multifamily
7 building stock in a deep, comprehensive way.

8
9 **Q. Why should the Commission look at bill impacts (as opposed to rate impacts) when**
10 **evaluating Efficiency Programs?**

11 A: Rates are a deceiving metric since they can increase even while total bills
12 decrease. Further, short-term rate impacts from energy efficiency are particular deceiving
13 as costs related to energy efficiency are recovered much faster than its benefits will
14 accrue, while the costs related to supply-side investment are typically amortized and
15 recovered over the entire life of the investment. This makes the short-term rate impacts
16 from efficiency look worse than supply-side alternatives when in reality it is a
17 consequence of how the costs are recovered – if efficiency costs were amortized and
18 recovered over the average measure life, any rate impacts would be much lower or non-
19 existent. Instead of focusing on rate impacts, the Commission should look at the TRC
20 test, as prescribed by the MEEIA legislation. Further, the IRP explicitly solves for the
21 least cost way to meet customer energy services, and Ameren's IRP has shown that
22 adoption of the MEEIA III Plan will reduce these present value costs.

23

³⁴ <https://aceee.org/research-report/u1707>

1 **Q. How does Staff view the throughput disincentive?**

2 A: Staff seems to view the throughput disincentive (TD) as a cost of efficiency. For
3 example, on page 3 of their testimony, they state that “At the targeted budget and
4 cumulative annual energy and demand savings targets, Cycle 3 would increase Ameren
5 Missouri’s revenues by \$839,771,049.” Given that the Cycle 3 6-year budget is
6 \$550,770,000, and the earnings opportunity has a maximum value of \$167,485,043,
7 Staff’s figure of increased revenue from increased efficiency seems to include the
8 throughput disincentive. As discussed above, the throughput disincentive is not a true
9 new cost.

10 **Q. Does the throughput disincentive actually result in increased utility revenue?**

11 A: No. The throughput disincentive is calculated simply to make up for the net lower
12 revenue due to lower sales caused by efficiency programs. Although the TD causes the
13 *rates* to increase over a scenario with no efficiency, it does not increase total Ameren
14 *revenues*. In fact, putting aside any shareholder earnings, it will in fact *decrease total*
15 *revenues* because of the lower total sales and variable costs as a result of the MEEIA
16 programs.

17 This apparent misunderstanding causes Staff to overestimate the costs of the
18 MEEIA portfolio. Combined with the misunderstanding that energy efficiency does not
19 provide benefits if it is not explicitly deferring or eliminating a known short-term supply-
20 side capital investment causes Staff to significantly underestimate the net benefits and
21 cost-effectiveness of Ameren’s proposed MEEIA Plan, and recognize the many benefits
22 that will accrue to all customers.

1 **Conclusion**

2 **Q. Please Summarize and conclude your testimony**

3 A: MEEIA legislation states that the Commission shall provide timely cost recovery,
4 ensure that utility financial incentives are aligned with efficiency, and provide earnings
5 opportunities associated with cost-effective and verifiable efficiency savings. Further, the
6 legislation instructs that “The commission shall consider the total resource cost test a
7 preferred cost-effectiveness test.”³⁵ Ameren’s MEEIA III Plan as proposed passes the
8 Total Resource Cost Test, has a significantly lower utility revenue requirement as shown
9 in the IRP than not pursuing it, and will thus provide a net benefit to all customers,
10 regardless of some potential short-term increase in rates for non-participants. The avoided
11 costs used in Ameren’s analysis are not overstated, and total benefits are almost certainly
12 understated due to risk, health, and economic impacts. Further, real and significant
13 benefits accrue from efficiency even when it is not deferring a specific planned supply
14 side investment, as demonstrated by Ameren’s IRP analysis and by the fact that the
15 portfolio passes the TRC. The reduced present value revenue requirement after efficiency
16 shows that ratepayers as a whole are better off with efficiency, and the fact that the
17 programs pass the TRC shows that they align with the mandate created by the MEEIA
18 legislation. Ameren’s proposed program provides significant savings to all Ameren
19 customers, includes new programs and benefits for low-income customers, continues to
20 create jobs and other economic benefits in the service territory, and aligns perfectly with
21 the type of program envisioned in the MEEIA legislation. For these reasons, I
22 recommend that the Commission approve the Plan. Not approving the Plan will be

³⁵ Missouri Revised Statutes, Section 393.1075.4.

1 inconsistent with the MEEIA statute and represent a U-turn to the policy followed by the
2 Commission and supported by Staff over the last six years.

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

4 A: Yes.

5

6

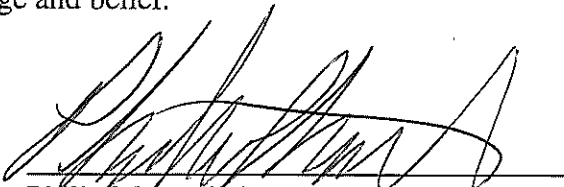
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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

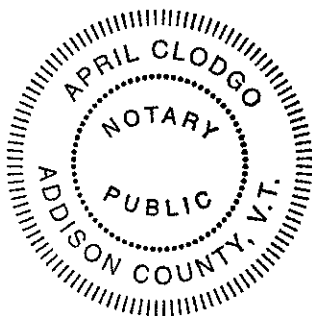
County of Addison)
State of Vermont)

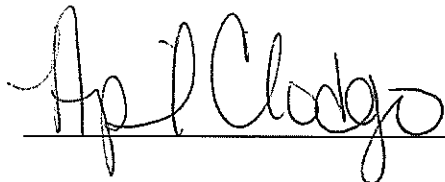
AFFIDAVIT OF PHILIP MOSENTHAL

Philip Mosenthal, 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 26 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.


Philip Mosenthal

In witness whereof I have hereunto subscribed my name and affixed my official seal this 17th day of September, 2018.




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