

# Exhibit No. 600

MIEC – Exhibit 600  
Maurice Brubaker  
Direct Testimony  
File Nos. ER-2022-0129 & ER-2022-0130

Issue: Cost of Service and Rate Design  
Witness: Maurice Brubaker  
Type of Exhibit: Direct Testimony  
Sponsoring Parties: Missouri Industrial Energy Consumers  
Case Nos.: ER-2022-0129 & ER-2022-0130  
Date Testimony Prepared: June 22, 2022

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

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In the Matter of Evergy Metro, Inc. d/b/a	)	
Evergy Missouri Metro's Request for	)	
Authority to Implement a General Rate	)	Case No. ER-2022-0129
Increase for Electric Service	)	
	)	
In the Matter of Evergy Missouri West, Inc.	)	
d/b/a Evergy Missouri West's Request for	)	
Authority to Implement a General Rate	)	Case No. ER-2022-0130
Increase for Electric Service	)	
	)	

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Direct Testimony and Schedules of

**Maurice Brubaker**

On behalf of

**Missouri Industrial Energy Consumers**

June 22, 2022



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


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<b>Evergy Missouri Metro's Request for</b>	)	)	<b>Case No. ER-2022-0129</b>
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<b>d/b/a Evergy Missouri West's Request for</b>	)	)	<b>Case No. ER-2022-0130</b>
<b>Authority to Implement a General Rate</b>	)	)	
<b>Increase for Electric Service</b>	)	)	
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STATE OF MISSOURI      )  
                                        )      SS  
COUNTY OF ST. LOUIS    )

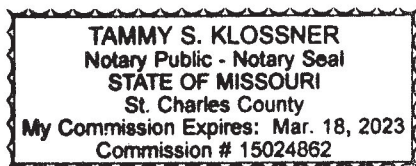
**Affidavit of Maurice Brubaker**

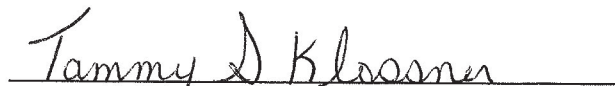
Maurice Brubaker, being first duly sworn, on his oath states:

1. My name is Maurice Brubaker. I am a consultant with Brubaker & Associates, Inc., having its principal place of business at 16690 Swingley Ridge Road, Suite 140, Chesterfield, Missouri 63017. We have been retained by the Missouri Industrial Energy Consumers in this proceeding on their behalf.
2. Attached hereto and made a part hereof for all purposes is my direct testimony and schedules which were prepared in written form for introduction into evidence in the Missouri Public Service Commission, Case Nos. ER-2022-0129 & ER-2022-0130.
3. I hereby swear and affirm that the testimony and schedules are true and correct and that they show the matters and things that they purport to show.

  
Maurice Brubaker

Subscribed and sworn to before me this 22<sup>nd</sup> day of June, 2022.



  
Notary Public

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

In the Matter of Evergy Metro, Inc. d/b/a Evergy Missouri Metro’s Request for Authority to Implement a General Rate Increase for Electric Service	)	)	)	
	)	)	)	Case No. ER-2022-0129
	)	)	)	
In the Matter of Evergy Missouri West, Inc. d/b/a Evergy Missouri West’s Request for Authority to Implement a General Rate Increase for Electric Service	)	)	)	
	)	)	)	Case No. ER-2022-0130
	)	)	)	

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**Direct Testimony of Maurice Brubaker**

- 1 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**
- 2 A Maurice Brubaker. My business address is 16690 Swingley Ridge Road, Suite 140,  
3 Chesterfield, MO 63017.
- 4 **Q WHAT IS YOUR OCCUPATION?**
- 5 A I am a consultant in the field of public utility regulation and a President at Brubaker &  
6 Associates, Inc., energy, economic and regulatory consultants.
- 7 **Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**
- 8 A This information is included in Appendix A to my testimony.
- 9 **Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**
- 10 A This testimony is presented on behalf of the Missouri Industrial Energy Consumers  
11 (“MIEC”), a non-profit company that represents the interests of industrial customers in  
12 Missouri utility matters. These companies purchase substantial amounts of electricity

1           Everbly Metro (“Metro”) formerly referred to as Kansas City Power & Light Company  
2           (“KCPL”) and Everbly West (“West”) formerly referred to as KCP&L-Greater Missouri  
3           Operations (“GMO”). The outcome of this proceeding will have an impact on their cost  
4           of electricity.

5   **Q       WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

6   A       The purpose of my testimony is to highlight the importance of basing rates on class  
7           cost of service and to support the allocation of production system fixed costs proposed  
8           by the Companies. I present these concepts using Metro’s class cost of service study,  
9           to explain how the study should be used, to recommend an appropriate allocation of  
10          any rate increase, and to make rate design recommendations.

11                    The same principles apply equally to West.

12   **Q       HOW IS YOUR TESTIMONY ORGANIZED?**

13   A       First, I present an overview of cost of service principles and concepts. This includes a  
14          description of how electricity is produced and distributed as well as a description of the  
15          various functions that are involved; namely, generation, transmission and distribution.  
16          This is followed by a discussion of the typical classification of these functionalized costs  
17          into demand-related costs, energy-related costs and customer-related costs.

18                    With this as a background, I then explain the various factors that should be  
19          considered in determining how to allocate these functionalized and classified costs  
20          among customer classes.

21                    Finally, I present the results of the detailed cost of service analysis for Metro.  
22          This cost study indicates how individual customer class revenues compare to the costs  
23          incurred in providing service to them. This analysis and interpretation is then followed

1 by recommendations with respect to the alignment of class revenues with class costs.  
2 I conclude by addressing rate design issues.

### 3 **Summary**

4 **Q PLEASE SUMMARIZE YOUR TESTIMONY AND RECOMMENDATIONS.**

5 **A** My testimony and recommendations may be summarized as follows:

- 6 1. Class cost of service is the starting point and the most important guideline for  
7 establishing the level of rates charged to customers.
- 8 2. Metro exhibits significant summer peak demands as compared to demands in  
9 other months.
- 10 3. There are two generally accepted methods for allocating generation and  
11 transmission fixed costs that would apply to Metro. These are the coincident peak  
12 methodology and the average and excess ("A&E") methodology.
- 13 4. Metro has presented an A&E-4 Coincident Peak ("A&E-4CP") class cost of service  
14 study.
- 15 5. Metro's study is reasonable and I will rely on it.
- 16 6. The results of Metro's class cost of service study are presented on Schedule  
17 MEB-COS-1 and expanded on Schedule MEB-COS-2, which shows the  
18 adjustments required to move each class to its cost of service at Evergy's  
19 proposed revenue level. They range from an increase of 30% for the Residential  
20 class to a decrease of 13% for the Large General Service ("LGS") class.
- 21 7. The rates for all classes of customers are so far from cost of service that equity  
22 demands a significant movement toward cost of service be made.
- 23 8. The increases to the Residential and Clean Charge Network ("CCN") classes  
24 should be set at the level proposed by Metro. To the extent that additional revenue  
25 is required to reach the awarded revenue level, it should be recovered by a uniform  
26 percentage increase over present rates of the remaining customer classes. If a  
27 decrease is required, it should be apportioned as an equal percent reduction to the  
28 remaining customer classes.
- 29 9. My rate design recommendations are set forth on page 28 of this testimony.

# COST OF SERVICE PROCEDURES

## Overview

### **Q PLEASE DESCRIBE THE COST ALLOCATION PROCESS.**

A The objective of *cost allocation* is to determine what proportion of the utility's total revenue requirement should be recovered from each customer class. As an aid to this determination, cost of service studies are usually performed to determine the portions of the total costs that are incurred to serve each customer class. The cost of service study identifies the cost responsibility of the class and provides the foundation for revenue allocation and rate design. For many regulators, cost-based rates are an expressed goal. To better interpret cost allocation and cost of service studies, it is important to understand the production and delivery of electricity.

## Electricity Fundamentals

### **Q IS ELECTRICITY SERVICE LIKE ANY OTHER GOODS OR SERVICES?**

A No. Electricity is different from most other goods or services purchased by consumers. For example:

- It cannot be stored in large quantities for a significant period of time; it must be delivered as produced;
- It must be delivered to the customer's home or place of business;
- The delivery occurs instantaneously when and in the amount needed by the customer; and
- Both the total quantity used (energy or kWh) by a customer and the rate of use (demand or kW) are important.

These unique characteristics differentiate electric utilities from other service-related industries.

The service provided by electric utilities is multi-dimensional. First, unlike most vital services, electricity must be delivered at the place of consumption – homes,



1 schools, businesses, factories – because this is where the lights, appliances,  
2 machines, air conditioning, etc. are located. Thus, every utility must provide a path  
3 through which electricity can be delivered regardless of the customer's **demand** and  
4 **energy** requirements at any point in time.

5 Even at the same location, electricity may be used in a variety of applications.  
6 Homeowners, for example, use electricity for lighting, air conditioning, perhaps heating,  
7 and to operate various appliances. At any instant, several appliances may be operating  
8 (e.g., lights, refrigerator, TV, air conditioning, etc.). Which appliances are used and  
9 when reflects the second dimension of utility service – the rate of electricity use or  
10 **demand**. The demand imposed by customers is an especially important characteristic  
11 because the maximum demands determine how much capacity the utility is obligated  
12 to provide.

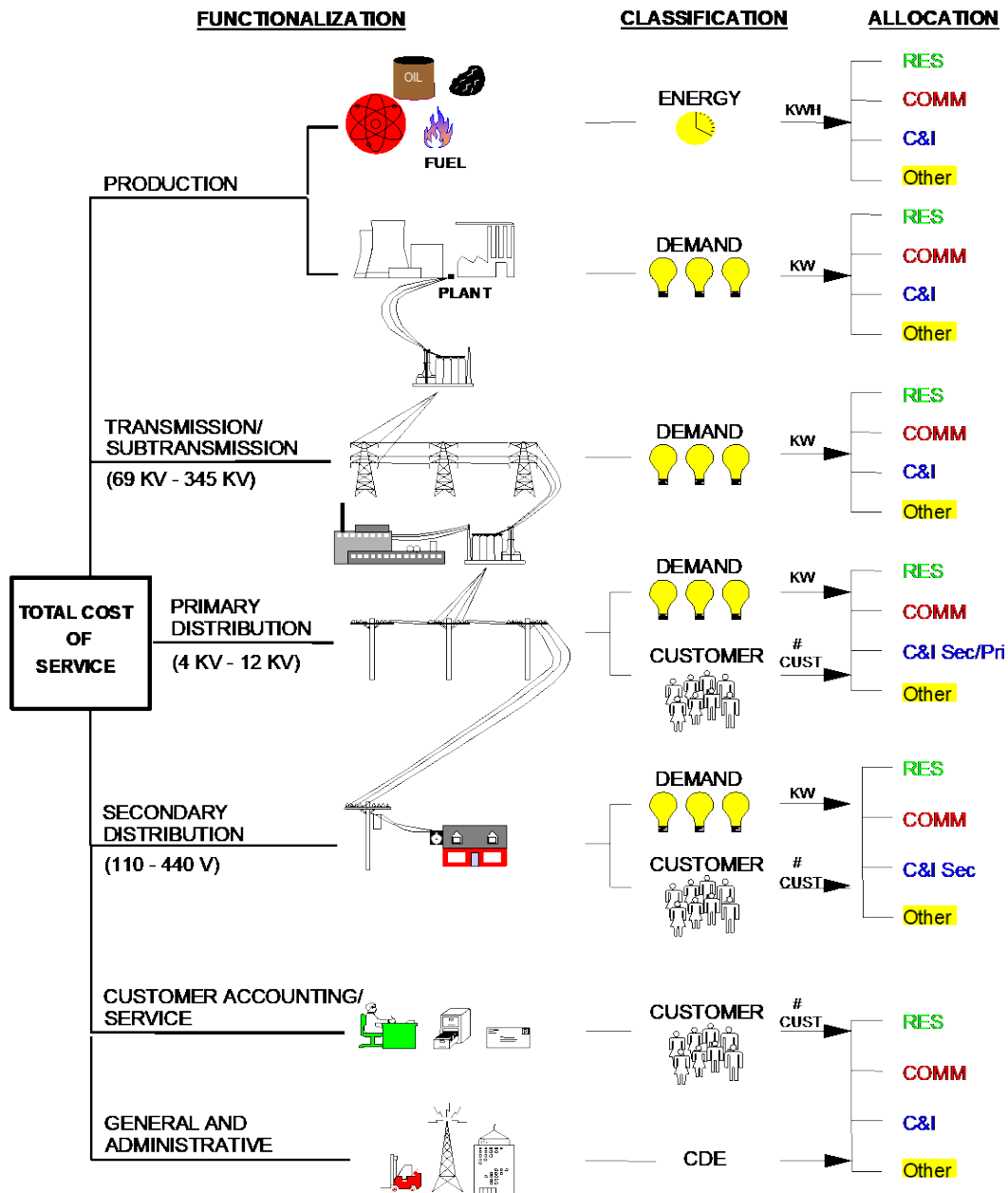
13 Generating units, transmission lines and substations and distribution lines and  
14 substations are rated according to the maximum demand that can safely be imposed  
15 on them. (They are not rated according to average annual demand; that is, the amount  
16 of energy consumed during the year divided by 8,760 hours.) On a hot summer  
17 afternoon when customers demand 2,000 MW of electricity, the utility must have at  
18 least 2,000 MW of generation, plus additional capacity to provide adequate reserves,  
19 so that when a consumer flips the switch, the lights turn on, the machines operate and  
20 air conditioning systems cool our homes, schools, offices, and factories.

21 Satisfying customers' demand for electricity over time – providing **energy** – is  
22 the third dimension of utility service. It is also the dimension with which many people  
23 are most familiar, because people often think of electricity simply in terms of kWhs. To  
24 see one reason why this isn't so simple, consider a more familiar commodity –  
25 tomatoes, for example.

1           The tomatoes we buy at the supermarket for about \$1.50 a pound might  
2 originally come from Florida where they are bought for about 30¢ a pound. In addition  
3 to the cost of buying them at the point of production, there is the cost of bringing them  
4 to the state of Missouri and distributing them in bulk to local wholesalers. The cost of  
5 transportation, insurance, handling and warehousing must be added to the original 30¢  
6 a pound. Then they are distributed to neighborhood stores, which adds more handling  
7 costs as well as the store's own costs of light, heat, personnel and rent. Shoppers can  
8 then purchase as many or few tomatoes as they desire at their convenience. In  
9 addition, there are losses from spoilage and damage in handling. These "line losses"  
10 represent an additional cost which must be recovered in the final price. What we are  
11 really paying for at the store is not only the vegetable itself, but the service of having it  
12 available in convenient amounts and locations. If we took the time and trouble (and  
13 expense) to go down to the wholesale produce distributor, the price would be less. If  
14 we could arrange to buy them in bulk in Florida, they would be even cheaper.

15           As illustrated in Figure 1, electric utilities are similar, except that in most cases  
16 (including Missouri), a single company handles everything from production on down  
17 through wholesale (bulk and area transmission) and retail (distribution to homes and  
18 stores). The crucial difference is that, unlike producers and distributors of tomatoes,  
19 electric utilities have an obligation to provide continuous reliable service. The obligation  
20 is assumed in return for the exclusive right to serve all customers located within its  
21 territorial franchise. In addition to satisfying the energy (or kWh) requirements of its  
22 customers, the obligation to serve means that the utility must also provide the  
23 necessary facilities to attach customers to the grid (so that service can be used at the  
24 point where it is to be consumed) and these facilities must be responsive to changes  
25 in the kilowatt demands whenever they occur.

# Figure 1 PRODUCTION AND DELIVERY OF ELECTRICITY



## A CLOSER LOOK AT THE COST OF SERVICE STUDY

1  
2 **Q PLEASE EXPLAIN HOW A COST OF SERVICE STUDY IS PREPARED.**

3 A To the extent possible, the unique characteristics that differentiate electric utilities from  
4 other service-related industries should be recognized in determining the cost of  
5 providing service to each of the various customer classes. The basic procedure for  
6 conducting a class cost of service study is simple. In an allocated cost of service study,  
7 we identify the different types of costs (**functionalization**), determine their primary  
8 causative factors (**classification**) and then apportion each item of cost among the  
9 various rate classes (**allocation**). Adding up the individual pieces gives the total cost  
10 for each customer class.

### Functionalization

11  
12 **Q PLEASE EXPLAIN FUNCTIONALIZATION.**

13 A Identifying the different levels of operation is a process referred to as  
14 **functionalization**. The utility's investment and expenses are separated by function  
15 (production, transmission, distribution, etc.). To a large extent, this is done in  
16 accordance with the Uniform System of Accounts.

17 Referring to Figure 1, at the top level there is generation, sometimes called  
18 production. The next level is the extra high voltage transmission and subtransmission  
19 system (69,000 volts to 345,000 volts). Then the voltage is stepped down to primary  
20 voltage levels of distribution – 4,160 to 12,000 volts. Finally, the voltage is stepped  
21 down by pole transformers at the "secondary" level to 110-440 volts used to serve  
22 homes, barbershops, light manufacturing and the like. Additional investment and  
23 expenses are required to serve customers at secondary voltages, compared to the cost  
24 of serving customers at higher voltage.

1           Each additional transformation, thus, requires additional investment, additional  
2 expenses and results in some additional electrical losses. To say that "a kilowatthour  
3 is a kilowatthour" is like saying that "a tomato is a tomato." It's true in one sense, but  
4 when you buy a kWh at home you're not only buying the energy itself but also the  
5 service of having it delivered instantaneously right to your doorstep in convenient form.  
6 Those who buy at the bulk or wholesale level – like some of the Large Power Service  
7 ("LPS") customers – pay less because some of the expenses to the utility are avoided.  
8 (Actually, the expenses are borne by the customer who must invest in transformers and  
9 other equipment, or pay separately for some services.)

## 10 **Classification**

### 11 **Q     WHAT IS CLASSIFICATION?**

12 **A**     Once the costs have been functionalized, the next step is to identify the primary  
13 causative factor (or factors). This step is referred to as **classification**. Costs are  
14 classified as demand-related, energy-related or customer-related.

15           Looking at the production function, the amount of production plant capacity  
16 required is primarily determined by the peak rate of usage during the year. If the utility  
17 anticipates a peak demand of 2,000 MW – it must install and/or contract for enough  
18 generating capacity to meet that anticipated demand (plus some reserve to  
19 compensate for variations in load and capacity that is temporarily unavailable).

20           In almost all hours during the day or during the year, not all of this generating  
21 capacity will be needed. Nevertheless, it must be in place to meet the peak demands  
22 on the system. Thus, production plant investment is usually classified to demand.

23 **Regardless of how production plant investment is classified, the associated**  
24 **capital costs** (which include return on investment, depreciation, fixed operation and

1 maintenance ("O&M") expenses, taxes and insurance) **are fixed**; that is, **they do not**  
2 **vary with the amount of kWhs generated and sold.** These fixed costs are  
3 determined by the amount of capacity (i.e., kilowatts) that the utility must install to  
4 satisfy its obligation-to-serve requirement.

5 On the other hand, it is easy to see that the amount of fuel burned – and  
6 therefore the amount of fuel expense – is closely related to the amount of energy  
7 (number of kWhs) that customers use. Therefore, fuel expense is an energy-related  
8 cost.

9 Most other O&M expenses are fixed and therefore are classified as  
10 demand-related. Variable O&M expenses are classified as energy-related.  
11 Demand-related and energy-related types of operating costs are not impacted by the  
12 number of customers served.

13 Customer-related costs are the third major category. Obvious examples of  
14 customer-related costs include the investment in meters and service drops (the line  
15 from the pole to the customer's facility or house). Along with meter reading, posting  
16 accounts and rendering bills, these "customer costs" may be several dollars per  
17 customer, per month. Less obvious examples of customer-related costs may include  
18 the investment in other distribution plant accounts such as poles and overhead  
19 conductors.

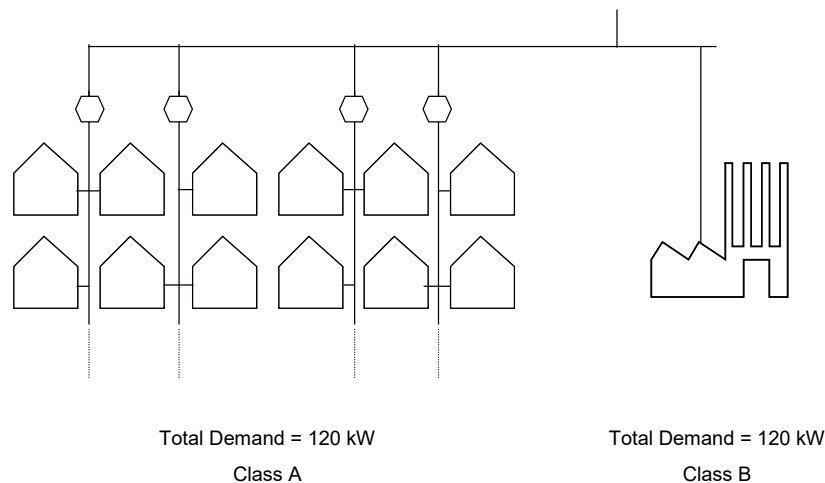
20 A certain portion of the cost of the distribution system – poles, wires and  
21 transformers – is required simply to attach customers to the system, regardless of their  
22 demand or energy requirements. This minimum or "skeleton" distribution system may  
23 also be considered a customer-related cost since it depends primarily on the number  
24 of customers, rather than demand or energy usage.

1           Figure 2, as an example, shows the distribution network for a utility with two  
2 customer classes, A and B. The physical distribution network necessary to attach  
3 Class A is designed to serve 12 customers, each with a 10-kilowatt load, having a total  
4 demand of 120 kW. This is the same total demand as is imposed by Class B, which  
5 consists of a single customer. Clearly, a much more extensive distribution system is  
6 required to attach the multitude of small customers (Class A), than to attach the single  
7 larger customer (Class B), despite the fact that the total demand of each customer class  
8 is the same.

9           Even though some additional customers can be attached without additional  
10 investment in some areas of the system, it is obvious that attaching a large number of  
11 customers requires investment in facilities, not only initially but on a continuing basis  
12 as a result of the need for maintenance and repair.

13           To the extent that the distribution system components must be sized to  
14 accommodate additional load beyond the minimum, the balance is a demand-related  
15 cost. Thus, the distribution system is classified as both demand-related and  
16 customer-related.

**Figure 2**  
**Classification of Distribution Investment**



1 **Demand vs. Energy Costs**

2 **Q WHAT IS THE DISTINCTION BETWEEN DEMAND-RELATED COSTS AND**  
3 **ENERGY-RELATED COSTS?**

4 A The difference between demand-related and energy-related costs explains the fallacy  
5 of the argument that "a kilowatthour is a kilowatthour." For example, Figure 3 compares  
6 the electrical requirements of two customers, A and B, each using 100-watt light bulbs.

7 Customer A turns on all five of his/her 100-watt light bulbs for two hours.  
8 Customer B, by contrast, turns on two light bulbs for five hours. Both customers use  
9 the same amount of energy – 1,000 watthours or 1 kWh. However, Customer A utilized  
10 electric power at a higher rate, 500 watts per hour or 0.5 kW, than Customer B who  
11 demanded only 200 watts per hour or 0.2 kW.

12 Although both customers had precisely the same kWh energy usage,  
13 Customer A's kW demand was 2.5 times Customer B's. Therefore, the utility must  
14 install 2.5 times as much generating capacity for Customer A as for Customer B. The  
15 cost of serving Customer A, therefore, is much higher.

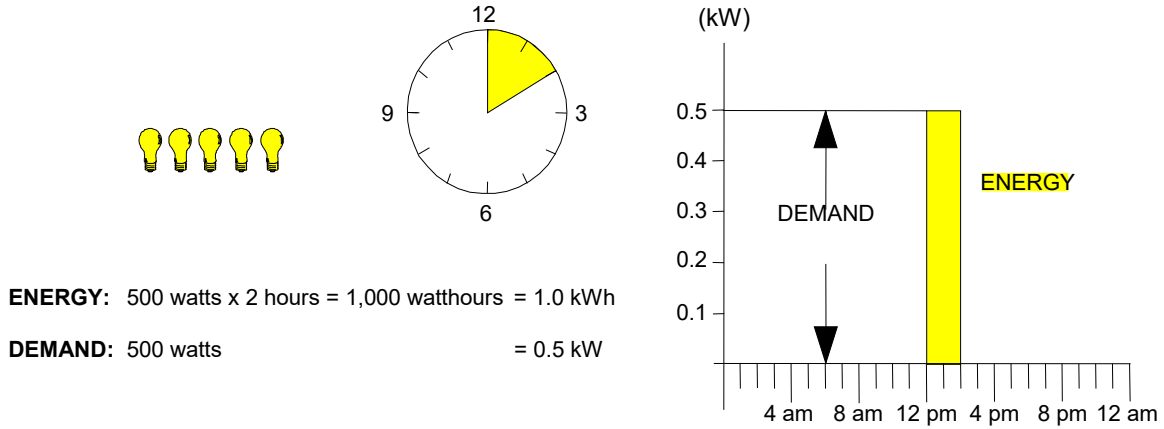
16 **Q DOES THIS HAVE ANYTHING TO DO WITH THE CONCEPT OF LOAD FACTOR?**

17 A Yes. Load factor is an expression of how uniformly a customer uses energy. In our  
18 example of the light bulbs, the load factor of Customer B would be higher than the load  
19 factor of Customer A because the use of electricity was spread over a longer period of  
20 time, and the number of kWhs used for each kilowatt of demand imposed on the system  
21 is much greater in the case of Customer B.

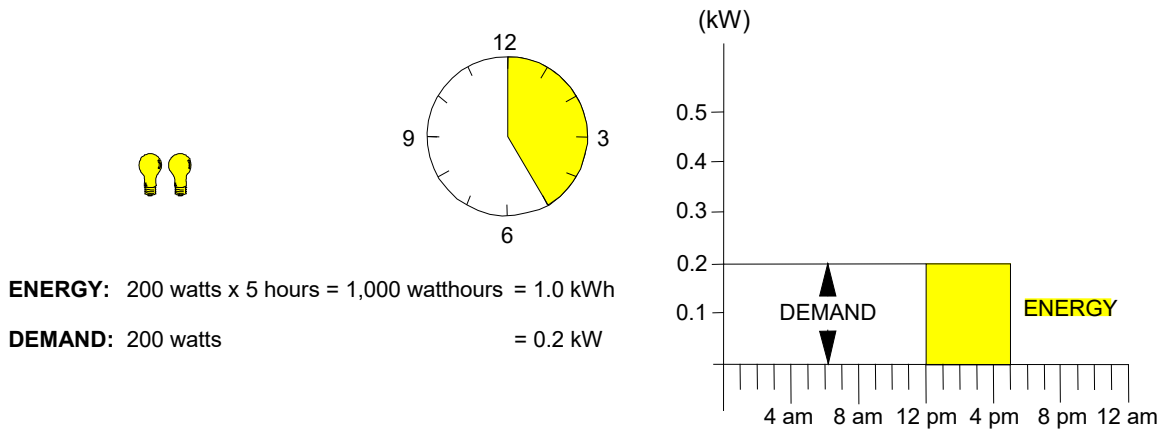


# Figure 3 DEMAND VS. ENERGY

## CUSTOMER A



## CUSTOMER B



- 1 Mathematically, load factor is the average rate of use divided by the peak rate
- 2 of use. A customer with a higher load factor is less expensive to serve, on a per kWh
- 3 basis, than a customer with a low load factor, irrespective of size.

1           Consider also the analogy of a rental car which costs \$40/day and 20¢/mile. If  
2           Customer A drives only 20 miles a day, the average cost will be \$2.20/mile. But for  
3           Customer B, who drives 200 miles a day, spreading the daily rental charge over the  
4           total mileage gives an average cost of 40¢/mile. For both customers, the fixed cost  
5           rate (daily charge) and variable cost rate (mileage charge) are identical, but the average  
6           total cost per mile will differ depending on how intensively the car is used. Likewise,  
7           the average cost per kWh will depend on how intensively the generating plant is used.  
8           A low load factor indicates that the capacity is idle much of the time; a high load factor  
9           indicates a more steady rate of usage. Since industrial customers generally have  
10          higher load factors than residential or commercial customers, they are less costly to  
11          serve on a per-kWh basis. Again, we can say that "a kilowatthour is a kilowatthour" as  
12          to energy content, but there may be a big difference in how much generating plant  
13          investment is required to convert the raw fuel into electric energy.

## 14    Allocation

### 15    **Q    WHAT IS ALLOCATION?**

16    **A**    The final step in the cost of service analysis is the **allocation** of the costs to the  
17          customer classes. Demand, energy and customer allocation factors are developed to  
18          apportion the costs among the customer classes. Each factor measures the customer  
19          class's contribution to the system total cost.

20                 For example, we have already determined that the amount of fuel expense on  
21          the system is a function of the energy required by customers. In order to allocate this  
22          expense among classes, we must determine how much each class contributes to the  
23          total kWh consumption and we must recognize the line losses associated with  
24          transporting and distributing the kWh. These contributions, expressed in percentage

1 terms, are then multiplied by the expense to determine how much expense should be  
2 attributed to each class. For demand-related costs, we construct an allocation factor  
3 by looking at the important class demands.

4 **Utility System Characteristics**

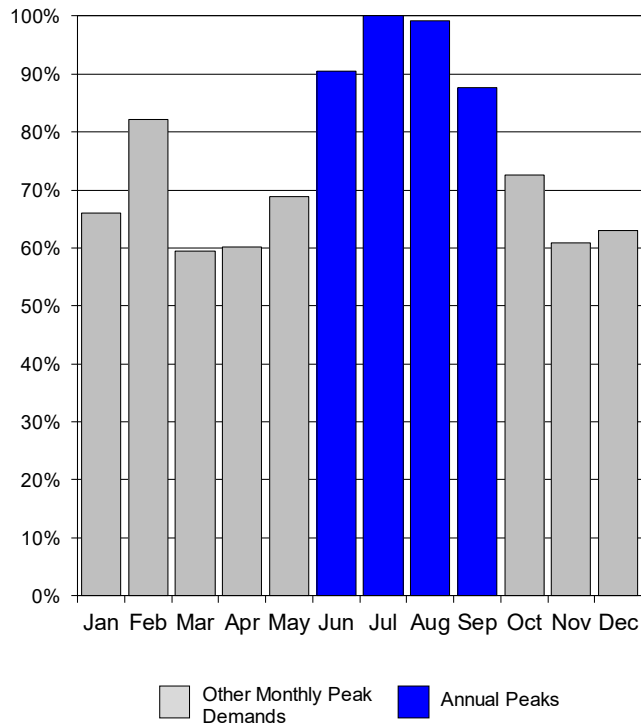
5 **Q WHAT IS THE IMPORTANCE OF UTILITY SYSTEM LOAD CHARACTERISTICS?**

6 A Utility system load characteristics are an important factor in determining the specific  
7 method that should be employed to allocate fixed or demand-related costs on a utility  
8 system. The most important characteristic is the annual load pattern of the utility.  
9 These characteristics for Metro are shown here as Figure 4.

**Figure 4**

**EVERGY METRO, INC.**  
Case No. ER-2022-0129

**Analysis of Evergy-Metro's Monthly Peak Demands  
as a Percent of the Annual System Peak  
For Calendar Year 2021**



1 This shows the monthly system peak demands for 2021. The highlighted bars show  
2 the months in which the highest peak occurred.

3 This analysis shows that summer peaks dominate the Metro system. This  
4 clearly shows that the system peak occurred in July, and was substantially higher than  
5 the monthly peaks occurring in most other months. The peaks in June, August and  
6 September were only 9.4%, 0.7%, and 12.7%, respectively, lower than the annual peak  
7 (July), while peaks in other months were substantially lower.

8 **Q WHAT CRITERIA SHOULD BE USED TO DETERMINE AN APPROPRIATE**  
9 **METHOD FOR ALLOCATING PRODUCTION AND TRANSMISSION CAPACITY**  
10 **COSTS AMONG THE VARIOUS CUSTOMER CLASSES?**

11 A The specific allocation method should be consistent with the principle of cost-causation;  
12 that is, the allocation should reflect the contribution of each customer class to the  
13 demands that caused the utility to incur capacity costs.

14 **Q WHAT FACTORS CAUSE ELECTRIC UTILITIES TO INCUR PRODUCTION AND**  
15 **TRANSMISSION CAPACITY COSTS?**

16 A As discussed previously, production and transmission plant must be sized to meet the  
17 maximum demand imposed on these facilities. Thus, an appropriate allocation method  
18 should accurately reflect the characteristics of the loads served by the utility. For  
19 example, if a utility has a high summer peak relative to the demands in other seasons,  
20 then production and transmission capacity costs should be allocated relative to each  
21 customer class's contribution to the summer peak demands. If a utility has predominant  
22 peaks in both the summer and winter periods, then an appropriate allocation method  
23 would be based on the demands imposed during both the summer and winter peak

1 periods. For a utility with a very high load factor and/or a non-seasonal load pattern,  
2 then demands in all months may be important.

3 **Q WHAT DO THESE CONSIDERATIONS MEAN IN THE CONTEXT OF THE METRO**  
4 **SYSTEM?**

5 A As noted, the Metro load pattern has predominant summer peaks. This means that  
6 these demands should be the primary ones used in the allocation of generation and  
7 transmission costs. Demands in other months are of much less significance, do not  
8 compel the addition of generation capacity to serve them and should not be used in  
9 determining the allocation of costs.

10 **Q WHAT SPECIFIC RECOMMENDATIONS DO YOU HAVE?**

11 A The two most predominantly used allocation methods in the industry are the coincident  
12 peak method and the A&E demand method.

13 The coincident method utilizes the demands of customer classes occurring at  
14 the time of the system peak or peaks selected for allocation. In the case of Metro, this  
15 would be one or more peaks occurring during the summer.

16 **Q WHAT IS THE A&E METHOD?**

17 A The A&E method is one of a family of methods that incorporates a consideration of  
18 both the maximum rate of use (demand) and the duration of use (energy). As the name  
19 implies, A&E makes a conceptual split of the system into an “average” component and  
20 an “excess” component. The “average” demand is simply the total kWh usage divided  
21 by the total number of hours in the year. This is the amount of capacity that would be  
22 required to produce the energy if it were taken at the same demand rate each hour.

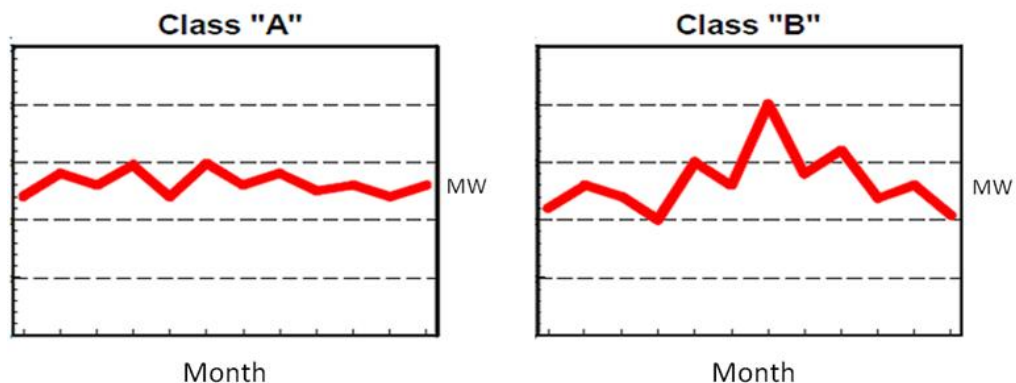
1 The system “excess” demand is the difference between the system peak demand and  
2 the system average demand.

3 Under the A&E method, the average demand is allocated to classes in  
4 proportion to their average demand (energy usage). The difference between the  
5 system average demand and the system peak(s) is then allocated to customer classes  
6 on the basis of a measure that represents their contribution to the “peaking” or  
7 variability in usage.<sup>1</sup>

8 **Q WHAT DO YOU MEAN BY VARIABILITY IN USAGE?**

9 **A** As an example, Figure 5 shows two classes that have different monthly usage patterns.

**Figure 5**  
**Load Patterns**



10 Both classes use the same total amount of energy and, therefore, have the same  
11 average demand. Class B, though, has a much greater maximum demand<sup>2</sup> than  
12 Class A. The greater maximum demand imposes greater costs on the utility system.  
13 This is because the utility must provide sufficient capacity to meet the projected

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<sup>1</sup>NARUC Electric Utility Cost Allocation Manual, 1992, page 81.

<sup>2</sup>During any specified time period (e.g., month, year), the maximum demand of a class, regardless of when it occurs, is called the non-coincident peak demand.

1 maximum demands of its customers. There may also be higher costs due to the greater  
2 variability of usage of some classes. This variability requires that a utility cycle its  
3 generating units in order to match output with demand on a real time basis. The stress  
4 of cycling generating units up and down causes wear and tear on the equipment,  
5 resulting in higher maintenance cost.

6 Thus, the excess component of the A&E method is an attempt to allocate the  
7 additional capacity requirements of the system (measured by the system excess) in  
8 proportion to the "peakiness" of the customer classes (measured by the class excess  
9 demands).

10 **Q WHAT DEMAND ALLOCATION METHODOLOGY DO YOU RECOMMEND FOR**  
11 **GENERATION AND TRANSMISSION?**

12 **A** First, in order to reflect cost-causation the methodology must give predominant weight  
13 to loads occurring during the summer months. Loads during these months (the peak  
14 loads) are the primary driver that has and continues to cause the utility to expand its  
15 generation and transmission capacity, and therefore should be given predominant  
16 weight in the allocation of capacity costs.

17 Either a coincident peak study, using the demands during the summer (peak)  
18 months, or a version of an A&E cost of service study that uses class demands occurring  
19 during the summer, would be most appropriate to reflect these characteristics. The  
20 results should be similar as long as only summer period peak loads are used. I  
21 recommend the A&E method.

22 **Q DO YOU AGREE WITH THE A&E-4CP STUDY PRESENTED BY METRO?**

23 **A** Yes. Given Metro's load characteristics, I find this study to be reasonable.

1 **Making the Cost of Service Study – Summary**

2 **Q PLEASE SUMMARIZE THE PROCESS AND THE RESULTS OF A COST OF**  
3 **SERVICE ANALYSIS.**

4 **A** As previously discussed, the cost of service procedure involves three steps:

- 5 1. Functionalization – Identify the different functional "levels" of the system;  
6 2. Classification – Determine, for each functional type, the primary cause or causes  
7 (customer, demand or energy) of that cost being incurred; and  
8 3. Allocation – Calculate the class proportional responsibilities for each type of cost  
9 and spread the cost among classes.

10 **Q WHERE ARE THE COST OF SERVICE RESULTS PRESENTED?**

11 **A** The results are presented in Schedule MEB-COS-1, which reflects results at present  
12 rates.

13 **Q REFERRING TO SCHEDULE MEB-COS-1, PLEASE EXPLAIN THE**  
14 **ORGANIZATION AND WHAT IS SHOWN.**

15 **A** Schedule MEB-COS-1 is a summary of the results of Metro's class cost of service  
16 study, based on an A&E-4CP cost of service study.

17 Column 1 shows the rate of return at present rates for each customer class  
18 based on this cost of service study, and Column 2 shows the percentage relationship  
19 of each class to the system average. A "relative" rate of return less than 1.0 (or  
20 negative) means that the class has a rate of return below the system average and is  
21 paying less than its cost of service. Conversely, a relative rate of return larger than 1.0  
22 means that the class is paying more than its cost of service.



1 **Adjustment of Class Revenues**

2 **Q WHAT SHOULD BE THE PRIMARY BASIS FOR ESTABLISHING CLASS REVENUE**  
3 **REQUIREMENTS AND DESIGNING RATES?**

4 **A** Cost should be the primary factor used in both steps.

5 Just as cost of service is used to establish a utility's total revenue requirement,  
6 it should also be the primary basis used to establish the revenues collected from each  
7 customer class and to design rate schedules.

8 Factors such as simplicity, gradualism and ease of administration may also be  
9 taken into account, but the basic starting point and guideline throughout the process  
10 should be cost of service. To the extent practicable, rate schedules should be  
11 structured and designed to reflect the important cost-causative features of the service  
12 provided, and to collect the appropriate cost from the customers within each class or  
13 rate schedule, based upon the individual load patterns exhibited by those customers.

14 Electric rates also play a role in economic development, both with respect to job  
15 creation and job retention. This is particularly true in the case of industries where  
16 electricity is one of the largest components of the cost of production.

17 **Q WHAT IS THE BASIS FOR YOUR RECOMMENDATION THAT COST BE USED AS**  
18 **THE PRIMARY FACTOR FOR THESE PURPOSES?**

19 **A** The basic reasons for using cost as the primary factor are equity, conservation, and  
20 engineering efficiency (cost-minimization).

21 **Q PLEASE EXPLAIN HOW EQUITY IS ACHIEVED BY BASING RATES ON COST.**

22 **A** When rates are based on cost, each customer pays what it costs the utility to provide  
23 service to that customer; no more and no less. If rates are based on anything other

1 than cost factors, then some customers will pay the costs attributable to providing  
2 service to other customers – which is inherently inequitable.

3 **Q HOW DO COST-BASED RATES FURTHER THE GOAL OF CONSERVATION?**

4 A Conservation occurs when wasteful, inefficient use is discouraged or minimized. Only  
5 when rates are based on costs do customers receive a balanced price signal upon  
6 which to make their electric consumption decisions. If rates are not based on costs,  
7 then customers who are not paying their full costs may be misled into using electricity  
8 inefficiently in response to the distorted rate design signals they receive.

9 **Q WILL COST-BASED RATES ASSIST IN THE DEVELOPMENT OF**  
10 **COST-EFFECTIVE DEMAND-SIDE MANAGEMENT (“DSM”) PROGRAMS?**

11 A Yes. The success of DSM (both energy efficiency and demand response programs)  
12 depends, to a large extent, on customer receptivity. There are many actions that can  
13 be taken by consumers to reduce their electricity requirements. A major element in a  
14 customer's decision-making process is the amount of reduction that can be achieved  
15 in the electric bill as a result of DSM activities. If the bill received by a customer is  
16 subsidized by other customers; that is, the bill is determined using rates that are below  
17 cost, that customer will have less reason to engage in DSM activities than when the bill  
18 reflects the actual cost of the electric service provided.

19 For example, assume that the relevant cost to produce and deliver energy is 8¢  
20 per kWh. If a customer has an opportunity to install energy efficiency or DSM  
21 equipment that would allow the customer to reduce energy use or demand, the  
22 customer will be much more likely to make that investment if the price of electricity

1 equals the cost of electricity, i.e., 8¢ per kWh, than if the customer is receiving a  
2 subsidized rate of 6¢ per kWh.

3 **Q HOW DO COST-BASED RATES ACHIEVE THE COST-MINIMIZATION**  
4 **OBJECTIVE?**

5 A When the rates are designed so that the energy costs, demand costs and customer  
6 costs are properly reflected in the energy, demand and customer components of the  
7 rate schedules, respectively, customers are provided with the proper incentives to  
8 minimize their costs, which will in turn minimize the costs to the utility.

9 If a utility attempts to extract a disproportionate share of revenues from a class  
10 that has alternatives available (such as producing products at other locations where  
11 costs are lower), then the utility will be faced with the situation where it must discount  
12 the rates or lose the load, either in part or in total. To the extent that the load could  
13 have been served more economically by the utility, then either the other customers of  
14 the utility or the stockholders (or some combination of both) will be worse off than if the  
15 rates were properly designed on the basis of cost.

16 From a rate design perspective, overpricing the energy portion of the rate and  
17 underpricing the fixed components of the rate (such as customer and demand charges)  
18 will result in a disproportionate share of revenues being collected from large customers  
19 and high load factor customers. To the extent that these customers may have lower  
20 cost alternatives than do the smaller or the low load factor customers, the same  
21 problems noted above are created.

1 **REVENUE ALLOCATION**

2 **Q PLEASE REFER AGAIN TO SCHEDULE MEB-COS-1 AND SUMMARIZE THE**  
3 **RESULTS OF METRO’S CLASS COST OF SERVICE STUDY.**

4 A The Residential class has a rate of return far below the system average, which means  
5 it is not covering its cost of service. On the other hand, all other customers (except for  
6 CCN) are being charged far more than their cost of service.

7 **Q WHAT ADJUSTMENTS TO REVENUES WOULD BE REQUIRED TO MOVE ALL**  
8 **CLASSES TO COST OF SERVICE?**

9 A This is shown on Schedule MEB-COS-2.

10 Column 1 shows revenues under present rates, Column 2 shows the dollar  
11 increase required to reach cost of service and Column 3 shows the percentage  
12 increase required. Column 4 express the required percentage increase on an index  
13 basis in comparison to the overall average increase. Note that the Residential class  
14 would require an increase of over five times the average to achieve cost of service  
15 whereas the LPS class, for example, requires a significant decrease to move it down  
16 to cost of service.

17 **Q WHAT ALLOCATION OF THE REQUESTED REVENUE INCREASE IS PROPOSED**  
18 **BY EVERGY?**

19 A This is shown on Schedule MEB-COS-3. Column 1 shows the dollar increase proposed  
20 by Evergy and Column 2 shows the resulting percentage increase.

1 **Q WHAT IS SHOWN ON SCHEDULE MEB-COS-4?**

2 A Schedule MEB-COS-4 shows the increases proposed by Evergy compared to the  
3 increases required to achieve cost of service at Evergy's proposed revenue level.  
4 Column 1 shows the dollar increase proposed by Evergy and Column 2 shows the  
5 resulting percentage increase. Column 3 shows the increase required to achieve cost  
6 of service and Column 4 shows the required percentage increase. Column 5 shows  
7 the requested increase as a percent (or a fraction) of the required increase. Note for  
8 the Residential class that the proposed increase is only 25% of that required, whereas  
9 for the LPS class an increase is proposed although a large decrease is warranted.

10 **Q WOULD METRO'S ALLOCATION MOVE CLASS RATES CLOSER TO COST OF**  
11 **SERVICE?**

12 A Not appreciably. Metro's allocation would essentially maintain the status quo in which  
13 the Residential class is far below cost of service, and other classes are above cost of  
14 service.

15 **Q WHAT IS YOUR RECOMMENDATION CONCERNING ALLOCATION TO THE**  
16 **VARIOUS CUSTOMER CLASSES OF METRO'S PROPOSED CHANGE IN**  
17 **REVENUES?**

18 A The movement toward cost of service should be no less than what results under Metro's  
19 proposed allocation of its proposed revenue increase. More aggressive movements  
20 would be more appropriate, but Metro's proposal represents the very bare minimum  
21 amount that should be accomplished.

1 **Q** **WHAT IS YOUR RECOMMENDATION IF METRO DOES NOT RECEIVE AS MUCH**  
2 **OF AN INCREASE AS IT HAS REQUESTED?**

3 A In the event that Metro does not receive as large an overall increase as it has  
4 requested, I recommend that the increases proposed for the Residential class and the  
5 CCN be maintained at the level proposed by Metro. The difference between the  
6 awarded revenue increase and the increase proposed by Metro for the Residential and  
7 CCN classes should be distributed proportionately to the other customer classes as an  
8 equal percentage increase over current revenues.

9 **Q** **CAN YOU ILLUSTRATE?**

10 A Yes. Suppose, for illustrative purposes only, that instead of an overall increase of  
11 \$47.715 million for Metro, the increase turns out to be \$32 million. The Residential  
12 class and the CCN together would produce an increase of \$26.354 million, leaving  
13 \$5.646 million to be collected when increasing the remaining customer classes. The  
14 present revenue from the remaining customer classes is \$502.132 million, so the  
15 resulting increase to these classes of \$5.646 million would be about 1.12%. This  
16 method of adjusting the proposed increase so as to retain the amount of the increase  
17 for the Residential class and the CCN as proposed by Metro can be applied to any  
18 other level of overall increase.

19 If, after accounting for the proposed increase to the Residential class and the  
20 CCN, a decrease is required, it should be apportioned as an equal percentage  
21 decrease to the remaining customer classes.

1 Q WHAT IS THE IMPORTANCE OF MOVING INDUSTRIAL RATES CLOSER TO  
2 COST OF SERVICE?

3 A The testimony of KCPL's witness Sullivan in the previous rate case (Case  
4 No. ER-2018-0145) said the following, which is just as applicable today.

5 Mr. Sullivan's testimony is particularly enlightening with respect to the  
6 importance of competition and the level of industrial rates. In discussing why it matters  
7 which methodology for cost of service is used by other utilities (he uses Ameren and  
8 Westar as examples), Mr. Sullivan states the following at pages 25 and 26 of his direct  
9 testimony:

10 "The primary reason it matters deals with competition and specifically  
11 competition for industrial customers. As discussed earlier in my  
12 testimony, KCP&L's industrial customers generally have a very high  
13 load factor, much higher than the system average and much higher than  
14 the other customer classes. As will be discussed in the next section of  
15 my testimony, of the three methodologies predominantly recommended  
16 in Missouri and Kansas, the A&E methodology is the only method that  
17 gives a significant recognition to the relative load factors of the customer  
18 classes. Further, when a system is not operating at a very high load  
19 factor, the A&E methodology best assigns the higher cost of unused  
20 capacity.

21 If the CCOS study is used as a principle tool in assigning the utility  
22 revenue requirement to customer classes and thus rate design,  
23 industrial cost responsibility and thus industrial rates for utilities using  
24 the A&E methodology will be lower than using either of the other two  
25 methodologies, all other things being equal. Thus, if the rates for the  
26 two major utilities with which KCP&L competes are using the A&E  
27 methodology and KCP&L is not, KCP&L will be at a competitive  
28 disadvantage in attracting and retaining industrial load.

29 **Q. Why is it important to attract and retain industrial load?**

30 A. There are numerous reasons why this is important. First, industrial  
31 customers have higher load factors that increase the overall  
32 efficiency of the electric system, particularly generation and  
33 transmission facilities. The loads are stable throughout the day,  
34 allowing the utility to invest in lower cost base load generating  
35 facilities. Second, industrial customers usually provide a large  
36 amount of direct and indirect jobs. The direct jobs are associated  
37 with the industrial facility itself. The indirect jobs include the  
38 supporting companies that provide materials to the facility and the

1 residential and commercial development supported by the  
2 employees of the industrial company.”

3 **RATE DESIGN**

4 **Q HOW DO YOU PROPOSE TO ADJUST THE LGS AND LPS RATES IN THIS CASE?**

5 A As a starting point, I believe Metro’s proposal at the level of overall increase net Metro  
6 is requesting from these schedules is appropriate.

7 To the extent that the final outcome is less revenue from either of these rate  
8 schedules than has been proposed by Metro, I would reduce the proposed energy  
9 charges by a uniform amount per kWh to achieve the adjusted revenue target. In the  
10 unlikely event that the final outcome would be a revenue requirement from these rates  
11 higher than what Metro has proposed, I would recommend increasing the demand and  
12 customer charges by the same percentage in order to collect the additional revenue.

13 **Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

14 A Yes, it does.



1 **Qualifications of Maurice Brubaker**

2 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A Maurice Brubaker. My business address is 16690 Swingley Ridge Road, Suite 140,  
4 Chesterfield, MO 63017.

5 **Q PLEASE STATE YOUR OCCUPATION.**

6 A I am a consultant in the field of public utility regulation and President of the firm of  
7 Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

8 **Q PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

9 A I was graduated from the University of Missouri in 1965, with a Bachelor's Degree in  
10 Electrical Engineering. Subsequent to graduation I was employed by the Utilities  
11 Section of the Engineering and Technology Division of Esso Research and Engineering  
12 Corporation of Morristown, New Jersey, a subsidiary of Standard Oil of New Jersey.

13 In the Fall of 1965, I enrolled in the Graduate School of Business at Washington  
14 University in St. Louis, Missouri. I was graduated in June of 1967 with the Degree of  
15 Master of Business Administration. My major field was finance.

16 From March of 1966 until March of 1970, I was employed by Emerson Electric  
17 Company in St. Louis. During this time I pursued the Degree of Master of Science in  
18 Engineering at Washington University, which I received in June, 1970.

19 In March of 1970, I joined the firm of Drazen Associates, Inc., of St. Louis,  
20 Missouri. Since that time I have been engaged in the preparation of numerous studies  
21 relating to electric, gas, and water utilities. These studies have included analyses of  
22 the cost to serve various types of customers, the design of rates for utility services, cost  
23 forecasts, cogeneration rates and determinations of rate base and operating income. I

1 have also addressed utility resource planning principles and plans, reviewed capacity  
2 additions to determine whether or not they were used and useful, addressed demand-  
3 side management issues independently and as part of least cost planning, and have  
4 reviewed utility determinations of the need for capacity additions and/or purchased  
5 power to determine the consistency of such plans with least cost planning principles. I  
6 have also testified about the prudence of the actions undertaken by utilities to meet the  
7 needs of their customers in the wholesale power markets and have recommended  
8 disallowances of costs where such actions were deemed imprudent.

9 I have testified before the Federal Energy Regulatory Commission ("FERC"),  
10 various courts and legislatures, and the state regulatory commissions of Alabama,  
11 Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia,  
12 Guam, Hawaii, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, Missouri,  
13 Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania,  
14 Rhode Island, South Carolina, South Dakota, Texas, Utah, Virginia, West Virginia,  
15 Wisconsin and Wyoming.

16 The firm of Drazen-Brubaker & Associates, Inc. was incorporated in 1972 and  
17 assumed the utility rate and economic consulting activities of Drazen Associates, Inc.,  
18 founded in 1937. In April, 1995 the firm of Brubaker & Associates, Inc. was formed. It  
19 includes most of the former DBA principals and staff. Our staff includes consultants  
20 with backgrounds in accounting, engineering, economics, finance, mathematics,  
21 computer science and business.

22 Brubaker & Associates, Inc. and its predecessor firm have participated in over  
23 700 major utility rate and other cases and statewide generic investigations before utility  
24 regulatory commissions in 40 states, involving electric, gas, water, and steam rates and

1 other issues. Cases in which the firm has been involved have included more than 80  
2 of the 100 largest electric utilities and over 30 gas distribution companies and pipelines.

3 While the firm has always assisted its clients in negotiating contracts for utility  
4 services in the regulated environment, increasingly there are opportunities for certain  
5 customers to acquire power on a competitive basis from a supplier other than its  
6 traditional electric utility. The firm assists clients in identifying and evaluating purchased  
7 power options, conducts RFPs and negotiates with suppliers for the acquisition and  
8 delivery of supplies. We have prepared option studies and/or conducted RFPs for  
9 competitive acquisition of power supply for industrial and other end-use customers  
10 throughout the United States and in Canada, involving total needs in excess of 3,000  
11 megawatts. The firm is also an associate member of the Electric Reliability Council of  
12 Texas.

13 In addition to our main office in St. Louis, the firm also has branch offices in  
14 Corpus Christi, Texas; Detroit, Michigan; Louisville, Kentucky and Phoenix, Arizona.

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**EVERGY MISSOURI METRO**  
**Case No. ER-2022-0129**

**Rate of Return at Present Rates**

<u>Line</u>	<u>Rate Class</u>	<u>Rate of Return</u> (1)	<u>Relative Rate of Return</u> (2)
1	Residential	2.04%	0.35
2	Small General Service	9.08%	1.54
3	Medium General Service	10.11%	1.72
4	Large General Service	10.33%	1.76
5	Large Power Service	9.63%	1.64
6	Lighting	9.62%	1.64
7	Clean Charge Network	-55.49%	(9.43)
8	MO Metro Retail	5.88%	1.00

Source: Schedule MEM-1

**EVERGY MISSOURI METRO**  
**Case No. ER-2022-0129**

**Class Revenue Adjustments at  
Evergy's Proposed Revenue Level  
Required to Achieve Cost of Service**

<u>Line</u>	<u>Rate Class</u>	Revenue	<u>Increase Required</u>		Required
		under Present Rates (\$000) (1)	Amount (\$000) (2)	Percent % (3)	Increase as a Percent of Average Increase (4)
1	Residential	\$ 340,922	\$ 104,309	30.6%	542%
2	Small General Service	\$ 68,664	\$ (6,280)	-9.1%	-162%
3	Medium General Service	\$ 123,595	\$ (15,908)	-12.9%	-228%
4	Large General Service	\$ 178,461	\$ (23,490)	-13.2%	-233%
5	Large Power Service	\$ 121,482	\$ (12,014)	-9.9%	-175%
6	Lighting	\$ 9,931	\$ (1,275)	-12.8%	-227%
7	Clean Charge Network	\$ 75	\$ 2,288	3068.9%	54324%
8	MO Metro Retail	\$ 843,129	\$ 47,631	5.6%	100%

Source: COS Summary per MIEC DR Set 2

**EVERGY MISSOURI METRO**  
**Case No. ER-2022-0129**

**Class Increases Proposed by Evergy**

<u>Line</u>	<u>Rate Class</u>	<u>Increase Proposed</u>	
		<u>Amount</u> <u>(\$000)</u> <u>(1)</u>	<u>Percent</u> <u>%</u> <u>(2)</u>
1	Residential	\$ 26,348	7.73%
2	Small General Service	\$ 2,910	4.24%
3	Medium General Service	\$ 5,249	4.24%
4	Large General Service	\$ 7,612	4.24%
5	Large Power Service	\$ 5,169	4.24%
6	Lighting	\$ 421	4.24%
7	Clean Charge Network	<u>\$ 6</u>	7.73%
8	MO Metro Retail	\$ 47,715	5.65%

Source: Response to MIEC-1-1 Data Request

**EVERGY MISSOURI METRO**  
**Case No. ER-2022-0129**

**Increase Proposed by Evergy Compared to  
Increase Required to Achieve Cost of Service at  
Evergy's Proposed Revenue Level**

<u>Line</u>	<u>Rate Class</u>	<u>Increase Proposed</u>		<u>Increase Required</u>		<u>Proposed Increase as a Percent of Required Increase</u>
		<u>Amount (\$000)</u>	<u>Percent %</u>	<u>Amount (\$000)</u>	<u>Percent %</u>	
		(1)	(2)	(3)	(4)	(5)
1	Residential	\$ 26,348	7.73%	\$ 104,309	30.60%	25%
2	Small General Service	\$ 2,910	4.24%	\$ (6,280)	-9.15%	*
3	Medium General Service	\$ 5,249	4.24%	\$ (15,908)	-12.87%	*
4	Large General Service	\$ 7,612	4.24%	\$ (23,490)	-13.16%	*
5	Large Power Service	\$ 5,169	4.24%	\$ (12,014)	-9.89%	*
6	Lighting	\$ 421	4.24%	\$ (1,275)	-12.84%	*
7	Clean Charge Network	\$ 6	7.73%	\$ 2,288	3068.88%	0.3%
8	MO Metro Retail	\$ 47,715	5.65%	\$ 47,631	5.65%	100%

\* Decrease required

Source: MEB-COS-2 and MEB-COS-3