BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of The Empire District Electric Company to Make Certain Changes in Its Charges for Electric Service.	**)** **)** **)** **)**	**Docket No. 19-EPDE-223-RTS**

DIRECT TESTIMONY

PREPARED BY

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UTILITIES DIVISION

KANSAS CORPORATION COMMISSION

May 13, 2019

I. STATEMENT OF QUALIFICATIONS

Q. What is your name?

A. Robert H. Glass.

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

A. I am employed by the Kansas Corporation Commission (KCC or Commission) as the Chief of Economics and Rates Section within the Utilities Division.

Q. What is your business address?

A. 1500 S.W. Arrowhead Road, Topeka, Kansas, 66604-4027.

Q. What is your educational background and professional experience?

A. I have a B.A. from Baker University with a major in history. I also have an M.A. and a Ph.D. in economics from the University of Kansas. For 22 years prior to my employment at the Commission, I was employed at the University of Kansas by the Institute for Business and Economic Research, which later became the Institute for Public Policy and Business Research. My primary duty was performing economic research.

Q. Have you previously submitted testimony before this Commission?

A. Yes. I provided testimony as a Staff consultant for Docket Nos. 91-KPLE-140-SEC and 97-WSRE-676-MER. As an employee of the Commission, I have testified in numerous rate case and non-rate case dockets.

II. INTRODUCTION

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide Staff's analysis of The Empire District Electric Company's (Empire) Revenue Stabilization Rider, to provide Staff's

proposed revenue allocation and rate design based on Staff's proposed revenue requirement, and to provide Staff's proposed Income Tax Credit allocation to individual customers.

Q. How is your testimony organized?

A. My testimony is divided into three basic sections: analysis of Empire's Revenue Stabilization Rider, explanation of Staff's revenue allocation to rate classes and rate design, and Staff's suggested Income Tax Credit allocation to individual customers.

Q. What are your recommendations?

A. I am recommending that the Commission reject the Revenue Stabilization Rider because it conflicts with previous Commission decoupling policy and because it is unnecessary at this time. I recommend the Commission accept Staff's proposed revenue allocation and rate design. And I recommend the Commission accept Staff's proposed Income Tax Credit allocation to individual customers.

III. ANALYSIS

Revenue Stabilization Rider

Empire's Decoupling Proposal—The Revenue Stabilization Rider

Q. What is Empire's Proposed Revenue Stabilization Rider?

A. In a confusing choice of names, the Revenue Stabilization Rider is a decoupling mechanism designed to break the link between energy consumption and revenue collection by Empire; and the Revenue Stabilization Rider is also the name of the instrument, the rider, used to implement the decoupling mechanism. In order to add some clarity to my discussion, when I am referring to the Revenue Stabilization Rider as a decoupling mechanism, I will call it the Decoupling Mechanism and

when I am referring to the Revenue Stabilization Rider as the implementing instrument, I will call it the Rider.

Q. How does the Decoupling Mechanism break the link between consumption and revenue collection?

A. There are two basic components of the Decoupling Mechanism—a base line for revenue collection and the Rider, which is used as a true-up instrument. The base line would be the revenue requirement approved by the Commission in this rate case. The Rider would either reduce the customers' bills if Empire is over recovering its revenue requirement or increase the customers' bills if Empire is under recovering its revenue requirement. Thus, the Decoupling Mechanism is designed to ensure the revenue collected by Empire is trued-up to eventually equal the approved revenue requirement.

Q. Why is Empire asking for the Decoupling Mechanism?

A. Empire states the Decoupling Mechanism is needed because of the "basic misalignment between the structure of utility costs and the structure of utility rates."[1]

Q. What is the misalignment?

A. Most electric utility costs are fixed—the costs do not vary with changes in electric usage—while most revenue for Residential and Small Commercial customers is collected in the energy charge. As a result, most fixed costs are collected by a charge that varies with electric usage. Empire contends this is "the basic

[1] Timothy Lyons, Direct Testimony, Docket No. 19-EPDE-223-RTS, p. 41.

misalignment between the structure of utility costs and the structure of utility rates."[2]

Q. What rate classes does Empire propose be part of the Decoupling Mechanism?

A. All three Residential rate classes—Residential General, Residential Water Heating, and Residential Space Heating—and two Small Commercial rate classes—Commercial Buildings and Commercial Space Heating.

Q. What are the effects of the misalignment?

A. Empire identifies three effects of the misalignment between utility costs and utility rates:

1. Since the recovery of fixed costs is dependent upon energy usage, changes in customer behavior can create over or under recovery of the fixed costs.

2. Empire's total energy usage has declined over the past decade causing the Company to under recover its revenue requirement, and thus preventing Empire from encouraging customers to be as energy efficient as possible.

3. The under recovery violates "a basic principle of establishing rates that are fair, just and reasonable."[3]

Q. Will the Decoupling Mechanism correct the misalignment?

A. The Decoupling Mechanism will not change the misalignment between utility costs and utility rates. To eliminate the misalignment, fixed charges would need to be significantly increased. Instead, the Decoupling Mechanism compensates for the effects of the misalignment. The Decoupling Mechanism eventually eliminates the over or under recovery of the revenue requirement with the true-up Rider. As a result, Empire would be indifferent to reductions in electric usage because of energy

[2] *Ibid.*
[3] *Ibid.,* pp. 43-44.

efficiency or distributed generation. And because Empire would be recovering its revenue requirement, Empire believes its rates would then be fair, just, and reasonable.

Q. How will the Decoupling Mechanism benefit Empire?

A. The Decoupling Mechanism would ensure that Empire collects its Commission approved revenue requirement.[4]

Q. How does Empire think the Decoupling Mechanism will benefit its customers?

A. Empire claims the Decoupling Mechanism will stabilize customers' electric bills.[5]

Q. For convenience, would you please summarize the Revenue Stabilization Rider?

A. The Revenue Stabilization Rider is a decoupling mechanism designed to break the link between customer energy usage and Empire's revenue collection. Empire feels it needs the Decoupling Mechanism because utility costs are misaligned with utility rates. The Decoupling Mechanism uses a rider to true-up revenue collection, which ensures that revenue collection is eventually equal to the revenue requirement. The Decoupling Mechanism does not eliminate the misalignment of costs and rates, but it would eliminate over or under revenue collection by Empire. Additionally, it solves Empire's alleged problem of declining electric usage over the last decade and it makes Empire indifferent to improved energy efficiency or distributed generation. Thus, the Decoupling Mechanism could ensure Empire's revenue collection meets its revenue requirement and could provide customers with stable electric bills.

[4] *Ibid.*, Exhibit TSL-11, p. 1.
[5] *Ibid.*

The Commission's Stated Decoupling Policy

Q. Has Commission established a policy on decoupling mechanisms?

A Yes. In the Final Order for Docket No. 08-GIMX-441-GIV ("08-441"), the Commission established its policy on cost recovery and incentives for energy efficiency programs. As part of that policy, the Commission outlined when and how decoupling should be implemented.

Q. What decoupling policy did the Commission adopt?

A. The 08-441 Final Order is littered with references to decoupling—more than 40 references are made to decoupling in the order. The decoupling discussion focused primarily on the throughput incentive and the conflict between utility's profit maximizing motivation and the negative consequence of effective energy efficiency programs on utility profit.[6]

But the Commission did step outside the confines of energy efficiency policy to discuss the unique problem faced by natural gas utilities. Since the mid-1980s, average customer usage of natural gas has declined. Because natural gas rates are designed to recover a large part of the utility's fixed cost in the volumetric rate, natural gas utilities have faced a continuing problem collecting their approved revenue requirement. In response to this problem, the Commission stated it will

[6] The throughput incentive is a motivation for energy utilities to encourage customers to use more energy. It results from the structure of most rate designs, particularly residential rate designs that contain a fixed charge that does not cover the utility's fixed cost. As a result, the utility collects a large part of its fixed costs in its volumetric rate. This rate design motivates utilities to encourage customers to use more energy because its short run profit (marginal revenue minus marginal cost) will increase when customers increase their energy usage. Energy efficiency advocates also use the term throughput disincentive to describe the same phenomenon because the utility's own profit maximizing directive is contrary to encouraging energy efficiency.

consider decoupling proposals from natural gas utilities outside of the confines of energy efficiency proposals on a case-by-case basis.[7]

In the same order, the Commission made it clear it would almost certainly not extend the same consideration to electric utilities that it would to natural gas utilities:

> [T]he Commission is highly unlikely to address a decoupling proposal without a demonstrated connection to an energy efficiency program application or to existing programs. … The [electric] utility must demonstrate that decoupling makes economic sense in the context of the utility's energy efficiency program or suite of programs.[8]

Q. Please summarize the Commission's decoupling policy.

A. The decoupling policy outlined in 08-441 Final Order views decoupling as a potential cost recovery mechanism, acceptable in principle, which removes the throughput incentive that incentivizes utilities to encourage customers to increase energy usage.

Outside of energy efficiency programs, the Commission will consider, on a case-by-case basis, the use of decoupling by natural gas utilities to reduce the impact of declining per customer volumetric usage. But this exemption of decoupling outside of energy efficiency programs for natural gas utilities almost certainly does not apply to electric utilities.

Q. Has the Commission consistently maintained its 08-441 decoupling policy?

A. Yes. In the two PURPA compliance dockets, Docket Nos. 09-GIME-360-GIE ("09-360") and 09-GIMG-361-GIG ("09-361"), the Commission confirmed its 08-

[7] Final Order, Docket No. 08-GIMX-441-GIV, November 17, 2008, ¶¶ 57-60.
[8] *Ibiid.,* ¶ 70.

441 decoupling policy. In fact, the Commission attached the 08-441 Final Order to the 09-361 Final Order.[9]

Additionally, in Docket No. 16-KCPE-446-TAR ("KEEIA") Staff proposed a decoupling mechanism consistent with the 08-441 decoupling policy in contrast to the cost recovery mechanisms proposed by KCP&L.[10] The Commission in the Final Order for the KEEIA docket found "Staff's proposal is consistent with KEEIA and traditional ratemaking principles and is, therefore, in the public interest."[11] Consistent with the 08-441 decoupling policy, the decoupling mechanism proposed by Staff and accepted by the Commission was tied to a portfolio of energy efficiency programs. But the current docket does not have any tie to energy efficiency programs.

Staff's Analysis of the Revenue Stabilization Rider

Q. What is Staff's recommendation concerning the Revenue Stabilization Rider?

A. Staff recommends the Commission reject the Revenue Stabilization Rider.

Q. Why does Staff oppose the Decoupling Mechanism?

A. Staff has two objections to Empire's proposed Decoupling Mechanism.

1. The Commission stated in the 08-441 Final Order that it would be "highly unlikely" for the Commission to approve a decoupling mechanism outside of an "energy efficiency [program] or suite of programs." Since Empire has not proposed an energy efficiency program in the current docket, a key Commission criterion for considering a decoupling mechanism is missing.

2. Staff does not believe that Empire has a demonstrated need for the decoupling mechanism it is proposing in the current docket.

[9] Order Addressing PURPA Integrated Resource Planning and Rate Design Modifications Standards and Setting Roundtable To Address Smart Grid Standards, Docket No. 09-GIME-360-GIE, ¶ 73, and Order Addressing PURPA Standards and Closing Docket, Docket No. 09-GIMG-361-GIG, pp. 15-16.
[10] Robert Glass, Cross-Answering Testimony, Docket No. 16-KCPE-446-TAR, August 15, 2016, pp. 2-18.
[11] Final Order, 16-KCPE-446-TAR, ¶ 116.

Q. Please explain why, in the 08-441 Final Order, the Commission treated the issue of decoupling differently for natural gas and electric utilities.

A. The Commission noted that natural gas utilities confronted declining per customer usage, which limited their ability to recover their full revenue requirement. In contrast, electric utilities did not face declining per customer usage. As a result, the Commission stated it would consider decoupling for natural gas utilities outside the realm of energy efficiency programs while the Commission stated it "[for electric utilities, it] is highly unlikely to address a decoupling proposal without a demonstrated connection to an energy efficiency program application or to existing programs."[12]

Q. But doesn't Empire claim to currently face the same revenue collection problem the Commission ascribed to natural gas utilities in the 08-441 Docket?

A. Yes. As outlined above, Empire claims to confront declining revenue collection.

Q. Does Empire have declining revenue collection?

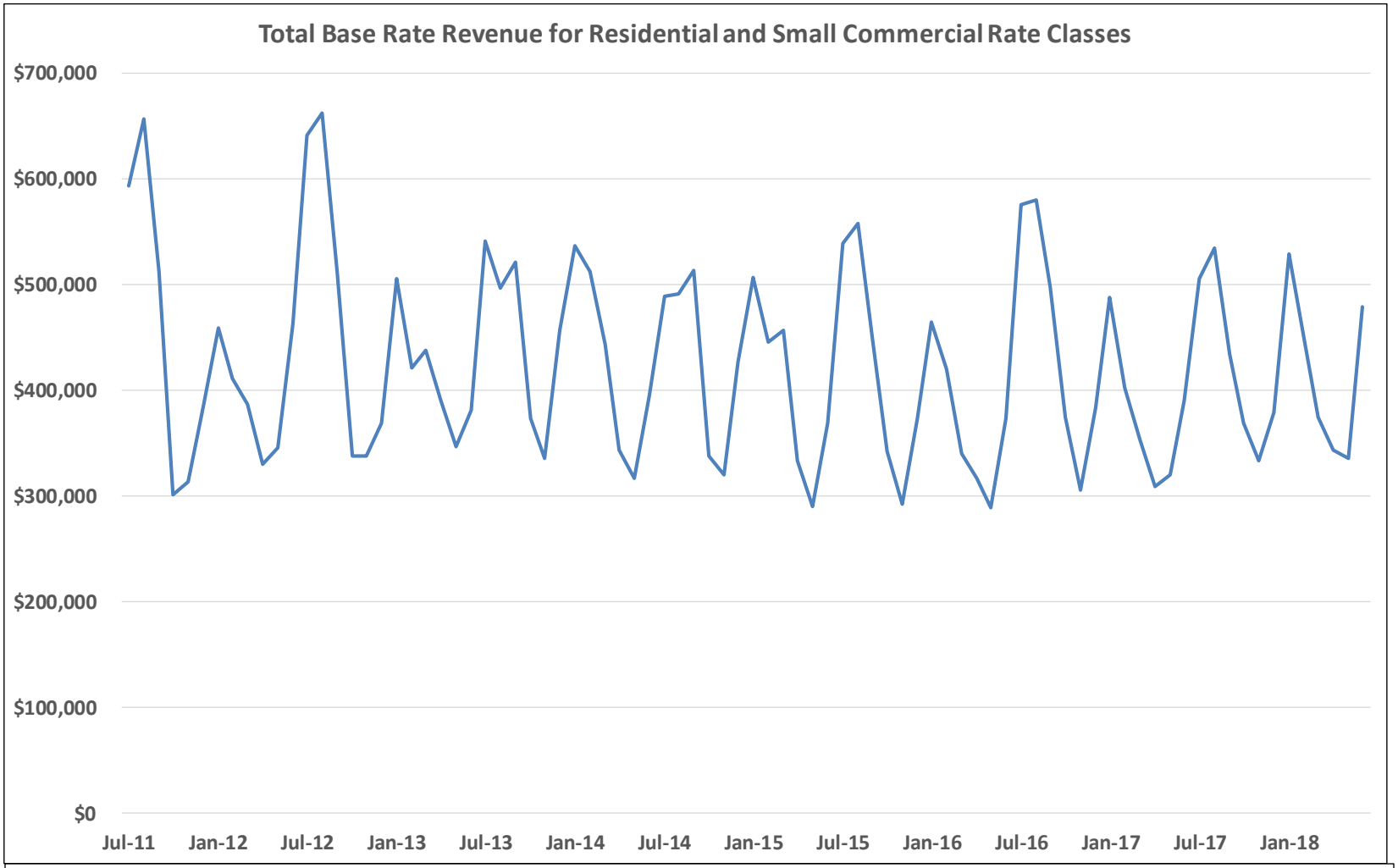
A. It depends on the time period analyzed. Empire notes "Residential General MWh sales have decreased by 5.8 percent since 2007 while the number of customers has decreased by 10.4 percent."[13]

However, if the last three to four years are considered, it is not clear that Empire has declining revenues, at least for the rate classes it has designated for the Decoupling Mechanism. Figure 1 below illustrates the monthly revenue collection for the five rate classes that Empire wishes to be part of the Decoupling Mechanism.

[12] Final Order, Docket No. 08-GIMX-441-GIV, November 17, 2008, ¶¶ 57-60 & 70.
[13] Timothy Lyons, Direct Testimony, Docket No. 19-EPDE-223-RTS, p. 46. Staff notes that if sales decreased 5.8 percent and the number of customers decreased 10.4 percent, then per customer sales actually increased during this period.

Figure 1 shows the decline in base rate revenue from July 2011 to July 2015, but base rate revenue seems to have stabilized after July 2015.

Figure 1



NOTE: The graph contains monthly base rate revenue for the five classes that are part of the Decoupling Mechanism: Residential General, Water Heating, and Space Heating, and Commercial Buildings and Commercial Space Heating.

Table 1 below contains the annual base rate revenue for the rate classes selected for the Decoupling Mechanism. As the graph above suggested, the table confirms the base rate stabilization that has taken place in the last few years.

Table 1

Total Annual Base Rate Revenue for the Decoupling Mechanism Rate Classes		
Year	**Total Base Rate Revenue**	**Percentage Change**
July 2011-June 2012	$5,794,944	
		0.11%
July 2012-June 2013	$5,801,171	
		-2.57%
July 2013-June 2014	$5,652,274	
		-4.94%
July 2014-June 2015	$5,373,268	
		-4.59%
July 2015-June 2016	$5,126,791	
		4.40%
July 2016-June 2017	$5,352,617	
		2.00%
July 2017-June 2018	$5,459,559	

NOTE: The table contains annual base rate revenue for the five classes that are part of the Decoupling Mechanism: Residential General, Water Heating, and Space Heating, and Commercial Buildings and Commercial Space Heating.

Q. Could better weather over the past few years account for the base rate revenue stabilization?

A. Better weather is a possible explanation for the stabilization. The best method for checking the possibility of favorable weather being the cause of the stabilization is to weather normalize the data. Although it is possible to directly weather normalize

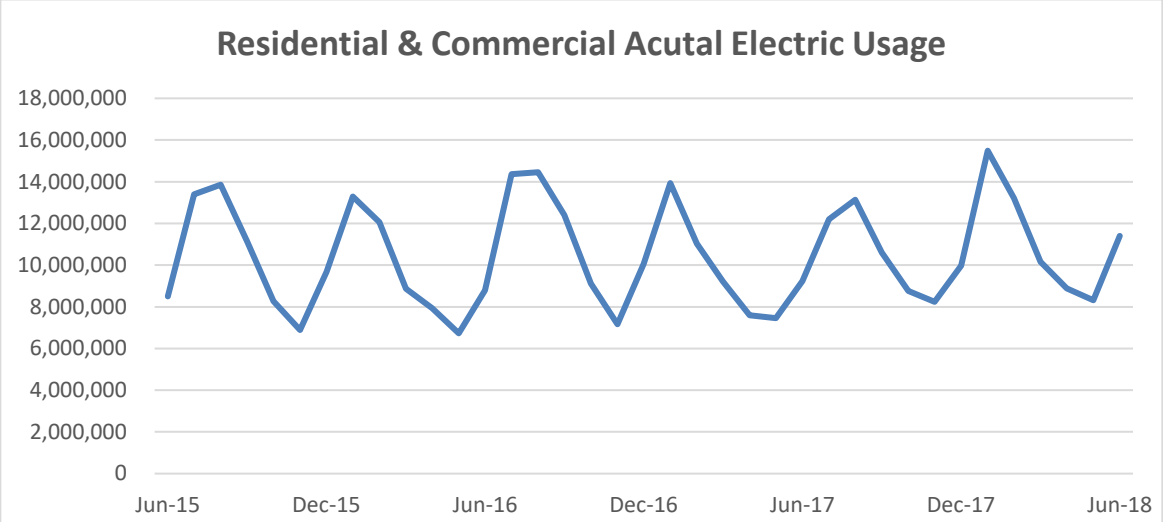
revenue, it is easier and more accurate to weather normalize electric usage, and as one would expect, the time path of base rate revenue follows the path of electric usage for the five rate classes selected for the Decoupling Mechanism. I used Staff's weather normalization method and applied it to all the available monthly billing determinant data—July 2011 to June 2018.[14]

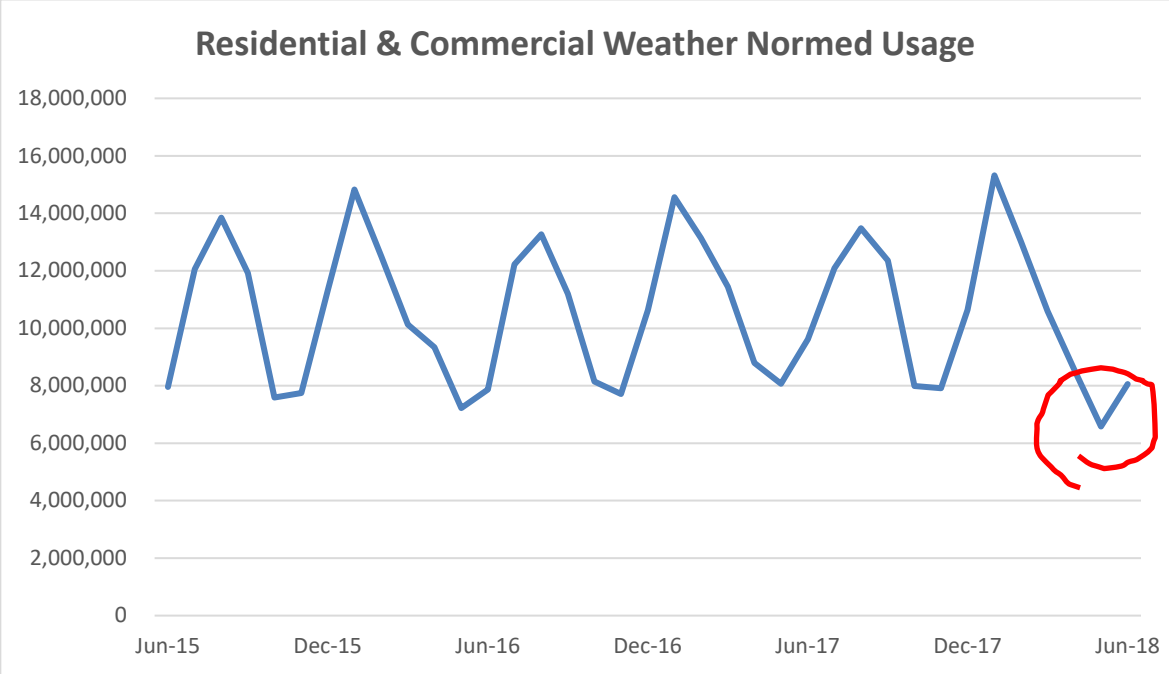
Figure 2 below has two stacked graphs representing the usage patterns of the five rate classes Empire selected for the Decoupling Mechanism for the period June 2015 through June 2018. This period was selected because it is during this period that the stabilization took place.

The top graph in Figure 2 has actual total electric usage and the bottom graph has weather normalized electric usage for the same period. By stacking the graphs, the reader can see the effect of weather normalization on the actual data. The top graph of actual electric usage shows the same pattern for the shortened period of June 2015 through June 2018 that Figure 1 shows for revenue collection. The weather normalized electric usage data in the bottom graph generally shows a stabilized pattern of usage but not the upward swing during the last two years that the raw data shows.[15]

[14] For an explanation of Staff's Weather Normalization Method see Darren Prince, Direct Testimony, Docket No. 19-EMPE-223-RTS.
[15]

Figure 2





NOTE: The graph contains monthly base rate revenue for the five classes that are part of the Decoupling Mechanism: Residential General, Water Heating, and Space Heating, and Commercial Buildings and Commercial Space Heating.

Q. Please explain why May 2018 in the bottom graph has an unexpected downward spike?

A. The downward spike is a result of the extreme weather in April and May 2018 coupled with the structure of our weather normalization equations. Additionally, May is historically the bottom of the first half of the year's electric usage cycle, which makes the spike more noticeable. A more detailed description of the causes of the spike are presented in an appendix to this testimony in Appendix RHG-1.

Q. Is there any other evidence the energy usage for the rate classes selected for the Decoupling Mechanism is more stable than it superficially appears?

A. Yes. Table 2 below compares the annual actual and weather normalized energy usage for the rates that would be part of the Decoupling Mechanism. The weather normalized annual energy use shows a slight decline in energy use by the rate classes selected for the Decoupling Mechanism, but the decline is not continuous or dramatic. Thus, the decline in energy usage appears to be more driven by weather than by actual decline in normal usage.

Table 2

Annual Energy Usage for the Rate Classes Selected for the Decoupling Mechanism				
Year	Actual Energy Use	Percentage Change	Weather Normed Energy Use	Percentage Change
July 2011-June 2012	132,702,030		129,231,856	
		2.08%		0.72%
July 2012-June 2013	135,460,917		130,166,777	
		0.93%		-0.82%
July 2013-June 2014	136,715,059		129,098,151	
		-5.92%		-1.28%
July 2014-June 2015	128,626,487		127,446,169	
		-6.00%		-0.85%
July 2015-June 2016	120,907,468		126,369,125	
		4.22%		1.92%
July 2016-June 2017	126,007,176		128,795,828	
		3.48%		-1.71%
July 2017-June 2018	130,394,077		126,591,770	

NOTE: The table contains annual base rate revenue for the five classes that are part of the Decoupling Mechanism: Residential General, Water Heating, and Space Heating, and Commercial Buildings and Commercial Space Heating.

Q. What is Staff's recommendation for Empire's proposed Decoupling Mechanism?

A. Staff recommends the Commission reject implementing Empire's proposed Decoupling Mechanism for two reasons. First, the Commission made clear in its 08-441 Final Order and in its orders since then it saw little reason for an electric utility to have a decoupling mechanism outside of energy efficiency programs. Second, given the slight nature of the decline in normal electricity usage since July

2011 for the rate classes Empire has selected for the Decoupling Mechanism, Staff believes Empire has not shown a need for the decoupling mechanism.

Rate Design

Foundations for Rate Design

Q. What are the foundations underlying most rate designs?

A. The foundations underlying most regulated utility rate designs are the billing determinants and the Class Cost of Service (CCOS).

Billing Determinants

Q. Please explain what billing determinants are and why they are important in a rate case.

A. Billing determinants consist of all the data needed to generate existing and proposed revenues. They include the number of customers, demand, and volumes used by rate block, along with the tariff rates. Billing determinants are essential to constructing a proof of revenue, which demonstrates that the company's revenue requirement can be recovered and provides a comparison of the revenue effect of existing rates and proposed rates.

Q. Are Staff's and Empire's Billing Determinants the same?

A. No. Staff's weather normalization adjustment is different than Empire's. Additionally, Staff incorporated a customer annualization adjustment, and Staff made other adjustments to Empire's filed customer electric usage. Staff Witness Darren Prince provides more details explaining why Staff's billing determinants differ from Empire's.

Class Cost of Service

Q. What is the purpose of a CCOS study?

A. Ultimately, a CCOS is a starting point and guide in rate design by estimating the cost to serve different rate classes. A CCOS study allocates to a utility's customers the costs incurred in providing electricity to those same customers. Since electric rates are set for classes of customers, the CCOS study allocates the cost of service to particular rate classes.

The CCOS study broadly informs the rate analyst how much it costs to serve each class. Thus, using a CCOS study as a starting point and guide for class allocation of the revenue requirement ensures the rate analyst is beginning the rate design process by employing the principle of cost causation. The link between cost causation and a CCOS study is the impetus for using a CCOS study for revenue allocation and rate design. However, CCOS studies do have limitations.

First, CCOS studies are an art; they are not a science. A substantial number of subjective judgments must go into the production of any CCOS study.

Second, because all CCOS studies are based on allocation mechanisms that are approximations of structural relationships, the CCOS studies must, themselves, be viewed as approximations.

Third, the approximations of the structural relationships are not based on statistical theory (for the most part) so determining a confidence interval using statistical techniques is not possible. Further, because of the size and complexity, only crude sensitivity analysis is possible. Therefore, it is difficult to get a handle on the accuracy of the approximation using sensitivity analysis. Thus, we are left

knowing that the cost allocation from a CCOS study is an approximation, but we cannot know precisely the numerical bounds of the approximation.

Fourth, a CCOS is a static snapshot of a dynamic process. Over time, the structural cost relationships have changed and are expected to change in the future. Thus, a rate analyst should be cautious when using a CCOS study to help determine class revenue allocations.

Allocation of the Revenue Requirement to Base Rates

Q. How large is the change in revenue requirement Staff is proposing in this docket?

A. Staff is proposing a $340,082 decrease in Empire's base revenue requirement.[16]

Q. How does Staff propose to allocate the decrease in revenue requirement among customer classes?

A. Table 3 below illustrates Staff's proposed revenue requirement allocation. The column labeled (e) has the allocated reduction for each class except the Transmission Class, which does not receive any reduction. Column (f) has the percent change in the class base rate revenue. Column (d) has the current class base rate revenue for each class.

Q. Why did Staff choose this allocation for the change in the revenue requirement?

A. Staff used the class rates of return in Column (b) and the relative class rates of return in Column (c) as a starting point and guide. The rates of return and relative

[16] However, if the proposed Transmission Delivery Charge is accepted, then total revenue collection will increase because all transmission costs will be pulled out of the base rate revenue requirement and instead will be paid for through a new Transmission Delivery Charge.

rates of return came from Staff's CCOS that is sponsored by Staff Witness Justin Prentiss.

Table 3

Rate Class	Class Rate of Return	Relative Rate of Return	Current Base Rate Revenue	Change in Revenue Requirement	Percent Change
(a)	(b)	(c)	(d)	(e)	(f)
RESIDENTIAL					
General	6.83%	0.91	$ 4,919,155	$ (54,523)	-1.1%
Water Heating	6.13%	0.82	$ 777,208	$ (6,728)	-0.9%
Space Heating	5.10%	0.68	$ 2,264,139	$ (13,794)	-0.6%
COMMERCIAL					
Buildings	13.81%	1.85	$ 1,843,780	$ (89,317)	-4.8%
Space Heating	9.83%	1.32	$ 226,288	$ (6,652)	-2.9%
OTHER					
General Power	12.52%	1.68	$ 2,930,254	$ (139,114)	-4.7%
Total Electric Building	9.76%	1.31	$ 664,158	$ (19,473)	-2.9%
Transmission	3.08%	0.41	$ 2,004,870	$ -	0.0%
Lighting	7.98%	1.07	$ 590,201	$ (10,480)	-1.8%
Municipal St Lighting			$ 170,772	$ (3,032)	-1.8%
Private Lighting			$ 400,389	$ (7,110)	-1.8%
Special Lighting			$ 18,532	$ (329)	-1.8%
TOTAL	7.47%	1.00	$ 16,220,052	$ (340,082)	-2.1%

Q. What do the class rates of return and the relative class rates of return signify?

A. The purpose of a CCOS is to allocate costs among classes so that rates can be constructed to reflect costs. The class rates of return and the relative class rates of return distill the class cost implications of the CCOS down to two numbers for each class.

The system-wide and the class rates of return are found by dividing net operating revenue by the rate base. The class rate of return summarizes the relationship between revenue generated by a class and the rate base allocated to that class. The system-wide rate of return can then be used as a guide to determine whether a class is generating as much revenue as it should relative to the amount of rate base allocated to it.

The comparison among classes is made easier by dividing the class rate of return for each class by the system-wide rate of return, which is shown at the bottom of Column (b). The result of the calculation is the relative rate of return and it is easily interpreted. If the relative rate of return is greater than one, then that particular class is generating more revenue than the system-wide average. If the relative rate of return is less than one, then that class is generating less revenue than the system-wide average. Thus, the relative rate of return provides a quick guide as to whether particular classes are providing too much revenue—the relative rate of return is greater than one—or too little revenue—the relative rate of return is less than one.

Q. How did Staff use the relative rates of return to allocate the increase in revenue requirement?

A. Since Staff is proposing a decrease in base rate revenue requirement, Staff did not want to give any rate class a rate increase. The relative rates of return indicate that the Transmission Class had the lowest relative rate of return of any class making it the worst performing class. As a result, it was not given a rate decrease—its rates remained the same. The next worse performing class was the Residential Space

Heating Class which was given the smallest percent decrease. Staff continued in this manner giving more of a rate decrease to the classes that performed better—the higher the relative rate of return, the greater the rate decrease. The Commercial Buildings Class received the greatest decrease, 4.8%, because it was the best performing class.

Q. Did Staff apply gradualism in its revenue requirement allocation?

A. Yes. Staff gave all classes a class revenue requirement decrease except for the worst performing class—The Power Transportation Class whose rates remained the same. But Staff did not give each class the same percentage decrease in revenue requirement. Instead, Staff gave slightly more of a decrease to the classes that performed better—their relative rate of return was higher. If Staff had strictly followed the CCOS, none of the Residential classes would have received a decrease in their respective class revenue requirement. For these reasons, Staff believes its revenue allocation adheres to the gradualism principle.

Rate Design for the Customer Classes

Q. What is the next step in rate design?

A. The next step is developing rates for the classes so that each class will recover its class revenue requirement. This step ensures that Empire will have the opportunity to recover its total revenue requirement.

Q. Did you follow any general principles when setting the rates for the different classes?

A. Yes. I followed two general guidelines. First, I increased the customer charge slightly for the rate classes that had a customer charge. Second, I put most of the

rate decrease in the first block for those rate classes that had multiple volumetric blocks.

Q. Since there was a rate decrease, why did you increase the customer charge?

A. Empire witness Timothy Lyons in his direct testimony established that most of Empire's costs are fixed costs.[17] This evidence was part of the misalignment argument made by Mr. Lyons for the Decoupling Mechanism. This argument has been made by other electric and natural gas utilities. And Staff does not dispute that utilities have a high level of fixed costs. The high percentage of fixed costs is one of the reasons utilities are natural monopolies. Thus, Staff is sympathetic to gradually raising customer charges even when rates are going down.

Q. Why did you put most of the rate decrease in the first block of multiple volumetric block rates?

A. Staff put most of the decrease in the first block for two reasons. First, Staff has for several years argued for minimizing or eliminating multiple block rates. Declining block rates are designed to encourage electric usage or to reflect the previous electric utility regime of electric utilities dispatching their own generation for their own customers. Since the Southwestern Power Pool's (SPP) Integrated Marketplace now dispatches over the whole SPP Region, it makes little sense to tie customer rates to a utility's generation pattern.

Second, Staff wants to make sure that all customers fully participate in the rate decrease rather than having the high energy usage customers getting the majority of the benefit of the rate decrease.

[17] Timothy Lyons, Direct Testimony, Docket No. 19-EPDE-223-RTS, especially pages 42 through 44.

Q. Did you provide a Proof of Revenue for all the rate classes with Staff's proposed rate design?

A. Yes. The Proof of Revenue is attached to this testimony as Exhibit RHG-2.

Rate Impact on Bills

Q. Did you investigate the change in Residential rates on Residential electric bills?

A. Yes. Table 4 has the rate impact on the Residential General Class and Table 5 has the rate impact on the Residential Space Heating Class. As indicated above, all of the Residential Classes received a base rate decrease. However, more than base rates go into calculating a customer's bill. Below the customer and energy charge in Tables 4 and 5 there is a section titled Riders. Notice that for the current rates, Ad Valorem Tax Surcharge (AVTS) and Asbury Environmental and Riverton Rider (AERR) have a positive value but for proposed rates these riders are zero because they have been incorporated into base rates. On the other hand, the Transmission Delivery Charge (TDC) is zero in the current rates but it is positive in the proposed rates. In addition, notice that the TDC is greater than the sum of the AVTS and AERR. Thus, even though base rates are declining, the overall bill for Residential customers will increase. The bill increase assumes the Commission will accept Empire's proposed TDC that Staff is also supporting.

But the bill increase is relatively small. In particular, the bill impacts for both Residential General and Residential Space Heating ranges from a 0.77% increase to a 2.55% increase.

Table 4

Residential General						
Elecric Usage in kWh		600	1000	2000	3000	4000
Current Rates						
Customer Charge	$ 14.00	$ 14.00	$ 14.00	$ 14.00	$ 14.00	$ 14.00
Energy Charge						
First 600 kWh	$ 0.06858	$ 41.15	$ 41.15	$ 41.15	$ 41.15	$ 41.15
All Additional kWh	$ 0.06112	$ -	$ 24.45	$ 85.57	$ 146.69	$ 207.81
Riders						
AVTS	$ 0.00221	$ 1.33	$ 2.21	$ 4.42	$ 6.63	$ 8.84
AERR	$ 0.00798	$ 4.79	$ 7.98	$ 15.96	$ 23.94	$ 31.92
TDC	$ -	$ -	$ -	$ -	$ -	$ -
ECA	$ 0.03038	$ 18.23	$ 30.38	$ 60.76	$ 91.14	$ 121.52
Staff's Proposed New Rates						
Customer Charge	$ 14.25	$ 14.25	$ 14.25	$ 14.25	$ 14.25	$ 14.25
Energy Charge						
First 600 kWh	$ 0.06618	$ 39.71	$ 39.71	$ 39.71	$ 39.71	$ 39.71
All Additional kWh	$ 0.06112	$ -	$ 24.45	$ 85.57	$ 146.69	$ 207.81
Riders						
AVTS	$ -	$ -	$ -	$ -	$ -	$ -
AERR	$ -	$ -	$ -	$ -	$ -	$ -
TDC	$ 0.01320	$ 7.92	$ 13.20	$ 26.40	$ 39.60	$ 52.80
ECA	$ 0.03038	$ 18.23	$ 30.38	$ 60.76	$ 91.14	$ 121.52
Bill Impacts of Current and Proposed Rates						
Current Rates		$ 79.49	$ 120.17	$ 221.86	$ 323.55	$ 425.24
Proposed Rates		$ 80.11	$ 121.99	$ 226.69	$ 331.39	$ 436.09
Percentage Increase		0.77%	1.51%	2.18%	2.42%	2.55%

NOTE: AVTS = Ad Valorem Tax Surcharge, AERR = Asbury Environmental and Riverton Rider, TDC = Transmission Delivery Charge, and ECA = Energy Cost Adjustment

Table 5

Residential Space Heating						
Elecric Usage in kWh		600	1000	2000	3000	4000
Current Rates						
Customer Charge	$ 14.00	$ 14.00	$ 14.00	$ 14.00	$ 14.00	$ 14.00
Energy Charge						
1st block - 1000 kWh	$ 0.05723	$ 34.34	$ 57.23	$ 114.46	$ 171.69	$ 228.92
Riders						
AVTS	$ 0.00221	$ 1.33	$ 2.21	$ 4.42	$ 6.63	$ 8.84
AERR	$ 0.00798	$ 4.79	$ 7.98	$ 15.96	$ 23.94	$ 31.92
TDC	$ -	$ -	$ -	$ -	$ -	$ -
ECA	$ 0.03038	$ 18.23	$ 30.38	$ 60.76	$ 91.14	$ 121.52
Staff's Proposed New Rates						
Customer Charge	$ 14.25	$ 14.25	$ 14.25	$ 14.25	$ 14.25	$ 14.25
Energy Charge						
1st block - 1000 kWh	$ 0.05666	$ 34.00	$ 56.66	$ 113.32	$ 169.98	$ 226.64
Riders						
AVTS	$ -	$ -	$ -	$ -	$ -	$ -
AERR	$ -	$ -	$ -	$ -	$ -	$ -
TDC	$ 0.01293	$ 7.76	$ 12.93	$ 25.86	$ 38.79	$ 51.72
ECA	$ 0.03038	$ 18.23	$ 30.38	$ 60.76	$ 91.14	$ 121.52
Bill Impacts of Current and Proposed Rates						
Current Rates		$ 72.68	$ 111.80	$ 209.60	$ 307.40	$ 405.20
Proposed Rates		$ 74.23	$ 114.22	$ 214.19	$ 314.16	$ 414.13
Percentage Decrease		2.14%	2.16%	2.19%	2.20%	2.20%

NOTE: AVTS = Ad Valorem Tax Surcharge, AERR = Asbury Environmental and Riverton Rider, TDC = Transmission Delivery Charge, and ECA = Energy Cost Adjustment

Balancing Test

Q. Are you aware of the balancing test set forth by the Kansas Supreme Court for determining whether rates are "just and reasonable?"

A. Yes, the Kansas Supreme Court has stated:

> The leading cases in this area clearly indicate that the goal should be a rate fixed within the 'zone of reasonableness' after the application of a balancing test in which the interests of all concerned parties are considered. In rate-making cases, the

> parties whose interests must be considered and balanced are these: (1) The utility's investors vs. the ratepayers; (2) the present ratepayers vs. the future ratepayers; and (3) the public interest.[18]

Q. Have you performed the requisite balancing test?

A. Yes. As explained below, I performed the requisite balancing test, as it pertains to Staff's proposed rate design.

Investors vs. Ratepayers

Ratepayers benefit from the utilities' continuous, reliable operation. Moreover, the proposed rate design provides an opportunity for the utility to recover revenues necessary to cover its costs. Thus, both ratepayers and investors are helped by the recovery of the revenue requirement, which means this balancing test is met.

Present vs. Future Ratepayers

This balancing factor is commonly referred to as an intergenerational conflict between ratepayers. If one set of ratepayers is paying for costs that do not adequately represent the service received by those ratepayers, then an intergenerational subsidy can occur. A good example of an intergenerational subsidy is the situation regarding the benefits that the first generation of social security recipients received relative to the payments they made into the system. In the electric utility industry, an example would be if the costs of decommissioning a power plant were back-loaded onto future generations. Staff is unaware of any major intergenerational equity issues in this rate case.

[18] *Kan. Gas and Electric Co. v. State Corp Comm'n*. 239 Kan. 483, 488 (1986).

The Public Interest

The public interest is served when the utility remains a healthy, viable business, able to provide reliable service. The proposed rate design provides an opportunity for the utility to recover revenues necessary to cover its costs and fund its ongoing operations. Furthermore, Staff's proposed rate plan is in the best interest of the public because ratepayers are protected from unrealistic price increases, undue discrimination, and unreliable service.

Income Tax Credits

Q. Why are customers being given income tax credits?

A. In December 2017, the Tax Cuts and Jobs Act (TCJA) was passed by Congress. On December 22, 2017 the President signed the legislation into law. The important section of the TCJA for investor owned utilities is the reduction in the corporate tax rate from 35% to 21%. In anticipation of the President signing the legislation, Staff filed a Motion to Open a General Investigation and Issue Accounting Authority Order Regarding Federal Tax Reform on December 14, 2017. The motion initiated Docket No. 18-GIMX-248-GIV (Docket 18-248), which investigated the effect of the change in corporate tax rates on Kansas utilities.

Staff Witness Justin Grady explains the calculation of the amount of bill credits in his direct testimony. I will describe Staff's allocation of the bill credits back to customers.

Q. How were the income tax credits allocated to the customer classes?

Staff allocated the income tax credits to customer classes based on each class's total base rate revenue from Staff's proof of revenue based on Staff's proposed rate

design and Staff's proposed revenue requirement. These allocations are shown in Table 4 below.

Table 6

Rate Class	Proposed Base Rate Revenue	Allocation of Income Tax Credits	Percent Change
(a)	(g)	(e)	(f)
RESIDENTIAL			
General	$ 4,864,631	$ 641,935	13.2%
Water Heating	$ 770,480	$ 101,672	13.2%
Space Heating	$ 2,250,345	$ 296,955	13.2%
COMMERCIAL			
Buildings	$ 1,754,462	$ 231,518	13.2%
Space Heating	$ 219,636	$ 28,983	13.2%
OTHER			
General Power	$ 2,791,140	$ 368,318	13.2%
Total Electric Building	$ 644,684	$ 85,072	13.2%
Transmission	$ 2,004,870	$ 264,562	13.2%
Lighting	$ 579,721	$ 76,500	13.2%
Municipal St Lighting	$ 167,739	$ 22,135	13.2%
Private Lighting	$ 393,279	$ 51,897	13.2%
Special Lighting	$ 18,203	$ 2,402	13.2%
TOTAL	$ 15,879,970	$ 2,095,516	13.2%

Q. Why did Staff allocate the income tax bill credits based on class revenues from the proof of revenue?

A. Class revenue represents each class's contribution to Empire's total revenue. The corporate income tax is a tax on profits, although revenue is not a perfect proxy for profit, in the case of a regulated utility it is a close proxy. By using Staff's proposed

revenue allocation from the proof of revenue, the income tax credits are reflective of Staff's new proposed rate design.

Q. How did Staff allocate the bill credits within the rate classes?

A. For the rate classes with customer counts, Staff allocated the class bill credits to individuals by taking the class' total bill credits and dividing that by the number of customers in the class. Thus, each customer in a particular class will receive the same bill credit. Below in Table 7 is the allocation of bill credits to individuals for the rate classes with customer counts.

Table 7

Rate Class	Number of Customers	Income Tax Credits	Per Customer Bill Credit
(a)	(b)	(c)	(d)
RESIDENTIAL			
General	5,553	$ 641,935	$ 116
Water Heating	753	$ 101,672	$ 135
Space Heating	1,874	$ 296,955	$ 158
COMMERCIAL			
Buildings	1,183	$ 231,518	$ 196
Space Heating	110	$ 28,983	$ 263
OTHER			
General Power	107	$ 368,318	$ 3,442
Total Electric Building	40	$ 85,072	$ 2,127

Q. How do propose to allocate the income tax credits to the classes without customer counts?

A. The two rate classes without customer counts are Transmission and Lighting. I will discuss Transmission first.

Transmission does have the total energy usage for the test year. I took the total income tax credits allocated to Transmission and divided it by the total kWhs for the test year. The result is a dollar per kWh for the test year. Thus, customers should receive the value of their energy usage multiplied by the dollar per kWh. Table 8 below has the calculation of the dollar per kWh value.

Table 8

Rate Class	Energy Usage (kWh)	Income Tax Credits	Per kWh Bill Credit
Power Transmission	48,142,857	$ 264,562	$ 0.00550

Q. How do propose to allocate the income tax credits to the Lighting rate class?

A. The Lighting rate class has three components: Municipal Street Lighting, Private Lighting, and Special Lighting. The Special Lighting sub-class has test year energy usage, which allows the same type of calculation as was done above for the Transmission class. Table 9 below has the per kWh calculation for the Special Lighting sub-class bill credit.

Table 9

Rate Class	Energy Usage (kWh)	Income Tax Credits	Per kWh Bill Credit
Special Lighting	154,007	$ 18,203	$ 0.11820

The Municipal Street Lighting and the Private Lighting sub-classes have test year bills. Staff took the total number of monthly bills and divided that into the

total income tax credits for each sub-class. The calculation is shown in Table 10 below.[19]

Table 10

Rate Class	Number of Bills	Income Tax Credits	Per Bill Bill Credit
(a)	(b)	(c)	(d)
LIGHTING			
Municipal St Lighting	1,832	$ 167,739	$ 91.56
Private Lighting	1,963	$ 393,279	$ 200.35
TOTAL		561,019	

IV. CONCLUSION

Q. What are the conclusions of your analysis?

A. I recommend rejection of the Rate Stabilization Rider because it conflicts with previous Commission decoupling policy and because Empire's revenue collection appears to have stabilized in the past few years indicating a decoupling mechanism is not needed at this time.

I recommend the acceptance of Staff's proposed revenue allocation and class rate design because it is a gradual movement toward equalizing class rates of return.

Finally, I recommend the acceptance of Staff's proposed allocation of the income tax credits.

[19] In the Lighting Proof of Revenue provided by Empire, the bills for the Municipal Street Lighting sub-class were on an annual basis while the bills for the Private Lighting are on a monthly basis. Since the bill credit is a onetime payment, the Private Lighting number of bill was divided by 12 so that both Municipal Street Lighting and Private Lighting bill counts are on an annual basis.

Q. Does this conclude your testimony?

A. Yes. Thank you.

EXHIBIT RHG – 1

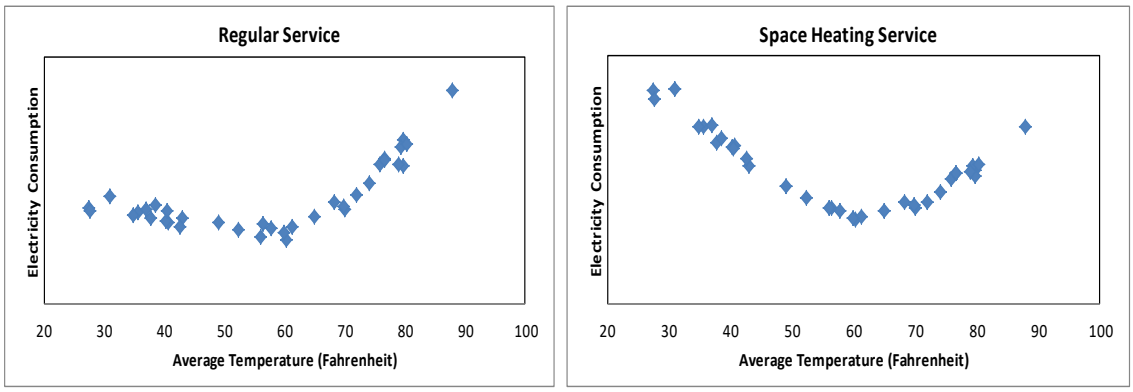
19-EPDE-223-RTS

APPENDIX

APPENDIX: MAY 2018 DOWNWARD SPIKE IN WEATHER NORMED USAGE

Brief Explanation of Staff's Weather Normalization

The spike is a result of both the structure of our weather normalization equations and extreme weather in April and May 2018. However, before I can explain how weather normalization and extreme weather created the May 2018 downward spike, I need to describe the weather variables used in weather normalization.[1] As it turns out, even though temperature is the major factor in heating and cooling decisions, temperature is not a good variable for a regression equation. Figure 3 below illustrates the problem with data from Residential regular service customers and Residential space heating service customers.



Notice that as temperature increases above 65 degrees and decreases below 65 degrees electric usage increases. Thus, just a single temperature variable cannot account for both effects of temperature changes on electric use. The simplest solution has been to develop separate variables for electric cooling demand and electric heating demand. The result has been Heating Degree Days (HDDs) to cover the colder weather and Cooling Degree Days (CDDs) to cover the warmer weather. Equations (1) and (2) below illustrate how these variables cover the two different demands for electricity.

$$(1)\quad HDD = \left(65 - \frac{Max + Min}{2}\right) if\ \frac{Max + Min}{2} < 65, Otherwise\ HDD = 0$$

$$(2)\quad CDD = \left(\frac{Max + Min}{2} - 65\right) if\ \frac{Max + Min}{2} > 65, Otherwise\ CDD = 0$$

Both HDDs and CDDs are the average of the daily maximum temperature and minimum temperature. For HDDs, the average is subtracted from 65 to estimate the daily heating demand for electricity while for CDDs 65 is subtracted from the average to estimate the daily cooling demand. The choice of 65 degrees as the baseline is somewhat arbitrary but the two graphs in

[1] For a fuller explanation of weather normalization and Staff's method see Darren Prince, Direct Testimony, Docket No. 19-EPDE-223-RTS.

Figure 3 indicate that at least in that case 65 is good estimate of minimum heating and cooling demand. Finally, to get a monthly value the daily HDDs are added together as are the daily CDDs. Now the explanation of how the weather normalization equations and the extreme weather caused the downward spike.

The May 2018 Downward Spike in Weather Normalized Usage

Weather Normalization Equations: The weather normalization equations for each of the five rate classes selected for the Decoupling Mechanism have four weather variables: current month heating degree days and cooling degree days and one month lagged for each variable. The current and lagged variables capture the billing cycle which is usually spread over two months. Rather than arbitrarily assign weights to each month, Staff's method allows the data to weight the relative importance of the current and lagged month's weather variables.

Extreme Weather: April 2018 was colder than usual and May 2018 was warmer than usual. To see how extreme April and May 2018 were, April's HDD was 433.5 while the 30-year April average HDD was 279.0, and May's CDD was 263.5 while the 30-year May average CDD was 99.1. April 2018 had 55% more HDDs than on average and May 2018 had 1.66% more CDDs than on average.

With these temperature difference from the average, the expectation is that Residential customers without space heating would have much higher electric usage and Residential customer with space heating would have even more because of the lagged effect of the heating demand in April 2018. Table 2 below illustrates that the expectation was correct.

The Effect of Weather Normalization and Extreme Weather on the Weather Normalization of May 2018				
Rate Class	**Actual Energy Use**	**Weather Normed Energy Use**	**Difference**	**Percentage Difference**
RESIDENTIAL				
General	3,916,243	3,012,284	903,959	23.1%
Water Heating	695,303	557,468	137,835	19.8%
Space Heating	2,102,807	1,571,477	531,330	25.3%
Total	6,714,353	5,141,229	1,573,124	23.4%
COMMERCIAL				
Buildings	1,337,589	1,209,171	128,418	9.6%
Space Heating	270,808	230,132	40,676	15.0%
Total	1,608,397	1,439,303	169,094	10.5%
COMBINED TOTAL	8,322,750	6,580,532	1,742,218	23.1%

NOTE: The table contains May 2018 energy usage in kWhs for the five classes that are part of the Decoupling Mechanism: Residential General, Water Heating, and Space Heating, and Commercial Buildings and Space Heating.

Space heating customers, both Residential and Commercial, had larger differences between actual energy use and weather normed energy use. One additional factor making the weather normalization estimate look more extreme is the fact that May is historically the bottom of the first half of the year's electric usage cycle. Thus the extreme adjustment at the typical bottom of the cycle creates a situation where the adjustment attracts attention.

EXHIBIT RHG – 2

19-EPDE-223-RTS

Proof of Revenue

Residential

Tariff	Billing Determinants	Existing Rates	Current Base Rate Revenue	Proposed Rates	Proposed Base Rate Revenue
(a) (b)	(c)	(d)	(e)	(f)	(g)
RG-Residential					
Annual Number of Bills	66,638	$ 14.00	$ 932,932	$ 14.25	$ 949,592
Usage (kWh Sales)					
First 600 kWh	29,659,525	$ 0.06858	$ 2,034,050	$ 0.06618	$ 1,962,867
All Additional kWh	31,939,995	$ 0.06112	$ 1,952,172	$ 0.06112	$ 1,952,172
Total Base Rate Revenue			$ 4,919,155		$ 4,864,631
RG-Residential Water Heat					
Annual Number of Bills	9,037	$ 14.00	$ 126,518	$ 14.25	$ 128,777
Usage (kWh Sales)					
First 600 kWh	4,561,857	$ 0.06309	$ 287,808	$ 0.06112	$ 278,821
All Additional kWh	5,937,212	$ 0.06112	$ 362,882	$ 0.06112	$ 362,882
Total Base Rate Revenue			$ 777,208		$ 770,480
RH-Residential Total Electric					
Annual Number of Bills	22,485	$ 14.00	$ 314,790	$ 14.25	$ 320,411
Usage (kWh Sales)	34,061,661	$ 0.05723	$ 1,949,349	$ 0.05666	$ 1,929,934
Total Base Rate Revenue			$ 2,264,139		$ 2,250,345

Commercial

Tariff		Billing Determinants		Existing Rates		Current Base Rate Revenue		Proposed Rates		Proposed Base Rate Revenue
(a)	(b)	(c)		(d)		(e)		(f)		(g)
CB-Commercial										
	Annual Number of Bills	14,197	$	19.00	$	269,743	$	20.00	$	283,940
	Usage (kWh Sales)									
	First 700 kWh	5,223,091	$	0.09284	$	484,912	$	0.08198	$	428,189
	All Additional kWh	13,180,745	$	0.08263	$	1,089,125	$	0.07908	$	1,042,333
	Total Base Rate Revenue				$	1,843,780			$	1,754,462
SH-Small Heating										
	Annual Number of Bills	1,317	$	19.00	$	25,023	$	20.00	$	26,340
	Usage (kWh Sales)									
	First 1,000 kWh	893,440	$	0.07891	$	70,501	$	0.06999	$	62,532
	All Additional kWh	1,877,985	$	0.06963	$	130,764	$	0.06963	$	130,764
	Total Base Rate Revenue				$	226,288			$	219,636

Commercial/Industrial

Tariff	Billing Determinants	Existing Rates	Current Base Rate Revenue	Proposed Rates	Proposed Base Rate Revenue
(a) (b)	(c)	(d)	(e)	(f)	(g)
GP-General Power				N/A	N/A
Annual Number of Bills	1,282				
All KWh Usage	38,603,218	$ 0.03400	$ 1,312,509	$ 0.03111	$ 1,200,946
Minimum Adjustment (Demand >= 40kW)			$ 64,473		$ 64,473
First 40kW Demand	47,443	$ 13.02	$ 617,706	$ 12.80	$ 607,269
Next 460kW Demand	86,066	$ 10.39	$ 894,227	$ 10.20	$ 877,875
All Additional Demand	5,072	$ 8.15	$ 41,338	$ 8.00	$ 40,577
Total Base Rate Revenue			$ 2,930,254		$ 2,791,140
TEB-Total Electric Building					
Annual Number of Bills	481	$ 30.46	$ 14,651	$ 32.00	$ 15,392
Usage (kWh Sales)					
First 150 kWh					
Next 9,850 kWh	3,565,111	$ 0.08460	$ 301,608	$ 0.07893	$ 281,394
Above 10,000 kWh	5,861,801	$ 0.05935	$ 347,898	$ 0.05935	$ 347,898
Total Base Rate Revenue			$ 664,158		$ 644,684

Transmission and Lighting

Tariff		Billing Determinants	Existing Rates	Current Base Rate Revenue	Proposed Rates	Proposed Base Rate Revenue
(a)	(b)	(c)	(d)	(e)	(f)	(g)
PT-Transmission						
	All kWh	48,142,857	$ 0.02083	$ 1,002,816	$ 0.02083	$ 1,002,816
	Minimum Demand Char	60	$ 11,858.75	$ 711,525	$ 11,858.75	$ 711,525
	First 1,000kW Demand					
	All Additional kW Demand	51,788	$ 5.61	$ 290,529	$ 5.61	$ 290,529
	Total Base Rate Revenue			$ 2,004,870		$ 2,004,870
Lighting						
	Municipal St Lighting			$ 170,772		$ 167,739
	Private Lighting			$ 400,389		$ 393,279
	Special Lighting			$ 18,532		$ 18,203
				$ 590,201		$ 579,721

Municipal Street Lighting

Tariff		Billing Determinants		Existing Rates		Current Base Rate Revenue		Proposed Rates		Proposed Base Rate Revenue
(a)	(b)	(c)		(d)		(e)		(f)		(g)
SPL-Municipal St Lighting										
	Mercury Vapor Lamp Sizes									
	7,000 Lumen Mercury	860	$	140.74	$	121,036	$	138.24	$	118,887
	11,000 Lumen Mercury	88	$	164.58	$	14,483	$	161.66	$	14,226
	20,000 Lumen Mercury	88	$	234.29	$	20,618	$	230.13	$	20,251
	53,000 Lumen Mercury	0	$	381.58	$	-				
	HP Sodium Vapor Lamp Sizes									
	6,000 Lumen HP Sodium	26	$	133.00	$	3,458	$	130.64	$	3,397
	16,000 Lumen HP Sodiur	683	$	167.53	$	114,423	$	164.56	$	112,391
	27,500 Lumen HP Sodium	66	$	207.95	$	13,725	$	204.26	$	13,481
	50,000 Lumen HP Sodium	19	$	305.76	$	5,809	$	300.33	$	5,706
	130,000 Lumen HP Sodium	2	$	477.89	$	956	$	469.40	$	939
	Excess Facility				$	96,903			$	95,183
	50% Discount				$	(195,467)			$	(191,996)
	Annual Revenue Discount				$	(25,173)			$	(24,726)
	Total Base Rate Revenue				$	170,772			$	167,739

Private Lighting

Tariff		Billing Determinants		Existing Rates	Current Base Rate Revenue		Proposed Rates		Proposed Base Rate Revenue
(a)	(b)	(c)		(d)	(e)		(f)		(g)
PL-Private Lighting									
Installation Charge: Standard									
Mercury Vapor Lamp Sizes									
6,800 Lumen Std Mercury		4,974	$	12.94	$64,364	$	12.71	$	63,221
20,000 Lumen Std Mercury		276	$	19.76	$5,454	$	19.41	$	5,357
54,000 Lumen Std Mercury		0	$	35.79	$0				
Sodium Vapor Lamp Sizes									
6,000 Lumen Std Sodium		10,469	$	12.15	$127,198	$	11.93	$	124,940
16,000 Lumen Std Sodium		5,794	$	17.42	$100,931	$	17.11	$	99,139
50,000 Lumen Std Sodium		291	$	26.77	$7,790	$	26.29	$	7,652
Metal Halide Lamp Sizes									
12,000 Lumen Std MetalH		0	$	36.31	$0	$	35.67	$	-
20,500 Lumen Std MetalH		60	$	26.25	$1,575	$	25.78	$	1,547
36,000 Lumen Std MetalH		192	$	28.33	$5,439	$	27.83	$	5,343

Private Lighting (Continued)

Tariff	Billing Determinants	Existing Rates	Current Base Rate Revenue	Proposed Rates	Proposed Base Rate Revenue
(a) (b)	(c)	(d)	(e)	(f)	(g)
PL-Private Lighting					
Installation Charge: Flood					
Mercury Vapor Lamp Sizes					
20,000 Lumen Mercury FL	12	$ 29.84	$358	$ 29.31	$ 352
54,000 Lumen Mercury FL	12	$ 45.87	$550	$ 45.06	$ 541
Sodium Vapor Lamp Sizes					
27,500 Lumen Sodium FL	132	$ 29.47	$3,890	$ 28.95	$ 3,821
50,000 Lumen Sodium FL	547	$ 39.52	$21,617	$ 38.82	$ 21,234
140,000 Lumen Sodium FL	348	$ 55.22	$19,217	$ 54.24	$ 18,875
Metal Halide Lamp Sizes					
12,000 Lumen MetalH FL	0	$ 53.36	$0	$ 52.41	$ -
36,000 Lumen MetalH FL	160	$ 39.67	$6,347	$ 38.97	$ 6,234
110,000 Lumen MetalH FL	288	$ 54.16	$15,598	$ 53.20	$ 15,321
Additional Charges					
Conductor	525,650	$ 0.01964	$10,324	$ 0.01929	$ 10,140
Pole	5,379	$ 1.79	$9,628	$ 1.76	$ 9,457
Anchor	60	$ 1.79	$107	$ 1.76	$ 105
			$ 400,389		$ 393,279

Special Lighting

Tariff		Billing Determinants		Existing Rates		Current Base Rate Revenue		Proposed Rates		Proposed Base Rate Revenue
(a)	(b)	(c)		(d)		(e)		(f)		(g)
LS-Special Lighting										
	First 1,000 kWh	78,091	$	0.13080	$	10,214	$	0.12848	$	10,033
	All Additional	75,916	$	0.09600	$	7,288	$	0.09430	$	7,159
	Minimum Adjustment				$	1,477	$	-	$	1,451
	Church & School				$	(447)	$	-	$	(439)
					$	18,532			$	18,203

STATE OF KANSAS)
) ss.
COUNTY OF SHAWNEE)

VERIFICATION

Robert H. Glass, Ph.D., being duly sworn upon his oath deposes and states that he is the Chief of Economic Policy and Planning for the Utilities Division of the Kansas Corporation Commission of the State of Kansas, that he has read and is familiar with the foregoing *Direct Testimony,* and attests that the statements contained therein are true and correct to the best of his knowledge, information and belief.

Robert H. Glass

Robert H. Glass, Ph.D.
Chief of Economic Policy and Planning
State Corporation Commission of the
State of Kansas

Subscribed and sworn to before me this 13th day of May, 2019.

VICKI D. JACOBSEN
Notary Public - State of Kansas
My Appt. Expires 6-30-22

Vicki D. Jacobsen

Notary Public

My Appointment Expires: 6-30-22

CERTIFICATE OF SERVICE

19-EPDE-223-RTS

I, the undersigned, certify that a true and correct copy of the above and foregoing Direct Testimony was served via electronic service this 13th day of May, 2019, to the following:

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