

**BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

In the Matter of the Application of Black)
Hills/Kansas Gas Utility Company, LLC,)
d/b/a Black Hills Energy, for Approval of) **Docket No. 21-BLCG-418-RTS**
the Commission to Make Certain Changes)
in its Rates for Natural Gas Service)

DIRECT TESTIMONY

PREPARED BY

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UTILITIES DIVISION

KANSAS CORPORATION COMMISSION

September 10, 2021

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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. Prior to my employment by Commission, I was employed for 22 years at the University of Kansas by the Institute for Business and Economic Research, which later became the Institute for Public Policy and Business Research. Economic research was my primary job.

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, a list of which can be produced on request.

II. INTRODUCTION

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide Staff's rate design analysis, review Black Hills' Tax Adjustment Rider, and explain Staff's change to the use of 10 year weather normals.

Q. What are your recommendations?

A. I recommend the Commission reject Black Hills's proposed rate design structure and instead accept Staff's proposed rate design structure. This recommendation includes the acceptance of Staff's customer class revenue allocation and customer class rates that provide Black Hills with the opportunity to recover Staff's proposed increase Black Hills' revenue requirement.

I recommend that the Commission reject Black Hills' proposed Tax Adjustment Rider ("TA Rider") and instead accept Staff's recommendation to put the excess revenue in base rates. If the Commission should determine that it wants to refund the excess revenue in a rider, then Staff recommends that instead of Black Hills' proposed TA Rider, the Commission accept Staff's simpler, fairer, and more transparent TA Rider.

Finally, I recommend that the Commission accept Staff's weather normalization adjustment presented by Staff Witness Dr. Lana Ellis, which is based on 10 year weather normals. Staff is switching from rolling 30 year weather normals to 10 year normals for this docket. I also recommend that the Commission not make the decision to use 10 year normals as precedential, but instead allow Staff to track the performance of 10 year and 30 year normals and to reevaluate the decision in future rate cases.

III. RATE DESIGN

Q. What is rate design?

A. The phrase “rate design” is used in two ways by rate design analysts when describing the prices of utility services: (1) when used as a verb, rate design refers to the process of creating the rates customers pay for utility services, and (2) when used as a noun, rate design refers to the rates and rate structure customers are charged for utility services. The rate design process entails developing billing determinants for all customer classes, using these billing determinants and the class cost of service to allocate the required revenue requirement to customer classes, and finally, developing the rates and structure that ensure the utility could recover its approved revenue requirement. The resulting rate design structure for Black Hills’ customers consists of (1) a customer charge—a monthly per customer fixed charge; and, (2) a volumetric rate—a charge for a unit of natural gas (therm) used by the customer for all customer classes.

Overview of the Black Hills and Staff's Rate Design Processes

Q. Does Black Hills propose any changes to the customer classes?

A. Yes. Black Hills proposes eliminating the Small Volume Interruptible Class and folding the class billing determinants into the Small Volume Firm Class.

Q. Does Staff agree with the suggested elimination of the Small Volume Interruptible Class?

A. Yes. Black Hills witness Robert Daniel revealed on page 4 of his Direct Testimony that the Small Volume interruptible class:

1. Has several customers with “human needs or business essential services at their facilities and are not equipped to incur an interruption in service.”

1 2. Because of the limitations on interruption, “administering and monitoring
2 customers ... puts an additional burden on both the customer and the Company.”
3

4 3. Because this customer class has a small consumption load, interrupting these
5 customers has little impact.¹
6

7 These reasons are sufficient to eliminate the customer class. And since the customers
8 will be moved to the Small Volume Firm Class and the rates for that class are the same
9 as for the Small Volume Interruptible Class, the move will have no effect on base rates,
10 but it will increase the purchase gas adjustment cost for the customers moved.

11 **Q. Are there any substantive differences between Black Hills’ and Staff’s rate design**
12 **processes?**

13 A. Yes. There are five substantive differences: (1) treatment of retail sales and
14 transportation classes, (2) weather normalization, (3) customer annualization, (4) class
15 cost of service, and (5) the rate design structure.

16 **Different Treatment of Retail Sales and Transportation Classes**

17 **Q. What are the differences in how Black Hills and Staff treat retail sales and**
18 **transportation classes?**

19 A. Black Hills combines retail sales and transportation customer classes for the Small
20 Commercial Classes, the Small Volume Classes, and the Large Volume Classes, but not
21 for the Irrigation Classes for their class cost of service and rate design. Staff separates
22 all retail sales and transportation classes in its class cost of service and rate design. As a
23 result, Staff’s rate design has customer charge and volumetric rates that differ between
24 the retail sales and transportation customer classes for the Small Commercial, Small
25 Volume, and Large Volume Classes.

¹ Direct Testimony of Robert W. Daniel on Behalf of Black Hills, p. 4, lines 1-8 (May 7, 2021) (Daniel Direct).

Differences in Staff's and Black Hills' Weather Normalization Estimates

Q. What are the differences in how Staff and Black Hills estimate the weather normalization adjustment?

Staff uses a more complex weather normalization estimation process, and as a result Staff gets different weather normalization results. In addition, Black Hills did not weather normalize transportation classes while Staff weather normalized all the transportation classes as well as the retail sales classes.

Black Hills created a separate Irrigation Adjustment that adjusts for weather but is not based on standard weather normalization techniques. Staff weather normalized both Irrigation Interruptible and Transportation Service. For the difference between Black Hills' Irrigation Adjustment and standard weather normalization please consult the testimony of Staff Witness Dr. Lana Ellis.

Difference in Staff's and Black Hills' Customer Annualization Estimates

Q. How is Staff's customer annualization different from Black Hills' customer annualization?

A. Black Hills did not develop a customer annualization adjustment while Staff did.

Differences in Staff's and Black Hills' Class Cost of Services

Q. How is Staff's class cost of service different from Black Hills'?

A. As noted earlier, Staff separates retail sales classes from transportation classes and estimates rate base and net operating revenue for each retail sales and transportation class individually. Black Hills combines the Small Commercial, Small Volume, and Large Volume retail sales and transportation classes and estimates rate base and net operating revenue for the combined retail sales and transportation classes, except for irrigation. As a result, Staff estimates individual class rates of return for retail sales and transportation

1 classes while Black Hills estimates class rates of return for the combined Small
2 Commercial, Small Volume, and Large Volume retail sales and transportation classes.
3 For an explanation of the difference between Black Hills and Staff's CCOS see Staff
4 Witness Justin Prentiss's Testimony.

5 **Differences in Staff's and Black Hills' Rate Design Structures**

6 **Q. How are Staff's and Black Hills' rate designs different?**

7 A. Staff has individual customer charges and volumetric rates for retail sales and
8 transportation classes while Black Hills has the same customer charge and volumetric
9 rate for the retail sales and transportation classes of the Small Commercial, Small
10 Volume, Large Volume, and Irrigation Classes.

11 **Q. Why are Staff's and Black Hills' rate designs different?**

12 A. There are three causes for the differences between Staff and Black Hills' rate design.

13 First, although Staff and Black Hills began with the same billing determinants, Staff's
14 weather normalization adjustment is substantially different than Black Hills' weather
15 normalization adjustment and Staff has a customer annualization adjustment while Black
16 Hills does not. Therefore, Staff has substantially different billing determinants than
17 Black Hills.

18 Second, Staff's class cost of service provides differentiated class rates of return for
19 retail sales and transportation classes while Black Hills only differentiates between
20 Irrigation retail sales and transportation classes. Therefore, Staff has different cost
21 causation estimates for Commercial retail sales and transportation classes.

22 Third, Staff has a different revenue requirement than Black Hills. Therefore, Staff's
23 rate design is designed to recover substantially less revenue than Black Hills' rate design.

1 These differences in billing determinants, estimates of cost causation, and revenue
2 requirement results in the differences between Staff's and Black Hills' rate designs.

3 **Foundations for Rate Design—Billing Determinants and Class Cost of Service**

4 **Q. What are the foundations underlying most rate design processes?**

5 **A.**Most rate design processes are built on the customer billing determinants and guided by
6 the Class Cost of Service (CCOS).

7 **Billing Determinants**

8 **Q. What are billing determinants?**

9 **A.**Billing determinants are the data needed to generate existing and proposed revenues.
10 They include the number of customers, customer demand, and customer volumes used,
11 along with the tariff rates necessary to generate existing and proposed revenues.

12 **Q. Why are billing determinants important in a rate case?**

13 **A.**Billing determinants are essential to constructing a proof of revenue. A proof of revenue
14 is necessary (1) to provide a comparison of the revenue generated by existing rates and
15 proposed rates, and (2) to demonstrate the company can recover its approved revenue
16 requirement with the proposed rates.

17 **Adjustments to Billing Determinants**

18 **Q. Are Black Hills' and Staff's billing determinants the same?**

19 **A.**Black Hills and Staff begin with the same initial billing determinants. But Black Hills
20 and Staff have some different adjustments to the basic billing adjustments which result
21 in different billing determinants for Black Hills and Staff.

1 **Q. What are Black Hills' and Staff's adjustments to the billing determinants?**

2 A. Black Hills makes two adjustments: revenue synchronization and weather normalization.
3 Staff accepts Black Hills revenue synchronization adjustment but rejects Black Hills'
4 weather normalization adjustment.

5 Staff performed its own weather normalization analysis that resulted in a significantly
6 different adjustment than provided by Black Hills. In addition, Staff performed a
7 customer annualization analysis that led to an adjustment to both the customer count and
8 the volumetric usage.

9 **Revenue Synchronization Adjustment**

10 **Q. What is revenue synchronization?**

11 A. Revenue synchronization is the adjustment necessary to match booked revenues and
12 revenues calculated by multiplying current rates by test year billing determinants. For
13 further explanation of the revenue synchronization, see the Direct Testimony of Douglas
14 Hyatt, pages 16-17.

15 **Weather Normalization Adjustment**

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

17 A. Weather normalization is the adjustment of test year billing determinants to eliminate the
18 effects of abnormal weather—abnormal temperatures and precipitation—on test year
19 natural gas usage and the resulting Black Hills revenue collection. Normal is defined as
20 the average over a period time and abnormal is the deviation from the average. Although
21 Black Hills did not use standard weather normalization regression techniques for the
22 Irrigation adjustment, I have combined it with the weather normalization adjustment.

1 **Q. Why are the test year billing determinants weather normalized?**

2 A. Customer usage of natural gas is temperature sensitive because of natural gas space and
3 water heating. If the temperature is below average, then customer usage will increase
4 resulting in an increase in Black Hills' billed revenue. If temperature is above average,
5 then the reverse effect will take place. Irrigation responds differently to abnormal
6 weather: cooler temperatures and increased precipitation result in less customer usage
7 and lower billed revenue. Warmer temperatures and decreased precipitation result in the
8 reverse effect.

9 The test year billing determinants act as a known and measurable forecast of future
10 year's usage and revenue. If the test year billing determinants are above normal because
11 of abnormal weather, then customer rates will be set too low to recover the approved
12 revenue requirement in a normal year, and billing determinants below normal will result
13 in rates too high and over recovery of the revenue requirement in a normal year.

14 **Q. What is the difference between Black Hills' weather normalization adjustment**
15 **and Staff's adjustment?**

16 A. The total weather normalization adjustment for Black Hills was \$153,499 and the total
17 for Staff was \$455,879. Dr. Lana Ellis explains why Staff's weather normalization
18 adjustment is larger than Black Hills in her Direct Testimony.

19 **Customer Annualization Adjustment**

20 **Q. What is a test year customer annualization adjustment?**

21 A. The test year billing determinants act as a known and measurable forecast of future year's
22 usage and revenue. During the test year, the number of monthly customers in each rate
23 class tends to vary. The best known and measurable forecast of rate class customer count

1 is the number of customers at the end of the test year. The customer annualization
2 adjustment modifies the test year monthly customer count to reflect the same number of
3 customers in the class for each month as were in the final month of the test year while
4 preserving the seasonal variation in the monthly customer count. Staff Witness Dr. Lana
5 Ellis explains Staff's customer annualization in her Direct Testimony.

6 **Q. How does the customer annualization adjustment affect the billing determinants?**

7 A. The initial effect changes the number of customers in the rate classes. If the number of
8 customers each month increases, then the revenue increases by the monthly customer
9 charge multiplied by the monthly increase in customers for all months in the test year.

10 The secondary effect of the change in the number of customers is the change in
11 volumetric revenue. Staff's customer annualization method assumes that each customer
12 uses the average weather-normalized amount of natural gas. If the number of customers
13 increases, then the amount of natural gas increases by the increase in new customers
14 multiplied by customer the monthly average usage.

15 **Q. What is Staff's customer annualization adjustment?**

16 A. Staff's customer annualization adjustment is a revenue increase of \$126,806.

17 **Black Hills' Adjusted Billing Determinants**

18 **Q. What are the resulting billing determinants for Black Hills after the adjustments?**

19 A. Black Hills' weather normalization reduced the test year therms from 188,056,774 to
20 185,196,158, a reduction of 2,860,616 therms to the annual usage. Because Black Hills
21 did not do a customer annualization, the annual number of bills did not change. A more
22 detailed picture of the weather normalization results may be found in Table 1 below.

Table 1

Black Hills Customer Count and Customer Usage				
Customer Class	Number of Bills	Customer Usage (Therms)	Weather Norm Adjustment (Therms)	Adjusted Customer Usage (Therms)
	(a)	(b)	(c)	(d)
Residential	1,237,769	67,144,031	1,844,183	68,988,214
Small Commercial - Sales	110,073	10,386,335	633,388	11,019,723
Small Commercial - Transportation	2,517	702,645		702,645
Small Volume Firm	17,658	13,221,714	90,232	13,311,946
Small Volume Transportation	5,352	7,332,862		7,332,862
Large Volume Firm	475	3,721,675	2,031	3,723,706
Large Volume Transportation	1,576	40,845,319		40,845,319
Large Volume Interruptible	224	6,788,039		6,788,039
Subtotal	1,375,644	150,142,620	2,569,834	152,712,454
Irrigation Service	15,981	30,665,975	(4,365,817)	26,300,158
Irrigation Transportation	4,415	7,248,179	(1,064,633)	6,183,546
Total Sales and Transportation	1,396,040	188,056,774	(2,860,616)	185,196,158
NOTE: Black Hills combined sales and transportation classes for the Small Commercial, Small Volume, and Large Volume classes for weather normalization purposes.				

Q. Why is the Black Hills weather normalization revenue adjustment positive and the weather normalization volumetric adjustment negative?

A. The answer is that the Residential and Small Commercial volumetric rate (\$0.16833) is more than three times larger than the Irrigation's volumetric rate (\$0.05100). Table 2 shows the weather normalization volumetric adjustment and the calculation of the revenue adjustment: Column (a) is the weather normalization volumetric adjustment, Column (b) is the current customer class volumetric rates, and Column (c) is the weather normalization revenue adjustment calculated by multiplying Column (a) by Column (b). By comparing Column (a) to Column (c), one can see that even though the volumetric adjustment is substantially negative, the much higher volumetric rates cause the revenue adjustment to be positive.

Table 2

Black Hills: Weather Normalization with Current Rates			
Customer Class	Volumetric Adjustment (Therms)	Volumetric Charge	Adjusted Volumetric Revenue
	(a)	(b)	(c) = (a) × (b)
Residential	1,844,183	\$ 0.16833	\$ 310,431
Small Commercial - Sales	633,388	\$ 0.16833	\$ 106,618
Small Commercial - Transportation		\$ 0.16833	\$ -
Small Volume Firm	90,232	\$ 0.14700	\$ 13,264
Small Volume Transportation		\$ 0.14700	\$ -
Large Volume Firm	2,031	\$ 0.06800	\$ 138
Large Volume Interruptible		\$ 0.06800	\$ -
Large Volume Transportation		\$ 0.06800	\$ -
Subtotal	2,569,834		\$ 430,452
Irrigation Service	(4,365,817)	\$ 0.05100	\$ (222,657)
Irrigation Transportation	(1,064,633)	\$ 0.05100	\$ (54,296)
Total Sales and Transportation	(2,860,616)		\$ 153,499

Staff's Adjusted Billing Determinants

Q. What are the resulting billing determinants for Staff after the adjustments?

A. The customer count for Staff was increased by 336 because of the customer annualization and the usage was increased by 3,415,263 therms. Since Black Hills weather normalization reduced usage by 2,860.616 therms, the total difference in volumetric usage is 6,275,879 therms more in Staff's billing determinants. For more details about Staff billing determinants see Table 3 below.

1

Table 3

Staff's Billing Determinants							
Customer Class	Number of Bills	Staff's Customer Adjustment	Staff's Adjusted Number of Bills	Customer Usage (Therms)	Staff's Customer Adjustment (Therms)	Staff's Weather Norm Adjustment (Therms)	Staff's Adjusted Customer Usage (Therms)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Residential	1,238,181	412	1,238,593	67,144,031	341,912	1,801,380	69,287,324
Small Commercial - Sales	109,931	(143)	109,788	10,386,335	(216,250)	465,498	10,635,584
Small Commercial - Transportation	2,484	(34)	2,450	702,645	(210,402)	29,421	521,664
Small Volume Firm	17,721	63	17,783	13,221,714	696,664	279,071	14,197,450
Small Volume Transportation	5,342	(11)	5,331	7,332,862	(226,117)	96,082	7,202,827
Large Volume Firm	476	1	476	3,721,675	(34,955)	64,101	3,750,821
Large Volume Transportation	1,574	(2)	1,572	40,845,319	(662,534)	225,524	40,408,308
Large Volume Interruptible	226	2	227	6,788,039	663,251	6,478	7,457,768
Subtotal	1,375,932	288	1,376,220	150,142,620	351,570	2,967,555	153,461,746
Irrigation Service	16,089	108	16,197	30,665,975	299,289	(93,293)	30,871,970
Irrigation Transportation	4,355	(60)	4,295	7,248,179	(86,690)	(23,168)	7,138,321
Total Sales and Transportation	1,396,376	336	1,396,712	188,056,774	564,169	2,851,094	191,472,037

2

1 **Class Cost of Service**

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

3 A. A CCOS study allocates to a utility's customers the costs incurred in providing electricity
4 to those same customers. Since electric rates are set for classes of customers, the CCOS
5 study allocates the cost of service to rate classes. The CCOS study broadly informs the
6 rate analyst how much it costs to serve each customer class.

7 **Q. What is the strength of a CCOS?**

8 A. Using a CCOS study as a starting point and guide for class allocation of the revenue
9 requirement ensures the rate analyst is beginning the rate design process by employing
10 the principle of cost causation. The link between the CCOS and cost causation is the
11 strength of using a CCOS study for revenue allocation. However, CCOS studies do have
12 limitations.

13 **Q. What are the weaknesses of the CCOS?**

14 A. First, CCOS studies are an art; they are not a science. A substantial number of subjective
15 judgments must go into the production of any CCOS study. Second, because all CCOS
16 studies are based on allocation mechanisms that are approximations of structural
17 relationships, the CCOS studies must, themselves, be viewed as approximations. Third,
18 the approximations of the structural relationships are not based on statistical theory (for
19 the most part) so determining a confidence interval using statistical techniques is not
20 possible. Further, because of the size and complexity, only crude sensitivity analysis is
21 possible. Therefore, it is difficult to get a handle on the accuracy of the approximation
22 using sensitivity analysis. Thus, we are left knowing that the cost allocation from a

1 CCOS study is an approximation, but we cannot precisely know the numerical bounds of
2 the approximation. Fourth, a CCOS is a static snapshot of a dynamic process. Over time,
3 the structural cost relationships have changed and are expected to change in the future.
4 Thus, a rate analyst should be cautious when using a CCOS study to help determine class
5 revenue allocations.

6 **An Additional Limitation of Black Hills CCOS**

7 **Q. Is there an additional limitation of the Black Hills CCOS?**

8 A. Yes. Black Hills only separates the retail sales from the transportation class with the
9 Irrigation Class. The Small Commercial, Small Volume, and Large Volume retail sales
10 and transportation classes are combined for each class.

11 **The Important Differences Between Black Hills' CCOS and Staff's CCOS**

12 **Q. How does Staff's CCOS differ from Black Hills' CCOS?**

13 A. First, Staff separates the retail sales classes from the transportation classes for the Small
14 Commercial, Small Volume, and Large Volume Classes. Second, Staff uses different
15 allocation methods which result in less rate base and more net revenue allocated to
16 Residential Customers and more rate base and less net revenue allocated to Large
17 Volume Customers.

18 **Q. What limitations does the combining of retail sales classes with transportation**
19 **classes create for rate design structure?**

20 A. First, by combining the retail sales with the transportation classes, Black Hills' CCOS
21 does not provide an estimation of the individual costs of retail sales and transportation
22 customers unless retail sales and transportation customers generate the same costs.
23 Second, since the CCOS is the starting point in rate design and the guide to using cost

causation, the Black Hills' CCOS provides no help in setting rates for retail sales and transportation customers except to establish the same rates for both classes.

Q. Why is it important to separate the retail sales classes from the transportation classes?

A. Because Black Hills only separated retail sales from transportation for the Irrigation Class and not for the Small Commercial, Small Volume, and Large Volume Classes, there is no way to know from Black Hills' CCOS if there are any differences in the costs of providing retail sales service and transportation service. By separating the retail sales from transportation, Staff has provided an estimate of the different costs of retail sales service and transportation service. As a result of Staff's more granular approach to analyzing cost causation, Staff's rate design structure provides different cost based customer charges and volumetric charges for retail sales customers and transportation customers.

Comparison of Black Hills and Staff's CCOS Results

Q. How different is Staff's allocation of rate base and net revenue from the Black Hills' allocation?

A. Staff's CCOS allocates 59.1% of rate base and 77.5% of its net revenue to Residential Customers and 8.1% of rate base and 14.5% of its net revenue to Large Volume Firm, Transportation, and Interruptible Customers. Black Hills' CCOS allocates 71.5% of rate base and 55.3% of its net revenue to Residential Customers and 5.1% of rate base and 21.4% of its net revenue to Large Customers. These different allocations to the different classes directly affect the class rates of return and the relative class rates of return used in class allocation of the revenue requirement.

Table 4 below shows the class rate base allocation (column (a)), the return on rate base (column (b)), the rate of return (column (c)), and the relative rate of return (column (d)) for Black Hills' CCOS.

Table 4

Black Hills Rate of Return with Current Rates					
Customer Class	Rate Base	Current Return on Rate Base	Rate of Return	Relative Rate of Return	
	(a)	(b)	(c) = (b)/(a)	(d) = (c)/3.55%	
Residential	\$ 164,638,897	\$ 4,358,757	2.65%	0.75	
Small Commercial - Sales	\$ 23,209,495	\$ 631,109	2.72%	0.77	
Small Commercial - Transportation					
Small Volume Firm	\$ 18,258,164	\$ 1,101,105	6.03%	1.70	
Small Volume Transportation					
Large Volume Firm	\$ 13,049,757	\$ 1,447,856	11.09%	3.12	
Large Volume Transportation					
Large Volume Interruptible	\$ 887,731	\$ 300,755	33.88%	9.54	
Subtotal	\$ 220,044,044	\$ 7,839,582	3.56%	1.00	
Irrigation Service	\$ 8,098,442	\$ 295,847	3.65%	1.03	
Irrigation Transportation	\$ 2,195,292	\$ 45,428	2.07%	0.58	
Total Sales and Transportation	\$ 230,337,778	\$ 8,180,857	3.55%	1.00	
NOTE: Black Hills combined sales and transportation classes for the Small Commercial, Small Volume, and Large Volume classes for the Class Cost of Service.					

Table 5 below shows the class rate base allocation (column (a)), the return on rate base (column (b)), the rate of return (column (c)), and the relative rate of return (column (d)) for Staff's CCOS.

Table 5

Staff Rate of Return with Current Rates					
Customer Class	Rate Base	Current Return on Rate Base	Rate of Return	Relative Rate of Return	
	(a)	(b)	(c) = (b)/(a)	(d) = (c)/5.27%	
Residential	\$ 138,259,361	\$ 9,545,798	6.90%	1.31	
Small Commercial - Sales	\$ 23,411,447	\$ 1,258,000	5.37%	1.02	
Small Commercial - Transportation	\$ 449,382	\$ 76,165	16.95%	3.22	
Small Volume Firm	\$ 18,366,511	\$ 651,521	3.55%	0.67	
Small Volume Transportation	\$ 4,107,952	\$ 759,516	18.49%	3.51	
Large Volume Firm	\$ 3,958,512	\$ (44,374)	-1.12%	-0.21	
Large Volume Transportation	\$ 9,908,625	\$ 1,959,116	19.77%	3.75	
Large Volume Interruptible	\$ 5,008,027	\$ (130,535)	-2.61%	-0.49	
Subtotal	\$ 203,469,817	\$ 14,075,207	6.92%	1.31	
Irrigation Service	\$ 29,446,442	\$ (1,996,337)	-6.78%	-1.29	
Irrigation Transportation	\$ 1,006,591	\$ 238,857	23.73%	4.51	
Total Sales and Transportation	\$ 233,922,850	\$ 12,317,728	5.27%	1.00	

Q. What is rate base?

A. Rate base is the net amount of investment in utility plant and other assets needed to provide utility service

Q. What is the return on rate base (column (b))?

A. The return on rate base is the net revenue generated by the customer class. In Staff's CCOS, net revenue is named net operating revenue and in Black Hills' CCOS net revenue is named return on rate base. Net operating revenue and return on rate base are both the same concept as net revenue generated by the customer class.

Q. What is the class rate of return (column (c))?

A. The class rates of return are calculated by dividing net operating revenue by the rate base allocated to each class. The system-wide rate of return is found in column (c) in the lines

1 labeled Total Sales and Transportation for Black Hills and Staff. The class rates of return
2 are analogous to the system-wide rate of return but for each individual class.

3 **Q. What is a relative rate of return?**

4 **A.** The relative rate of return acts as an index and normalizes the class rates of return. For
5 a class, the relative rate of return index is calculated by dividing that class's rate of return
6 by the system-wide rate of return. The result is a pure number—the index has no units
7 attached to it. The formula for the relative rate of return index is given below.

$$\text{Relative Rate of Return Index} = \frac{\text{Class Rate of Return}}{\text{System Average Rate of Return}}$$

8
9
10 The relative rate of return index is a useful tool for analyzing the implications of class
11 rates of return. For example, assume that the system average rate of return is 8% and a
12 class has a rate of return of 7% and another class has a rate of return of 9%. The class
13 with the 7% rate of return would have a relative rate of return index of $0.875 \left(\frac{7\%}{8\%} \right)$ and
14 the class with the 9% rate of return would have a relative rate of return index of 1.125
15 $\left(\frac{9\%}{8\%} \right)$. A class with the same rate of return as the system wide average would have a
16 relative rate of return index of $1.0 \left(\frac{8\%}{8\%} \right)$. Thus, a class with an index above 1.0 is over-
17 earning while a class with an index below 1.0 is under-earning.

18 **The Rate Design Process**

19 **Q. What is the rate design process?**

20 **A.** The rate design process has two stages: (1) allocate revenue requirement among the
21 customer classes, and (2) develop rates for each customer class that provide the
22 opportunity for Black Hills to fully recover its revenue requirement.

1 **Q. What is the revenue requirement?**

2 A. The revenue requirement is a cost determined revenue that a regulated utility needs to
3 earn to recover the costs of providing service to its customers and a fair return for its
4 shareholders.

5 **Allocation of Revenue Requirement Among Customer Classes**

6 **Q. What is the starting point for allocating the total revenue requirement among**
7 **classes?**

8 A. The starting point for revenue requirement allocation is a proof of revenue for existing
9 rates. The current rates proof of revenue is created by multiplying the adjusted billing
10 determinants by the current rates. Since Black Hills and Staff have different adjusted
11 billing determinants, we also have different starting positions in the revenue allocation
12 process. Black Hills' Current Rates Proof of Revenue is in Douglas Hyatt's Direct
13 Testimony as Exhibit DNH-14. Staff's Current Rates Proof of Revenue is provided
14 below in Table 6.

Table 6

Base Rate Revenue with Current Rates and Staff's Billing Determinants							
Customer Class	Adjusted Number of Bills	Adjusted Customer Usage (Therms)	Customer Charge	Volumetric Charge	Total Customer Charge	Total Volumetric Charge	Total Base Rate Revenue
Residential	1,238,593	69,287,324	\$ 16.94	\$ 0.16833	\$ 20,981,765	\$ 11,663,135	\$ 32,644,901
Small Commercial - Sales	109,788	10,635,584	\$ 25.94	\$ 0.16833	\$ 2,847,901	\$ 1,790,288	\$ 4,638,189
Small Commercial - Transportation	2,450	521,664	\$ 25.94	\$ 0.16833	\$ 63,553	\$ 87,812	\$ 151,365
Small Volume Firm	17,783	14,197,450	\$ 52.97	\$ 0.14700	\$ 941,966	\$ 2,087,025	\$ 3,028,991
Small Volume Transportation	5,331	7,202,827	\$ 52.97	\$ 0.14700	\$ 282,383	\$ 1,058,816	\$ 1,341,199
Large Volume Firm	476	3,750,821	\$ 333.10	\$ 0.06800	\$ 158,556	\$ 255,056	\$ 413,611
Large Volume Transportation	1,572	40,408,308	\$ 333.10	\$ 0.06800	\$ 523,633	\$ 2,747,765	\$ 3,271,398
Large Volume Interruptible	227	7,457,768	\$ 333.10	\$ 0.06800	\$ 75,614	\$ 507,128	\$ 582,742
Subtotal	1,376,220	153,461,746			\$ 25,875,370	\$ 20,197,024	\$ 46,072,395
Irrigation Service	16,197	30,871,970	\$ 28.45	\$ 0.05100	\$ 460,805	\$ 1,574,470	\$ 2,035,275
Irrigation Transportation	4,295	7,138,321	\$ 28.45	\$ 0.05100	\$ 122,193	\$ 364,054	\$ 486,247
Total Sales and Transportation	1,396,712	191,472,037			\$ 26,458,368	\$ 22,135,549	\$ 48,593,917

1 **Q. Do the differences in starting points between Black Hills and Staff prevent**
2 **comparison of the revenue requirement allocation among classes?**

3 Although the differences in billing determinants are ultimately important in the rate
4 design process, at this point in the process the difference in starting points can be ignored
5 by using the delta in revenue requirement—the change in revenue requirement advocated
6 by Black Hills and Staff rather than the full revenue requirement. The delta is allocated
7 rather than the whole revenue requirement.

8 **Q. Do Black Hills and Staff have different revenue requirement deltas to allocate**
9 **among the classes?**

10 A. Yes. Black Hills estimates that its revenue requirement delta is \$10,199,945 and Staff
11 estimates Black Hills delta is \$2,914,624

12 **Q. What is used as a guide to allocate the revenue requirement delta?**

13 A. The primary guide for allocating the revenue requirement delta is the CCOS because it
14 is built on cost allocation and is the best estimate of cost causation—the bellwether for
15 rate design structure. Using a CCOS study as a guide for class allocation of the revenue
16 requirement delta ensures the rate analyst is beginning the rate design process by
17 employing the principle of cost causation.

18 **Q. How is the CCOS used to allocate the revenue requirement delta?**

19 A. Staff uses the relative rate of return index as its CCOS guide to allocating the revenue
20 requirement delta. A class with a relative rate of return index less than 1.00 is generating
21 less net revenue given the amount of rate base allocated to it and is under-earning. A
22 class with a relative rate of return index greater than 1.00 is generating more net revenue
23 given the amount of rate base allocated to it and is over-earning. By changing the relative
24 revenue requirement delta allocation to a class, the rate analyst can either increase or

1 decrease the class relative rate of return index. The general approach is to give relatively
2 less of an increase in the delta to the classes that are over-earning and give relatively
3 more to classes that are under-earning.

4 **Q. Did Staff only use the relative rate of return index to develop its class allocations?**

5 A. No. Staff tempered the implications of the relative rate of return index by using the
6 principle of gradualism. The principle of gradualism recognizes the limitations of a
7 CCOS study, and reflects the uncertainty inherent in the art, the approximations, and the
8 static nature of CCOS studies. Because of the uncertainty of the results of a CCOS,
9 gradualism implies that small steps in changing class allocation of the delta rather than
10 large leaps should be taken, but it does not imply that no change should occur.

11 **Q. Gradualism seems to be a vague concept. How did Staff implement gradualism in**
12 **its class allocation?**

13 A. Staff implements gradualism by using three basic rules of thumb. First, if the relative
14 rate of return for a class is between 0.95 and 1.05 then that class should receive an
15 increase in revenue requirement approximately equal to the system-wide percentage
16 increase in revenue requirement.² Second, if a class is outside of the 10% range where
17 no major movement of revenue allocation is warranted, then any increase in revenue
18 requirement for the class should not move the class more than halfway toward the 1.0
19 relative rate of return. Third, Staff will not reduce the overall revenue requirement to a
20 class—no class will receive a rate reduction. These three rules of thumb moderate change
21 but do not prevent change.

² Paul Normand, Cross-Examination, Evidentiary Hearing Transcript, Docket No. 10-KCPE-415-RTS, p. 2889. When Mr. Normand answered Commissioners' questions in Docket No. 12-KCPE-764-RTS, he stated that he adopted this rule of thumb from "a young man at FERC" years before. Evidentiary Hearing Transcript, pp. 166-168.

Staff's Class Allocation of the Revenue Requirement Delta

Q. How did Staff allocate the revenue requirement delta among the Black Hills customer classes?

A. Staff's class allocation of the revenue requirement delta is shown in Table 7 below. Column (a) shows the base rate revenue with existing rates and column (b) the percentage each class's base rate revenue is of the total base rate revenue. Column (c) shows what an equal percentage increase in base rate revenue would be for each class. Column (d) shows Staff's proposed increase in revenue requirement for each class, column (e) shows the resulting base rate revenue with Staff's proposed increase added to the base rate revenue with existing rates, and column (f) shows what percentage each class has of the total base rate revenue after Staff's proposed allocation of the revenue requirement delta. Additionally, Table 8 below shows a comparison of Black Hills's proposed allocation of their revenue requirement delta and Staff's proposed allocation of our revenue requirement delta. Columns (a) and (b) show Black Hills' proposed allocation of their revenue requirement delta and the percentage increase for each class, and columns (c) and (d) show the same for Staff's proposed allocation of our revenue requirement delta.

Table 7

Staff's Proposed Allocation of the Revenue Requirement Increase						
Customer Class	Total Base Rate Revenue	Percentage Revenue Rate Class	Equal Percentage Increase in Revenue	Staff's Proposed Increase in Revenue Requirement	Total Base Rate Revenue	Percentage Revenue Rate Class
	(a)	(b)	(c)	(d)	(e)	(f)
Residential	\$ 32,644,901	67.2%	\$ 1,958,015	\$ 1,758,015	\$ 34,402,915	66.8%
Small Commercial - Sales	\$ 4,638,189	9.5%	\$ 278,195	\$ 278,195	\$ 4,916,383	9.5%
Small Commercial - Transportation	\$ 151,365	0.3%	\$ 9,079	\$ -	\$ 151,365	0.3%
Small Volume Firm	\$ 3,028,991	6.2%	\$ 181,676	\$ 262,120	\$ 3,291,111	6.4%
Small Volume Transportation	\$ 1,341,199	2.8%	\$ 80,444	\$ -	\$ 1,341,199	2.6%
Large Volume Firm	\$ 413,611	0.9%	\$ 24,808	\$ 106,262	\$ 519,874	1.0%
Large Volume Transportation	\$ 3,271,398	6.7%	\$ 196,216	\$ -	\$ 3,271,398	6.4%
Large Volume Interruptible	\$ 582,742	1.2%	\$ 34,952	\$ 149,714	\$ 732,456	1.4%
Subtotal	\$ 46,072,395	94.8%	\$ 2,763,385	\$ 2,554,306	\$ 48,626,701	94.4%
Irrigation Service	\$ 2,035,275	4.2%	\$ 122,074	\$ 360,318	\$ 2,395,593	4.7%
Irrigation Transportation	\$ 486,247	1.0%	\$ 29,165	\$ -	\$ 486,247	0.9%
Total Sales and Transportation	\$ 48,593,917	100.0%	\$ 2,914,624	\$ 2,914,624	\$ 51,508,541	100.0%

Table 8

Black Hills & Staff's Proposed Allocation of the Revenue Requirement Increase				
	Black Hills		Staff	
Customer Class	Proposed Increase in Revenue Requirement	Percent of Revenue Requirement Increase	Proposed Increase in Revenue Requirement	Percent of Revenue Requirement Increase
	(a)	(b)	(c)	(d)
Residential	\$ 7,779,231	76.3%	\$ 1,758,015	60.3%
Small Commercial - Sales	\$ 1,634,863	16.0%	\$ 278,195	9.5%
Small Commercial - Transportation	\$ 63,459	0.6%		
Small Volume Firm	\$ 175,232	1.7%	\$ 262,120	9.0%
Small Volume Transportation	\$ 60,273	0.6%		
Large Volume Firm			\$ 106,262	3.6%
Large Volume Transportation				
Large Volume Interruptible			\$ 149,714	5.1%
Subtotal	\$ 9,713,058	95.2%	\$ 2,554,306	87.6%
Irrigation Service	\$ 390,558	3.8%	\$ 360,318	12.4%
Irrigation Transportation	\$ 96,133	0.9%		
Total Sales and Transportation	\$ 10,199,750	100.0%	\$ 2,914,624	100.0%

Comparison of Black Hills and Staff's Proposed Revenue Requirement Allocation

Q. How do Black Hills and Staff's proposed allocation of their revenue requirement delta compare?

A. Black Hills and Staff start with their own CCOS and then moderate the results by using the principle of gradualism. Neither class allocation reduces any class's revenue requirement, but both have classes that receive no increase in the revenue requirement. For Black Hills, all three large classes received no increase in their revenue requirement. For Staff, all four transportation classes received no increase in revenue requirement. Finally, because of the dominant size of the Residential Class, both Black Hills and Staff allocated most of their increase in revenue requirement to the Residential Class.

Development of Rates for Each Customer Class

Q. What rate design does Black Hills propose?

A. Black Hills proposed a basic continuation of their current rate design with the additional revenue necessary to recover their revenue requirement delta. Table 9 below shows Black Hills' proposed rate structure.

Table 9

Black Hills: Current and Proposed Rates				
Customer Class	Current Rates		Proposed Rates	
	Customer Charge	Volumetric Charge	Customer Charge	Volumetric Charge
	(a)	(b)	(c)	(d)
Residential	\$ 16.94	\$ 0.16833	\$ 20.00	\$ 0.22619
Small Commercial - Sales	\$ 25.94	\$ 0.16833	\$ 35.00	\$ 0.22619
Small Commercial - Transportation	\$ 25.94	\$ 0.16833	\$ 35.00	\$ 0.22619
Small Volume Firm	\$ 52.97	\$ 0.14700	\$ 70.00	\$ 0.13943
Small Volume Transportation	\$ 52.97	\$ 0.14700	\$ 70.00	\$ 0.13943
Large Volume Firm	\$ 333.10	\$ 0.06800	\$ 333.10	\$ 0.06800
Large Volume Transportation	\$ 333.10	\$ 0.06800	\$ 333.10	\$ 0.06800
Large Volume Interruptible	\$ 333.10	\$ 0.06800	\$ 333.10	\$ 0.06800
Irrigation Service	\$ 28.45	\$ 0.05100	\$ 35.00	\$ 0.06187
Irrigation Transportation	\$ 28.45	\$ 0.05100	\$ 35.00	\$ 0.06187
NOTE: Proposed Volumetric Charge for Small Volume Firm and Transportation is the corrected rate. See Black Hills response to Staff Data Request 228.				

Q. What guidelines did Black Hills employ in its development of its proposed rate design?

A. Black Hills witness Douglas Hyatt listed on pages 26 and 27 seven guidelines used in developing the Black Hills rate design proposal. The seven guidelines are:

1. The overall increase should be approximately \$10.199 million.
2. The revenues for each class should align with the class cost of service study to the extent practical.

3. The proposed customer charges should reflect customer related costs to the extent practical.
4. The commodity charge for the Residential and Small Commercial rates should be equal maintaining the current practice.
5. Maintain the existing differential between the Residential and Small Commercial commodity charge and the Small Volume commodity charge to the extent practical.
6. The customer and commodity (non-gas portion) should be the same for the Firm and Transportation rates within the Small Volume and Irrigation customer classes, and Firm, Interruptible, and Transportation within the Large Volume customer class.
7. The Irrigation customer charge should be the same as the Small Commercial reflecting both the current practice and due to the fact that the irrigation customers have a significant number of months of little or no use.

Q. Does Staff agree with the seven guidelines provided by Black Hills?

A. The first three guidelines basically state set rates to recover the revenue requirement and use cost causation as a principle of rate design structure tempered gradualism. The last four guidelines seem ad hoc without an obvious justification.

Q. Did Staff ask Black Hills for a justification for the last four guidelines?

A. Yes. In Staff Data Request No. 226 Staff asked for the source and the reason for the last four guidelines. Black Hills responded that the source for the guidelines is “fundamentally the same as those used in the currently approved rate design in Docket No. 14-BHCG-502-RTS.” The reason for these guidelines is that they “provide for the updating of the current rates with the overall increase in revenue requirement and aligns with the results of the Class Cost of Service Study. The Company is not proposing any changes to the current rate design other than the elimination of the Small Volume Interruptible rate schedule.”

1 **Q. Does Staff agree with Black Hills?**

2 A. Staff agrees with most of Black Hills' response. In the 14-BHCG-502-RTS Docket,
3 Black Hills proposed the same basic guidelines with the addition of "Pricing should
4 reflect market pressures."³ Staff agrees that Black Hills is proposing a continuation of
5 the same rate design structure with only an increase in rates to collect additional revenue.
6 And finally Staff agrees that the proposed rates align with Black Hills CCOS.

7 What Staff disagrees with is continuing with the same rigid rate design while Staff's
8 CCOS indicates that the rigid rate design does not reflect the cost differences between
9 retail sales and transportation.

10 **Q. Did Staff agree to the continuation of the Black Hills in the settlement in Docket**
11 **No. 14-BHCG-502-RTS.**

12 A. Staff agreed to a continuation of the rate design structure in a negotiated settlement, but
13 the continuation was not a precedent.

14 Except as specified herein, the Parties shall not be prejudiced, bound by, or in
15 any way affected by the terms of this Agreement (a) in any future proceeding;
16 (b) in any proceeding currently pending under a separate docket; and/or (c) in
17 this proceeding should the Commission decide not to approve this Agreement
18 in the instant proceeding.⁴

19 Staff agreed to the continuation of the rate design structure for the 14-BHCG-502-
20 RTS Docket only. In the current docket, Staff is under no obligation to follow the
21 previously approved rate design. And since Staff's CCOS indicates that the existing
22 rate design substantially violates cost causation, Staff's proposed rate design will
23 violate Black Hills guidelines four through seven by following cost causation.
24

³ Thomas Sullivan, Direct Testimony, Docket No. 14-BHCG-502-RTS, pp. 40-14.

⁴ Stipulated Settlement Agreement, Docket No. 14-BHCG-502, p. 8. The settlement was approved in Order Approving Stipulated Settlement Agreement, Docket No. 14-BHCG-502.

Q. What is Staff's proposed rate design?

A. Staff's proposed rate design along with the existing rates is in Table 10 below.

Table 10

Staff: Current and Proposed Rates				
Customer Class	Current Rates		Proposed Rates	
	Customer Charge	Volumetric Charge	Customer Charge	Volumetric Charge
	(a)	(b)	(c)	(d)
Residential	\$ 16.94	\$ 0.16833	\$ 18.50	\$ 0.16582
Small Commercial - Sales	\$ 25.94	\$ 0.16833	\$ 28.47	\$ 0.16833
Small Commercial - Transportation	\$ 25.94	\$ 0.16833	\$ 25.94	\$ 0.16833
Small Volume Firm	\$ 52.97	\$ 0.14700	\$ 67.71	\$ 0.14700
Small Volume Transportation	\$ 52.97	\$ 0.14700	\$ 52.97	\$ 0.14700
Large Volume Firm	\$ 333.10	\$ 0.06800	\$ 380.00	\$ 0.09050
Large Volume Transportation	\$ 333.10	\$ 0.06800	\$ 333.10	\$ 0.06800
Large Volume Interruptible	\$ 333.10	\$ 0.06800	\$ 380.00	\$ 0.08665
Irrigation Service	\$ 28.45	\$ 0.05100	\$ 50.00	\$ 0.05137
Irrigation Transportation	\$ 28.45	\$ 0.05100	\$ 28.45	\$ 0.05100

Q. Has Staff prepared a proof of revenue for its proposed rate design?

A. Yes. Table 11 on the next page has the proof of revenue for Staff's proposed rate design.

Table 11

Base Rate Revenue with Current Rates and Staff's Billing Determinants							
Customer Class	Adjusted Number of Bills	Adjusted Customer Usage (Therms)	Customer Charge	Volumetric Charge	Total Customer Charge	Total Volumetric Charge	Total Base Rate Revenue
Residential	1,238,593	69,287,324	\$ 18.50	\$ 0.16582	\$ 22,913,971	\$ 11,488,947	\$ 34,402,917
Small Commercial - Sales	109,788	10,635,584	\$ 28.47	\$ 0.16833	\$ 3,125,664	\$ 1,790,288	\$ 4,915,952
Small Commercial - Transportation	2,450	521,664	\$ 25.94	\$ 0.16833	\$ 63,553	\$ 87,812	\$ 151,365
Small Volume Firm	17,783	14,197,450	\$ 67.71	\$ 0.14700	\$ 1,204,087	\$ 2,087,025	\$ 3,291,112
Small Volume Transportation	5,331	7,202,827	\$ 52.97	\$ 0.14700	\$ 282,383	\$ 1,058,816	\$ 1,341,199
Large Volume Firm	476	3,750,821	\$ 380.00	\$ 0.09050	\$ 180,880	\$ 339,449	\$ 520,329
Large Volume Transportation	1,572	40,408,308	\$ 333.10	\$ 0.06800	\$ 523,633	\$ 2,747,765	\$ 3,271,398
Large Volume Interruptible	227	7,457,768	\$ 380.00	\$ 0.08665	\$ 86,260	\$ 646,216	\$ 732,476
Subtotal	1,376,220	153,461,746			\$ 28,380,431	\$ 20,246,317	\$ 48,626,748
Irrigation Service	16,197	30,871,970	\$ 50.00	\$ 0.05137	\$ 809,850	\$ 1,585,893	\$ 2,395,743
Irrigation Transportation	4,295	7,138,321	\$ 28.45	\$ 0.05100	\$ 122,193	\$ 364,054	\$ 486,247
Total Sales and Transportation	1,396,712	191,472,037			\$ 29,312,474	\$ 22,196,264	\$ 51,508,738

Q. Why did Staff increase the Residential customer charge and reduce the Residential volumetric charge?

A. Staff had two reasons for its Residential rate design.

First, the rebasing of the Gas System Reliability Surcharge (“GSRS”) represented much more than Staff’s proposed increase in revenue requirement—the delta. Since the GSRS is collected in a fixed customer charge, it seems natural to increase the customer charge to recover the revenue increase.

Second, Black Hills’ Residential customer charge is the lowest of the Kansas Natural Gas Investor Owned Utilities while its volumetric charge is between Kansas Gas Service (“KGS”) and Atmos Energy’s volumetric charge. Table 12 illustrates the relationship between Staff’s proposed Black Hills’ rates and KGS and Atmos’ rates.

Table 12

Comparison of Staff's Proposed Rates with Other Natural Gas Utilities' Rates			13
Natural Gas Utility	Customer Charge	Volumetric Charge	
	(a)	(b)	
Black Hills Proposed Rates	\$ 18.50	\$ 0.16582	
Kansas Gas Service Rates	\$ 18.18	\$ 0.22647	
Atmos Gas Service Rates	\$ 18.89	\$ 0.14804	
NOTE: Black Hills volumetric rate is in therms while the KGS volumetric rate is in McF and the Atmos volumetric rate is in Ccf. The KGS rate and the Atmos rate were changed to therms using 10.37 therms per Mcf and 1.037 therms per Ccf. The Energy Information Administration recommended the conversion factors based on averages from 2020.			

1 **Q. How did Staff determine the rates for the Commercial Sales and Transportation**
2 **customers?**

3 A. Staff left the rates for the Transportation customers unchanged since they were all
4 substantially over recovering revenue. For the Commercial Sales customer classes, Staff
5 first increased the customer charge because of the GSRS rebasing, and then fine-tuned
6 with the volumetric charge. Staff's rate design recovers Staff's calculation of the revenue
7 requirement delta plus \$197—Staff's rate design provides Black Hills with the
8 opportunity to recover Staff's proposed revenue requirement delta.

9 **Staff's Rate Design Recommendation**

10 **Q. What is Staff rate design recommendation?**

11 A. Staff recommends that Black Hills rigid rate design be rejected, and instead accept Staff's
12 recommended rate design structure because its more granular structure allows for rates
13 that better reflects the cost to serve customers.

14 **IV. TAX ADJUSTMENT RIDER**

15 **Black Hills' Proposed Tax Adjustment Rider**

16 **Q. Why is Black Hills proposing the Tax Adjustment Rider (TA Rider)?**

17 A. Black Hills is proposing the TA Rider to compensate for changes in Excess Accumulated
18 Deferred Income Taxes (EDIT) because of recent legislation at both the national and state
19 level. Effective January 1, 2018, the federal corporate income tax rate was dropped from
20 35% to 21%. Then in 2020, the Kansas corporate income tax rate for certain Kansas
21 utilities was dropped from 7% to 0%. Black Hills Witnesses Thomas Stevens, Kenneth

1 Crouch, and Staff Witness Ian Campbell all discuss the accounting aspects of the
2 corporate income tax changes and the impact on Kansas Black Hills customers.

3 **Staff's Recommendation for Revenue Refund**

4 **Q. Does Staff accept the TA Rider proposal by Black Hills?**

5 A. No. Staff proposes that customers recover the rider revenue in base rates.

6 **Q. Why are you discussing this accounting issue?**

7 A. In case the Commission decides that it wants to allow recovery of the TA Rider revenue
8 with a rider, Staff is suggesting a simpler, fairer, and more transparent rider than the TA
9 Rider proposed by Black Hills.

10 **The Calculation of Black Hills' TA Rider Refund**

11 **Q. How is the Black Hills TA Rider refund calculated?**

12 A. The description of the refund calculation is in the testimony of Black Hills witness
13 Thomas Stevens. Table 13 below is a recreation of KSG Direct Exhibit TDS-3 which
14 shows the calculation of Black Hills TA Rider refund.

Table 13

Black Hills Tax Adjustment Rider Refund Proposal				
Customer Classes	Rate Base Allocation Factors	Rider TS Refund by Customer Class	Proposed Base Rate Revenue by Customer Class	Calculated Refund Percentage by Customer Class
	(A)	(B) = (A) * \$8,423,897	(C)	(D) = -(B)/(C)/3
Residential	0.71477	6,021,162	40,359,824	(0.049729)
Small Commercial	0.10076	848,816	6,592,132	(0.042921)
Small Volume	0.07927	667,736	4,489,132	(0.049582)
Large Volume	0.06051	509,721	4,250,083	(0.039977)
Irrigation	0.04469	376,462	2,723,627	(0.046074)
Total	1.00000	8,423,897	58,414,798	

The Black Hills procedure starts with the customer rate base allocation, column (A), which is used to allocate the total TA refund amount to customer classes. The result of the calculation is in column (B). Divide the allocated amount by class revenue in column (C) into the customer class amount in column (B) to get the percentage of total rate revenue collected by Black Hills with its proposed base rates. Then divide further by 3 because the amount is going to be returned over three years. The result is the annual percentage of the customer's bill that is reduced by the TA Rider Refund—column (D).

Staff's Objections to Black Hills' TA Rider

Q. What are Staff's objections to the Black Hills proposal?

A. The first problem with the proposal is Column (A). The rate base allocation is from Black Hills CCOS. Staff's rate base allocation, as discussed earlier, is much different. The Commission has rarely picked a "CCOS winner" in a rate case. And the filed CCOSs in the docket are obsolete as soon as the Commission changes the revenue requirement

1 delta, so it does not match either Black Hills or Staff's filed position. To accurately use
2 the Black Hills first step in the allocation mechanism, the Commission would need to
3 pick a CCOS and then have it recalculated using the new Commission approved revenue
4 requirement delta.

5 The second problem is that using a second allocation mechanism in the calculation,
6 the base rate revenue by customer class, the Black Hills method creates a unique revenue
7 allocation for each customer class—notice that in Column (D) the percentage return
8 varies by customer class. Given that corporate taxes are collected from the utility and
9 not from customer classes, the difference in class returns raises questions of opaqueness
10 and fairness.

11 **Staff's Suggested Substitution TA Rider Refund**

12 **Q. What is Staff's suggestion for a TA Rider refund?**

13 A. If the Commission prefers to refund the excess revenue using a rider rather than base
14 rates, then Staff proposes a much simpler allocation method in Table 14 below where
15 Staff has used Black Hills' numbers for illustrative purposes. Column (A) is Column (C)
16 from Table 13—base rate revenue by customer class. The refund is constructed on the
17 base rate revenue, and in Table 14, the percentage allocation is calculated for each class.
18 Notice they are all the same. Thus, the allocation percentage only needs to be calculated
19 once, see equation below and dividing by 3 gives the annual rate for 3 years.

20
$$\text{Refund Percentage} = \frac{\text{Total Refund}}{\frac{\text{Total Base Rate Revenue}}{3}}$$

Table 14

Staff's Suggested Tax Adjustment Rider Refund			
Customer Classes	Proposed Base Rate Revenue by Customer Class	Rider TS Refund by Customer Class	Calculated Refund Percentage by Customer Class
	(A)	(B) = (A) * \$8,423,897	(C) = -(B)/(A)/3
Residential	40,359,824	5,820,220	(0.048069)
Small Commercial	6,592,132	950,640	(0.048069)
Small Volume	4,489,132	647,370	(0.048069)
Large Volume	4,250,083	612,897	(0.048069)
Irrigation	2,723,627	392,770	(0.048069)
Total	58,414,798	8,423,897	

Q. Besides simplicity, are there other advantages of Staff's suggested TA Rider?

A. Yes. First, by only using the base rate revenue to allocate the refund, the Commission is using a number that it determines when it accepts a new rate design. The Commission does not need to select a CCOS and have it recalculated.

Second, the percentage refund is the same for all classes, which in this case is inherently transparent and fair. The corporate income tax is tied to revenue, and allocating excess revenue based on base rate revenue fits with the concept of cost causation.

Staff's TA Rider Recommendation

Q. What is your recommendation for the proposed TA Rider?

A. Staff recommends that the Black Hills proposed TA Rider be rejected, and instead the excess revenue collection be recovered in base rates. If the Commission does prefer

1 recovery in a rider, Staff recommends that Staff's substitute TA Rider be used because it
2 is simpler, fairer, and more transparent.

3 **V. 10 YEAR AND 30 YEAR WEATHER NORMS**

4 **Q. Are you the Staff Witness for the weather normalization adjustment?**

5 A. No. Dr. Lana Ellis is the Staff Witness for the weather normalization adjustment and her
6 testimony should be consulted for Staff's position on the weather normalization
7 adjustment. I am only going to discuss 10 year and 30 year weather normals.

8 **Weather Normals**

9 **Q. What are 10 year and 30 year weather norms?**

10 A. They are monthly averages for weather variables such as heating degree days (HDD),
11 temperature, and precipitation for a particular weather station. The difference between
12 the 10 year and the 30 normals are that the period of data for averaging: 10 year normals
13 are averaged over 10 years and 30 year normals are averaged over 30 years.

14 **Staff's Previous Adoption of a rolling 30 year normals**

15 **Q. What period has Staff used for its weather normals in the past?**

16 A. When I first started work at the Commission, Staff used the 30 year weather normals
17 produced by The National Oceanic and Atmospheric Administration (NOAA). Every
18 decade NOAA would produce a new a new set of 30 year weather normals—in 2000 the
19 new normals would be constructed on data from 1971 through 2000, and then in 2010 a
20 new set constructed on data from 1981 through 2010 would be produced.

21 By 2009 it became clear that the 2000 weather normals were not accurately reflecting
22 the changes in temperature that were occurring—the 1970s were the last cold decade and

1 in Topeka and Wichita the 1970s were cold enough to skew the weather normals. In
2 looking at the annual data since 1947 for Topeka and 1953 for Wichita, the two years
3 with the highest HDDs were 1978 and 1979. Starting in 2009, Staff began using 30 year
4 rolling weather normals—1979 through 2008. After using the 2010 NOAA 30 year
5 normals for a few years in the early 2010s, Staff returned to using a 30 year rolling
6 average because of the warming trend that started in the mid-2010s.

7 **Q. Why did the warming trend cause Staff's return to the rolling 30 year weather**
8 **normals?**

9 A. The increasing trend in warmer weather from 2014 to 2020 made it evident that natural
10 gas utilities would under recover revenue requirement even more than they had using
11 older weather normals.

12 **Warming Weather Trend Since the mid-2010s**

13 **Q. What evidence do you have for the warming trend after 2013?**

14 A. Table 15 below has NOAA average temperature difference, in Celsius degrees, on an
15 annual basis from the 1901 through 2000 average temperature. Column (a) has the
16 Celsius degrees above the average and Column (b) has the rank from warmest to coolest
17 years starting in 1880—141 years of data. Notice that the seven warmest years are the
18 last seven years.

Table 15

NOAA: Temperature Difference from 1901 through 2000 Average Temperature		
	Celsius Degress above Average	Year Rank
Year	1901 through 2000	Warmest to Coolest 1880 through 2000
	(a)	(b)
2016	0.99	1
2020	0.98	2
2019	0.95	3
2015	0.93	4
2017	0.91	5
2018	0.82	6
2014	0.74	7
2010	0.72	8
2005	0.67	9
2013	0.67	10

Staff's New Position on Weather Normals

Q. Is Staff changing its position on the rolling 30 year weather normals?

A. Yes. For the case of Black Hills, Staff is recommending the use of 10 year normals rather than a rolling 30 year normal.

Q. Has Staff recommended 10 year weather normals before?

A. No. In the 18-KGSG-560-RTS docket Staff argued against using 10 year normals.⁵

Q. Why did Staff argue against 10 year weather normals in the KGS rate case?

A. Staff argued that 30 year weather normals were more predictable and consistent.

Q. Does Staff still think 30 year normals are more predictable and consistent?

A. Yes. Figures 1 and 2 below show a comparison of rolling 30 year HDD normals and rolling 10 year HDD normals for Topeka and Wichita with the end date of the normals

⁵ Robert Glass, Direct Testimony, Docket No. 18-KGSG-580-RTS, pp. 24 – 32.

starting in 1983 and finishing in 2020. For both cities, the 30 year normals are consistently declining except for a few examples before 1997 while the 10 year normals are usually declining but occasionally increasing even after 1997. Thus, Staff concluded in the KGS rate case that the 30 year normals were more predictable and consistent and that conclusion remains correct today.

Figure 1

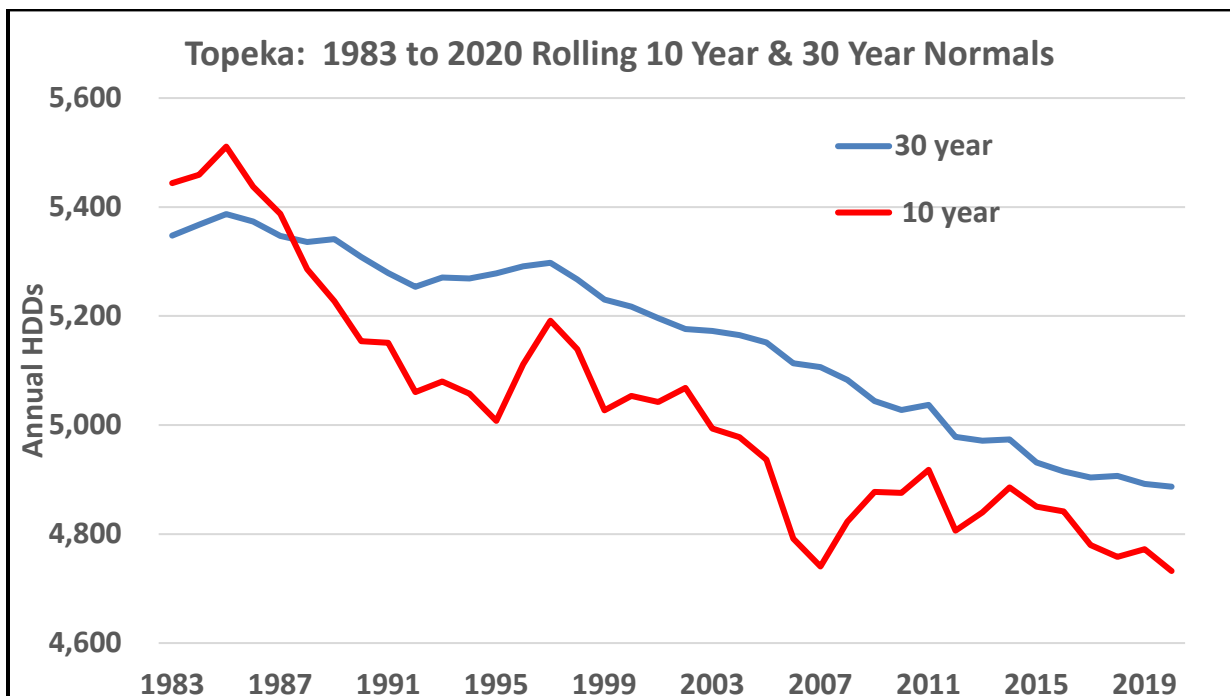
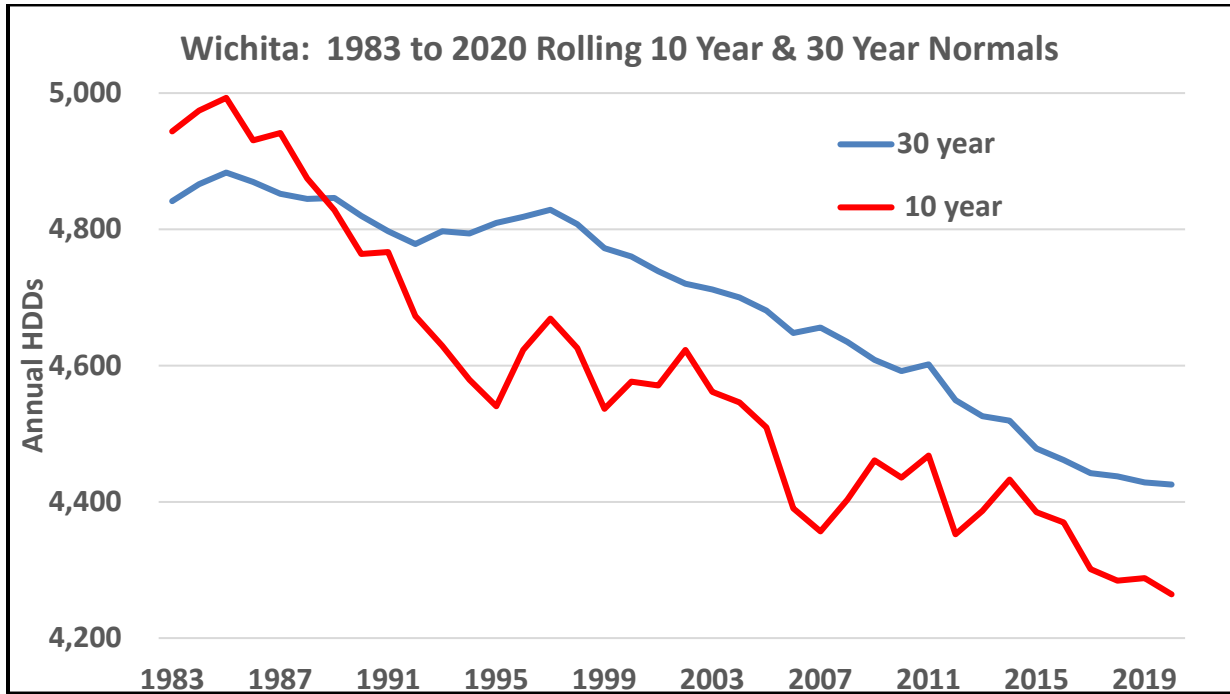


Figure 2



Q. Why then is Staff changing its recommendation?

A. Even though the 30 year normals are more predictable and consistent, they are also predictably and consistently underestimating warmer weather of Topeka and Wichita. The 30 year normals are going to be smoother because they have more data to average. But the 10 year normals are going to emphasize an ongoing trend better because they only use more recent data. If the trend of warmer weather continues, then the 10 year normals are going to be better at stabilizing natural gas revenue collection.

Q. Is Staff then permanently changing to recommending 10 year weather normals?

A. No. The recommendation is for this docket. Staff will evaluate the success or failure of the 10 year normals and reevaluate the use of 10 year normals in the next natural gas rate case.

1 **Q. Has Staff checked more than just Topeka and Wichita weather normals?**

2 A. Yes. Staff compared the 10 year normals in 2020 to the 30 year normals for 2020 for all
3 five of the weather stations used in this docket: Concordia, Dodge City, Goodland,
4 Topeka, and Wichita. In all cases, the 10 year HDD normals were less than the 30 year
5 HDD normals and the 10 year average temperature was higher than the 30 year average
6 temperature—for all five weather stations there is clearly a warming trend over the past
7 10 years.

8 **Staff's Recommendation for Weather Normals**

9 **Q. What is Staff's recommendation for weather normals to use in this docket?**

10 A. Staff recommends that the Commission determine that 10 year normals be tried in this
11 docket, and that Staff continue to track the performance of 10 year and 30 year normals.
12 Staff also recommends that the Commission's determine the use of a 10 year normal to
13 not be precedential for all future rate cases.

14
15 **Q. Does this conclude your testimony?**

16 A. Yes. Thank you.

STATE OF KANSAS)
) ss.
COUNTY OF SHAWNEE)

VERIFICATION

Bob Glass, being duly sworn upon his oath deposes and states that he is 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.



Bob Glass
Chief of Economic Policy and Planning
State Corporation Commission of the
State of Kansas

Subscribed and sworn to before me this 10 day of September, 2021.


Notary Public

My Appointment Expires: 4/28/25



NOTARY PUBLIC - State of Kansas
ANN M. MURPHY
My Appt. Expires 4/28/25

CERTIFICATE OF SERVICE

21-BHCG-418-RTS

I, the undersigned, certify that a true and correct copy of the above and foregoing testimony was sent by electronic mail this 10th day of September, 2021, to the following:

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