Exhibit No.:	________________
Issue(s):	FAC Impact on MEEIA Benefits
Witness/Type of Exhibit:	Mantle/Rebuttal
Sponsoring Party:	Public Counsel
Case No.:	EO-2023-0369 & EO-2023-0370

REBUTTAL TESTIMONY

OF

LENA M. MANTLE

Submitted on Behalf of the Office of the Public Counsel

EVERGY METRO, INC. D/B/A
EVERGY MISSOURI METRO
AND
EVERGY MISSOURI WEST, INC. D/B/A
EVERGY MISSOURI WEST

CASE NOS. EO-2023-0369 & EO-2023-0370

July 9, 2024

TABLE OF CONTENTS

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LENA M. MANTLE, P.E.

EVERGY METRO, INC., d/b/a Evergy Metro
Case No. EO-2023-0369

EVERGY MISSOURI WEST, INC., d/b/a Evergy Missouri West
Case No. EO-2023-0370

Q. What is your name and business address?

A. My name is Lena M. Mantle and my business address is P.O. Box 2230, Jefferson City, Missouri 65102.

Q. By whom are you employed and in what capacity?

A. I am employed by the Missouri Office of the Public Counsel ("OPC") as a Senior Analyst.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the OPC.

Q. Did you file direct testimony in this case?

A. No.

Q. What is your experience, education, and other qualifications?

A. Prior to my employment at the OPC, I worked for the Staff of the Missouri Public Service Commission ("Staff") from August 1983 until I retired as Manager of the Energy Unit in December 2012. During my employment at the Missouri Public Service Commission ("Commission"), I worked as an Economist, Engineer, Engineering Supervisor, and Manager of the Energy Unit. During my time at the Commission, my duties included the review of energy efficiency and demand response programs of electric utilities and the development of the fuel adjustment clauses ("FAC") of the electric utilities in Missouri. A whitepaper that I authored regarding how the FAC operates in Missouri is attached to this testimony as Schedule LMM-R-1.

I began employment at the OPC in my current position as Senior Analyst in August 2014. In this position, I have provided expert testimony on a variety of issues in electric, natural gas, and water cases before the Commission on behalf of the OPC. I am a Registered Professional Engineer in the State of Missouri.

Attached as Schedule LMM-R-2 is a brief summary of my experience with the OPC and Staff, and a list of the Commission cases I filed testimony in, Commission rulemakings I participated in, and Commission reports in rate cases that I contributed to as Staff.

Q. What is the purpose of your rebuttal testimony?

A. According to the Missouri Energy Efficiency Investment Act ("MEEIA")[1] , a demand-side program is

> [A]ny program conducted by the utility <u>to modify the net consumption of electricity on the retail customer's side of the electric meter</u>, including but not limited to energy efficiency measures, rate management, demand response, and interruptible or curtailable load.[2]
>
> (Emphasis added)

For the electric utilities, MEEIA requires the Commission to:

> (1) Provide timely cost recovery for utilities;
>
> (2) Ensure that utility financial incentives are aligned with helping customers use energy more efficiently and in a manner that sustains or enhances utility customers' incentives to use energy more efficiently; and
>
> (3) Provide timely earnings opportunities associated with cost-effective measurable and verifiable efficiency savings.[3]

For customers, MEEIA requires the demand-side programs provide benefits to all customers, participants, and non-participants alike, in the customer

[1] Section 393.1075 RSMo.
[2] Section 393.1075.2(2) RSMo.

class in which the programs are proposed.[4] It also requires the Commission to "fairly apportion the costs and benefits of demand-side programs to each customer class."[5] Assuring these customer protection requirements of MEEIA are achieved is a challenge due to the interactions between MEEIA programs and Evergy Metro's and Evergy West's (collectively "the Evergy utilities") FACs, which were implemented to protect the Evergy utilities from large variations in fuel and purchased power costs between rate case changes to permanent rates.

In his direct testimony, Staff witness J Luebbert recognizes that the FAC complicates the determination of MEEIA program benefits and which customer classes receive the benefits. He states in his testimony:

> Analysis of whether a demand-side program is cost-beneficial must include consideration of the extent to which avoided costs (or facilitated capacity revenues) flow through the respective Evergy FACs, which complicates the Commission's statutory directive to fairly apportion the costs and benefits of MEEIA among classes.[6]

In reviewing Mr. Luebbert's testimony I found his conclusions regarding the impact of the interaction between the FAC and MEEIA to be correct. However, determining exactly how the FAC impacts MEEIA is complicated and takes an understanding of both the Evergy utilities' FACs and how the Southwest Power Pool ("SPP") energy market functions. The purpose of my rebuttal testimony is to provide clarity to Mr. Luebbert's direct testimony through an explanation of terminology and the basics of SPP's energy market. I will also provide my alternative analysis, which supports Mr. Luebbert's conclusions.[7]

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[3] Section 393.1075.3 RSMo.
[4] Section 393.1075.4 RSMo.
[5] Section 393.1075.5 RSMo.
[6] Page 3, footnote omitted.
[7] Luebbert direct, pages 35-36.

Definitions

Q. What terms used in Mr. Luebbert's direct testimony require further explanation to better understand the interaction between the Evergy utilities' FACs and MEEIA?

A. With respect to generation, there are two terms that are essential to correctly understand the FAC/MEEIA interaction: capacity and energy.

In the simplest terms, capacity is the maximum output an electricity generator can physically produce, measured in megawatts ("MW").

Energy, on the other hand, is the amount of electricity a generator produces over a defined period of time and is measured in megawatt-hours ("MWh"). For example, a generator with a capacity of 100 MW that runs at full capacity for 10 hours generates 1,000 MWh (100 MW x 10 hours = 1,000 MWh) of energy.

Q. Can the terms capacity and energy be used interchangeably?

A. No. They should not be used interchangeably because they are different concepts.

Q. Are capacity and energy interrelated?

A. Capacity and energy are interrelated to the extent that both are influenced by the design of a given generating unit. To clarify, consider an example. There is a sign in the elevator that gives its capacity, *i.e.* how many people the elevator can hold at a given time. This limits the amount of people that can be in the elevator at any given time. However, it gives no information on the number of people that ride in the elevator each day. For example, in a given day the elevator may make 10 trips with 20 people each time, meaning it gives 200 rides (10 x 20) that day. Or, because the building is closed, the elevator may not move that day, resulting in zero rides being given. The elevator's capacity is the same, 20 people, no matter how many rides it gives. However, one cannot determine the number of rides solely using the capacity of the elevator and a given period of time.

Similarly, the capacity of a generating unit is the limiting criteria for the maximum amount of energy it can produce. A unit with a capacity of 100 MW cannot generate 200 MWh in an hour, just as an elevator with a capacity of 20 people cannot hold 40 people in any given trip—they simply would not all fit. However, it is not correct to say that the same plant is producing 100 MWh of energy at every hour of every day, just as that same elevator is not carrying 20 people with every trip.

Therefore, the capacity of and energy produced by the generating unit are related, in as far as they are dependent on the unit's design, but they are measuring very different things.

Q. You have described capacity and energy as they relate to electric generation or the supply side of the electric utilities. Is similar terminology used on the demand side or the consumption of electricity on the retail customer's side of the electric meter?

A. Yes. On the demand side, a customer uses or "demands" electricity over an increment of time, typically an hour. A customer's demand is typically measured in kilowatts ("kW"). The maximum hourly demand is called the peak demand. The sum of the customer's hourly demands over time is the energy[8] used by the customer and is measured in kilowatt hours ("kWh").

The sum of a group of customers' hourly demand provides the hourly demands and energy for that group of customers for the given time period. For example, the energy of the residential class is the sum of all of the energy of all the individual residential customers. When the hourly demands of each of the residential customers is summed in a given hour, the result is the demand for the residential customer class for that hour. Class demand is typically measured in megawatts ("MW").[9] The sum of the class's hourly demands, typically measured

[8] A customer's energy may also be referred to as usage, consumption, or sales.
[9] One MW = 1,000 kW.

in megawatt hours ("MWh"), is the class load. The sum of all the electric utility's customers' loads, adjusted for delivery losses,[10] is the energy and demands that the electric utility must provide to meet the energy requirements of its customers.

Q. Are there other terms you use in this testimony that you would like to define?

A. Yes. Load requirements is described by both peak demand and energy usage over a set period of time. Let's assume two customers that both have energy usage of 1,000 kWh over a span of ten hours. These two customers are shown in Table 1 below.

Table 1
Example of Demand and Energy

Hour	Customer A Demand	Customer B Demand	Class Demand
1	50	100	150
2	50	100	150
3	50	100	150
4	50	100	150
5	550	100	650
6	50	100	150
7	50	100	150
8	50	100	150
9	50	100	150
10	50	100	150
Total	1,000	1,000	2,000
Peak (kW)	550	100	650
Energy (kWh)	1,000	1,000	2,000

Customer A uses 50 kW in nine hours and 550 kW in one hour for a total energy of 1,000 kWh (50 kW x 9 hours) + (550 kW x 1 hour). This customer only requires generation of 50 kW for nine of the ten hours. However, the utility must

[10] When electrical current travels on a network, some energy is dissipated in the form of heat, and is "lost" due to the electrical resistance in the network. Typically, losses are between 5% to 7% meaning 5% to 7% more generation is needed to meet the energy required at the customers' meters.

be able to supply 550 kWh to this customer in one hour. This is this customer's load requirement.

Customer B uses 100 kWh each hour over the ten hours for a total energy usage of 1,000 kWh (100 kW x 10 hours). Over this ten hours its load requirement is a continuous 100 kW.

The hourly demands of Customer A and B are summed to get the class load. Over these ten hours, this class uses 2,000 kWh of energy and has a peak demand of 650 kW.

These two customers, while using the same amount of energy over the ten hours, have very different load requirements. Customer A could not be served by a 100 kW generating plant. However, building a 550 kW plant for Customer A is overbuilding for nine of the hours. When the two loads are added together, the need is 150 kW in every hour with an additional 500 kW needed in one hour.

Q. Could any generator that can produce 2,000 kWh be able to meet the load requirements of this class?

A. No. Only a generator that can both provide at least 150 kW in all hours and an additional 500 kW for just one hour when needed. Therefore, just being able to provide 2,000 kWh over a ten-hour span of time, does not mean that a generator can meet the combined needs of Customer A and B.[11]

This demonstrates how both energy and peak are important. In this testimony, when I use the word "load requirement" or "load," I am referring to the characteristics of the customer's usage that include both the peak demand and energy of the customer. Likewise, a customer class and all the electric utility's customers combined have load requirements.

[11] It may be that it is more cost-effective to have more than one generation resource to meet this combined need – a base load plant that can provide 150 kW every hour and a 500 kW peaking plant that generates electricity just one hour.

Q. Would you summarize the definitions of capacity, energy, demand, and load requirement?

A. Capacity reflects the maximum ability of a generation plant to produce electricity and is measured in MW.

Energy is the amount of electricity generated over time and is also the amount of electricity consumed by customers over a period of time. It is measured in MWh.

Demand refers to the amount of electrical power that customers are consuming over a short period of time - usually an hour. It is measured in MW.

The load requirement or load of a customer, a customer class, or all of the utility's customers is the combination of both the energy and peak demand for the customer or the customer class.

<u>**Basics of the SPP Energy Market**</u>

Q. Why is it important to understand the basics[12] of SPP's energy market?

A. MEEIA programs impact customers' energy usage and demands. These changes, in turn, affect the load requirement that the Evergy utilities must purchase from the energy market. The change in load requirements from participation in MEEIA programs impacts the cost to meet their customers' energy usage.

To properly evaluate MEEIA programs, it is necessary to have a basic understanding of how the SPP energy market in which the Evergy utilities participate impacts the cost and benefits of the MEEIA programs.

Q. Would you provide a simplistic explanation of the SPP energy market?

A. As members of SPP that are required to serve load, the Evergy utilities pay for every MWh of energy required to meet their customers' load, at prices set by SPP. The cost per MWh is different for each hour as is the amount of energy required

[12] The SPP energy market is very complex and has many moving parts. It is not necessary to understand all the complexities of the market to understand how the energy market impacts MEEIA.

by the Evergy utilities' customers. The amount of the energy purchased multiplied by the price per MWh at the time the energy is needed is the cost to meet the energy requirements of their loads.[13] If the usage increases by one MWh, the utility pays more. If the usage decreases by one MWh, due to a MEEIA program or a response to weather, the utility pays less. The dollar amount paid or saved is different in every hour. Likewise, the Evergy utilities receive payment for each MWh their generating units produce. I will describe this in more detail later in this testimony.

Q. How does the payment to the SPP energy market for every MWh of energy needed affect the cost/benefit of MEEIA programs?

A. Assuming that a customer's energy usage is reduced, the Evergy utilities will pay SPP less because their customers require less energy. If a program leads to less energy usage during a time when market prices for energy are high, such as when it is extremely hot, then the benefit of reducing the load by one MWh is greater than if a program leads to less energy usage during a mild spring night when energy prices are typically low.

Q. Are additional savings obtained through a reduction in the cost of fuel for the Evergy utilities' generating facilities because load has been reduced?

A. No. Generally, there is no change to the Evergy utilities' fuel costs when their customers do not use a MWh of energy.

Q. Why not?

A. As members of SPP, the Evergy utilities do not dispatch their generating units to meet the load requirements of their own customers. Rather, SPP dispatches the Evergy utilities' generating units based on energy market prices and the

[13] While this is often referred to as purchasing energy from SPP, it is actually only a financial transaction. Electricity is a function of physics and is generally drawn to the closest need regardless of who gives or receives payment or who owns the generating plant.

generating units that the Evergy utilities offered into the market for that day. In the most simplistic terms, if a utility has bid in a generation resource and the market price offered by SPP is above that bid, then the resource provides electricity (energy) into the SPP system. SPP, in turn, provides revenue to the utility owner based on the offered price. The energy the Evergy utilities' generating units provides supports the load requirements of SPP's members.

If the Evergy utilities accurately account for fuel costs when offering their generation into the SPP energy market, the revenues provided by SPP should cover the variable costs of generating the energy, including fuel and variable operation and maintenance costs. For low variable cost generation such as Evergy Metro's Wolf Creek nuclear plant, the energy market will provide revenues greater than the variable cost of producing the energy, meaning that Evergy Metro will receive more money for the energy than it expends to generate that energy. This makes Wolf Creek a revenue producer for Evergy Metro. Generation with high variable costs will only be called upon to generate electricity when market prices are high and will provide little, if any, positive revenue margin.

Q. Would you provide a further explanation of the basics of generation dispatch in SPP?

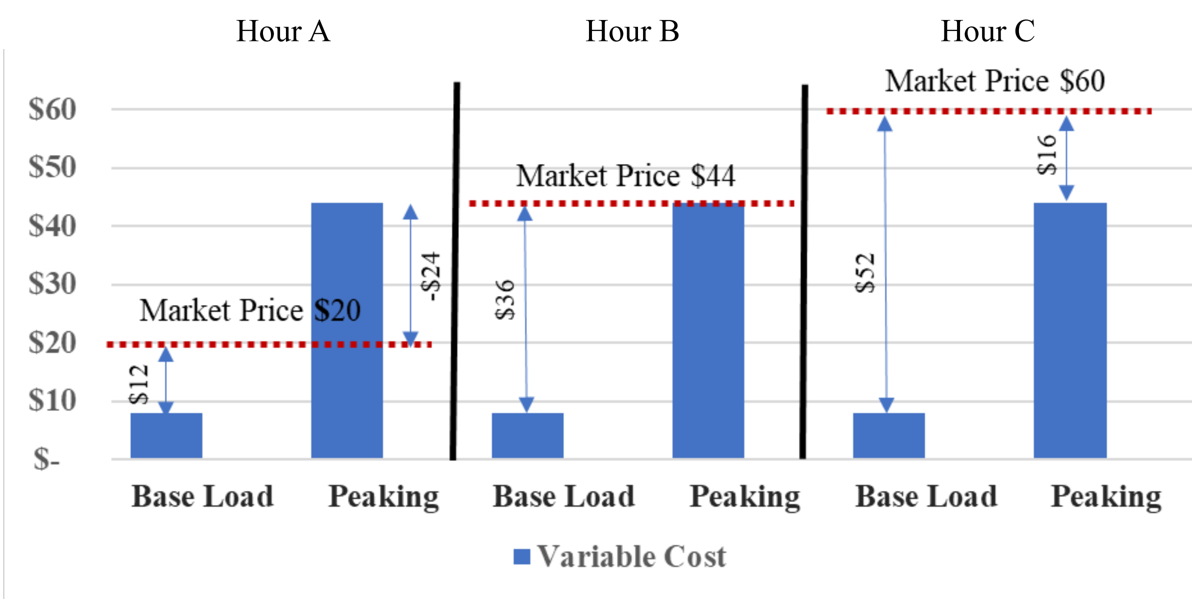
A. The dispatch[14] of generation by SPP is complex but the basics are not. The Evergy utilities, like all SPP members with generation, offer in their available generation plants[15] at a price that they are willing to accept for allowing SPP to dispatch those resources. Determining the appropriate price to offer to allow a plant to be dispatched is not always easy. However, the price each plant is offered

[14] As the customers' needs for power change, SPP dispatches, *i.e.* determines the amount of electricity produced by various generation units that have been bid into the market by their owners.
[15] Some generation may not be available due to planned or forced outages.

to SPP should cover the variable costs of running the plant[16] plus startup/shutdown costs.

SPP, based on the bids offered, the load forecasted, and constraints of the SPP system, determines a price for each hour. This price determines whether SPP will dispatch a resource.[17] I created Graph 1 below as a high-level demonstration of how the market price determines whether a resource is utilized and how a resource can earn more than its costs to produce electricity.

Graph 1
Energy Market Example



In this example, the variable cost of the base load plant is $8 and for the peaking plant, $44. These are the prices the owner bid into the market for these two plants.

In Hour A, the market price is $20. At this price, the base load plant should be dispatched. For every MWh produced by the base load plant in this

[16] Fuel cost and variable operations and maintenance costs.
[17] To be clear, after the owner of the generating unit determines what price to offer the resource into the market at, it is SPP—not the owner of the generating unit—who decides whether to dispatch the generating unit.

hour, the plant generates $20 providing a profit of $12 ($20 - $8) for each MWh. The peaking plant will not be dispatched since it was bid in at $44. The plant would lose $24 ($20 - $44) for every MWh generated if it was dispatched.

In Hour B, the market price is $44. At this price both the base load and the peaking plant would be dispatched. The base load plant would earn $36 ($44 - $8) for each MWh it generates in this hour. The peaking plant would also be dispatched. Its variable cost of $44 would be recovered from SPP but it would generate no revenue ($44 - $44).

In Hour C, the market price is $60. Again, both the base load and the peaking plant would be dispatched. The base load plant would earn $52 ($60 - $8) for each MWh. The peaking plant would earn $16 for each MWh it produces ($60 - $44).

Of course, this is a simplification of the actual process, but it demonstrates the basics of when SPP dispatches units and how the units can earn revenue or cause additional costs for their owners.

MEEIA, the FAC, and the SPP Energy Market

Q. The tables Mr. Luebbert includes in his direct testimony to demonstrate how the FAC complicates the determination of MEEIA benefits show fuel costs, purchased power costs, and purchased power revenues.[18] How do these correspond to the costs and revenues of the SPP energy market?

A. Fuel costs are the costs incurred by the Evergy utilities when SPP dispatches these resources. What Mr. Luebbert calls "purchased power revenues" is the revenue that the Evergy utilities receive from SPP for the energy its generation resources provide to SPP.[19]

[18] Tables are on pages 17, 18, and 20.
[19] Luebbert direct, page 17.

Q. Would the fuel costs of the Evergy utilities' dispatched generation or the revenues they receive from the SPP energy market be impacted by a MEEIA program?

A. It is very unlikely that a change in the load of the Evergy utilities' customers would impact the fuel costs it incurs or the revenue it receives from SPP for the electricity supplied by their generating resources. As explained above, these costs and revenues are mostly independent from the load requirements of the Evergy utilities' customers because of the Evergy utilities' participation in the SPP energy market.

Q. Mr. Luebbert also includes "purchased power costs" in his tables. What are these costs with respect to the SPP energy market?

A. Mr. Luebbert uses the term "purchased power costs" to refer to the amount SPP charges for load,[20] *i.e.,* what the Evergy utilities pay SPP for each MWh of energy required by their customers.[21]

Q. Would this amount be impacted by MEEIA programs?

A. Yes. This amount will change with the level of MWh the Evergy utilities' customers require. If a MEEIA program reduces the load requirement or changes when customers use energy, the amount SPP charges the Evergy utilities for the load requirements of their customers will also change. As described later in this testimony, MEEIA programs could increase or decrease the costs incurred by customers depending on when the program induces customers to change how they are using electricity.

[20] *Id*.
[21] Energy provided through bilateral purchased power contracts from generation owned by other entities is also referred to as purchased power. However, Mr. Luebbert only uses this term for the payments made to the SPP for the energy needs of customers.

Q. Is Mr. Luebbert's table a good representation of how to calculate the FAC base factor?

A. Mr. Luebbert's representation is a simplistic representation in that it contains a limited number of the charge and revenue types included in the Evergy utilities' FACs.[22] For ease of discussion in my testimony, I have duplicated the table found on page 17 of his direct testimony below.

Table 2

Mr. Luebbert's Calculation of the FAC Base Factor

Fuel Cost	$ 1.50
Purchased Power Costs	$ 2.00
Purchased Power Revenue	$ (1.65)
Total/Net	$ 1.85
Energy Sales	100
FAC Base Factor:	$ 0.01850

Despite being simplistic, it is accurate. However, I found it very confusing.

Q. Would you provide an alternative explanation?

A. Yes. Table 3 below provides an alternative simplistic, but accurate, calculation of how the FAC base factor ("BF") is calculated in a rate case. It follows the methodology used in general rate cases to determine the base factor and it results in the same base factor calculated by Mr. Luebbert shown in Table 2 above.

[22] It is not necessary to understand all of the detailed FAC cost and revenue components to understand how the FAC complicates the cost benefit analysis of MEEIA programs.

Table 3

Determination of FAC Base Factor

Normal Fuel Costs	$1,500.00	
Normal Generation Revenue	($1,650.00)	
Normal Net Market	($150.00)	
Normal Load Cost @ $0.02/kWh	$2,000.00	
Normalized Cost	**$1,850.00**	
Normalized load	100,000	kWh
Base Factor (BF)	**$0.01850**	**$/kWh**

In this example, I relabel the components of Mr. Luebbert's example to be more representative of what the component is. I use the term "Generation Revenues" instead of Mr. Luebbert's title of "Purchased Power Revenues" and "Load Cost" instead of "Purchased Power Costs." I also multiply his numbers by 1,000 to make the example easier to understand.

The normalized cost in my example of $1,850 is the net of the fuel costs and generation revenues received ($1,500 + ($1,650) = ($150)) net of the load cost (($150) + $2,000 = $1,850). These are the normalized costs and revenues that are included in setting permanent rates in the rate case. The Base Factor is the normalized cost divided by the normalized load ($1,850 ÷ 100,000 kWh).[23]

Q. What does the base factor represent?

A. The base factor is the amount of normalized FAC costs and revenues that are included in revenue requirement in the rate case divided by the annualized and normalized usage determined in the rate case. In other words, it is the normalized FAC cost per kWh of usage as used to determine revenue requirement and set rates in the most recent general rate case.

[23] The normalized load for the FAC is the same as the normalized load used to determine billing determinates in the rate case where the base factor is determined.

Q. Mr. Luebbert, in his example on page 18 of his direct testimony shows the calculation of a new FAC rate. Is this an accurate example?

A. Yes. It is accurate but difficult to follow. I have duplicated his table below as Table 4.

Table 4
Mr. Luebbert's Calculation of FAC Rate

	Base Factor		Actuals
Fuel Cost	$ 1.50		$ 1.20
Purchased Power Costs	$ 2.00		$ 1.90
Purchased Power Revenue	$ (1.65)		$ (1.26)
Total/Net	$ 1.85		$ 1.84
Energy Sales	100		95
		Base Energy Cost:	$ 1.75750
		Difference from Actual and Base Energy Cost:	$ 0.08250
		New FAC Rate:	$ 0.00078

Q. Would you show the calculation using the methodology in the Evergy utilities' FAC tariff sheets?

A. Yes. Table 5 below shows the calculation of the FAC rate given fuel costs of $1,200; generation revenues of $1,260; load cost of $1,900; and an actual load of 95,000 kWh.[24]

[24] Again, just 1,000 greater than the numbers used by Mr. Luebbert.

Table 5

Calculation of FAC Rate After an Accumulation Period

Actual Fuel Costs	$1,200.00	
Actual Generation Revenue	($1,260.00)	
Actual Net Market	($60.00)	
Actual Load Cost @ $0.02/MWh	$1,900.00	
Actual Net Energy Costs (ANEC)	**$1,840.00**	
Actual Load	95,000	kWh
Net Base Energy Cost (NBEC)	**$1,757.50**	
FAC rate for next period		
ANEC - NBEC	$82.50	
Customer's share (95%)	$78.38	
Company's share (5%)	$4.13	
Projected Load	100,000	kWh
FAC rate	**$0.00078**	**$/kWh**

In this example, like Mr. Luebbert's example, the fuel costs, generation revenues, and load costs were all lower than the normalized costs estimated in the rate case, which were shown in Tables 2 and 3. While the actual net energy costs were $10 lower than the amount set in the rate case ($1,850 - $1,840), as shown in Table 3, the energy costs recovered in permanent rates were $1,757.50[25] or $82.50 lower than the actual costs incurred of $1,840. This means that the company did not recover $82.50 of the actual costs incurred through permanent rates billed to customers.

The design of the Evergy utilities' FACs requires a sharing between the company and its customers of the difference between the net and actual energy costs. Under this sharing mechanism customers are responsible for 95% of the difference and the Evergy utilities are responsible for 5%. Therefore, in my example shown in Table 5, the company's share of the difference is $4.13 ($82.50 x 0.05), and it is allowed to collect the remaining $78.38 ($82.50 x 0.95) from its

[25] BF x Actual usage = $0.0185/kWh x 95,000 kWh = $1,757.50.

customers through the FAC rate. To calculate the FAC rate, one divides $78.38—the customer's share—by the projected load of 100,000 kWh, resulting in an FAC rate after this accumulation period of $0.00078/kWh.[26]

Q. Mr. Luebbert testifies: "Through operation of the FAC, unless the avoided energy sales are of above-average cost per kWh, the avoided energy sales will result in an increase in the FAC rates, which will offset the benefits received by all customers."[27] Do you agree?

A. Yes, with some clarification. I agree with Mr. Luebbert's statement if "average cost per kWh" is defined as the average load cost included in the calculation of the base factor in the rate case. This is the definition I use in this testimony. This average would only change in a general rate case. This average does not change day-to-day or across seasons. It is not tied to the actual energy market prices. It is based on the normalized market prices used in the general rate case.

Q. What analysis did you conduct to determine if Mr. Luebbert's testimony is correct?

A. I calculated the benefits to the participant, the non-participants, and the company in three different scenarios. Each scenario results in a different average cost saved. They are:

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[26] Mr. Luebbert used actual kWh to calculate the FAC rate instead of the projected usage amount. This would only be appropriate if a "new" normalized usage of the same amount had been forecasted. In my examples I assume normalized usage estimates do not change between rate cases.

[27] Page 19.

Table 6
Scenarios

Scenario	The MEEIA Program saves energy at a time when market cost of energy:	Avg in Base Factor		Avg when Energy Saved
1	equals the average cost in the base factor	$0.02/kWh	=	$0.02/kWh
2	is above the average cost in the base factor	$0.02/kWh	<	$0.03/kWh
3	is below the average cost in the base factor	$0.02/kWh	>	$0.01/kWh

In my analysis, for each of these scenarios I looked at the benefits of MEEIA programs from the FAC[28] for participants, non-participants, and a utility company across four accumulation periods.

I also looked at the FAC impact of MEEIA programs that reduced energy over four FAC accumulation periods.[29] In the first accumulation period ("AP 1"), the costs, revenues, and usage were equal to the normalized costs, revenues, and usage used in the rate case. In the second, third, and fourth accumulation periods (AP 2, AP 3, and AP 4 respectively) I assumed a reduction in actual load of 1,000 kWh; 5,000 kWh; and 3,000 kWh respectively due to the participation in a MEEIA program of a single customer. To isolate the change due to energy reduction due to MEEIA programs, all other costs and revenues remained the same in each accumulation period.

My analysis is shown on Schedules LMM-R-3 (average at base factor), LMM-R-4 (above average base factor), and LMM-R-5 (below average base factor) respectively. Table 7 below gives a summary of the cost/benefit results of my analysis.

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[28] No MEEIA program costs or benefits outside of the FAC were included in my analysis.

[29] FAC net costs are aggregated over a set time period and compared to the normalized costs included in permanent rates. This time period over which costs and revenues are accumulated is called an accumulation period.

Table 7
Cost/(Benefit) of MEEIA Program

	AP 1	AP 2	AP 3	AP 4
Participant				
Average	$0.00	($18.50)	($92.55)	($55.99)
> Average	$0.00	($18.50)	($93.05)	($59.35)
< Average	$0.00	($18.50)	($92.10)	($52.70)
Non-Participants				
Average	$0.00	$0.00	($0.90)	($6.30)
> Average	$0.00	$0.00	($9.90)	($49.50)
< Average	$0.00	$0.00	$7.20	$36.00
Company				
Average	$0.00	($0.08)	($0.38)	($0.23)
> Average	$0.00	($0.58)	($2.88)	($1.73)
< Average	$0.00	$0.43	$2.13	$1.28

As shown in Table 7 and the attached schedules, the participant always benefits from the MEEIA program. This is true because he or she paid for less energy regardless of whether the kWh saved was at the time the market price was the same as the average, above the average, or below the average cost used in setting the base factor.

The non-participants, however, only saved when the kWh saved was at a time when the market price matched the price used in setting the base factor or at a time when the market price was above the price used in setting the base factor. However, non-participants did not see a benefit until they were charged the lower FAC rate, which began in AP 3. In the scenario where the kWh saved by the participant was at a market price below what was included in the base factor, the cost for non-participants increased. This means that the MEEIA program was not cost-effective for non-participants. In fact, the program increased the FAC cost for the non-participants.

Q. AP 3 had the greatest reduction in load. Would you please walk through your calculations for AP 3 for the three different scenarios?

A. I will start with the calculation of the Actual Net Energy Cost (ANEC) and Net Base Energy Cost (NBEC) of each of the three scenarios shown below in Table 10.

Table 8
Calculation of ANEC and NBEC

	Scenario		
	1	**2**	**3**
	Average	**> Average**	**< Average**
Normalized Load Cost ($/kWh)	$0.02000	$0.02000	$0.02000
Cost of Load Saved ($/kWh)	$0.02000	$0.03000	$0.01000
Fuel Costs	$1,500.00	$1,500.00	$1,500.00
Generation Revenue	($1,650.00)	($1,650.00)	($1,650.00)
Net Market	($150.00)	($150.00)	($150.00)
Load Cost	$1,900.00	$1,850.00	$1,950.00
Actual Net Energy Costs (ANEC)	**$1,750.00**	**$1,700.00**	**$1,800.00**
Actual Load	95,000	95,000	95,000
Net Base Energy Cost (NBEC)	**$1,757.50**	**$1,757.50**	**$1,757.50**
% Reduction in Load	**5.0%**	**5.0%**	**5.0%**
% Reduction in Load Cost	**5.0%**	**7.5%**	**2.5%**

For all three scenarios, the Net Market amount is revenue of $150. This means the utility company received $150 above the fuel cost for the generation resources that were dispatched. Keeping this amount the same in each scenario is consistent with my testimony above that fuel costs and generation revenues are independent from a change in load.

The ANEC is different in each of the three scenarios. The ANEC is the Net Market amount of ($150) plus the actual load cost. The actual load cost is calculated as the average energy cost in the base factor ($0.02/kWh) multiplied by the normalized load (100,000 kWh) minus the reduction in usage (5,000 kWh)[30] multiplied by the cost of load saved ($0.02/kWh, $0.03/kWh, and $0.01/kWh for the three scenarios respectively). The ANEC for each scenario is calculated as:

Scenario 1: ($150) + (($0.02 x 100,000) – (5,000 x $0.02)) = $1,750
Scenario 2: ($150) + (($0.02 x 100,000) – (5,000 x $0.03)) = $1,700
Scenario 3: ($150) + (($0.02 x 100,000) – (5,000 x $0.01)) = $1,800

Like the Net Market amount, the NBEC is also consistent across all three scenarios. The NBEC is the amount of net FAC costs that is included in permanent rates. It is calculated as the Base Factor ($0.0185/kWh) multiplied by the kWh of energy used (95,000 kWh).

Q. How is the FAC rate calculated?

A. The calculation of the FAC rate for the three different scenarios is shown below in Table 9.

Table 9
FAC Rate Calculation for Next Recovery Period

	Scenario		
	1	**2**	**3**
	Average	**> Average**	**< Average**
ANEC – NBEC	($7.50)	($57.50)	$42.50
Customer's share (95%)	($7.13)	($54.63)	$40.38
Company's share (5%)	($0.38)	($2.88)	$2.13
Projected Load	100,000	100,000	100,000
FAC rate	($0.00007)	($0.00055)	$0.00040

Scenario 1: Cost of Energy Saved = Average Base Factor Cost

The difference between the actual costs incurred (ANEC) and the amounts billed in permanent rates (NBEC) is calculated to determine the costs over- or under-billed. In the first scenario, where the market price of the saved energy is

[30] Again, for AP3 I assumed the participant reduced his or her energy usage by 5,000 kWh and non-participants did not change their energy usage. This reduction is consistent across all three columns

the same as the average market price included in the base factor, there is a difference between the ANEC and the NBEC. This is because the net market revenues stayed constant but the energy usage decreased. As I explained above, the generation that the utility offers and receives revenue for does not change when the load requirements of the customers change. Only the load cost changed and it changed at the same rate that was included in the base factor. [31]

The sharing mechanism of the FAC means that only 95% of the difference is returned to customers. So of the $7.50 that was overbilled in the first scenario,[32] the company gets to keep 5% or $0.38. The FAC rate is 95% of the amount the utility company billed in excess of the actual cost—$7.13—divided by the projected load of 100,000 kWh. In this first scenario, the FAC rate is ($0.00007)/kWh.

<u>Scenario 2: Cost of Energy Saved > Average Base Factor Cost</u>

It is easier to understand why a reduction in load at a time when cost is higher than the average cost used in setting the base factor results in the ANEC being less than the NBEC. Put simply, the company avoided having to pay a higher cost than what was in the base factor. In the scenario provided, the ANEC was $57.50[33] less than what was billed in permanent rates (NBEC). In other words, the utility billed its customers $57.50 for FAC costs above what it incurred. Through the FAC, it is required to return to customers 95% of the overbilled amount or $54.63 and the utility company gets to keep 5% or $2.88.

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because customers saved the same amount of energy. The columns differ because they each represent a different market price at the *time* customers saved the energy.

[31] In the calculation of the base factor, the Net Market portion is $150 divided by the normalized usage of 100,000 kWh reducing the base factor by $0.0015/kWh. The NBEC for AP 3 only includes $142.50 of the Net Market (95,000 kWh x $0.015). Customers were billed for a Net Market of $142.50 even though the Net Market was $150. It is this $7.50 that is to be 95% returned to customers and 5% kept by the company in this example.

[32] Actual costs incurred (ANEC) was $1,750.00 and cost recovered in permanent rates (NBEC) was $1,757.50.

[33] $50 less for native load cost (5,000 kWh x ($0.03/kWh – $0.02/kWh)) and $7.50 for Net Market costs not considered.

The FAC rate in this scenario is ($0.00055)/kWh or $54.63 divided by 100,000 kWh.

Scenario 3: Cost of Energy Saved < Average Base Factor Cost

The increases in costs for non-participants and the utility company shown in the third scenario are not intuitive. In this scenario the actual cost incurred (Net Market plus Load Cost) is greater than the costs included in permanent rates. This is because the amount not paid in permanent rates for load cost was $0.02/kWh or $100 (5,000 kWh x $0.02/kWh) but the average cost saved was actually $0.01/kWh or $50 (5,000 x $0.01/kWh).[34] Reducing energy at time of low market prices raises the actual average price paid to be above the normalized average price used in the calculation of the base factor. In this scenario, the sharing mechanism allows 95% of the cost not billed or $40.38 to be used to determine the FAC rate. The FAC rate is $0.00040/kWh, calculated by dividing $40.38 by the forecasted load of 100,000 kWh. The utility company does not recover $2.13 of net FAC costs incurred.

Q. Given these three scenarios, what are the benefits or costs that are realized through the FAC due to MEEIA programs for the participant, non-participants, and company in AP 3?

A. The benefits and costs for these entities are shown in Table 10 below for the three scenarios for AP 3.

Table 10
AP 3 (Benefit)/Cost

		Scenario	
	Average	**> Average**	**< Average**
Participant	($92.55)	($93.05)	($92.10)
Non-Participants	($0.90)	($9.90)	$7.27
Company	($0.38)	($2.88)	$2.13

[34] $7.50 of Net Market was not credited to customers as in the first scenario reducing the increase to $42.50.

Q. How did you calculate the benefits and costs of MEEIA programs through the FAC determined for the company that are shown in Table 10 above?

A. The utility company's benefits or costs attributable to the MEEIA programs are simply the 5% share of the difference between the actual costs incurred (ANEC) and the costs recovered in permanent rates (NBEC). For the three example scenarios, the company received a benefit when energy was reduced during a time when the market price was at the average or above the average market price used in setting the base factor. MEEIA programs are detrimental to the company when the programs encourage customers to reduce energy usage when market prices are below the average price used to calculate the base factor.

Q. How did you calculate the benefits and costs to the participant and non-participants shown in Table 10?

A. Determining the benefits and costs for the participant and the non-participants first required the calculation of how much each would have been charged absent an FAC charge (meaning that the company collects only in permanent rates) and prior to the participant reducing his or her energy usage.[35] The charges are calculated as the usage (as shown in the attached schedule, I assumed 10,000 kWh for the participant and 90,000 kWh for the non-participants) multiplied by the FAC base factor ($0.01850/kWh). This results in a charge of $185.00 for the participant and $1,665.00 for the non-participants. This is consistent across all three scenarios.

Next, I calculated the charge for the participant's and non-participants' usage for the third accumulation period (AP 3). For the scenario where the average market price saved is the same as the average market price in the FAC, I calculated this using the base factor of $0.01850/kWh and the FAC rate from AP 2 of ($0.00001)/kWh for a rate of $0.01849/kWh. This charge is multiplied by

[35] Shown as AP 1 on Schedules LMM-R-3, LMM-R-4, and LMM-R-5.

the usage in AP 3 of 5,000 kWh for the participant and 90,000 kWh for the non-participants. This results in a charge of $92.45 (5,000 kWh x $0.01849/kWh) for the participant and $1,664.10 (90,000 kWh x $0.01849) for the non-participants.

Therefore, for the scenario where the participant saved energy at a time when the average market price matched the market price used in the base factor, the benefit of the MEEIA program through the FAC is a savings of $92.55 ($185.00 minus $92.45) for the participant and $0.90 ($1,665.00 minus $1,664.10) for the non-participants.

Q. Is this all the costs and benefits of a MEEIA program to participants and non-participants?

A. No. The cost of the MEEIA programs paid by participants and non-participants are not included in my analysis. Incentives paid to the participants are also not included. My calculations here are merely the benefits/costs realized through the FAC.

Q. Why is this exercise in how the FAC complicates the evaluation of MEEIA program benefits important in this case?

A. It is important to understand that, because of the Evergy utilities' participation in the SPP energy markets and the design of the FAC, the actual market price when there is a reduction in energy usage is critical to a determination of whether or not a MEEIA program provides benefits to non-participants and the Evergy utilities. A reduction in energy during a high-cost hour will benefit both participants and non-participants[36] through a reduction in the FAC rate. A reduction in energy usage during a time where the market price is below the average price used in setting the FAC base factor will provide a benefit for the participant, as shown in Table 10, but result in a higher FAC rate that is charged to both the participant and the non-participants and increase cost to the utility, as shown in Table 9.

[36] And the utility through the sharing mechanism of the Evergy utilities' FACs.

This effect makes it critical to understand the SPP energy market and to accurately forecast it in the design of MEEIA programs. One simply cannot assume that the avoided cost of energy (the cost of the saved energy) is the average annual market price because, again, the market price at the time the saved energy occurs affects whether benefits will be realized. Careful program design is needed and a thorough understanding of who receives the benefits and when all of the benefits and costs are realized is required to meet the statutory objective that the MEEIA programs result in energy savings that are beneficial to all customers regardless of whether or not the program is utilized by all customers.[37]

Finally, the benefits that the Evergy utilities receive from the 5% sharing of savings in the FAC should be included in the MEEIA cost/benefit studies to offset some of the program costs. These are program benefits that have not been taken into consideration but exist because of the Evergy utilities' FACs.

FAC and Socialization of Benefits

Q. Do you agree with Mr. Luebbert that "[t]hrough the operation of the FAC, even if the avoided energy sales reduce (rather than increase) the FAC rates, those benefits are socialized across all customers"?[38]

A. Yes. The MEEIA statute states that MEEIA programs are to be beneficial to all customers in the class in which the programs are proposed.[39] Between general rate cases, the benefits of a MEEIA program that results in lower energy usage is realized through lower FAC rates if the market price of the "saved" usage is higher than the average market price used to set rates in the rate case.

However, the FAC is not designed to allocate the benefits of MEEIA programs to particular classes. The purpose of the FAC is to recover from or

[37] Section 393.1075.4 RSMo.
[38] Page 3.
[39] Section 393.1075.4 RSMo.

return to customers the prudently incurred fuel and purchase power costs.[40] It is based on an average cost per kWh, *i.e.* base factor, determined using normalized FAC costs and revenues. There is no distinction in the calculation of the FAC charge as to which class caused the changed cost.[41] Therefore, every customer class sees the benefit of changes to the energy costs due to the implementation of a MEEIA program through the FAC regardless of whether or not the customers are in the class in which the programs are proposed.

Q. Does the fact that all customers may receive benefits mean that the customer class in which the programs were approved does not receive benefits?

A. No. If benefits exist because of the FAC, all customers that pay the FAC[42] receive benefits. However, because the majority of the benefits of reduced energy usage are realized through the Evergy utilities' FACs, it is important in the cost/benefit analysis of MEEIA programs[43] to realize that the class for which the program is proposed will receive only a portion of the benefits.

It is also important to understand that a reduction in energy usage does not necessarily result in benefits to all and can in fact increase costs to non-participants. This is exactly what the MEEIA statute prohibits. Therefore, a consideration of the timing of when the energy usage is reduced is critical in providing benefits for non-participants.

Therefore, in the analysis of a MEEIA program, only the portion of the benefits that the class will actually receive should be assigned to the customer class in which the programs are proposed.[44] Again, it is critical that this be

[40] 20 CSR 4240-20.090(1)(I) and (L).

[41] The FAC rate is the same for all customers. A voltage expansion factor is applied based on the voltage that the customers take electricity. The voltage expansion factor is based on the transmission and distribution system losses, not based on who caused an increase or reduction in costs.

[42] Customers taking service on Evergy West's SIL and MKT tariff schedules and Evergy Missouri Metro MKT tariff schedule are not subject to the FAC.

[43] Both pre- and post-implementation.

[44] A potential method of assigning benefits to the classes would be to apply allocation factors based on energy usage of the classes.

considered in the design of MEEIA programs to assure that all customers, participants and non-participants alike, receive benefits greater than the costs they are required to pay.

Conclusion

Q. Why is it important to consider the FAC in this MEEIA case?

A. An important customer protection in the MEEIA statute is that MEEIA programs must be cost-effective and beneficial to both participants and those customers who are required to pay for the programs.[45] In his direct testimony in this case, OPC witness Dr. Geoff Marke wrote testimony regarding his skepticism that the Evergy utilities' proposed MEEIA programs will actually result in the savings they claim. This is due to multiple considerations such as the principal-agent problem, the rebound effect, the Inflation Reduction Act, the potential for aggregators of retail choice, the impact of rate design, and building energy codes and standards. To build on this, in this testimony, I described how the realization of benefits is not straightforward. Accurate design and cost-benefit analysis is complex and should take into consideration all these factors. All of this should cause the Commission to pause and rethink the role of MEEIA.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

[45] Section 393.1075.4 RSMo.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Evergy Metro, Inc. d/b/a Evergy Missouri Metro's Notice of Intent to File an Application for Authority to Establish a Demand-Side Programs Investment Mechanism	))))	Case No. EO-2023-0369
In the Matter of Evergy Missouri West, Inc. d/b/a Evergy Missouri West's Notice of Intent to File an Application for Authority to Establish a Demand-Side Programs Investment Mechanism	))))	Case No. EO-2023-0370

AFFIDAVIT OF LENA M. MANTLE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Lena M. Mantle, of lawful age and being first duly sworn, deposes and states:

1. My name is Lena M Mantle. I am a Senior Analyst for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

Lena M. Mantle
Senior Analyst

Subscribed and sworn to me this 8th day of July 2024.

TIFFANY HILDEBRAND
NOTARY PUBLIC - NOTARY SEAL
STATE OF MISSOURI
MY COMMISSION EXPIRES AUGUST 8, 2027
COLE COUNTY
COMMISSION #15637121

My Commission expires August 8, 2027.

Tiffany Hildebrand
Notary Public