

**In the Matter of the Application of            )**  
**Kansas Gas Service, A Division of            )**  
**ONE Gas, Inc. for Adjustment of its        ) Docket No. 18-KCPE-560-RTS**  
**Natural Gas Rates in the State of         )**  
**Kansas.    )**

**DIRECT TESTIMONY**

**PREPARED BY**

**ROBERT H. GLASS**

**UTILITIES DIVISION**

**KANSAS CORPORATION COMMISSION**

**October 29, 2018**

**I. STATEMENT OF QUALIFICATIONS**

**Q. What is your name and business address?**

A. Robert H. Glass, Kansas Corporation Commission (Commission), 1500 S.W. Arrowhead Road, Topeka, Kansas, 66604-4027.

**Q. What is your position at the Commission?**

A. I am employed as Chief of the Economics and Rates Section within the Utilities Division.

**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 testified before the 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 sponsor Staff's position on four basic proposals presented by Kansas Gas Service, a Division of ONEOK, Inc. (KGS or Company) in its rate case Application. The four KGS proposals are: (1) the Revenue Normalization Adjustment (RNA) which is a revenue per customer decoupling

1 mechanism; (2) the proposed rate design; (3) the proposed allocation of the tax  
2 reform credits; and (4) the proposed 10-year weather normals for weather  
3 normalization.

4 **Q. What are your major recommendations?**

5 **A.** Staff recommends: (1) the Commission reject the proposed RNA mechanism and  
6 instead approve Staff's proposed total revenue requirement decoupling mechanism;  
7 (2) the Commission reject KGS's proposed rate design and instead approve Staff's  
8 proposed rate design; (3) approve Staff's proposed allocation of the tax reform  
9 credits; and (4) reject KGS's proposed use of 10-year weather normals and instead  
10 approve Staff's proposed 30-year weather normals for weather normalization.

11 **Q. How is your testimony organized?**

12 **A.** First, I will discuss decoupling mechanisms beginning with KGS's proposed RNA  
13 mechanism and then move on to Staff's proposed decoupling mechanism. Second,  
14 I will discuss rate design. I will begin by describing the background information  
15 needed to perform rate design, then discuss KGS's and Staff's proposed revenue  
16 allocation among rate classes, and finish up with a discussion of KGS's and Staff's  
17 proposed rate design. Third, I will explain Staff's proposed rate class allocation of  
18 the tax reform credits. Fourth, I will explain the impacts of KGS's proposed 10-  
19 year weather normals and Staff's 30-year weather normals on weather  
20 normalization. Fifth, I will end by reviewing the conclusion of my analysis and the  
21 recommendations that stem from my analysis.

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23



1   **Q.    How does the decline in Residential per customer usage adversely impact**  
2   **KGS's ability to recover its revenue requirement?**

3    A.    Two factors combine to create the adverse impact of the decline in Residential per  
4           customer usage. First, more than 99% of KGS's Residential revenue requirement  
5           is fixed cost.<sup>4</sup> Second, current Residential rates recover 44.2% of revenue from the  
6           volumetric rate. Declining usage translates into declining revenue. But fixed costs  
7           do not decline with declining usage. Thus, KGS confronts a disparity between  
8           declining revenue and nearly constant cost that impedes recovering its approved  
9           revenue requirement.<sup>5</sup>

10   **Q.    What is Staff's response to KGS's struggle to recover its approved revenue**  
11   **requirement?**

12   A.    Staff agrees with KGS's explanation of its problem. In fact, Staff in testimony and  
13           the Commission in an order have described the difficulty that declining per  
14           customer average revenue has created for natural gas utilities. And Ms. Buchanan  
15           quoted some of these comments in her testimony.

16   **Q.    Why is Staff opposed to the proposed RNA?**

17   A.    Staff rejects the proposed RNA because the mechanism can potentially recover  
18           more than the approved revenue requirement. The cause of the potential over-  
19           recovery is that KGS has been consistently adding customers, especially to its  
20           Residential Class, even as the Residential Customer's average usage has been  
21           declining.

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<sup>4</sup> Staff estimates customer and demand costs as 99.43% of total revenue requirement while Raab estimates 99.46%

<sup>5</sup> *Ibid.*, p. 13. Especially see Figure 4.

1   **Q.    Can you illustrate how KGS could over-recover with the RNA?**

2           Yes. Table 1 below illustrates the potential for the proposed RNA to over-recover

3           the revenue requirement. Staff estimated customer growth for the six rate classes

4           the proposed RNA would cover. The top part of Table 1 demonstrates the potential

5           effect of customer growth on RNA collections for 2019 through 2021. Columns

6           (1), (3), and (5) displays the impact of estimated customer growth on revenue from

7           the service (fixed) charge using the current service charge. Columns (2), (4), and

8           (6) displays the impact of customer growth on revenue from the volumetric charge

9           using the current volumetric charge. The last row of the top part of the figure shows

10          the total impact on KGS revenue each year. Column (7) shows the total impact for

11          each class and for all classes on revenue collection. The bottom part of the table

12          uses the same customer growth but assumes KGS's proposed rate increases in this

13          docket for the service charge and the volumetric charge.

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**Table 1**

<b>Projected Revenue Increases Using Current Rates and KGS's Decoupling Mechanism: 2019-2021</b>							
CUSTOMER CLASS	2019		2020		2021		<b>TOTAL</b>
	Service Charge	Volumetric Charge	Service Charge	Volumetric Charge	Service Charge	Volumetric Charge	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Residential	\$202,371	\$113,482	\$202,804	\$113,677	\$203,238	\$113,872	\$949,443
General Service Small	(\$6,792)	(\$14,447)	(\$6,694)	(\$14,350)	(\$6,597)	(\$14,252)	(\$63,132)
General Service Large	(\$20,807)	(\$32,038)	(\$20,665)	(\$31,760)	(\$20,524)	(\$31,483)	(\$157,278)
General Service Transport Eligib	(\$6,429)	(\$26,602)	(\$6,267)	(\$26,013)	(\$6,110)	(\$25,440)	(\$96,860)
Small Transportation Service k	\$28,007	\$83,676	\$28,361	\$84,633	\$28,721	\$85,603	\$339,000
Small Transportation Service t	\$19,437	\$71,465	\$19,919	\$73,142	\$20,413	\$74,863	\$279,238
<b>TOTAL</b>	<b>\$215,788</b>	<b>\$195,535</b>	<b>\$217,458</b>	<b>\$199,329</b>	<b>\$219,140</b>	<b>\$203,161</b>	<b>\$1,250,411</b>
<b>Projected Revenue Increases Using KGS's Proposed Rates and Decoupling Mechanism: 2019-2021</b>							
Residential	\$274,594	\$113,452	\$275,182	\$113,646	\$275,771	\$113,841	\$1,166,486
General Service Small	(\$6,792)	(\$14,447)	(\$6,694)	(\$14,350)	(\$6,597)	(\$14,252)	(\$63,132)
General Service Large	(\$25,032)	(\$38,542)	(\$24,861)	(\$38,207)	(\$24,692)	(\$37,874)	(\$189,207)
General Service Transport Eligib	(\$6,429)	(\$33,330)	(\$6,267)	(\$32,592)	(\$6,110)	(\$31,875)	(\$116,602)
Small Transportation Service k	\$28,530	\$83,687	\$28,891	\$84,645	\$29,257	\$85,614	\$340,624
Small Transportation Service t	\$19,800	\$71,435	\$20,291	\$73,111	\$20,794	\$74,831	\$280,262
<b>TOTAL</b>	<b>\$284,672</b>	<b>\$182,255</b>	<b>\$286,541</b>	<b>\$186,253</b>	<b>\$288,422</b>	<b>\$190,286</b>	<b>\$1,418,430</b>
NOTE: In 2013 General Service was split into General Service Small, General Service Large, and General Service Transp Eligible. The same year the Large Transportation Service k and t were added respectively to Small Transportation Serv							

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1   **Q.    How did you estimate the changes in revenue collection caused by customer**  
2   **growth in Table 1?**

3   A.    First, I estimated customer growth for each of the rate classes covered by the RNA  
4        using the annualized percentage customer growth over the last few years.<sup>6</sup> Second,  
5        I multiplied estimated customer growth by the customer average monthly usage for  
6        each of the months in the test year for an estimate of the volumetric change due to  
7        the customer growth. Third, the change in customer count was multiplied by the  
8        service charge and the change in usage was multiplied by the volumetric charge.

9   **Q.    Why is over-recovery by KGS a problem?**

10  A.    First, KGS's argument for the RNA is that KGS is unable in most years to recover  
11        its Commission approved revenue requirement. But not being able to recover a  
12        revenue requirement and not being able to recover more than a revenue requirement  
13        are two different concerns. KGS did not argue that it is harmed because it fails to  
14        over-recover its revenue requirement. But as Table 1 illustrates, if KGS continues  
15        to add customers as it has added customers in the recent past, then KGS will over-  
16        recover its revenue requirement.

17        Second, if KGS were allowed to use the RNA and KGS continued to increase  
18        its number of customers, then, in effect, KGS would be getting an increase in its  
19        revenue requirement without a rate case. Since the RNA is only concerned with

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<sup>6</sup> For the Residential Class the period 2011 – 2017 was used to estimate the annualized growth rate. For the General Service Small, Large, and Transport Eligible I used the period 2014 – 2017 because the classes were not created until 2013 and the first year data is a little inconsistent. For Small Transportation Service on the k and t systems I used 2013 – 2017 because these classes were changed in 2013 when the Large Transportation Service on both systems were added to the Small Transportation Service.

1 KGS's revenue collection, any change in KGS's costs would not be considered in  
2 approving the RNA increase in revenue.

3 **Staff's Decoupling Proposal**

4 **Q. What is Staff's solution to KGS's revenue deficiency?**

5 A. Staff recommends that KGS be given total revenue requirement (TRR) decoupling,  
6 not per customer revenue decoupling like the RNA.

7 **Q. Why does Staff prefer total revenue requirement decoupling?**

8 A. In Docket No. 08-GIMX-441-GIV (08-441 Docket), the Commission stated its  
9 preference for decoupling based on the total revenue requirement.<sup>7</sup> An advantage  
10 of TRR decoupling is it would allow KGS to recover its revenue requirement, but  
11 not more than its revenue requirement.

12 **Q. At a high level, how would TRR decoupling work?**

13 A. With TRR decoupling, the utility baseline is also the revenue requirement from the  
14 last rate case. If KGS collects less revenue than its revenue requirement, the  
15 decoupling mechanism would provide KGS with enough additional revenue to  
16 cover the gap between its revenue requirement and the revenue it recovered. If  
17 KGS recovered more than its revenue requirement, then the mechanism would  
18 refund the over-recovery to KGS customers.

19 **Q. Over what time period would the under or over recovery for KGS be**  
20 **determined?**

21 A. Staff's proposal would determine on an annual basis whether KGS under or over  
22 recovered its revenue requirement.

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<sup>7</sup> Docket No. 08-GIMX-441-GIV, Final Order (Nov. 14, 2008), ¶ 63.

1   **Q.   How would acceptance of Staff’s proposal affect the weather normalization?**

2   **A.**   Staff’s decoupling mechanism would eliminate the need for KGS’s WNA. During  
3       a rate case, the billing determinants would still need to be weather normalized so  
4       that weather-neutral rates could be implemented. However, the WNA appearing  
5       on customer bills would be eliminated.

6   **Q.   How does Staff envision the implementation of its decoupling mechanism?**

7   **A.**   Probably the easiest way to transition from the WNA to Staff’s decoupling  
8       mechanism would be to run the WNA through March as it is done now, and then,  
9       in April, have a last WNA true-up and at the same time transition to the decoupling  
10      mechanism.

11         In April and May, there would need to be a short review by CURB and Staff of  
12       KGS’s revenue collection during the previous year. Subtracting the revenue  
13       collected from the revenue requirement would provide the under collection  
14       (positive result) or over collection (negative result) of the collected revenue. The  
15       difference between the revenue collected and revenue requirement would then be  
16       allocated among the rate classes based on each class’s contribution to the revenue  
17       requirement. Then a factor would be developed for each rate class to charge or  
18       refund to each customer an appropriate share of the under or over-recovery of  
19       revenue.

20         Since both KGS’s and Staff’s CCOSs classified over 99% of the revenue  
21       requirement as either customer or demand costs, a fixed amount per customer seems  
22       the appropriate means of recovery—especially since it is the decline in average  
23       monthly usage that lowered the revenue recovery from the volumetric charge that

1 created the revenue recovery problem. In addition, because one of the purposes of  
2 the decoupling is to reduce volatility, Staff prefers using the less volatile per service  
3 (fixed) charge or refund to the more volatile delivery (volumetric) charge for trueing-  
4 up purposes.

5 **Q. Does Staff recommend imposing a price cap to reduce rate volatility?**

6 **A.** No. The Commission recognized the potential that rates could become more  
7 volatile if rate increases were left unchecked and, in the 08-411 Docket, mandated  
8 annual caps to prevent significant increases in volatility.<sup>8</sup> In the past, Staff has  
9 suggested capping rate increases to 3% of the total revenue requirement.<sup>9</sup>  
10 However, elimination of the WNA was not contemplated at the time the 08-411  
11 Docket was decided. As illustrated in Figure 4 in Ms. Buchanan's Testimony, in  
12 eight of the eleven years shown (2007 – 2017), the volumetric usage was more than  
13 3% below the usage used in the creation of the rate design to recover the revenue  
14 requirement. Thus, in most of those eight years there is a good chance a 3% price  
15 cap would prevent KGS from fully recovering its revenue requirement even with  
16 Staff's decoupling mechanism. Therefore, Staff does not recommend imposing a  
17 price cap if the WNA is eliminated.

18 **Q. Has the Commission expressed preferences for a decoupling true-up**  
19 **mechanism?**

20 **A.** Yes. In the 08-441 Docket, the Commission stated that utilities must work to  
21 minimize carrying charges on balancing accounts.<sup>10</sup> Staff previously advocated for

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<sup>8</sup> Docket No. 08-GIMX-441-GIV, Final Order (Nov. 14, 2008), ¶ 65 (Internal citation omitted).

<sup>9</sup> Direct Testimony of Janet Buchanan, Docket No. 10-BHCG-639-TAR, p. 35, lines 6-11 (10-639, Buchanan Direct).

<sup>10</sup> Docket No. 08-GIMX-441-GIV, Final Order (Nov. 14, 2008), ¶ 66.

1 an annual true-up, which will reduce whatever carrying charges the Company might  
2 have to minimal levels.<sup>11</sup> Staff continues to hold the opinion that having an annual  
3 true-up eliminates the need to allow a utility to collect carrying charges on its  
4 deferral accounts. Therefore, Staff recommends the Commission adopt an annual  
5 true-up mechanism for Staff's decoupling proposal.

6 **Q. Does the reduction in revenue variability for KGS have any other**  
7 **implications?**

8 **A.** Yes. The Commission, in the 08-441 Docket, noted that decoupling reduces  
9 revenue risk for utilities. As a result, the Commission stated it would factor in this  
10 risk reduction when setting rates of return.<sup>12</sup> This topic is further addressed by Staff  
11 witness Adam Gatewood in his direct testimony. Briefly, he recommends a 9.25%  
12 return on equity without Staff's decoupling mechanism. If the Commission  
13 chooses to implement the TTR, he recommends the return on equity be reduced  
14 from 9.25% to 9.15% because of the reduction in risk for KGS.

15 **Q. Does Staff have any other suggestions for the decoupling mechanism?**

16 **A.** Yes. All transport customers should be excluded from the decoupling mechanism.  
17 Transportation of natural gas tends to be a more competitive part of the natural gas  
18 industry, and the revenues from transportation can be volatile. Thus, the decoupling  
19 mechanism should focus only on retail customers.

20 **Q. Please summarize Staff's decoupling mechanism proposal.**

21 **A.** Staff's decoupling mechanism is a total revenue requirement mechanism with the  
22 baseline revenue requirement established in this docket. The purpose of Staff's

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<sup>11</sup> Docket No. 10-BHCG-639-TAR, Direct Testimony of Janet Buchanan (July 23, 2010), p. 29.

<sup>12</sup> Docket No. 08-GIMX-441-GIV, Final Order (Nov. 18, 2008), ¶ 64.

1 decoupling mechanism is to ensure that KGS is given the opportunity to collect its  
2 revenue requirement in light of declining usage. If KGS recovers more than the  
3 revenue requirement, the additional revenue will be refunded. If KGS recovers less  
4 than its revenue requirement, customers will be charged the additional revenue  
5 necessary to make KGS whole. The decoupling charge will be a fixed charge for  
6 customers. The weather normalization adjustment will be eliminated and a true-up  
7 will occur annually. Finally, transport customers will be exempt from the  
8 decoupling mechanism.

9 **Rate Design**

10 ***Foundations for Rate Design***

11 **Q. What are the foundations underlying most rate designs?**

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

14 ***Billing Determinants***

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

17 **A.** Billing determinants consist of all the data needed to generate existing and proposed  
18 revenues. They include the number of customers, demand, and annual volumes  
19 used by rate block, along with the tariff rates necessary to generate existing and  
20 proposed revenues. Billing determinants are essential to constructing a proof of  
21 revenue, which (1) demonstrates that the company's revenue requirement can be  
22 recovered, and (2) provides a comparison of the revenue effect of existing rates and  
23 proposed rates.

1    **Q.     Are Staff's and KCP&L's Billing Determinants the same?**

2    **A.**    No. Staff Witness Darren Prince provides the details of why Staff's billing  
3           determinants are different from KGS's billing determinants. The biggest cause of  
4           the difference in billing determinants is Staff's use of 30-year normals compared to  
5           KGS's use of 10-year normals. I will discuss this issue later in my testimony.

6    *Class Cost of Service*

7    **Q.     What does a Class Cost of Service study do?**

8    **A.**    A CCOS study allocates to a utility's customers the costs incurred in providing  
9           natural gas to those same customers. Since gas rates are set for classes of  
10          customers, the CCOS study allocates the cost of service to particular rate classes.  
11          The CCOS study broadly informs the rate analyst how much it costs to serve each  
12          class. Thus, using a CCOS study as a starting point and guide for class allocation  
13          of the revenue requirement ensures the rate analyst is beginning the rate design  
14          process by employing the principle of cost causation.

15           The link between the CCOS study and cost causation is the strength of using a  
16          CCOS study for revenue allocation. However, CCOS studies do have limitations.  
17          First, CCOS studies are an art; they are not a science. A substantial number of  
18          subjective judgments must go into the production of any CCOS study. Second,  
19          because all CCOS studies are based on allocation mechanisms that are  
20          approximations of structural relationships, the CCOS studies must, themselves, be  
21          viewed as approximations. Third, the approximations of the structural relationships  
22          are not based on statistical theory (for the most part) so determining a confidence  
23          interval using statistical techniques is not possible. Further, because of the size and

1 complexity, only crude sensitivity analysis is possible. Therefore, it is difficult to  
2 get a handle on the accuracy of the approximation using sensitivity analysis. Thus,  
3 we are left knowing that the cost allocation from a CCOS study is an approximation,  
4 but we cannot know precisely the numerical bounds of the approximation. Fourth,  
5 a CCOS is a static snapshot of a dynamic process. Over time, the structural cost  
6 relationships have changed and are expected to change in the future. Thus, a rate  
7 analyst should be cautious when using a CCOS study to help determine class  
8 revenue allocations.

9 *Allocation of the Revenue Requirement to Base Rates*

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

12 A. Staff is proposing a \$19,828,859 increase in KGS's revenue requirement.

13 **Q. How does Staff propose to allocate the increase in revenue requirement among**  
14 **customer classes?**

15 A. Staff's revenue allocation among the customer classes is presented in Table 2  
16 below—Staff's Proof of Revenue. Column (1) is the number of customers in a  
17 class, Column (2) is the total annual volumetric consumption, Columns (3) through  
18 (5) are the current service and delivery (volumetric) charges, and the revenue  
19 generated by those charges. Columns (6) through (9) are Staff's proposed service  
20 and delivery charges, the revenue increase generated by the increase over current  
21 rates, and the expected total revenue generated by the proposed rates.

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

24 A. Staff used the class rates of return and the relative class rates of return from Staff's  
25 CCOS that is sponsored by Staff Witness Dr. Lana Ellis. Below in Table 3 is a

1 reproduction of Table 3 from Dr. Ellis's Direct Testimony. Column (1) contains  
2 Staff's class rates of return and Column (2) has the relative rates of return based on  
3 Column (1). Columns (3) and (4) repeat the same information for KGS Witness  
4 Paul Raab's CCOS.<sup>13</sup>

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<sup>13</sup> Paul Raab provided three CCOS in this docket: one using KGS's preferred method, one using what he refers to as Staff's preferred method, and one using what he refers to as CURB's method. However, Raab informed Staff that the KGS method was his preferred method in this docket.

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**Table 2**

<b>Staff's Proof of Revenue</b>									
<b>Class</b>	<b>Billing Determinants</b>		<b>Current Rates</b>			<b>Proposed Rates</b>			
	Customers	MCF	Service Charge	Delivery Charge	Revenue	Service Charge	Delivery Charge	Revenue Increase	Revenues
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Residential	583,049	41,430,893	\$ 16.70	\$ 2.2316	\$ 209,300,263	\$ 18.50	\$ 2.3470	\$ 17,374,990	\$ 226,675,253
General Service - Small	36,896	3,781,870	\$ 28.65	\$ 2.3472	\$ 21,561,638	\$ 28.65	\$ 2.3472	\$ -	\$ 21,561,638
General Service - Large	11,621	5,714,601	\$ 36.00	\$ 1.7810	\$ 15,197,959	\$ 45.00	\$ 1.7915	\$ 1,315,067	\$ 16,513,026
General Service - Transport Eligible	500	1,113,229	\$ 60.00	\$ 1.5293	\$ 2,062,306	\$ 60.00	\$ 1.7915	\$ 291,889	\$ 2,354,195
Small Generator Service	676	12,622	\$ 52.20	\$ 0.6427	\$ 431,454	\$ 52.20	\$ 0.6427	\$ -	\$ 431,454
Irrigation Sales	214	141,754	\$ 36.00	\$ 1.6819	\$ 330,821	\$ 38.00	\$ 1.7500	\$ 14,787	\$ 345,608
Kansas Gas Supply	1	21,846	\$350.00	\$0.8673	\$ 23,147	\$360.00	\$ 0.9500	\$ 1,927	\$ 25,074
Sales for Resale	7	68,904	\$ 85.00	\$ 1.2497	\$ 93,588	\$ 85.00	\$ 1.2497	\$ -	\$ 93,588
Sales for Resale - BH	1	1,911	\$140.00	\$ 1.2497	\$ 4,069	\$ 140.00	\$ 1.2497	\$ -	\$ 4,069
Small Transport k-System	3,497	6,151,668	\$ 60.00	\$ 1.4598	\$ 11,498,231	\$ 60.00	\$ 1.4598	\$ -	\$ 11,498,231
Small Transport t-System	1,211	1,862,195	\$ 60.00	\$ 1.9170	\$ 4,441,906	\$ 60.00	\$ 1.9170	\$ -	\$ 4,441,906
CNG k-System	9	191,059	\$ 60.00	\$ 0.8199	\$ 163,179	\$ 60.00	\$ 0.8199	\$ -	\$ 163,179
CNG t-System	2	67,350	\$ 60.00	\$ 0.8199	\$ 56,990	\$ 60.00	\$ 0.8199	\$ -	\$ 56,990
Irrigation Transport	513	843,484	\$ 36.00	\$ 1.6819	\$ 1,640,105	\$ 38.00	\$ 1.7500	\$ 69,744	\$ 1,709,849
Large Transport k - Tier 1	214	1,154,072	\$208.00	\$ 0.8714	\$ 1,540,207	\$ 260.00	\$ 0.8990	\$ 165,490	\$ 1,705,696
Large Transport k - Tier 2	94	1,491,344	\$252.00	\$ 0.8714	\$ 1,582,364	\$ 295.00	\$ 0.8990	\$ 89,418	\$ 1,671,782
Large Transport k - Tier 3	45	1,360,883	\$323.00	\$ 0.8714	\$ 1,358,792	\$ 340.00	\$ 0.8990	\$ 46,661	\$ 1,405,454
Large Transport k - Tier 4	61	6,922,224	\$392.00	\$ 0.8714	\$ 6,318,113	\$ 400.00	\$ 0.8990	\$ 196,892	\$ 6,515,005
Large Transport t - Tier 1	43	304,861	\$288.00	\$ 1.3103	\$ 548,658	\$ 360.00	\$ 1.3485	\$ 48,945	\$ 597,604
Large Transport t - Tier 2	31	464,028	\$367.00	\$ 1.3103	\$ 742,844	\$ 430.00	\$ 1.3485	\$ 40,871	\$ 783,715
Large Transport t - Tier 3	14	381,651	\$495.00	\$ 1.3103	\$ 580,583	\$ 520.00	\$ 1.3485	\$ 18,645	\$ 599,228
Large Transport t - Tier 4	32	3,983,601	\$621.00	\$ 1.3103	\$ 5,457,969	\$ 630.00	\$ 1.3485	\$ 155,627	\$ 5,613,596
Wholesale Transport	27	916,740	\$ 85.00	\$ 1.2497	\$ 1,173,190	\$ 85.00	\$ 1.2497	\$ -	\$ 1,173,190
<b>TOTAL</b>	<b>638,757</b>	<b>78,382,787</b>			<b>\$ 286,108,376</b>			<b>\$ 19,830,952</b>	<b>\$ 305,939,328</b>

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**Table 3**

<b>Class Rates of Return—Existing Rates</b>				
<b>Class</b>	<b>Staff's CCOS As Adjusted</b>	<b>Relative ROR</b>	<b>Raab's CCOS As Corrected</b>	<b>Relative ROR</b>
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
<b>Sales Customers</b>				
Residential	4.15%	0.77	2.35%	0.53
GS-Small	9.46%	1.75	7.95%	1.80
GS-Large	5.25%	0.97	8.24%	1.87
GS-Transport Eligible	4.67%	0.87	8.09%	1.83
Small Generator Service	41.26%	7.65	31.23%	7.08
Irrigation Sales	5.59%	1.04	11.02%	2.50
Kansas Gas Supply	6.47%	1.20	4.10%	0.93
Sales for Resale k system	190.15%	35.25	154.95%	35.11
Sales for Resale k system - BH	4.57%	0.85	4.75%	1.08
<b>Transportation Customers</b>				
Small Transport k	11.28%	2.09	21.62%	4.90
Small Transport t	9.23%	1.71	14.10%	3.20
Compressed Natural Gas k system	21.47%	3.98	40.75%	9.23
Compressed Natural Gas t system	10.20%	1.89	14.60%	3.31
Irrigation Transport	2.25%	0.42	7.79%	1.77
Large Vol. Transport k - T1	4.52%	0.84	11.96%	2.71
Large Vol. Transport k - T2	6.70%	1.24	15.03%	3.41
Large Vol. Transport k - T3	14.46%	2.68	27.56%	6.25
Large Vol. Transport k - T4	14.46%	2.68	27.77%	6.29
Large Vol. Transport t - T1	3.98%	0.74	8.71%	1.97
Large Vol. Transport t - T2	9.26%	1.72	13.49%	3.06
Large Vol. Transport t - T3	26.32%	4.88	39.48%	8.95
Large Vol. Transport t - T4	10.81%	2.00	17.45%	3.96
Wholesale Transport t	34.09%	6.32	29.45%	6.67
<b>Total System Average</b>	<b>5.39%</b>	<b>1.00</b>	<b>4.41%</b>	<b>1.00</b>

2

3 **Q. What information do the class rates of return and the relative class rates of**  
 4 **return provide for revenue allocation?**

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

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

7           The comparison among classes is made easier by dividing the class rate of  
8           return for each class by the system-wide rate of return. The result of the calculation  
9           is the relative rate of return that is easily interpreted. If the relative rate of return is  
10          greater than one, then that particular class is generating more revenue than the  
11          system-wide average. If the relative rate of return is less than one, then that class  
12          is generating less revenue than the system-wide average. Thus, the relative rate of  
13          return provides a quick guide as to whether particular classes are providing too  
14          much revenue (the relative rate of return is greater than one) or too little revenue  
15          (the relative rate of return is less than one).

16   **Q.   How do Staff's and KGS's allocation of the increase in revenue requirement**  
17   **compare?**

18   A.   Table 4 below has Staff's and KGS's revenue requirement allocation adjusted for  
19          Staff's proposed increase in revenue requirement. KGS proposed an increase in  
20          revenue requirement that was about two and a third times greater than Staff's  
21          proposed increase. In order to make the comparison of revenue requirement  
22          allocation compatible, KGS's proposed increase was scaled down to Staff's  
23          proposed increase. Column (1) has the revenue collection using current rates and

Staff's billing determinants, Columns (2) and (3) have the proposed increase in revenue collection and the percentage increase the proposed increase is of the revenue from current rates. Columns (4) and (5) have the same information for KGS's revenue allocation.

**Table 4**

Revenue Requirement Allocation for KGS and Staff					
Class	Revenue at Current Rates	Staff		KGS	
		Proposed Increase	% Increase	Proposed Increase	% Increase
	(1)	(2)	(3)	(4)	(5)
Residential	\$ 209,300,263	\$ 17,374,990	8.30%	\$ 18,036,940	8.62%
General Service - Small	\$ 21,561,638	\$ -	0.00%	\$ -	0.00%
General Service - Large	\$ 15,197,959	\$ 1,315,067	8.65%	\$ 1,335,288	8.79%
General Service - Transport	\$ 2,062,306	\$ 291,889	14.15%	\$ 186,363	9.04%
Small Generator Service	\$ 431,454	\$ -	0.00%	\$ -	0.00%
Irrigation Sales	\$ 330,821	\$ 14,787	4.47%	\$ 29,466	8.91%
Kansas Gas Supply	\$ 23,147	\$ 1,927	8.32%	\$ 2,181	9.42%
Sales for Resale	\$ 93,588	\$ -	0.00%	\$ -	0.00%
Sales for Resale - BH	\$ 4,069	\$ -	0.00%	\$ -	0.00%
Small Transport k-System	\$ 11,498,231	\$ -	0.00%	\$ 20,876	0.18%
Small Transport t-System	\$ 4,441,906	\$ -	0.00%	\$ 6,401	0.14%
CNG k-System	\$ 163,179	\$ -	0.00%	\$ 672	0.41%
CNG t-System	\$ 56,990	\$ -	0.00%	\$ 5,760	10.11%
Irrigation Transport	\$ 1,640,105	\$ 69,744	4.25%	\$ 146,076	8.91%
Large Transport k - Tier 1	\$ 1,540,207	\$ 165,490	10.74%	\$ 21,812	1.42%
Large Transport k - Tier 2	\$ 1,582,364	\$ 89,418	5.65%	\$ 9,525	0.60%
Large Transport k - Tier 3	\$ 1,358,792	\$ 46,661	3.43%	\$ 4,544	0.33%
Large Transport k - Tier 4	\$ 6,318,113	\$ 196,892	3.12%	\$ 6,194	0.10%
Large Transport t - Tier 1	\$ 548,658	\$ 48,945	8.92%	\$ 5,569	1.02%
Large Transport t - Tier 2	\$ 742,844	\$ 40,871	5.50%	\$ 3,950	0.53%
Large Transport t - Tier 3	\$ 580,583	\$ 18,645	3.21%	\$ 1,749	0.30%
Large Transport t - Tier 4	\$ 5,457,969	\$ 155,627	2.85%	\$ 4,125	0.08%
Wholesale Transport	\$ 1,173,190	\$ -	0.00%	\$ 3,465	0.30%
<b>TOTAL</b>	<b>\$ 286,108,376</b>	<b>\$ 19,830,952</b>	<b>6.93%</b>	<b>\$ 19,830,952</b>	<b>6.93%</b>

**Q. Why are Staff's and KGS's revenue requirement allocations different?**

A. Table 3, the table with the relative rates of return, indicates that KGS's CCOS shows the Residential Class is under-collecting more than Staff's CCOS, although

1 both show the Residential Class under-collecting. As a result, Staff allocated  
2 slightly less of the increase in revenue requirement to Residential customers than  
3 KGS. Because with the current rates the Residential Class provides about 73% of  
4 the total base rate revenue, and because both Staff's and KGS's CCOSs had the  
5 Residential Class under-collecting, the decision of how much of the total base rate  
6 revenue should be collected from the Residential Class determines most of the other  
7 classes' base rate revenue collection. None of the other classes collected even 10%  
8 of the total base rate revenue using current rates. This leads to the rest of the class  
9 base rate revenue collection for Staff and KGS looking similar.

10 ***Rate Deign***

11 **Q. What is Staff's rate design proposal to collect the class allocated revenue**  
12 **requirement?**

13 A. Table 5 below has Staff's proposed rate design in Columns (3) and (4). As a rule  
14 of thumb, Staff tried to increase the service charge (the fixed charge) two to three  
15 times more than we increased the delivery charge (the volumetric charge). Staff  
16 did this in recognition that over 99% of KGS's revenue requirement is either  
17 customer or demand related with less than 1% volumetric usage related. In the case  
18 of General Service – Transport Eligible, Staff only increased the volumetric charge  
19 because the service charge was tied to other classes.

20 **Q. Why didn't Staff increase only the service charge?**

21 A. Staff is a firm proponent of gradualism. Staff has for the past six or seven years,  
22 tried to gradually increase the service charge for natural gas customers. The current  
23 rate design is another example of that gradualism. Staff is aware that the service  
24 charge is unpopular with customers, but because of the cost structure of natural gas

utilities and their declining average customer usage, the service charge needs to be higher so the rate design better reflects the cost structure and to increased revenue stability to cope with the declining average customer usage.

**Table 5**

<b>Staff's Proposed Rate Design</b>						
Class	Current		Proposed		% Increase	
	Service Charge	Delivery Charge	Service Charge	Delivery Charge	Service Charge	Delivery Charge
	(1)	(2)	(3)	(4)	(5)	(6)
Residential	\$ 16.70	\$ 2.2316	\$ 18.50	\$ 2.3470	10.78%	5.17%
General Service - Small	\$ 28.65	\$ 2.3472	\$ 28.65	\$ 2.3472	0.00%	0.00%
General Service - Large	\$ 36.00	\$ 1.7810	\$ 45.00	\$ 1.7915	25.00%	0.59%
General Service - Transport Eligible	\$ 60.00	\$ 1.5293	\$ 60.00	\$ 1.7915	0.00%	17.15%
Small Generator Service	\$ 52.20	\$ 0.6427	\$ 52.20	\$ 0.6427	0.00%	0.00%
Irrigation Sales	\$ 36.00	\$ 1.6819	\$ 38.00	\$ 1.7500	5.56%	4.05%
Kansas Gas Supply	\$ 350.00	\$ 0.8673	\$ 360.00	\$ 0.9500	2.86%	9.54%
Sales for Resale	\$ 85.00	\$ 1.2497	\$ 85.00	\$ 1.2497	0.00%	0.00%
Sales for Resale - BH	\$ 140.00	\$ 1.2497	\$ 140.00	\$ 1.2497	0.00%	0.00%
Small Transport k-System	\$ 60.00	\$ 1.4598	\$ 60.00	\$ 1.4598	0.00%	0.00%
Small Transport t-System	\$ 60.00	\$ 1.9170	\$ 60.00	\$ 1.9170	0.00%	0.00%
CNG k-System	\$ 60.00	\$ 0.8199	\$ 60.00	\$ 0.8199	0.00%	0.00%
CNG t-System	\$ 60.00	\$ 0.8199	\$ 60.00	\$ 0.8199	0.00%	0.00%
Irrigation Transport	\$ 36.00	\$ 1.6819	\$ 38.00	\$ 1.7500	5.56%	4.05%
Large Transport k - Tier 1	\$ 208.00	\$ 0.8714	\$ 260.00	\$ 0.8990	25.00%	3.17%
Large Transport k - Tier 2	\$ 252.00	\$ 0.8714	\$ 295.00	\$ 0.8990	17.06%	3.17%
Large Transport k - Tier 3	\$ 323.00	\$ 0.8714	\$ 340.00	\$ 0.8990	5.26%	3.17%
Large Transport k - Tier 4	\$ 392.00	\$ 0.8714	\$ 400.00	\$ 0.8990	2.04%	3.17%
Large Transport t - Tier 1	\$ 288.00	\$ 1.3103	\$ 360.00	\$ 1.3485	25.00%	2.92%
Large Transport t - Tier 2	\$ 367.00	\$ 1.3103	\$ 430.00	\$ 1.3485	17.17%	2.92%
Large Transport t - Tier 3	\$ 495.00	\$ 1.3103	\$ 520.00	\$ 1.3485	5.05%	2.92%
Large Transport t - Tier 4	\$ 621.00	\$ 1.3103	\$ 630.00	\$ 1.3485	1.45%	2.92%
Wholesale Transport	\$ 85.00	\$ 1.2497	\$ 85.00	\$ 1.2497	0.00%	0.00%

***Rate Impact on Residential Customer Bills***

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

A. Yes, but not as thoroughly as with electric rate changes for several reasons. (1) Natural gas usage changes much more during the year than electric usage. In

1 particular, during the summer the service charge dominates the base rate portion of  
2 the natural gas bill, so the approximate 10% increase in the service charge should  
3 be an upper bound on the impact of the rate changes on the summer base rate portion  
4 of the customer's bill. In the winter, usage can increase as much as ten times, and  
5 since the delivery charge is increasing slightly more than 5%, the winter base rate  
6 portion of the customer's bill should only increase by 6% to 7% for most customers.

7 (2) The single most volatile portion of a customer's bill is the cost of gas that  
8 KGS recovers in a rider. Even with the price of natural gas as low as it currently  
9 is, the cost of gas still represents slightly less than half the customer's bill on an  
10 annual basis. Thus, a 5% to 10% increase in base rates can be swamped by a sharp  
11 increase in the cost of gas which would significantly drive up the cost of gas rider.

12 As a result, doing a detailed bill comparison of the Residential customer of a  
13 base rate increase does not provide much information.

14 **Allocation of the Income Tax Credits to KGS's Customers**

15 **Q. Why are customers being given income tax credits?**

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

1           As a result of the Settlement Agreement in Docket 18-248, \$17,925,813 in  
2 income tax credits are to be distributed back to KGS customers. Staff Witness  
3 Justin Grady explains the calculation of the amount of bill credits in his direct  
4 testimony. I will describe Staff's allocation of the bill credits back to customers.

5           Staff allocated the income tax credits in two steps. First, the total income tax  
6 credits were allocated to customer classes based on each class's total revenue after  
7 applying Staff's rate increase in Staff's proof of revenue. These allocations are  
8 shown in Table 6 below in Column (4).

9           Second, the tax credits allocated to each customer class were divided by the  
10 total number of customers in that class, again based on Staff's Proof of Revenue.  
11 The result is a one-time bill credit to each member of each customer class in the  
12 Proof of Revenue. For example, Residential customers would receive a one-time  
13 bill credit of \$22.78. The individual bill credits of each customer class can be found  
14 in Column (5) in Table 6.

1

**Table 6**

<b>Staff's Proposed Allocation of the Tax Reform Credit</b>					
Class	Customers	Proposed Revenues	% of Proposed Revenues	Class Allocation of Tax Credit	Per Customer Tax Credit
	(1)	(2)	(3)	(4)	(5)
Residential	583,049	\$ 226,675,253	74.092%	\$ 13,281,516	\$ 22.78
General Service - Small	36,896	\$ 21,561,638	7.048%	\$ 1,263,355	\$ 34.24
General Service - Large	11,621	\$ 16,513,026	5.397%	\$ 967,543	\$ 83.26
General Service - Transport Eligible	500	\$ 2,354,195	0.769%	\$ 137,939	\$ 276.00
Small Generator Service	676	\$ 431,454	0.141%	\$ 25,280	\$ 37.41
Irrigation Sales	214	\$ 345,608	0.113%	\$ 20,250	\$ 94.67
Kansas Gas Supply	1	\$ 25,074	0.008%	\$ 1,469	\$ 1,469.14
Sales for Resale	7	\$ 93,588	0.031%	\$ 5,484	\$ 747.93
Sales for Resale - BH	1	\$ 4,069	0.001%	\$ 238	\$ 238.39
Small Transport k-System	3,497	\$ 11,498,231	3.758%	\$ 673,712	\$ 192.64
Small Transport t-System	1,211	\$ 4,441,906	1.452%	\$ 260,263	\$ 214.88
CNG k-System	9	\$ 163,179	0.053%	\$ 9,561	\$ 1,054.21
CNG t-System	2	\$ 56,990	0.019%	\$ 3,339	\$ 1,358.32
Irrigation Transport	513	\$ 1,709,849	0.559%	\$ 100,185	\$ 195.44
Large Transport k - Tier 1	214	\$ 1,705,696	0.558%	\$ 99,941	\$ 466.66
Large Transport k - Tier 2	94	\$ 1,671,782	0.546%	\$ 97,954	\$ 1,047.41
Large Transport k - Tier 3	45	\$ 1,405,454	0.459%	\$ 82,349	\$ 1,845.87
Large Transport k - Tier 4	61	\$ 6,515,005	2.130%	\$ 381,732	\$ 6,276.63
Large Transport t - Tier 1	43	\$ 597,604	0.195%	\$ 35,015	\$ 811.08
Large Transport t - Tier 2	31	\$ 783,715	0.256%	\$ 45,920	\$ 1,499.91
Large Transport t - Tier 3	14	\$ 599,228	0.196%	\$ 35,110	\$ 2,590.55
Large Transport t - Tier 4	32	\$ 5,613,596	1.835%	\$ 328,916	\$ 10,287.55
Wholesale Transport	27	\$ 1,173,190	0.383%	\$ 68,740	\$ 2,545.94
	638,757	\$ 305,939,328	100.000%	\$ 17,925,813	

2

3 **Staff's Method for Calculating Weather Normals for Weather Normalization**

4 **Q. What is weather normalization?**

5 A. Staff Witness Darren Prince, in his testimony, describes the purpose of weather  
 6 normalization and Staff's method of weather normalizing. At a high level, weather  
 7 normalization is the recognition that weather, particularly cold weather, impacts the  
 8 sale of natural gas. If a winter is particularly cold or warm, then the expected result  
 9 is either more or less usage of natural gas for heating.

1           Since natural gas usage by KGS customers is an important element in the billing  
2           determinants used to create a rate design, the existing billing determinants need to  
3           be normalized to reflect normal weather. The normalization process involves  
4           subtracting normal weather from test year weather to determine the deviations in  
5           the test year usage due to weather. For a natural gas utility, the key weather variable  
6           for nearly all classes is heating degree days.

7   **Q.   What are heating degree days (HDDs)?**

8   A.   HDDs are a measure of the coldness of the weather for a particular period for a  
9           particular location.<sup>14</sup> The purpose of HDDs is to provide one measure of the  
10          demand for heating, which for KGS translates into a demand for natural gas.

11 **Q.   What are HDD normals?**

12 A.   Normals are defined as an average over a particular period of time. Staff used 30-  
13          year monthly HDD normals to weather normalize customer usage.

14 **Q.   Who calculates the HDD normals?**

15          The National Oceanic and Atmospheric Administration (NOAA) estimates 30-year  
16          normals for many weather stations on a decade basis. For example, the current  
17          NOAA normals were calculated using HDD data for the period 1981 – 2010. The  
18          next set of NOAA normals will come out in 2020 or 2021 and will be calculated  
19          based on the 1991 – 2020 period.

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<sup>14</sup> HDDs are calculated using the following formula.

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

1    **Q.     Does Staff use the NOAA normals for its weather normalization?**

2    A.     Staff has usually used the NOAA 30-year normals in its weather normalization.  
3           However, as a decade ends, the NOAA normals tend to look stale. For example, in  
4           the 10-KCPE-415-RTS docket, Staff tried using its own created normals that ended  
5           in 2009.

6           The problem created by using older normals is that since 1980 there has been a  
7           relatively steady increase in the average temperature. That means that eight and  
8           nine year old NOAA HDD normals could consistently overstate what the normal  
9           HDDs actually are.

10   **Q.     What did Staff do for HDD normals in the current docket?**

11   A.     Staff estimated HDD normals using the years 1988 – 2017 for the three weather  
12           stations we used in the weather normalization process: Wichita, Topeka, and  
13           Kansas City International Airport. Staff Witness Darren Prince has a more detailed  
14           discussion of how Staff performed its weather normalization.

15   **Q.     What did KGS do for HDD normals in the current docket?**

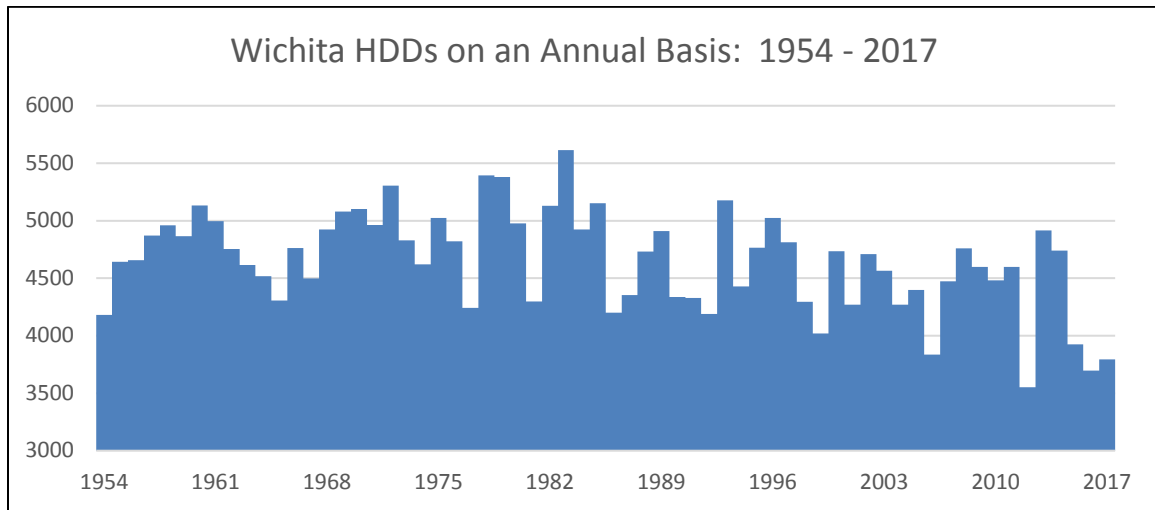
16   A.     Paul Raab calculated normals using the years 2008-2017. Attached to Mr. Raab's  
17           testimony are a number of documents that provide background information on  
18           NOAA's research into calculating normals and Mr. Raab's own research  
19           supporting his choice of 10-year normals.

20   **Q.     Why does Staff think 30-year normals are better?**

21   A.     Staff believes that 30 year normals provide a more consistent estimate of what  
22           normal weather is. To make this point, Staff will use HDD data from Wichita.

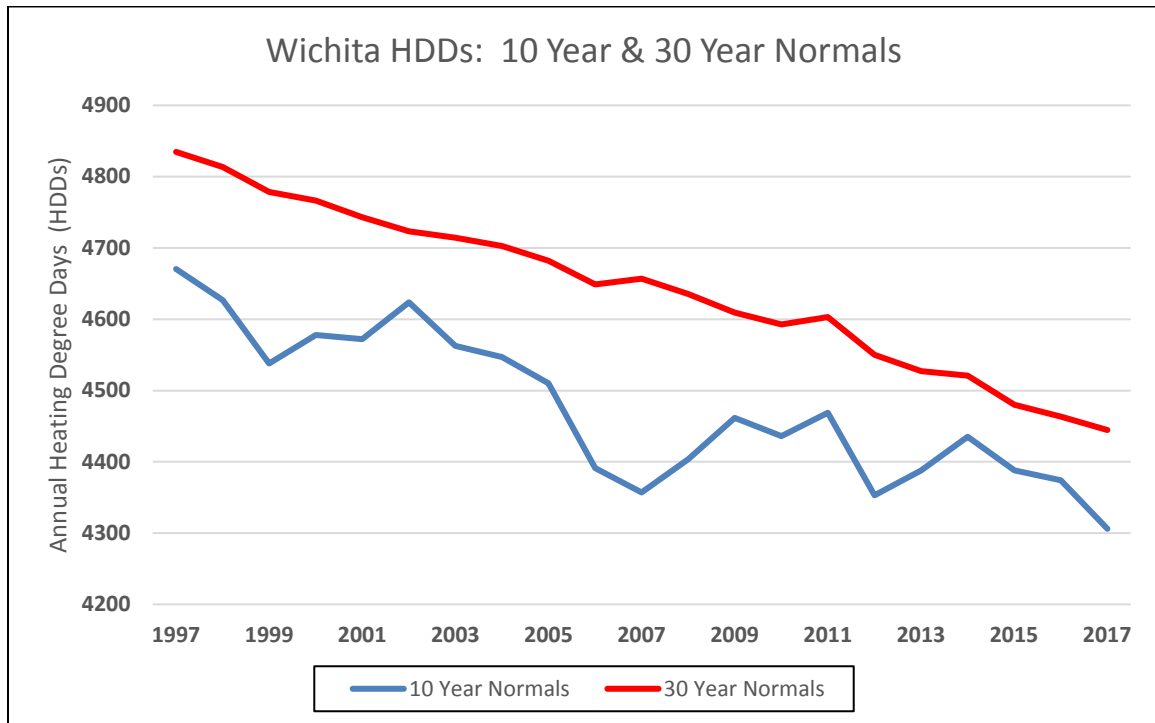
Figure 1 below illustrates the annual HDDs for Wichita during the period 1954 – 2017. First, a note of caution—the vertical axis starts at 3000 HDDs annually and extends up to 6000 HDDs. Thus, the pattern of annual HDDs is going to look more volatile than it really is. Second, Wichita winters seem to have gotten slightly warmer over the period of the graph. However, also note that this warming is anything but a steady, gradual decline in HDDs.

**Figure 1**



But if instead of looking at only single year data, data is averaged over multiple years, then a trend does develop. Figure 2 below shows the effects of using a moving average to smooth the data. The blue line is a rolling moving average using ten years of HDDs (10-year normals) starting in 1997 with the calculation repeated for the next twenty years. The ten years of data for the 1997 normals was the period 1988 – 1997. Notice that the blue line shows a clear downward trend, but that it is anything but a smooth line. In fact, there are years where the 10-year normals increase (such as 2007 – 2009 and 2012 – 2014).

**Figure 2**



The second line in Figure 2 is a 30-year rolling moving average that also begins in 1997 but the data for its 1997 normal is 1968 – 1997. There are at least two interesting points to notice about the red line. First, it is always greater than the blue line. This is just a mathematical artifact of the blue line having significant downward trend. The downward trend of the blue line (10-year normals) will cause a line generated using a longer period of averaging (30-year normals) to always be above the blue line.

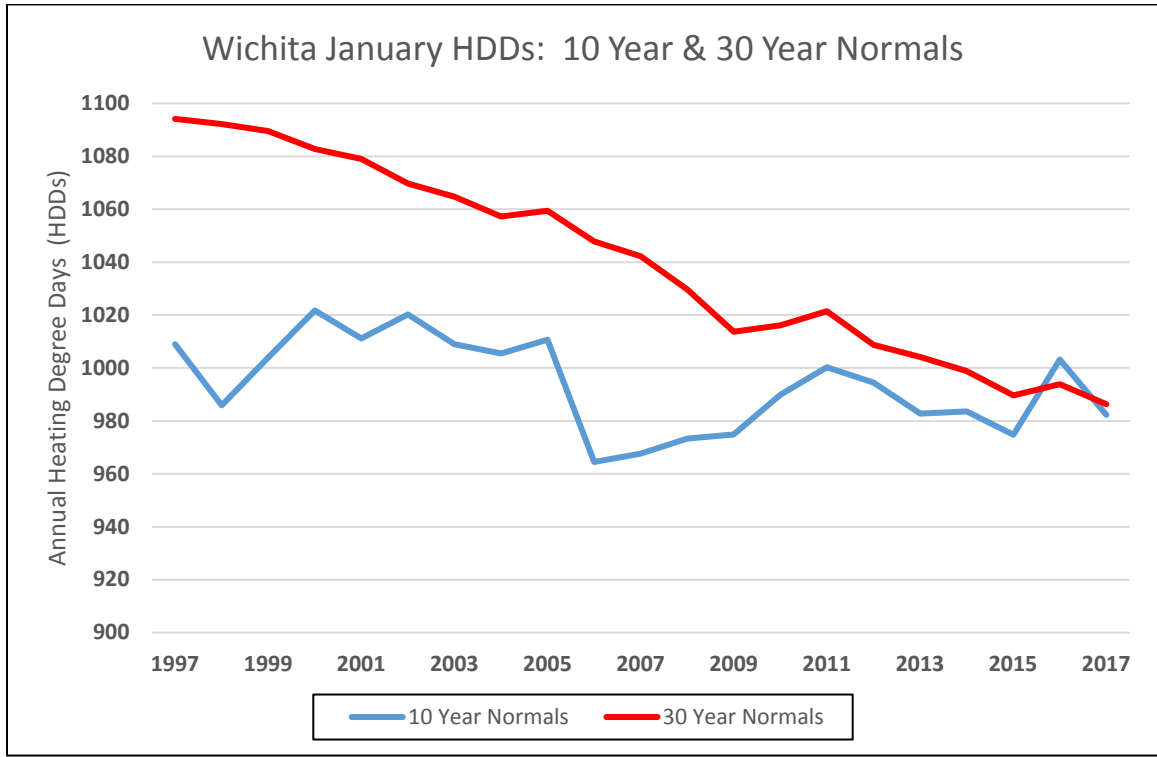
Second, the red line is much smoother than the blue line. The red line is much more predictable. These traits, smoothness and predictability, are due to the longer period of time used for averaging. And this is the reason that Staff prefers the 30-year normals to the 10-year normals: the 30 year normals are smoother and more predictable.

1           The positive impact of the 30-year normals is more obvious when individual  
2           months are investigated. And individual months are the time period used for  
3           weather normalization, not annual HDDs. Figures 3 through 7 are the same type  
4           of chart as Figure 2: the blue line is the rolling 10-year moving average and the red  
5           line is the rolling 30-year moving average. However, these figures are for the  
6           individual months of January, February, March, November, and December—these  
7           five months have between 84.8% and 87.2% of the HDDs during the whole year  
8           for the 21-year period of the graphs.

9           For the five months that produce about 85% of the HDDs, Staff believes that  
10          the 30-year normals are smoother and more predictable. As a result, Staff believes  
11          that 30-year normals are better for estimating normal HDDs. Thus, Staff  
12          recommends that the Commission use Staff weather normalization adjustment with  
13          our use of 30-year normals updated to 2017.

1

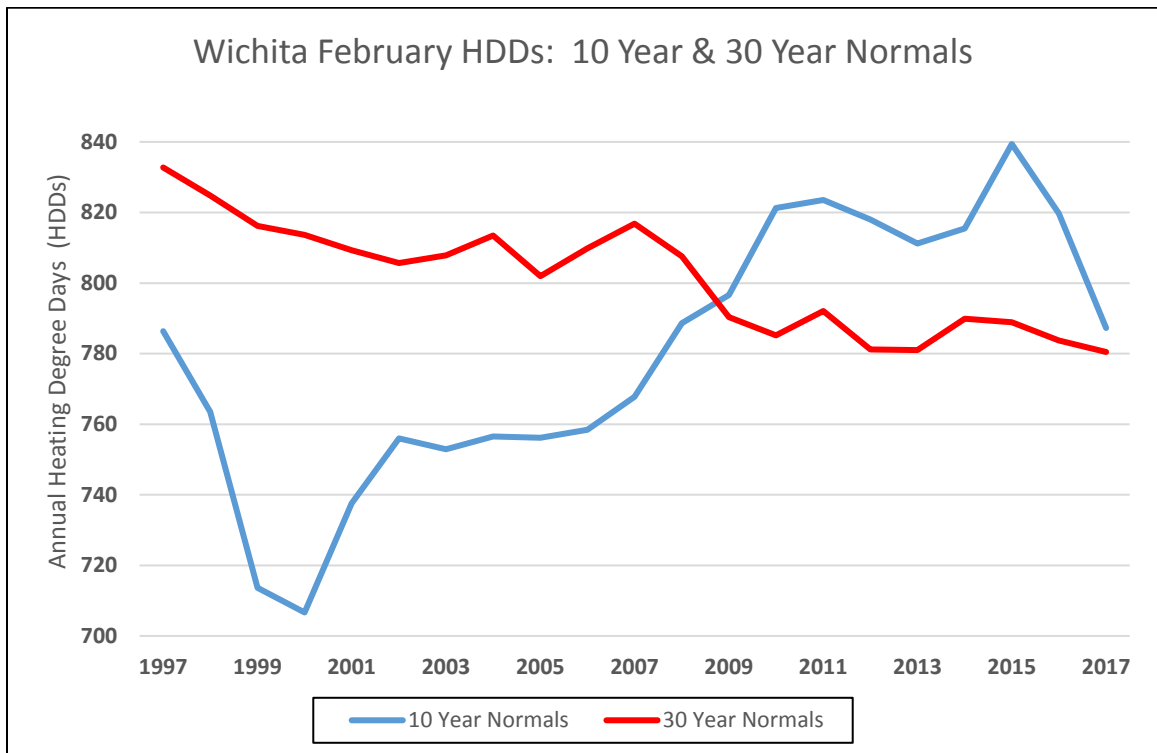
**Figure 3**



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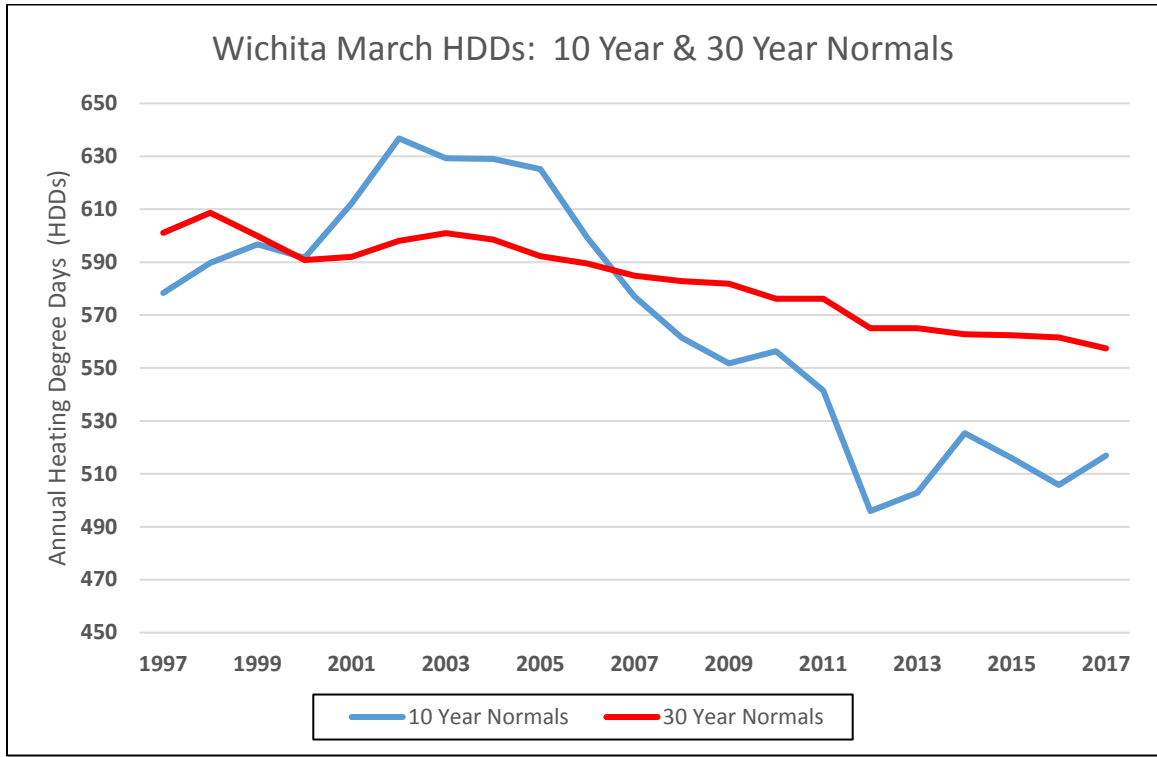
**Figure 4**



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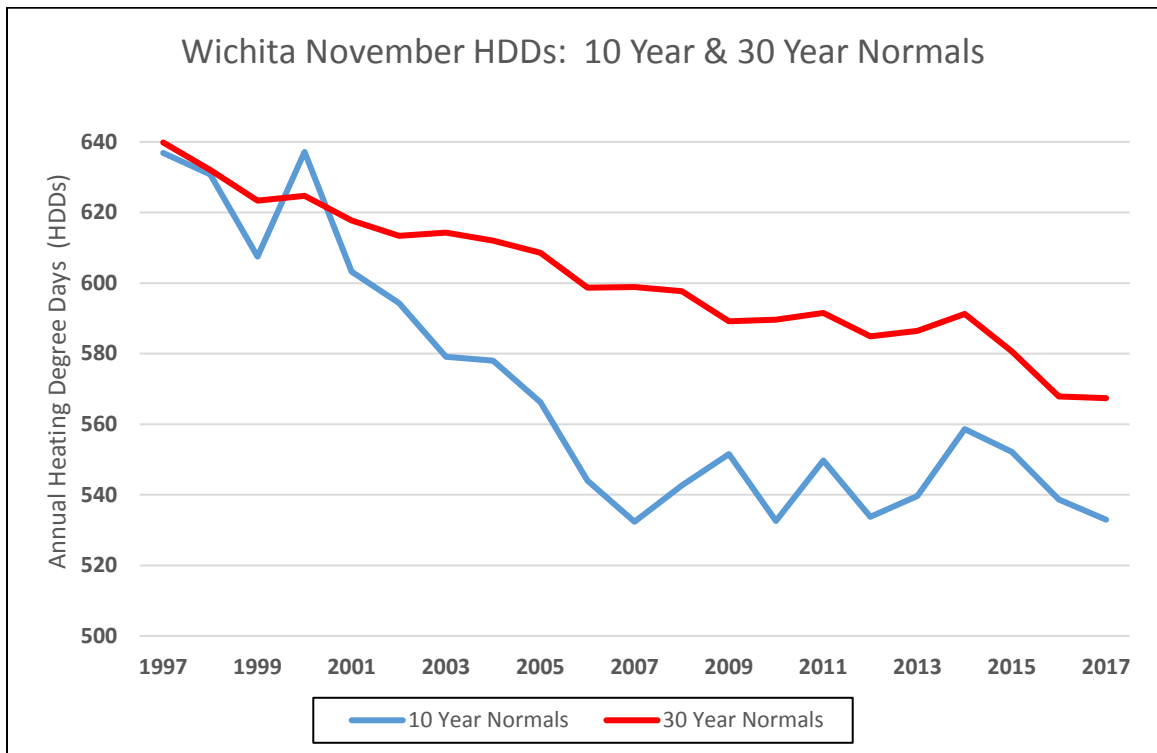
**Figure 5**



2

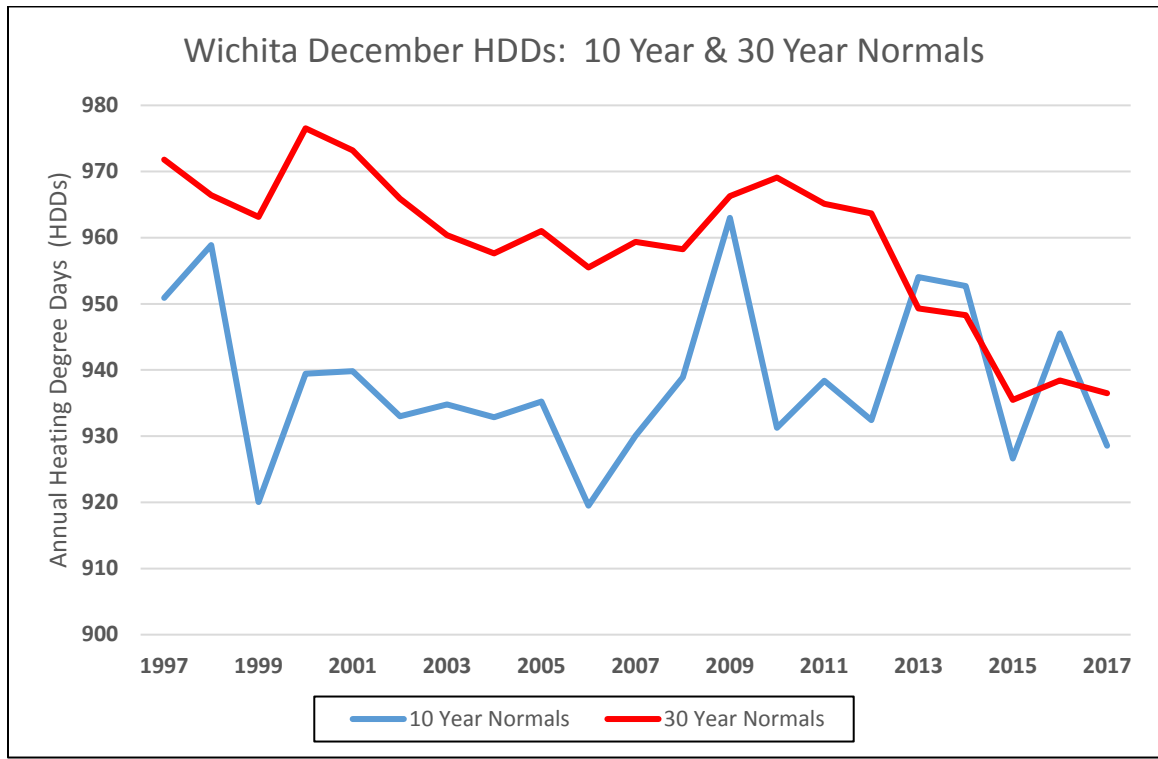
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**Figure 6**



4

**Figure 7**



#### **IV. CONCLUSIONS AND RECOMMENDATIONS**

**Q. What are the conclusions and recommendations of your analysis?**

A. I will organize my conclusions and recommendations in the order I discussed them in my testimony.

##### **Decoupling**

I recommend rejection of KGS's revenue per customer decoupling mechanism (the RNA) because: (1) the RNA has the potential to recover more than KGS's approved revenue requirement; KGS only argued it was being hurt by collecting less than its revenue requirement, not that it needed more than its revenue requirement; and (2) over-recovery would provide KGS with an increase in its

1 revenue requirement without a rate case where, besides revenue, costs would also  
2 be audited.

3 As an alternative, I recommend approval of Staff's total revenue requirement  
4 decoupling mechanism (TRR), which would allow KGS to recover its revenue  
5 requirement, but not more than its revenue requirement.

6 **Rate Design**

7 I recommend the rejection of KGS's proposed revenue requirement allocation  
8 among classes and its specific rate design for individual customer classes.

9 KGS's and Staff's revenue allocation among rate classes appear similar for two  
10 reasons. First, 73% of base rate revenue is recovered from the Residential Class  
11 and second, both KGS's and Staff's CCOSs indicated that not enough revenue was  
12 currently being collected from the Residential Class. Staff's CCOS indicated the  
13 Residential Class was providing more revenue relative to its generated costs than  
14 KGS's CCOS. Thus, Staff allocated slightly less revenue requirement to the  
15 Residential Class than KGS. The remaining classes were treated somewhat similar  
16 in most cases by Staff and KGS.

17 The most important factor in both KGS's and Staff's rate design was the fact  
18 that both KGS's and Staff's CCOSs showed that more than 99% of the revenue  
19 requirement came from fixed costs—either customer costs or demand costs, not  
20 commodity costs. As a result, both KGS and Staff raised the service (fixed) charge  
21 to collect more revenue. However, Staff generally used a two to one or a three to  
22 one ratio of service charge to delivery (volumetric) charge when recovering

1 revenue. For the Residential Class, KGS recovered all of the revenue requirement  
2 increase in the service charge and lowered the delivery charge slightly.

3 **Tax Reform Credits**

4 Staff Witness Grady discussed KGS's response to the Tax Reform Act and his  
5 calculation of the tax reform credits. I recommend acceptance of Staff's proposed  
6 allocation of the tax reform credits. Staff proposed allocating the tax reform credits  
7 in two steps. First, Staff allocated the tax reform credits to rate classes based on  
8 each rate class' contribution to revenue recovery in Staff's Proof of Revenue.  
9 Second, within each class, Staff proposed that the total class tax credit allocated to  
10 it should be divided by the number of customers and that each customer in a class  
11 receive the same fixed amount of tax credit.

12 **Weather Normalization**

13 I recommend the rejection of KGS's proposed 10-year weather normals, and  
14 instead, the acceptance of Staff's 30-year weather normals. KGS proposed using  
15 10-year weather normals (the average of 2008 – 2017) weather variables) as the  
16 criteria for normal weather. Staff proposed using 30-year weather normals (the  
17 average of 1988 – 2017 weather variables) as the criteria for normal weather. Staff  
18 compared 10-year and 30-year rolling moving averages for 21 years of normals  
19 (1997 – 2017) and found that the 30-year normals were more predictable and  
20 consistent. The superior predictability and consistency was particular true of  
21 normals for individual months during the heating season: November, December,  
22 January, February, and March.

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

2    **A.**     Yes. Thank you.

STATE OF KANSAS )  
 ) ss.  
COUNTY OF SHAWNEE )

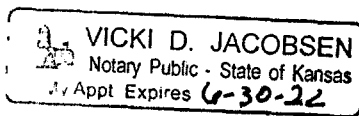
## VERIFICATION

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.

Rent H. Allen

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 29<sup>th</sup> day of October, 2018.



Vicki D. Jacobsen  
Notary Public

My Appointment Expires: June 30, 2022

## **CERTIFICATE OF SERVICE**

18-KGSG-560-RTS

I, the undersigned, certify that a true and correct copy of the above and foregoing Staff Direct Testimony was served via electronic service this 29th day of October, 2018, to the following:

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