

**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
the Commission to Make Certain Changes
in its Rates for Natural Gas Service**)
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Docket No. 21-BHCG-418-RTS

DIRECT TESTIMONY OF DOUGLAS N. HYATT

ON BEHALF OF

**BLACK HILLS/KANSAS GAS UTILITY
COMPANY, LLC, d/b/a BLACK HILLS ENERGY**

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1 **I. INTRODUCTION**

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

3 A. My name is Douglas N. Hyatt, and my business address is 1515 Arapahoe Street, Tower 1,
4 Suite 1200, Denver, CO 80202.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

6 A. I am employed by Black Hills Service Company, LLC ("BHSC"). I am a Principal
7 Regulatory and Finance Analyst. BHSC is a wholly owned subsidiary of Black Hills
8 Corporation ("BHC").

9 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

10 A. I am testifying on behalf of Black Hills/Kansas Gas Utility Company, LLC d/b/a Black Hills
11 Energy ("Black Hills" or "Company"). Black Hills is a wholly owned subsidiary of Black
12 Hills Utility Holdings, Inc. ("BHUH"). BHUH is a wholly owned subsidiary of BHC.

13 **II. STATEMENT OF QUALIFICATIONS**

14 **Q. WILL YOU PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND**
15 **BUSINESS EXPERIENCE?**

16 A. My education, employment history, and professional experience are provided on KSG Direct
17 Exhibit DNH-1.

1 **Q. WHAT ARE YOUR CURRENT JOB RESPONSIBILITIES?**

2 A. I am responsible for gathering, researching and analyzing customer billing data, and other
3 information to prepare analyses in support of internal analysis and external regulatory reports
4 and filings. I am also responsible for preparing class cost of services studies and designing
5 rates for the Company's rate proceedings.

6 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY REGULATORY BODIES?**

7 A. Yes. I have testified before the Colorado Public Utilities Commission, and prepared
8 testimony filed with the Wyoming Public Service Commission and the Nebraska Public
9 Service Commission.

10 **Q. ARE YOU SPONSORING ANY EXHIBITS?**

11 A. Yes, I am sponsoring the following Exhibits:

KSG Direct Exhibit DNH-1	Education, Employment History and Professional Experience
KSG Direct Exhibit DNH-2	Summary of Weather Normalization Statistical Results
KSG Direct Exhibit DNH-3	Test Year Weather Normalization Adjustment
KSG Direct Exhibit DNH-4	Irrigation Normalization Adjustment
KSG Direct Exhibit DNH-5	Test Year Revenues Under Existing Rates
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KSG Direct Exhibit DNH-9	Meter Weighting Factor Study
KSG Direct Exhibit DNH-10	Service Line Cost Study
KSG Direct Exhibit DNH-11	Mains Study
KSG Direct Exhibit DNH-12	Functional Cost Classification
KSG Direct Exhibit DNH-13	Class Cost of Service Study
KSG Direct Exhibit DNH-14	Revenues Under Current and Proposed Rates
KSG Direct Exhibit DNH-15	Average Customer Bill Impacts Under Current and Proposed Rates

1 **Q. HAVE THE TESTIMONY AND EXHIBITS THAT YOU ARE SPONSORING BEEN**
2 **PREPARED BY YOU OR UNDER YOUR SUPERVISION?**

3 A. Yes.

4 **III. PURPOSE OF TESTIMONY**

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

6 A. The purpose of my testimony is to describe the test year adjustments to billing determinants,
7 the Class Cost of Service Study (“CCOSS”) and proposed rate design. In my testimony I
8 sponsor the following analyses, studies and proposals:

- 9 1. The billing determinants and revenues under current rates used in the CCOSS
10 and rate design, including:
 - 11 a. The Company’s proposed weather normalization adjustment
12 (“WNA”) of volumes for heating by the Residential, Small
13 Commercial, Small Volume Firm, and Large Volume Firm customer
14 classes;
 - 15 b. The adjustment to irrigation volumes to reflect normal conditions;
- 16 2. The customer class load factor analysis;
- 17 3. The weighting factors studies;
- 18 4. The CCOSS;
- 19 5. Design of the rates proposed by the Company and rate design to produce
20 revenues equal to the Company’s proposed test year revenue requirement;
21 and,
- 22 6. The revenue proofs and bill impact analysis.

1 The following sections of my direct testimony generally follow this outline.

2 **IV. TEST YEAR REVENUES UNDER CURRENT RATES**

3 **Q. PLEASE DESCRIBE WHAT IS MEANT BY THE TERM BILLING**
4 **DETERMINANTS.**

5 A. A “therm” is a unit for quantity of heat that equals 100,000 British thermal units. Billing
6 determinants include the number of therms contained within the quantity of natural gas used
7 by the customer, as well as the number of customer bills issued to the customer. These billing
8 determinants form the bases for calculating the customers’ bills. The billing determinants I
9 develop for Black Hills’ rate application are used in the allocation of costs to each customer
10 class in the CCOSS and the determination of revenues under existing and proposed rates.

11 **Q. HAVE YOU PREPARED A SUMMARY OF TEST YEAR BILLING**
12 **DETERMINANTS AND REVENUES BY CUSTOMER CLASS?**

13 A. Yes. The billing determinants reflected in KSG Direct Exhibit DNH-5 shows the base year
14 billing determinants and base rate revenues for the current customer classes including several
15 adjustments. As described in the section below, the billing determinants were adjusted for a
16 heating adjustment and an irrigation adjustment. A separate adjustment is made to
17 synchronize base year billing determinants and base year revenues.

1 **V. ADJUSTMENTS MADE TO BILLING DETERMINANTS**

2 **Q. PLEASE DESCRIBE THE ADJUSTMENTS MADE TO BASE YEAR BILLING**
3 **DETERMINANTS AND REVENUES.**

4 A. Adjustments to billing determinants and revenues are necessary to reflect conditions that
5 would be expected in a normal test year and to arrive at just and reasonable rates. As noted
6 above, the adjustments include the following: a) heating adjustment, b) irrigation adjustment,
7 and c) revenue synchronization adjustment.

8 **a. Heating Adjustment**

9 **Q. PLEASE DESCRIBE THE RATIONALE FOR ADJUSTING VOLUMES TO**
10 **REFLECT NORMAL WEATHER CONDITIONS.**

11 A. Because proposed rates are based on Test Year volumes (therms), those volumes should be
12 adjusted to reflect sales expected in a "normal" (typical) year. Assuming all other factors are
13 equal, if rates are based upon volume levels that are inflated due to colder-than-normal
14 weather (for example), the rates will be set too low and will only recover costs during similar
15 periods of colder-than-normal conditions. Similarly, if the weather used to set rates is
16 warmer-than-normal, rates will be set too high and will over recover costs during periods of
17 normal weather conditions. Thus, if Test Year weather conditions deviate from normal
18 conditions, it is necessary to adjust the heating load to recognize what volumes would have
19 been if conditions were normal.

20 Traditionally, warmer- or colder-than-normal weather is based on a comparison of
21 actual heating degree-days during a Test Year to the heating degree-days that would be
22 expected during a normal or typical year.

1 **Q. PLEASE DEFINE A HEATING DEGREE-DAY.**

2 A. A heating degree-day ("HDD") is calculated by subtracting the average daily temperature
3 from 65 degrees Fahrenheit. Average daily temperature equals the average of the high and
4 low temperatures on each day. In the gas industry, 65 degrees Fahrenheit is commonly used
5 for this calculation as the base temperature because it is assumed that when average daily
6 temperatures reach a level below 65 degrees, heat sensitive customers will turn their heaters
7 on for space heating. If the average daily temperature exceeds 65 degrees, the HDD for that
8 day is set equal to zero. The sum of the daily HDDs for a particular month is the monthly
9 HDDs. Below is how HDDs are calculated.

10 Maximum (high) Temperature = A Fahrenheit

11 Minimum (low) Temperature = B Fahrenheit

12 The sum of A and B is C.

13 C divided by 2 is D.

14 $65 - D = \text{HDDs.}$

15 **Q. PLEASE DESCRIBE THE WEATHER DATA YOU UTILIZED FOR YOUR**
16 **ANALYSIS.**

17 A. Black Hills used monthly actual HDD data as published by National Oceanographic and
18 Atmospheric Administration ("NOAA") for weather stations in the following cities in
19 Kansas: Goodland, Topeka, Dodge City, Wichita, and Concordia. The primary consideration
20 in my selection of these weather stations was to select NOAA stations that are in close
21 geographic proximity to the Company's load centers (the cities the Company serves). The
22 intent of Black Hills is to group the towns around NOAA weather stations where one would
23 expect weather conditions (HDDs) to be similar based on geographic proximity. Black Hills

1 reviewed the location of the weather stations in relationship to its cities to ensure that the
2 use of those weather stations is appropriate. These weather stations differ slightly from what
3 was used in the Company's last rate proceeding.

4 **Q. HAVE YOU MADE CHANGES TO THE NUMBER OF WEATHER STATIONS**
5 **USED IN YOUR ANALYSIS AS COMPARED TO THE LAST RATE**
6 **PROCEEDING?**

7 A. Yes. In the last rate proceeding the Company used the following weather stations: Dodge
8 City, Garden City, Goodland, Hutchinson, Liberal, Topeka, and Wichita. In this rate
9 proceeding I am proposing to use the following weather stations: Dodge City, Goodland,
10 Topeka, Wichita, and Concordia. The cities formerly included with the Garden City, Liberal,
11 and Dodge City weather stations are now included with the Dodge City weather station. The
12 cities formerly included with the Hutchinson and Wichita weather stations are now included
13 with the Wichita and Concordia weather stations. These weather station changes resulted, in
14 part, from informal discussions between Commission Staff and Black Hills representatives.
15 The changes also eliminate issues with the occasional lack of complete data associated with
16 the weather stations that are no longer being used as part of Black Hills' weather
17 normalization analysis.

18 As in prior studies provided in past rate proceedings, the weather stations identified
19 above are in geographic proximity to the cities that Black Hills serves.

20 **Q. WHAT ARE YOU USING FOR NORMAL HDDs?**

21 A. Black Hills used a 10-year normal based upon the last 10 years of NOAA HDD data from
22 its online database.

1 **Q. WHY ARE YOU PROPOSING TO USE A 10-YEAR AVERAGE FOR WEATHER**
2 **NORMALIZATION?**

3 A. Use of a 10-year period provides a reasonable balance between using a sufficiently long
4 period of time to capture both warmer and colder conditions and giving recognition that the
5 more recent past is generally a better predictor of the near future. The time period used
6 should recognize that rates approved in this rate proceeding will be in effect over the near
7 term.

8 **Q. WHAT VOLUME AND CUSTOMER DATA HAS THE COMPANY USED FOR THE**
9 **CALCULATION OF THE WEATHER NORMALIZATION ADJUSTMENTS?**

10 A. The Company used detailed historical billing records by customer class and rate schedule
11 for the period of January 2011 through December 2020 as the source for monthly volumetric
12 (usage) and customer data used for the calculation of the weather normalization adjustment.

13 **Q. WERE ACTUAL HEATING SEASON WEATHER CONDITIONS WITHIN THE**
14 **COMPANY'S SERVICE TERRITORY FOR THE 12-MONTH PERIOD ENDING**
15 **DECEMBER 31, 2020 NORMAL?**

16 A. No. Generally, weather conditions during that period of time were warmer than normal.
17 Based on a comparison of actual 2020 HDDs to normal HDDs for the 10-year period ending
18 December 31, 2020, conditions were warmer than normal. Table DNH-1 below summarizes
19 conditions at the five weather stations I propose to use in this rate application.

1

Table DNH-1: Actual and Normal HDDs

Weather Station	2020 Actual Heating Degree Days	10-Year Normal Heating Degree Days	Percent Warmer than Normal
Concordia	4,626	5,088	9%
Dodge City	4,519	4,742	5%
Goodland	5,497	5,600	2%
Topeka	4,587	4,700	2%
Wichita	4,193	4,221	1%

2 These deviations are significant enough that a heating adjustment to reflect normal weather
3 conditions is warranted.

4 **Q. PLEASE SUMMARIZE THE METHODOLOGY USED TO DETERMINE THE**
5 **RELATIONSHIP BETWEEN USAGE AND WEATHER.**

6 A. The Company used multiple linear regression analyses to define the relationship between
7 volumes and variables that represent weather conditions. Multiple linear regression is a
8 statistical approach commonly used to predict the value of a dependent variable (use per
9 customer) using multiple independent variables (including current month HDDs and
10 previous month HDDs). In this regard, the goal is to explain the dependent variable with
11 reasonable accuracy using as few independent variables as possible.

12 Multiple regression yields an equation of the form:

13 $Y = B + A1X1 + A2X2 + \dots + AKXK$

14 where

15 Y is the dependent variable

16 B is the y-intercept (or constant)

17 X1...XK are the independent variables

18 A1...AK are the regression coefficients

1 With respect to the Company's use of multiple linear regression as a tool in
2 developing adjustments to reflect normal weather conditions, the dependent variable (Y) is
3 monthly use per customer and is calculated by dividing monthly volumes by monthly
4 number of customers. Monthly use per customer is used as the dependent variable instead of
5 total monthly volumes because use per customer reduces the effect of growth or decline in
6 total volumes due to changes in numbers of customers. Independent variables (X1...XK) are
7 typically weather variables such as HDDs. The intercept (B) is a monthly constant. The
8 constant represents usage that is not affected by the independent variables. The coefficients
9 (A1...AK) are developed from the regression analysis based on the best fit (least squares).

10 **Q. IS THIS THE SAME METHODOLOGY USED BY THE COMPANY IN THE LAST**
11 **RATE APPLICATION FILING?**

12 A. Yes.

13 **Q. WHAT DATA DID THE COMPANY USE IN PERFORMING THE MULTIPLE**
14 **LINEAR REGRESSION ANALYSIS DESCRIBED ABOVE?**

15 A. The analysis was based on actual monthly use per customer (dependent variable), and actual
16 monthly HDDs (independent variables). The Company ran separate regression analyses on
17 each of the heat sensitive customer classes. The regression analysis produced coefficients
18 that the Company used to determine use per customer per HDD.

19 **Q. FOR WHICH CUSTOMER CLASSES IS THE COMPANY PROPOSING TO**
20 **ADJUST VOLUMES?**

21 A. The Company is proposing to adjust volumes for those classes of customers where it can be
22 demonstrated that their usage is sensitive to changes in winter temperature conditions. These
23 classes of customers use natural gas primarily for space heating. Further, customers who use

1 natural gas for space heating generally use more natural gas when the weather is colder and
2 less when it is warmer. HDDs increase as average temperature decreases. Thus, usage and
3 HDDs should have a positive correlation. The variation in monthly HDDs typically explains
4 most of the variation in volumes used by customers who use natural gas in space heating
5 applications. The customer classes the Company is proposing to adjust are the Residential,
6 Small Commercial, Small Volume Firm, and Large Volume Firm customer classes.

7 **Q. HAVE YOU PREPARED SEPARATE REGRESSION COEFFICIENTS FOR EACH**
8 **OF THE CUSTOMER CLASSES?**

9 A. No. Since customers are reassigned between the Small Commercial, Small Volume Firm,
10 and Large Volume Firm classes due to changes in their usage, more reasonable and
11 consistent results are produced over time by combining these customers for purposes of
12 determining usage and weather correlation. Therefore, the coefficients developed in weather
13 normalization for these customer classes are based upon the regression of monthly customer
14 volumes to HDDs for the combined usage by Small Commercial, Small Volume, and Large
15 Volume customer classes. This approach is consistent with the approach that the Company
16 has taken in prior rate proceedings. A separate regression coefficient has been prepared for
17 the residential customer class.

18 **Q. PLEASE DESCRIBE THE COMPANY'S WEATHER NORMALIZATION**
19 **REGRESSION RESULTS.**

20 A. In order to identify anomalies in usage patterns over the ten-year period, regression analyses
21 in decreasing blocks of time (January 2011 - December 2020, January 2012 - December
22 2020, January 2013 - December 2020, etc.) were performed for each of the customer classes.
23 KSG Direct Exhibit DNH-2 summarizes the results of each of the regression analyses. The

1 Company evaluated the results of each of these time periods using four criteria to determine
2 which period should be used to define usage characteristics. These four criteria are as
3 follows:

- 4 1. Consistency of predicted normal use per customer;
- 5 2. Average annual HDDs for the period evaluated being near normal;
- 6 3. R squared - values in the 90% range are common; and
- 7 4. Obvious changes as reflected in coefficients.

8 KSG Direct Exhibit DNH-2 shows which regression analysis the Company chose for
9 the Residential, Small Commercial, Small Volume, and Large Volume classes. These time
10 periods satisfy the four criteria identified above and also align to the period used in the
11 calculation of normal HDDs. Based on these regression analyses, the Company concluded it
12 is reasonable to base volume adjustment for all the customer classes on a 10-year regression
13 analysis, except as discussed below. Further, Black Hills determined that both the current
14 and previous month's HDD were significant independent variables, except as discussed
15 below.

16 **Q. PLEASE EXPLAIN THE EXCEPTIONS.**

17 A. In performing the analyses of the customers assigned to the Concordia weather station, Black
18 Hills discovered two issues. First, only seven (7) years of complete billing data was
19 available. Second, when the regression analyses were performed using both the current and
20 previous months' HDDs, the coefficients for the current months' HDDs were negative. This
21 result is counterintuitive to the rationale for a heating adjustment based on the premise that
22 customers use more gas when it is colder (thus a positive correlation between HDDs and
23 usage). Based on a review of the Company's bill cycle information, Black Hills found that

1 most of the customers around the Concordia NOAA weather station are billed in the first
2 billing cycle of the month, and therefore are closely correlated with the previous month's
3 HDD's while having a statistically insignificant negative correlation to the current month's
4 HDD's. For these reasons, the regression analyses used by Black Hills in its weather
5 normalization regression analysis for Concordia are based on seven (7) years and only
6 include the prior month's HDD's as an independent variable.

7 **Q. HOW DID THE COMPANY DETERMINE THE HEATING VOLUME**
8 **ADJUSTMENT APPLICABLE TO THE RESIDENTIAL, SMALL COMMERCIAL,**
9 **SMALL VOLUME FIRM, AND LARGE VOLUME FIRM CUSTOMER CLASSES?**

10 A. This calculation is summarized in KSG Direct Exhibit DNH-3 Test Year Weather
11 Normalization Adjustment. The heating adjustment per customer is the difference between
12 normal and actual HDDs multiplied by its respective HDD coefficients (current and prior
13 months) for each month of the Test Year. The heating adjustment is determined using
14 coefficients from KSG Direct Exhibit DNH-2 and the 10-year average HDD.

15 After the monthly heating adjustment per customer (i.e., therm/customer) was
16 calculated, the respective number of sales customers for each month of the Test Year was
17 multiplied by each of these figures to determine the total volumetric (therm) adjustment. The
18 total adjustments by customer class are shown in KSG Direct Exhibit DNH-5 and in Table
19 DNH-2 below.

1

Table DNH-2: Heating Adjustment by Customer Class

Customer Class (Sales)	Total Therms	Therm Adjustment	Percent Adjustment
Residential	67,144,031	1,844,183	2.75%
Small Commercial	10,386,335	633,388	6.10%
Small Volume Firm	12,464,217	90,232	0.72%
Large Volume Firm	3,721,675	2,031	0.05%
Totals	131,927,769	2,569,834	1.95%

2

3 These adjustments result in an increase in Test Year volumes, which is consistent
4 with the degree to which actual conditions were warmer than normal during the Test Year.

5 **Q. HOW DID THE COMPANY DETERMINE THE WEATHER NORMALIZATION**
6 **REVENUE ADJUSTMENTS?**

7 A. The volumetric adjustments shown in KSG Direct Exhibit DNH-3, are detailed by customer
8 class and by weather station. For each customer class, the margin adjustment is determined
9 by multiplying the weather normalization volume times the appropriate margin rate. These
10 adjustments result in an increase in Test Year revenues which is consistent with the
11 conditions being warmer than normal during the Test Year.

12 **Q. WILL THE INFORMATION DEVELOPED IN YOUR ANALYSIS IN THE**
13 **CURRENT RATE APPLICATION BE USED FOR THE COMPANY’S WNA**
14 **CALCULATION?**

15 A. Yes, the Company will use the coefficients resulting from the multiple linear regression
16 analysis in the calculation of the WNA in future filings.

1 **b. Irrigation Adjustment**

2 **Q. PLEASE EXPLAIN THE RATIONALE FOR ADJUSTING IRRIGATION**
3 **VOLUMES TO REFLECT NORMAL CONDITIONS.**

4 A. The Company is proposing to adjust irrigation volumes to reflect normal conditions. Similar
5 to the heating adjustment discussion above, the intent of this adjustment is so that Test Year
6 volumes reflect sales that would be expected in an otherwise “normal” or typical year.

7 **Q. DURING THE BASE YEAR, WERE IRRIGATION VOLUMES NORMAL?**

8 A. No. KSG Direct Exhibit No. DNH-4, Line 10 shows that for the Test Year, irrigation
9 volumes were higher than they were for the previous four years, even though the number of
10 customers was relatively flat. While several factors can affect irrigation volumes, the higher
11 irrigation usage during the Test Year was likely the result of drier conditions that resulted in
12 the need for increased irrigation. Based on this abnormally high usage level, the Company
13 concluded that an adjustment to irrigation volumes was necessary to reflect more normal or
14 average conditions.

15 **Q. FOR PURPOSES OF THE COMPANY’S PROPOSED IRRIGATION**
16 **ADJUSTMENT, HOW IS NORMAL DEFINED?**

17 A. The Company defines normal as the five-year average usage from January 2016 through
18 December 2020. A five-year average takes into account multiple considerations that can
19 affect irrigation usage from year-to-year, including HDDs, localized precipitation, crop
20 rotations, improved efficiency, and various other factors.

1 **Q. HOW DID THE COMPANY CALCULATE THE IRRIGATION**
2 **ADJUSTMENT FOR THE BASE YEAR ENDED DECEMBER 31, 2020?**

3 A. First, the Company calculated the five-year average therms for the irrigation customers, KSG
4 Direct Exhibit No. DNH-4, Line 13. The Company used this five-year average as the basis
5 for “normal.” Next, the difference between the five-year average therms and the actual Test
6 Year therms was calculated, KSG Direct Exhibit No. DNH-4, Column C, Line 15. This
7 results in a total volumetric adjustment of (4,365,817) therms for Irrigation sales, and
8 (1,064,633) therms for Irrigation transport customers.

9 **Q. HAS THE COMPANY CALCULATED THE MARGIN IMPACT OF THE**
10 **PROPOSED IRRIGATION ADJUSTMENT?**

11 A. Yes, Line 45 of KSG Direct Exhibit No. DNH-5 shows the Company’s proposed reduction
12 to margin revenue to the Test Year Irrigation sales customers of \$222,657, and Irrigation
13 transport customers of \$54,296, for a total adjustment to Irrigation revenue of \$276,953.

14 **c. Synchronization Adjustments**

15 **Q. PLEASE DESCRIBE WHY SYNCHRONIZATION ADJUSTMENTS ARE**
16 **NEEDED.**

17 A. Two adjustments are necessary to account for the difference between booked revenues and
18 the revenues that result from applying the current rates to Test Period billing determinants.
19 The total amount of adjustment between billed and calculated revenue based upon rates
20 effective during 2020 is a reduction to revenue of \$161,850 as shown in KSG Direct Exhibit
21 DNH-6, column D. The revenue resulting from resetting base rate customer charges to reflect
22 the removal of Kansas State Utility Income Tax effective January 1, 2021 results in a

1 reduction of \$564,120 in annual revenue as shown in KSG Direct Exhibit DNH-6, column
2 F.

3 **VI. LOAD FACTOR STUDY**

4 **Q. PLEASE DEFINE A LOAD FACTOR.**

5 A. In the context of the CCOSS, the load factor is defined as the customer class' average daily
6 use divided by its peak day use. It is a measure of how effectively a customer class utilizes
7 the capacity needed to serve it. For example, if one customer class has a load factor of 25%,
8 meaning that its average daily use is 25% of its peak day use, and another customer class
9 has a load factor of 50%, meaning that its average daily use is 50% of its peak day use, then
10 the second class is utilizing the capacity required to serve that class twice as effectively as
11 the first class.

12 **Q. HOW IS THE LOAD FACTOR USED?**

13 A. The Company uses customer class load factors in its CCOSS to determine the peak day
14 requirements used for the peak day allocation. The load factors used by the Company are
15 shown on KSG Direct Exhibit DNH-7 for the Residential, Small Commercial, Small Volume
16 Firm, and Large Volume Firm customer classes. The load factor for the Small Commercial,
17 Small Volume, and Large Volume customer classes were calculated based on the classes
18 relative winter period usage as a percentage of the adjusted annual volumes. The resulting
19 load factors shown in KSG Direct Exhibit DNH-7, line number 14 are Small Commercial:
20 20%, Small Volume: 25%, and Large Volume: 67%. The load factors for the Irrigation
21 classes are set to zero because the peak day is assumed to occur on the coldest winter days
22 when it is not possible to run irrigation pumps. Similarly, the load factor for interruptible

1 classes is also set equal to zero recognizing that the nature of this service is that the Company
2 can interrupt these customers during period of high demand such as those occurring at the
3 time of system peak.

4 **Q. PLEASE EXPLAIN HOW THE LOAD FACTOR FOR THE RESIDENTIAL**
5 **CUSTOMER CLASS WAS CALCULATED.**

6 A. In KSG Direct Exhibit DNH-7, the load factor of 20.68% for the Residential customer class
7 was developed by using the HDD statistical results, the normal annual HDD, and the
8 expected design day peak HDDs for each weather station weighted by the Residential
9 volumes for each weather station to develop a weighted average load factor for the class.

10 **VII. CLASS COST OF SERVICE**

11 **Q. WHAT IS THE BASIS OF THE CCROSS?**

12 A. The class cost of service study is based upon Black Hills gas operations for the twelve-month
13 period ended December 31, 2020 as adjusted for known and measurable changes.

14 The class cost of service study I sponsor is contained in KSG Direct Exhibits DNH-
15 12 and DNH-13. The form and structure of these exhibits are the same as the class cost of
16 service studies filed in Docket No. 00-UTCG-336-RTS, Docket No. 05-AQLG-367-RTS,
17 Docket No. 07-AQLG-431-RTS, and Docket No. 14-BHCG-502-RTS.

1 **Q. PLEASE DESCRIBE KSG DIRECT EXHIBIT DNH-12.**

2 A. In KSG Direct Exhibit DNH-12, I classify Test Period costs, as developed in the Revenue
3 Requirement Study, sponsored by Ms. Schuldt, into functional categories. KSG Direct
4 Exhibit DNH-12 consists of four tables. Table 1 shows a summary of rate base and total cost
5 of service by functional classification. Table 2 shows the functional classification of rate
6 base. Table 3 shows the functional classification of operation and maintenance expenses.
7 Table 4 shows the functional classification of depreciation expenses, taxes other than income
8 taxes, and other operating revenues. I classify costs in KSG Direct Exhibit DNH-12 into nine
9 functions:

- 10 • gas supply demand;
- 11 • gas supply commodity;
- 12 • transmission demand;
- 13 • transmission commodity;
- 14 • distribution demand;
- 15 • distribution customer;
- 16 • service lines;
- 17 • meters and regulators; and
- 18 • customer accounting.

19 The classification of investment in transmission and distribution mains is based on a detailed
20 study of the Company's investment and the relative capacity of these facilities in KSG Direct
21 Exhibit DNH-11. The results of this study are shown in the table below with fixed costs
22 associated with transmission and distribution mains classified as capacity-related,
23 commodity-related, and customer-related.

1 **Table DNH-3: Functional Allocators**

2 Transmission – Capacity 10.70 percent

3 Transmission – Commodity 5.35 percent

4 Distribution – Capacity 31.95 percent

5 Distribution – Customer 52.00 percent

6 Costs associated with the remaining three functionalized categories, service lines,
7 meters and regulators, and customer accounting, are each categorized as described in KSG
8 Direct Exhibit DNH-8.

9 **Q. BRIEFLY DESCRIBE KSG DIRECT EXHIBIT DNH-8.**

10 A. KSG Direct Exhibit DNH-8 includes a memorandum discussing how the functional
11 classification of transmission and distribution mains was determined and how the weighting
12 factors used to assign and allocate service lines, meters and regulators, and customer
13 accounting related costs were determined. Further, KSG Direct Exhibits DNH-9 through
14 DNH-11 are discussed and explained in Exhibit DNH-8.

15 **Q. PLEASE DISCUSS THE CONTENTS OF KSG DIRECT EXHIBIT DNH-13.**

16 A. KSG Direct Exhibit DNH-13 sets forth the results of my allocation of functionally classified
17 costs to customer classes and consists of five tables. Table 1 shows the calculation of class
18 rates of return under current and proposed rates. Table 2 shows the allocation of total
19 functional cost of service to customer classes. Table 3 shows the allocation of rate base to
20 customer classes. Table 4 shows the allocation bases used to allocate total functional cost of
21 service and rate base to customer classes. Table 5 shows the unit (\$/Therm or \$/bill)
22 functionalized cost of service by customer class.

1 **Q. HOW ARE THE CUSTOMER CLASSES ORGANIZED IN KSG DIRECT EXHIBIT**
2 **DNH-13?**

3 A. For the allocation of costs, the customer classes are Residential Service, Firm and
4 Transportation customers (Small Commercial, Small Volume, and Large Volume),
5 Irrigation Sales and Transportation, and the Large Volume Interruptible classes.

6 **Q. IS THE COMPANY PROPOSING TO MAKE ANY CHANGES TO ANY OF THE**
7 **RATE SCHEDULES?**

8 A. Yes. As described by Black Hills' witness Mr. Daniel in his Direct Testimony, Black Hills
9 is proposing to eliminate the Small Volume Interruptible rate schedule and place these
10 customers under the Small Volume Firm rate schedule. Since all Small Volume customers
11 are billed the same base monthly customer charge and volumetric rates, this has no effect on
12 the revenue under current rates discussed above.

13 **Q. WHY HAVE THE IRRIGATION SALES AND TRANSPORTATION CLASSES**
14 **BEEN INCLUDED IN THE CLASS COST OF SERVICE?**

15 A. The Irrigation Sales and Transportation customer classes are included in the CCOSS because
16 the overall rate base and cost of service in Kansas has increased since the last rate
17 proceeding. Based upon my analysis, this class is no longer recovering its allocated cost of
18 service and should therefore be included in the CCOSS to determine the classes' cost of
19 service and possible revenue deficiency.

20 **Q. WHICH CUSTOMERS HAVE YOU EXCLUDED FROM THE ALLOCATION OF**
21 **COSTS IN THE CCOSS?**

22 A. It is most appropriate to treat customers who are served in competitive markets as credits to
23 cost of service. The primary factor in determining the appropriate level of rates for such

1 competitive rate or alternative energy customers is the marketplace. The negotiated margin
2 large volume customers have other energy options and/or other natural gas supply options.
3 Therefore, the price for natural gas service must recognize the pricing of these other
4 competitive options. The marketplace does not care what a cost of service study might
5 determine regarding rates. As long as the Company is recovering a margin above its variable
6 costs to serve these customers, the captive customers on the Company's system benefit from
7 the Company maximizing sales and margin from customers served in competitive markets.
8 Therefore, I am not including these customers as a class in the CCOSS; however, the margin
9 revenues derived from these customers is credited to the cost of service for the other
10 customer classes.

11 **Q. PLEASE DISCUSS THE PRINCIPAL ALLOCATION BASIS YOU USE IN THE**
12 **CCOSS.**

13 A. Table 4 of KSG Direct Exhibit DNH-13 shows the allocation factors used to allocate
14 functionally classified costs to the customer classes. Firm winter peak demand represents
15 estimated class peak day requirements. The peak day requirements for the firm classes are
16 estimated based on the load factor analysis discussed in the prior section of my testimony.
17 Winter period throughput represents Test Period throughput for each class during the months
18 of November through March. The commodity allocation basis represents annual Test Period
19 throughput for each class.

20 I developed the distribution-customer, service lines, meters and regulators, and
21 customer accounting allocation bases by weighting average number of customers. I weighted
22 the number of customers by factors that represent the relative cost or investment associated
23 with providing service to each class. The customer weighting factors in the meters and

1 regulators customer weighting factor study in KSG Direct Exhibit DNH-9 and the service
2 line (and distribution-customer) weighting factor study in KSG Direct Exhibit DNH-10.

3 Distribution customer and services cost are allocated to each customer class by the
4 services allocator shown in Table 4, lines 27 and 32, respectively based on the service line
5 (and distribution-customer) weighting factor study. The services (and distribution-customer)
6 weighting factor for each customer class is shown in the following table:

7 **Table DNH-4: Services and Distribution-Customer Weighting Factors**

Customer Class	Weighting Factor
Residential	1
Small Commercial	1.25
Small Volume	2
Large Volume	4
Irrigation	3

8
9 The meters and regulators cost shown is allocated to each customer class by the
10 meters and regulator allocator in Table 4, line 7. The meters and regulators allocator for each
11 customer class is shown in the following table:

12 **Table DNH-5: Meters and Regulators Weighting Factors**

Customer Class	Weighting Factor
Residential	1
Small Commercial	2
Small Volume	10
Large Volume	25
Irrigation	9

1 Customer accounting functionalized cost is allocated by the customer accounting
2 allocator shown in Table 4, line 40. The customer accounting allocator for each customer
3 class is shown in the following table:

4 **Table DNH-6: Customer Accounting Weighting Factors**

Customer Class	Weighting Factor
Residential	1
Small Commercial	2
Small Volume	4
Large Volume	20
Irrigation	2

5
6 **Q. HOW ARE OTHER OPERATING REVENUES FUNCTIONALIZED?**

7 A. Other operating revenues are functionalized by FERC Account, with Forfeited Discounts
8 functionalized as direct, Miscellaneous Service Revenue functionalized by Supervised
9 O&M, and Negotiated Margin revenue functionalized by the Mains Allocation. Other
10 Operating Revenues are credited back to the other customers as shown in KSG Direct
11 Exhibit DNH-12, Table 1, line 10.

1 **Q. WHAT IS THE NET REVENUE DEFICIENCY/EXCESS FOR EACH CUSTOMER**
2 **CLASS?**

3 A. The revenue deficiency by customer class is shown in Table 1, line 9, of KSG Direct Exhibit
4 DNH-13 and represents the difference between each class's fully allocated cost of service
5 and revenues under existing base rates. The customer classes have the following revenue
6 deficiencies (or excess) under current rates:

- 7 • Residential has a deficiency of \$9,175,045;
- 8 • Small Commercial class has a revenue deficiency of \$1,272,356;
- 9 • Small Volume has a deficiency of \$235,564;
- 10 • Large Volume has a revenue excess of \$969,644; and
- 11 • Irrigation has a revenue deficiency of \$486,625.

12 **Q. WHAT ARE THE PRINCIPAL FINDINGS OF YOUR STUDY?**

13 A. The principal finding is that the overall rate of return on Black Hills Kansas gas utility
14 operations under current rates amounts to 3.55 percent based on Kansas jurisdictional rate
15 base of \$230,337,778.

16 For purposes of rate design (as discussed in the next section of my testimony), some
17 of these classes are aggregated. The rate of return under current rates for the Residential and
18 Small Commercial classes is 2.66 percent, 6.03 percent for the Small Volume Firm, 12.55
19 percent for the Large Volume Firm (Transportation full margin) and Interruptible classes,
20 and for the Irrigation classes is 3.32 percent.

21 As indicated by the rates of return under current rates, current rate revenues
22 associated with service to Black Hills Kansas customers are insufficient to cover cost,

1 including an opportunity for the Company to earn a reasonable return on its investment
2 devoted to public service. In order for the Company to earn the 7.05 percent rate of return
3 requested by the Company, current Kansas rate revenues must be increased by \$10.199
4 million.

5 **VIII. RATE DESIGN**

6 **Q. WHAT GUIDELINES DID YOU FOLLOW IN THE DESIGN OF PROPOSED** 7 **RATES?**

8 A. The guidelines are as follows:

- 9 1. The overall increase should be approximately \$10.199 million.
- 10 2. The revenues for each class should align with the class cost of service study to
11 the extent practical.
- 12 3. The proposed customer charges should reflect customer related costs to the extent
13 practical.
- 14 4. The commodity charge for the Residential and Small Commercial rates should
15 be equal maintaining the current practice.
- 16 5. Maintain the existing differential between the Residential and Small Commercial
17 commodity charge and the Small Volume commodity charge to the extent
18 practical.
- 19 6. The customer and commodity (non-gas portion) should be the same for the Firm
20 and Transportation rates within the Small Volume and Irrigation customer
21 classes, and Firm, Interruptible, and Transportation within the Large Volume
22 customer class.

1 7. The Irrigation customer charge should be the same as the Small Commercial
2 reflecting both the current practice and due to the fact that the irrigation
3 customers have a significant number of months of little or no use.

4 **Q. HAVE YOU APPLIED ANY OTHER CRITERIA IN ADDITION TO THE**
5 **GUIDELINES DESCRIBED ABOVE?**

6 A. Yes. I have applied the criteria that due to the level of overall revenue deficiency; no
7 customer class should receive a decrease in base rate revenues under the proposed rates.
8 Based on the results of the CCOSS, the Large Volume classes show a rate of return in excess
9 of that requested by the Company and base rates for the Large Volume classes would need
10 to be reduced to achieve the requested rate of return. Therefore, I am recommending no
11 change to the base rates for the Large Volume classes and to use the revenue decrease that
12 would otherwise result from reducing their rates be used instead to mitigate a portion of the
13 Residential and Small Commercial customer class increases.

14 **Q. WHAT IS THE NET REVENUE IMPACT FOR EACH CUSTOMER CLASS**
15 **UNDER PROPOSED RATES?**

16 A. The impact of the proposed rates by customer class is shown in Table 1, line 13, of KSG
17 Direct Exhibit DNH-13.

18 The impact to each customer class under proposed rates is an annual increase as
19 follows:

- 20 • Residential: \$7,779,231;
- 21 • Small Commercial: \$1,698,322;
- 22 • Small Volume: \$235,506;

- Large Commercial: \$0; and
- Irrigation: \$486,692.

Q. PLEASE SUMMARIZE THE SPECIFIC RATES YOU ARE RECOMMENDING.

A. I'm recommending the monthly customer charge and commodity charge rates shown below in Table DNH-8.

Table DNH-8: Proposed Rates

Customer Class	Customer Charge - \$/month	Commodity Charge - \$/therm
Residential	\$20.00	\$0.22619
Small Commercial	\$35.00	\$0.22619
Small Volume	\$70.00	\$0.14279
Large Volume	\$333.10	\$0.06800
Irrigation	\$35.00	\$0.06187

Q. PLEASE DESCRIBE HOW THE MONTHLY CUSTOMER CHARGE FOR EACH CUSTOMER CLASS WAS DETERMINED.

A. The Residential customer charge is designed to recover the customer-related cost (excluding the distribution-customer related costs). The proposed \$20.00 per month customer charge also is approximately equal to the current monthly charge paid by the residential customers that includes the current Gas System Reliability Surcharge Rider ("GSRS"). The Small Commercial monthly customer charge of \$35.00 recovers the customer-related cost and is also approximately equal to the current monthly charge including the GSRS rider and maintains the relative relationship with the Residential monthly customer charge. The Small Volume monthly customer charge of \$70.00 is set to twice the Small Commercial monthly customer charge maintaining the existing relationship. As discussed earlier in this section of

1 my testimony, I am proposing no change to the existing base rates for the Large Volume
2 customers. The proposed monthly customer charge of \$35.00 for the Irrigation class is set at
3 the same as the Small Commercial class as previously discussed in my testimony.

4 **Q. HOW DID YOU DETERMINE THE PROPOSED COMMODITY RATES?**

5 A. The commodity rates are set following the guidelines described above and are adjusted to
6 recover the portion of the revenue requirement not recovered in the monthly customer
7 charge.

8 **Q. PLEASE DESCRIBE THE IMPACT OF THE PROPOSED RATES ON RATE OF**
9 **RETURN.**

10 A. The recommended rate design produces an overall rate of return of 7.05%. The rate of return
11 for each class is the following:

- 12 • Residential and Small Commercial 6.64%;
- 13 • Small Volume 7.05%;
- 14 • Large Volume 12.55%; and
- 15 • Irrigation 7.05%

16 The rate of return for the Residential and Small Commercial customer classes is based upon
17 the monthly customer charges being set to recover customer-related cost plus the current
18 GSRS for each class, and then setting the commodity charge at an equal rate based upon the
19 principles described above.

1 **IX. DEVELOPMENT OF REVENUE UNDER PROPOSED RATES**

2 **Q. PLEASE DESCRIBE HOW YOU DEVELOPED THE REVENUES UNDER**
3 **PROPOSED RATES.**

4 A. The revenues under proposed rates were developed using the Test Year billing determinants
5 shown in KSG Direct Exhibit DNH-5 and the proposed rates for each customer class as
6 shown in KSG Direct Exhibit DNH-14.

7 The revenues under proposed base rates are shown in Section 5, and the difference
8 between current and proposed base rates in Section 6, of KSG Direct Exhibit DNH-14. The
9 revenues are based upon the billing determinants shown in Section 1 of KSG Direct Exhibit
10 DNH-14 and the proposed rates shown in Section 4. The total of the differences by customer
11 class equals the total revenue deficiency for the Company.

12 **X. CUSTOMER BILL IMPACTS**

13 **Q. HAVE YOU PREPARED CUSTOMER BILL IMPACTS BASED UPON THE**
14 **AVERAGE CUSTOMER BILL FOR EACH CUSTOMER CLASS?**

15 A. Yes. The average customer bill impacts for each customer class are shown in Section 6 of
16 KSG Direct Exhibit DNH-15.

17 **Q. PLEASE DESCRIBE HOW YOU DETERMINED THE AVERAGE MONTHLY**
18 **BILL UNDER CURRENT RATES.**

19 A. The total average customer bill by customer class was developed by multiplying the Test
20 Year billing determinants shown in KSG Direct Exhibit DNH-5 by the current rates from
21 the tariff including the current level of rate riders. The current rates include the monthly
22 customer charge, GSRS, commodity charge, and current Purchased Gas Adjustment

1 (“PGA”). The WNA Rider rates and AVTS Rider rates are removed from this calculation
2 for simplification as these rate riders are adjusted annually and can result in either a
3 surcharge or a surcredit from year to year. The fixed monthly customer charge and monthly
4 GSRS are added together for the fixed monthly portion of the average bill, and the other
5 rates are multiplied by the average therms per bill shown in Section 1 for the volumetric
6 portion of the average bill. For example, as shown on line 13, column B, the average
7 Residential bill is \$50.41. The portion of the average monthly bill for Residential customers
8 based upon current rates includes total fixed monthly charges of \$19.33, as shown in Section
9 3, line 11 of KSG Direct Exhibit DNH-15.

10 **Q. PLEASE DESCRIBE HOW YOU DETERMINED THE AVERAGE MONTHLY**
11 **BILL UNDER PROPOSED RATES.**

12 A. The total average customer bill by customer class was developed by multiplying the Test
13 Year billing determinants shown in KSG Direct Exhibit DNH-5 by the proposed base rates.
14 The proposed rates shown in Section 4 of KSG Direct Exhibit DNH-15 includes the monthly
15 customer charge, commodity charge, and current PGA. The bill impact under proposed rates
16 does not include the current GSRS as the investment recovered under the current rider is
17 included in the proposed base rates. Similar to the calculation of the average monthly bill
18 under current rates, the WNA Rider and AVTS Rider rates are also removed from this
19 calculation. The average monthly bill under proposed rates includes the fixed monthly
20 customer charge, with the other rates being multiplied by the average therms per bill shown
21 in Section 1 for the volumetric portion of the average bill. For example, as shown on line 22,
22 column B, the average monthly Residential bill is \$54.31. The portion of the average
23 monthly bill for Residential customers based upon the proposed rates includes total fixed

1 monthly charges of \$20.00, as shown in Section 5, line 20 of KSG Direct Exhibit DNH-15.

2 **Q. PLEASE DESCRIBE HOW THE FIXED MONTHLY PORTION OF THE**
3 **RESIDENTIAL CUSTOMER BILL WOULD CHANGE UNDER PROPOSED**
4 **RATES.**

5 A. The fixed portion of Residential customer bills would increase from \$19.33 to \$20.00 under
6 current and proposed rates, respectively, for an effective increase of \$0.67 per month.

7 **Q. WHAT ARE THE AVERAGE CUSTOMER BILL IMPACTS TO CUSTOMERS**
8 **UNDER THE PROPOSED RATES?**

9 A. The change in average monthly bill by customer class is shown on line 24, Section 6 of KSG
10 Direct Exhibit DNH-15, with the percentage change shown on line 25. These changes do not
11 include the proposed refund to customers through the Tax Adjustment Rider (“TA Rider”)
12 discussed in the direct testimony of Mr. Stevens. The change in the average monthly bill by
13 customer class, excluding the TA Rider refund, are shown below:

14 Residential - \$3.89

15 Small Commercial Sales - \$8.89

16 Small Commercial Transportation - \$19.23

17 Small Volume Firm – (\$23.86)

18 Small Volume Transportation – (\$26.46)

19 Large Volume Firm – (\$279.07)

20 Large Volume Interruptible – (\$279.07)

21 Large Volume Transportation – (\$279.07)

22 Irrigation Sales - \$19.84

23 Irrigation Transportation - \$17.17

1 **Q. PLEASE EXPLAIN WHY THE SMALL VOLUME AND LARGE VOLUME**
2 **CUSTOMERS WOULD SEE A REDUCTION BASED UPON AN AVERAGE BILL.**

3 A. There are two reasons why the customer classes have different average bill impacts under
4 the proposed rates primarily due to how the GSRS is charged and specifically how it is
5 charged through the fixed part of customer bills.

6 First, as described above the proposed increase/decrease for the Large Volume
7 customer class is set to zero with the benefit offsetting an equal portion of the Residential
8 customer class revenue deficiency. While a portion of the Residential customer class revenue
9 deficiency is partially offset, the net revenue deficiency allocated to the Residential customer
10 class results in an increase of 7.7% to an average bill.

11 Second, the setting of the current GSRS to zero has a disproportionate impact upon
12 the customer classes. For the Small Volume customer class, the combination of setting the
13 current Small Volume GSRS of \$37.72 to zero, an increase in the monthly customer charge
14 of \$17.03, and a small reduction of the commodity charge of \$0.00421, the class sees an
15 overall reduction in the average monthly bill for both sales and transportation customers.
16 The Large Volume customers also see a reduction in their average monthly bill under the
17 proposed rates due to the current GSRS being set to zero.

18 **Q. WHAT ARE THE AVERAGE CUSTOMER BILL IMPACTS TO CUSTOMERS**
19 **INCLUDING THE PROPOSED TA RIDER REFUNDS DISCUSSED BY MR.**
20 **STEVENS IN HIS DIRECT TESTIMONY?**

21 A. The proposed TA Rider rates reduce the average monthly bill impact for each customer class
22 over the three-year proposed refund period. The change in average monthly bill by customer
23 class, including the TA Rider refund, is shown on line 31, Section 8 of KSG Direct Exhibit

1 DNH-15, with the percentage change shown on line 32, Section 8. The change in the average
2 monthly bill by customer class, including the TA Rider refund, are shown below:

3 Residential - \$2.27

4 Small Commercial Sales - \$6.42

5 Small Commercial Transportation - \$15.02

6 Small Volume Firm – (\$32.67)

7 Small Volume Transportation – (\$39.63)

8 Large Volume Firm – (\$313.48)

9 Large Volume Interruptible – (\$373.32)

10 Large Volume Transportation – (\$363.02)

11 Irrigation Sales - \$13.53

12 Irrigation Transportation - \$11.57

13
14 **XI. CONCLUSION AND RECOMMENDATIONS**

15 **Q. WHAT ARE YOUR RECOMMENDATIONS?**

16 A. For the reasons set forth in this testimony, my recommendation is for the Commission to
17 approve the CCOSS, weather normalization, rate design, and other proposals in the rate
18 application of Black Hills.

1 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

2 A. Yes.

AFFIDAVIT OF DOUGLAS N. HYATT


State of Colorado)
) ss
City and County of Denver)

I, DOUGLAS N. HYATT, being first duly sworn on oath, depose and state that I am the same Douglas N. Hyatt identified in the foregoing Direct Testimony; that I have caused the foregoing Direct Testimony to be prepared and am familiar with the contents thereof; and that the foregoing Direct Testimony is true and correct to the best of my knowledge, information, and belief as of the date of this Affidavit.



Douglas N. Hyatt

On April 28, 2021, appeared Douglas N. Hyatt, not in my physical presence but rather appearing remotely by means of communication technology from 8308 W 69th Way, Arvada, Colorado 80004, known to me to be the person who executed the foregoing instrument and acknowledged that he executed the same as his free act and deed.



Notary Public

My Commission expires: November 17, 2022

ELAINE D HEGLER
Notary Public
State of Colorado
Notary ID # 19984031852
My Commission Expires 11-17-2022

EDUCATION, EMPLOYMENT HISTORY AND PROFESSIONAL EXPERIENCE

I graduated from Colorado State University with a Bachelor's degree in Political Science. Upon graduation, received a commission as an Officer in the United States Air Force Reserve, and after serving on active duty was placed on inactive individual ready reserve status for the remainder of his service commitment.

I accepted a civilian position with the United States Department of State at Embassy Budapest, Hungary. After working for three years in Budapest, I returned to Colorado in 1993, and began working towards an MBA at the University of Colorado at Denver. During a portion of my two years of studies, I accepted a civilian position in Office Automation with the Defense Finance and Accounting Service in Denver, Colorado. Upon achieving his MBA in 1995, I accepted a position as a Telecommunications Analyst with AT&T Wireless in Denver.

In April 1996, I accepted a position as a Telecommunication Analyst with First Data Corporation located in Englewood, Colorado. In that capacity, I oversaw the auditing of telecommunications services expense as well as the impact upon the unit cost to the Company of various retail customer financial transactions. I led the effort to develop a database to enable network engineers to maintain network information, to streamline the auditing of network cost, and properly account for the costs incurred for multitude of internal and external customers.

In January 2001, accepted a position as a Senior Specialist with AT&T. In this position, I championed regulatory initiatives to reduce or mitigate potential increases to expense, and supported state advocacy plans to ensure favorable State Public Utilities Commission rulings to reduce inter-carrier compensation expense. I testified before the Colorado Public Utilities Commission and drafted written testimony for submission to State Utilities Commissions. I assisted in the preparation

KSG DIRECT EXHIBIT DNH-1

of highly complex unit cost modeling for state regulatory proceedings throughout Qwest's 14 state territory. While at AT&T, I completed a Master of Applied Science Degree in Telecommunications at the University of Denver.

In November 2007, I accepted a position as a Lead Telecommunications Analyst with Qwest Communications. In this position, I played a lead role in auditing switched access expense to the Company. I played a role in the development of one of the largest private corporate databases in the World. During database development, I honed my expertise in compiling very large volumes of complex data into meaningful analytics for corporate decision makers.

I began his employment with Black Hills Corporation in June 2014, as Principal Regulatory Analyst. In this role, I have prepared and presented complex analyses and modelling for electric and gas utilities of Black Hills Corporation. I have prepared many studies and analyses in support of Company advocacy before the Colorado Public Utilities Commission, the Wyoming Public Service Commission, and the Nebraska Public Service Commission in gas rate proceedings.

Line No	Description	A	B	C	D	E	F	G	H	I	J	K	L	M	
				10 Years	9 Years	8 Years	7 Years	6 Years	5 Years	4 Years	3 Years	2 Years	1 Year		
				2011-2020	2012-2020	2013-2020	2014-2020	2015-2020	2016-2020	2017-2020	2018-2020	2019-2020	2020	Comments	
2	Residential														
3	Weather Station - Concordia														
4	Constant (Base Use)						6.48486	6.82285	7.22186	7.85502	8.72986	8.90669	7.89708	7 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.	
5	CHDD														
6	PHDD						0.11304	0.11263	0.11281	0.11222	0.11262	0.11411	0.12211		
7	Adj R Square						0.97228	0.97055	0.97275	0.97077	0.97051	0.98366	0.98948		
8	F						2.912	2.341	2.107	1.562	1.153	1.386	1.036		
9	10-Year Average	HDDs (2)	5,088												
10	Predicted Normal Annual Use/Customer - therms						653.02	654.98	660.66	665.28	677.79	687.52	716.09		L5 x 12 + (L6 * Column B, L10 + L7
11	Predicted Peak Day Use/Customer - therms						8.13	8.11	8.13	8.11	8.17	8.28	8.81		(L5 x 12*) / 365 + (L6 * Note(1) x Note(1))
12	Load Factor						22.02%	22.13%	22.25%	22.46%	22.73%	22.75%	22.28%		L11 / 365 / L12
13	Time Period Used						xxxxx								
14	Weather Station - Dodge City														
15	Constant (Base Use)			10.02476	10.09738	9.91789	9.81090	9.91980	10.13557	10.28941	10.06618	9.75707	10.67136		10 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.
16	CHDD			0.03637	0.03544	0.03703	0.03685	0.03648	0.03816	0.03816	0.04263	0.04415	0.04084		
17	PHDD			0.08209	0.08285	0.08192	0.08248	0.08320	0.08162	0.08186	0.07920	0.07839	0.07962		
18	Adj R Square			0.97467	0.97363	0.97319	0.97399	0.97330	0.97748	0.97721	0.97917	0.97828	0.98061		
19	F			2,290.92285	1,976.53012	1,725.44306	1,554.86589	1,294.89192	1,281.28971	1,008.48503	823.69178	518.98253	279.12207		
20	10-Year Average	HDDs (2)	4,742												
21	Predicted Normal Annual Use/Customer - therms			682.06	682.16	683.10	683.63	686.61	689.63	692.63	698.55	698.21	699.30	L16 x 12 + (L17 * Column B, L21 + L18	
22	Predicted Peak Day Use/Customer - therms			8.62	8.61	8.65	8.68	8.70	8.72	8.74	8.86	8.90	8.78	(L16 x 12*) / 365 + (L17 * Note(1) x Note(1))	
23	Load Factor			21.67%	21.70%	21.63%	21.59%	21.61%	21.67%	21.71%	21.60%	21.50%	21.81%	L22 / 365 / L23	
24	Time Period Used			xxxxx											
25	Weather Station - Goodland														
26	Constant (Base Use)			7.74336	7.77970	7.55692	7.36612	7.56342	7.56172	7.38195	7.59472	6.73005	7.04552	10 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.	
27	CHDD			0.01801	0.01696	0.01822	0.01740	0.01749	0.01889	0.01983	0.02357	0.02550	0.02421		
28	PHDD			0.10995	0.11088	0.11056	0.11200	0.11151	0.11044	0.10976	0.10613	0.10548	0.10521		
29	Adj R Square			0.97808	0.97770	0.97848	0.97897	0.97860	0.98178	0.98078	0.98068	0.97600	0.98014		
30	F			2,655	2,347	2,161	1,933	1,625	1,591	1,200	889	469	272		
31	10-Year Average	HDDs (2)	5,600												
32	Predicted Normal Annual Use/Customer - therms			809.47	809.25	811.80	812.97	813.15	814.97	814.24	817.46	814.22	809.29		L27 x 12 + (L28 * Column B, L32 + L29
33	Predicted Peak Day Use/Customer - therms			9.21	9.20	9.26	9.30	9.28	9.30	9.31	9.33	9.39	9.29		(L27 x 12*) / 365 + (L28 * Note(1) x Note(1))
34	Load Factor			24.07%	24.09%	24.01%	23.95%	24.01%	24.00%	23.95%	24.01%	23.76%	23.86%		L32 / 365 / L33
35	Time Period Used			xxxxx											
36	Weather Station - Topeka														
37	Constant (Base Use)			6.87377	7.06238	6.83915	6.69445	6.94723	7.23990	7.15219	7.01070	6.93463	6.73504		10 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.
38	CHDD			0.02130	0.02012	0.02213	0.02305	0.02280	0.02345	0.02329	0.02588	0.02531	0.02668		
39	PHDD			0.09638	0.09748	0.09648	0.09585	0.09496	0.09423	0.09432	0.09354	0.09307	0.09098		
40	Adj R Square			0.97790	0.97726	0.97776	0.97741	0.97649	0.97922	0.97726	0.97860	0.97861	0.98374		
41	F			2,633	2,301	2,089	1,797	1,475	1,391	1,011	801	527	334		
42	10-Year Average	HDDs (2)	4,700												
43	Predicted Normal Annual Use/Customer - therms			635.55	637.41	639.46	639.08	636.76	639.94	638.54	645.37	639.57	633.80	L38 x 12 + (L39 * Column B, L43 + L40	
44	Predicted Peak Day Use/Customer - therms			8.46	8.46	8.53	8.54	8.47	8.48	8.47	8.59	8.51	8.46	(L38 x 12*) / 365 + (L39 * Note(1) x Note(1))	
45	Load Factor			20.57%	20.63%	20.55%	20.50%	20.59%	20.69%	20.66%	20.58%	20.58%	20.53%	L44 / 365 / L45	
46	Time Period Used			xxxxx											
47	Weather Station - Wichita														
48	Constant (Base Use)			9.88102	10.01418	9.82439	9.77537	9.85075	9.93831	9.62461	9.41566	9.48449	9.82876	10 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.	
49	CHDD			0.03345	0.03226	0.03381	0.03319	0.03268	0.03350	0.03331	0.03652	0.03381	0.03158		
50	PHDD			0.09747	0.09857	0.09818	0.09898	0.09944	0.09867	0.09959	0.09902	0.09987	0.09791		
51	Adj R Square			0.97884	0.97806	0.97812	0.97875	0.97745	0.97828	0.97649	0.97858	0.98048	0.98775		
52	F			2,753	2,386	2,124	1,912	1,540	1,329	977	800	579	445		
53	10-Year Average	HDDs (2)	4,221												
54	Predicted Normal Annual Use/Customer - therms			671.17	672.36	674.99	675.14	675.85	677.11	676.45	685.07	678.03	664.52		L49 x 12 + (L50 * Column B, L54 + L51
55	Predicted Peak Day Use/Customer - therms			9.49	9.49	9.56	9.57	9.57	9.58	9.62	9.80	9.67	9.39		(L49 x 12*) / 365 + (L50 * Note(1) x Note(1))
56	Load Factor			19.38%	19.42%	19.34%	19.32%	19.34%	19.37%	19.27%	19.16%	19.21%	19.39%		L54 / 365 / L55
57	Time Period Used			xxxxx											

Line No	Description	A	B	C	D	E	F	G	H	I	J	K	L	M
				10 Years 2011-2020	9 Years 2012-2020	8 Years 2013-2020	7 Years 2014-2020	6 Years 2015-2020	5 Years 2016-2020	4 Years 2017-2020	3 Years 2018-2020	2 Years 2019-2020	1 Year 2020	Comments
58	Commercial (Small Commercial, Small Volume, and Large Volume)													
59	Weather Station - Concordia													
60	Constant (Base Use)					1.56356	3.17853	3.97579	4.15979	4.32501	4.54837	8.13067		7 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.
61	CHDD					0.19418	0.18777	0.18505	0.18418	0.18621	0.18388	0.17955		
62	PHDD					0.93598	0.94212	0.94966	0.95349	0.95248	0.97024	0.97999		
63	Adj R Square					1.215	1.157	1.114	965	703	751	540		
64	F													
65	10-Year Average	HDDs (2)	5,088											
66	Predicted Normal Annual Use/Customer - therms					1,006.82	993.59	989.28	987.06	999.42	990.24	1,011.18		L61 x 12 + (L62 * Column B, L66 + L63
67	Predicted Peak Day Use/Customer - therms					13.64	13.25	13.08	13.03	13.18	13.02	12.84		(L61 x 12") / 365 + (L62 * Note(1) x Note(1))
68	Load Factor					20.22%	20.55%	20.72%	20.76%	20.78%	20.83%	21.58%		L66 / 365 / L67
69	Time Period Used					xxxxx								
70	Weather Station - Dodge City													
71	Constant (Base Use)			48.04728	49.42156	49.73698	49.94117	47.02261	43.17471	42.00464	31.42883	26.35170	25.97390	10 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.
72	CHDD			0.11177	0.10867	0.11428	0.11384	0.11607	0.12345	0.13537	0.13662	0.15377	0.15044	
73	PHDD			0.31029	0.31249	0.30922	0.31012	0.30923	0.30598	0.29716	0.31043	0.29293	0.28859	
74	Adj R Square			0.95988	0.95698	0.95665	0.95508	0.95054	0.95250	0.95007	0.95367	0.96971	0.97057	
75	F			1,424	1,191	1,049	883	683	593	448	361	369	182	
76	10-Year Average	HDDs (2)	4,742											
77	Predicted Normal Annual Use/Customer - therms			2,578.14	2,590.39	2,605.27	2,609.90	2,581.18	2,554.59	2,555.30	2,497.23	2,434.64	2,393.74	L72 x 12 + (L73 * Column B, L77 + L74
78	Predicted Peak Day Use/Customer - therms			31.12	31.11	31.28	31.32	31.32	31.48	31.66	32.33	32.14	31.59	(L72 x 12") / 365 + (L73 * Note(1) x Note(1))
79	Load Factor			22.69%	22.82%	22.82%	22.83%	22.58%	22.23%	22.11%	21.16%	20.76%	20.76%	L77 / 365 / L78
80	Time Period Used			xxxxx										
81	Weather Station - Goodland													
82	Constant (Base Use)			22.45156	21.58769	20.34417	17.93484	18.41953	16.77658	15.72156	16.55582	13.06379	10.46622	10 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.
83	CHDD			0.04379	0.04152	0.04465	0.03067	0.02616	0.02777	0.03333	0.03950	0.04961	0.04521	
84	PHDD			0.31690	0.32253	0.32328	0.33927	0.34166	0.34090	0.33823	0.33570	0.33395	0.33756	
85	Adj R Square			0.96406	0.96452	0.96451	0.96976	0.96864	0.97024	0.96984	0.97226	0.96600	0.96795	
86	F			1,597	1,455	1,292	1,332	1,097	963	757	614	328	167	
87	10-Year Average	HDDs (2)	5,600											
88	Predicted Normal Annual Use/Customer - therms			2,289.16	2,297.67	2,304.47	2,286.79	2,280.67	2,265.75	2,269.29	2,299.70	2,304.62	2,268.96	L83 x 12 + (L84 * Column B, L88 + L85
89	Predicted Peak Day Use/Customer - therms			25.99	26.19	26.42	26.49	26.35	26.36	26.53	26.81	27.28	27.14	(L83 x 12") / 365 + (L84 * Note(1) x Note(1))
90	Load Factor			24.13%	24.03%	23.89%	23.65%	23.71%	23.55%	23.44%	23.50%	23.15%	22.91%	L89 / 365 / L90
91	Time Period Used			xxxxx										
92	Weather Station - Topeka													
93	Constant (Base Use)			50.05927	50.80606	49.94341	49.89723	51.58413	53.21173	55.78633	55.76761	54.51053	45.80387	10 Years has a high F-Value and a high Adjusted R-Square prefer to use a longer period of time when statistics are similar.
94	CHDD			0.05276	0.05024	0.05570	0.05576	0.05295	0.05421	0.05067	0.06062	0.06629	0.08518	
95	PHDD			0.34243	0.34332	0.34029	0.33851	0.33459	0.33189	0.33382	0.33351	0.33975	0.34622	
96	Adj R Square			0.97037	0.96961	0.96874	0.96800	0.96599	0.96588	0.96704	0.97248	0.97345	0.97416	
97	F			1,950	1,708	1,473	1,256	1,009	836	691	619	423	208	
98	10-Year Average	HDDs (2)	4,700											
99	Predicted Normal Annual Use/Customer - therms			2,457.96	2,459.24	2,460.32	2,451.64	2,440.26	2,453.03	2,476.38	2,521.46	2,562.39	2,577.08	L94 x 12 + (L95 * Column B, L99 + L96
100	Predicted Peak Day Use/Customer - therms			29.31	29.22	29.36	29.24	28.82	28.78	28.75	29.42	30.22	31.70	(L94 x 12") / 365 + (L95 * Note(1) x Note(1))
101	Load Factor			22.98%	23.06%	22.96%	22.97%	23.20%	23.35%	23.60%	23.48%	23.23%	22.27%	L99 / 365 / L100
102	Time Period Used			xxxxx										

A	B	C	D	E	G	H	I	J	K	L	M	N	O	P	Q
Line No.	Customer Class	Weather Station	2020 Month	HDD Current Month		HDD Previous Month		Per Cust. Adj. Therm / Cust.	2020 # of Cust.	Volumetric Adj. Therms	Margin		Cost of Gas		Total Adjustment
				Actual	Normal (1)	Actual	Normal (1)			[H]x[I]	(\$/therm (4))	\$ [J]x[K]	\$/therm (5)	\$ [L]x[M]	\$ [N]+[O]
1				HDD	HDD	HDD	HDD	therm/cust. (3)		therms					
2	Residential	Concordia			-	(2)	0.11304	(2)							
5			January	1,014	1,087	870	986	13.15	370	4,864	0.1683	819	0.3390	1,649	2,468
6			February	830	925	1,014	1,087	8.30	371	3,078	0.1683	518	0.3390	1,044	1,562
7			March	525	620	830	925	10.76	370	3,982	0.1683	670	0.3390	1,350	2,020
8			April	351	349	525	620	10.74	366	3,931	0.1683	662	0.3390	1,332	1,994
9			May	130	119	351	349	(0.21)	366	(79)	0.1683	(13)	0.3390	(27)	(40)
10			June	-	4	130	119	(1.24)	362	(450)	0.1683	(76)	0.3390	(153)	(228)
11			July	-	1	-	4	0.41	363	148	0.1683	25	0.3390	50	75
12			August	-	0	-	1	0.11	366	41	0.1683	7	0.3390	14	21
13			September	54	49	-	0	0.02	365	8	0.1683	1	0.3390	3	4
14			October	365	305	54	49	(0.58)	366	(211)	0.1683	(36)	0.3390	(72)	(107)
15			November	476	643	365	305	(6.84)	365	(2,496)	0.1683	(420)	0.3390	(846)	(1,266)
16			December	881	986	476	643	18.89	366	6,914	0.1683	1,164	0.3390	2,344	3,507
17			Total	4,626	5,088	4,615	5,088	53.50	366	19,730		3,321		6,688	10,009
18	Residential	Dodge City			0.03637	(2)	0.08209	(2)							
20			January	903	972	839	957	12.19	34,524	420,763	0.1683	70,827	0.3390	142,634	213,461
21			February	827	843	903	972	6.26	34,581	216,369	0.1683	36,421	0.3390	73,347	109,768
22			March	523	575	827	843	3.22	34,666	111,564	0.1683	18,780	0.3390	37,819	56,599
23			April	341	333	523	575	3.96	34,543	136,926	0.1683	23,049	0.3390	46,416	69,465
24			May	107	118	341	333	(0.22)	34,413	(7,484)	0.1683	(1,260)	0.3390	(2,537)	(3,797)
25			June	2	4	107	118	0.99	34,467	34,135	0.1683	5,746	0.3390	11,571	17,317
26			July	-	1	2	4	0.17	34,505	6,005	0.1683	1,011	0.3390	2,036	3,047
27			August	-	0	-	1	0.12	34,532	4,094	0.1683	689	0.3390	1,388	2,077
28			September	67	34	-	0	(1.18)	34,477	(40,844)	0.1683	(6,875)	0.3390	(13,846)	(20,721)
29			October	390	290	67	34	(6.33)	34,355	(217,318)	0.1683	(36,581)	0.3390	(73,668)	(110,249)
30			November	490	615	390	290	(3.67)	34,616	(127,137)	0.1683	(21,401)	0.3390	(43,098)	(64,499)
31			December	869	957	490	615	13.42	34,747	466,190	0.1683	78,474	0.3390	158,033	236,507
32			Total	4,519	4,742	4,489	4,742	28.93	34,536	1,003,264		168,879		340,095	508,975
33	Residential	Goodland			0.01801	(2)	0.10995	(2)							
35			January	984	1,038	914	1,051	15.97	2,319	37,039	0.1683	6,235	0.3390	12,556	18,791
36			February	930	942	984	1,038	6.09	2,336	14,238	0.1683	2,397	0.3390	4,826	7,223
37			March	644	683	930	942	1.99	2,329	4,637	0.1683	780	0.3390	1,572	2,352
38			April	490	454	644	683	3.58	2,324	8,331	0.1683	1,402	0.3390	2,824	4,226
39			May	195	214	490	454	(3.61)	2,323	(8,383)	0.1683	(1,411)	0.3390	(2,842)	(4,253)
40			June	20	16	195	214	2.06	2,319	4,775	0.1683	804	0.3390	1,619	2,423
41			July	-	2	20	16	(0.41)	2,314	(956)	0.1683	(161)	0.3390	(324)	(485)
42			August	2	3	-	2	0.25	2,312	588	0.1683	99	0.3390	199	298
43			September	122	76	2	3	(0.68)	2,312	(1,577)	0.1683	(265)	0.3390	(534)	(800)
44			October	530	409	122	76	(7.22)	2,312	(16,702)	0.1683	(2,811)	0.3390	(5,662)	(8,473)
45			November	590	713	530	409	(11.14)	2,320	(25,853)	0.1683	(4,352)	0.3390	(8,764)	(13,116)
46			December	990	1,051	590	713	14.61	2,329	34,035	0.1683	5,729	0.3390	11,538	17,267
47			Total	5,497	5,600	5,421	5,600	21.50	2,321	50,172		8,445		17,008	25,453

Line No.	Customer Class	Weather Station	2020 Month	HDD Current Month		HDD Previous Month		Per Cust. Adj. Therm / Cust.	2020 # of Cust.	Volumetric Adj. Therms [H]x[I]	Margin \$/therm (4)	\$ [J]x[K]	Cost of Gas \$/therm (5)	\$ [L]x[M]	Total Adjustment \$ [N]+[O]		
				Actual HDD	Normal (1) HDD	Actual HDD	Normal (1) HDD	(3)									
1	Residential	Concordia															
2							(2)	0.11304	(2)								
3																	
4																	
5					January	1,014	1,087	870	986	13.15	370	4,864	0.1683	819	0.3390	1,649	2,468
6					February	830	925	1,014	1,087	8.30	371	3,078	0.1683	518	0.3390	1,044	1,562
7					March	525	620	830	925	10.76	370	3,982	0.1683	670	0.3390	1,350	2,020
8					April	351	349	525	620	10.74	366	3,931	0.1683	662	0.3390	1,332	1,994
9					May	130	119	351	349	(0.21)	366	(79)	0.1683	(13)	0.3390	(27)	(40)
10					June	-	4	130	119	(1.24)	362	(450)	0.1683	(76)	0.3390	(153)	(228)
11					July	-	1	-	4	0.41	363	148	0.1683	25	0.3390	50	75
12					August	-	0	-	1	0.11	366	41	0.1683	7	0.3390	14	21
13					September	54	49	-	0	0.02	365	8	0.1683	1	0.3390	3	4
14					October	365	305	54	49	(0.58)	366	(211)	0.1683	(36)	0.3390	(72)	(107)
15					November	476	643	365	305	(6.84)	365	(2,496)	0.1683	(420)	0.3390	(846)	(1,266)
16					December	881	986	476	643	18.89	366	6,914	0.1683	1,164	0.3390	2,344	3,507
17					Total	4,626	5,088	4,615	5,088	53.50	366	19,730		3,321		6,688	10,009
18																	
19	Residential	Topeka			0.02130	(2)	0.09638	(2)									
20					January	971	1,044	839	919	9.28	32,442	301,046	0.1683	50,675	0.3390	102,051	152,727
21					February	862	866	971	1,044	7.15	32,478	232,112	0.1683	39,071	0.3390	78,683	117,755
22					March	480	560	862	866	2.12	32,498	68,782	0.1683	11,578	0.3390	23,316	34,895
23					April	339	293	480	560	6.72	32,481	218,374	0.1683	36,759	0.3390	74,026	110,785
24					May	129	92	339	293	(5.22)	32,432	(169,385)	0.1683	(28,513)	0.3390	(57,420)	(85,932)
25					June	-	1	129	92	(3.58)	32,453	(116,328)	0.1683	(19,581)	0.3390	(39,434)	(59,015)
26					July	-	0	-	1	0.14	32,496	4,523	0.1683	761	0.3390	1,533	2,295
27					August	-	-	-	0	0.02	33,203	640	0.1683	108	0.3390	217	325
28					September	55	34	-	-	(0.44)	32,487	(14,395)	0.1683	(2,423)	0.3390	(4,880)	(7,303)
29					October	388	283	55	34	(4.25)	32,227	(137,034)	0.1683	(23,067)	0.3390	(46,453)	(69,520)
30					November	485	607	388	283	(7.57)	32,422	(245,276)	0.1683	(41,287)	0.3390	(83,146)	(124,433)
31					December	878	919	485	607	12.65	32,615	412,690	0.1683	69,468	0.3390	139,897	209,366
32					Total	4,587	4,700	4,548	4,700	17.01	32,520	555,750		93,549		188,393	281,943
33																	
34			Residential	Wichita			0.03345	(2)	0.09747	(2)							
35							January	877	943	804	869	8.54	33,080	282,392	0.1683	47,535	0.3390
36					February	792	790	877	943	6.31	33,197	209,502	0.1683	35,265	0.3390	71,019	106,284
37					March	439	499	792	790	1.80	33,282	59,777	0.1683	10,062	0.3390	20,264	30,326
38					April	296	255	439	499	4.48	33,237	148,897	0.1683	25,064	0.3390	50,475	75,538
39					May	103	75	296	255	(4.95)	33,267	(164,645)	0.1683	(27,715)	0.3390	(55,813)	(83,528)
40					June	-	1	103	75	(2.68)	33,376	(89,314)	0.1683	(15,034)	0.3390	(30,277)	(45,311)
41					July	-	0	-	1	0.13	33,429	4,460	0.1683	751	0.3390	1,512	2,262
42					August	-	-	-	0	0.02	33,722	657	0.1683	111	0.3390	223	334
43					September	50	16	-	-	(1.14)	33,460	(38,281)	0.1683	(6,444)	0.3390	(12,977)	(19,421)
44					October	353	222	50	16	(7.73)	33,519	(258,964)	0.1683	(43,591)	0.3390	(87,786)	(131,378)
45					November	449	551	353	222	(9.38)	33,587	(314,911)	0.1683	(53,009)	0.3390	(106,751)	(159,760)
46					December	834	869	449	551	11.15	33,708	375,698	0.1683	63,241	0.3390	127,357	190,599
47					Total	4,193	4,221	4,163	4,221	6.55	33,405	215,267		36,236		72,973	109,209
48																	
49	Small Commercial	Concordia						(2)	0.19418	(2)							
50							January	1,014	1,087	870	986	22.58	40	903	0.1683	152	0.3414
51					February	830	925	1,014	1,087	14.25	41	584	0.1683	98	0.3414	199	298
52					March	525	620	830	925	18.49	42	776	0.1683	131	0.3414	265	396
53					April	351	349	525	620	18.45	41	756	0.1683	127	0.3414	258	385
54					May	130	119	351	349	(0.37)	41	(15)	0.1683	(3)	0.3414	(5)	(8)
55					June	-	4	130	119	(2.14)	41	(88)	0.1683	(15)	0.3414	(30)	(45)
56					July	-	1	-	4	0.70	41	29	0.1683	5	0.3414	10	15
57					August	-	0	-	1	0.19	41	8	0.1683	1	0.3414	3	4
58					September	54	49	-	0	0.04	42	2	0.1683	0	0.3414	1	1
59					October	365	305	54	49	(0.99)	42	(42)	0.1683	(7)	0.3414	(14)	(21)
60					November	476	643	365	305	(11.75)	42	(493)	0.1683	(83)	0.3414	(168)	(251)
61					December	881	986	476	643	32.45	42	1,363	0.1683	229	0.3414	465	695
62					Total	4,626	5,088	4,615	5,088	91.91	41	3,784		637		1,292	1,929

Line No.	Customer Class	Weather Station	2020 Month	HDD Current Month		HDD Previous Month		Per Cust. Adj. Therm / Cust.	2020 # of Cust.	Volumetric Adj. Therms [H]x[I]	Margin \$/therm (4)	\$ [J]x[K]	Cost of Gas \$/therm (5)	\$ [L]x[M]	Total Adjustment \$ [N]+[O]
				Actual	Normal (1)	Actual	Normal (1)	(3)							
				HDD	HDD	HDD	HDD	therm/cust.		therms		\$		\$	\$
1															
2															
3															
4	Residential	Concordia			-	(2)	0.11304	(2)							
5			January	1,014	1,087	870	986	13.15	370	4,864	0.1683	819	0.3390	1,649	2,468
6			February	830	925	1,014	1,087	8.30	371	3,078	0.1683	518	0.3390	1,044	1,562
7			March	525	620	830	925	10.76	370	3,982	0.1683	670	0.3390	1,350	2,020
8			April	351	349	525	620	10.74	366	3,931	0.1683	662	0.3390	1,332	1,994
9			May	130	119	351	349	(0.21)	366	(79)	0.1683	(13)	0.3390	(27)	(40)
10			June	-	4	130	119	(1.24)	362	(450)	0.1683	(76)	0.3390	(153)	(228)
11			July	-	1	-	4	0.41	363	148	0.1683	25	0.3390	50	75
12			August	-	0	-	1	0.11	366	41	0.1683	7	0.3390	14	21
13			September	54	49	-	0	0.02	365	8	0.1683	1	0.3390	3	4
14			October	365	305	54	49	(0.58)	366	(211)	0.1683	(36)	0.3390	(72)	(107)
15			November	476	643	365	305	(6.84)	365	(2,496)	0.1683	(420)	0.3390	(846)	(1,266)
16			December	881	986	476	643	18.89	366	6,914	0.1683	1,164	0.3390	2,344	3,507
17			Total	4,626	5,088	4,615	5,088	53.50	366	19,730		3,321		6,688	10,009
18															
19	Small Commercial	Dodge City			0.11177	(2)	0.31029	(2)							
20			January	903	972	839	957	44.30	3,823	169,341	0.1683	28,505	0.3414	57,805	86,310
21			February	827	843	903	972	23.23	3,766	87,491	0.1683	14,727	0.3414	29,865	44,593
22			March	523	575	827	843	10.84	3,801	41,188	0.1683	6,933	0.3414	14,060	20,993
23			April	341	333	523	575	15.18	3,793	57,583	0.1683	9,693	0.3414	19,656	29,349
24			May	107	118	341	333	(1.12)	3,781	(4,216)	0.1683	(710)	0.3414	(1,439)	(2,149)
25			June	2	4	107	118	3.70	3,729	13,816	0.1683	2,326	0.3414	4,716	7,042
26			July	-	1	-	4	0.62	3,752	2,333	0.1683	393	0.3414	797	1,189
27			August	-	0	-	1	0.45	3,731	1,662	0.1683	280	0.3414	567	847
28			September	67	34	-	0	(3.63)	3,737	(13,584)	0.1683	(2,287)	0.3414	(4,637)	(6,923)
29			October	390	290	67	34	(21.34)	3,698	(78,927)	0.1683	(13,286)	0.3414	(26,942)	(40,228)
30			November	490	615	390	290	(17.08)	3,710	(63,378)	0.1683	(10,668)	0.3414	(21,634)	(32,303)
31			December	869	957	490	615	48.46	3,762	182,290	0.1683	30,685	0.3414	62,225	92,910
32			Total	4,519	4,742	4,489	4,742	103.60	3,757	395,600		66,591		135,039	201,631
33															
34	Small Commercial	Goodland			0.04379	(2)	0.31690	(2)							
35			January	984	1,038	914	1,051	45.60	323	14,729	0.1683	2,479	0.3414	5,028	7,507
36			February	930	942	984	1,038	17.47	315	5,503	0.1683	926	0.3414	1,879	2,805
37			March	644	683	930	942	5.43	317	1,720	0.1683	289	0.3414	587	877
38			April	490	454	644	683	10.62	314	3,336	0.1683	562	0.3414	1,139	1,700
39			May	195	214	490	454	(10.56)	311	(3,284)	0.1683	(553)	0.3414	(1,121)	(1,674)
40			June	20	16	195	214	5.97	310	1,850	0.1683	311	0.3414	632	943
41			July	-	2	-	16	(1.21)	310	(374)	0.1683	(63)	0.3414	(128)	(191)
42			August	2	3	-	2	0.72	308	223	0.1683	37	0.3414	76	113
43			September	122	76	-	3	(1.59)	306	(488)	0.1683	(82)	0.3414	(166)	(249)
44			October	530	409	122	76	(19.83)	309	(6,129)	0.1683	(1,032)	0.3414	(2,092)	(3,124)
45			November	590	713	530	409	(33.12)	311	(10,299)	0.1683	(1,734)	0.3414	(3,516)	(5,249)
46			December	990	1,051	590	713	41.63	314	13,071	0.1683	2,200	0.3414	4,462	6,662
47			Total	5,497	5,600	5,421	5,600	61.13	312	19,858		3,343		6,778	10,121
48															
49	Small Commercial	Topeka			0.05276	(2)	0.34243	(2)							
50			January	971	1,044	839	919	31.29	2,213	69,247	0.1683	11,656	0.3414	23,638	35,294
51			February	862	866	971	1,044	25.29	2,227	56,327	0.1683	9,482	0.3414	19,227	28,709
52			March	480	560	862	866	5.69	2,226	12,662	0.1683	2,131	0.3414	4,322	6,454
53			April	339	293	480	560	24.94	2,188	54,565	0.1683	9,185	0.3414	18,626	27,811
54			May	129	92	339	293	(17.70)	2,181	(38,595)	0.1683	(6,497)	0.3414	(13,175)	(19,671)
55			June	-	1	129	92	(12.77)	2,175	(27,769)	0.1683	(4,674)	0.3414	(9,479)	(14,153)
56			July	-	0	-	1	0.49	2,182	1,069	0.1683	180	0.3414	365	545
57			August	-	-	-	0	0.07	2,154	148	0.1683	25	0.3414	50	75
58			September	55	34	-	-	(1.10)	2,130	(2,338)	0.1683	(393)	0.3414	(798)	(1,191)
59			October	388	283	55	34	(12.69)	2,115	(26,837)	0.1683	(4,518)	0.3414	(9,161)	(13,678)
60			November	485	607	388	283	(29.68)	2,136	(63,394)	0.1683	(10,671)	0.3414	(21,640)	(32,311)
61			December	878	919	485	607	44.01	2,147	94,497	0.1683	15,907	0.3414	32,257	48,164
62			Total	4,587	4,700	4,548	4,700	57.85	2,173	129,582		21,813		44,233	66,046

Line No.	Customer Class	Weather Station	2020 Month	HDD Current Month		HDD Previous Month		Per Cust. Adj. Therm / Cust.	2020 # of Cust.	Volumetric Adj. Therms [H]x[I]	Margin \$/therm (4)	\$ [J]x[K]	Cost of Gas \$/therm (5)	\$ [L]x[M]	Total Adjustment \$ [N]+[O]
				Actual	Normal (1)	Actual	Normal (1)	(3)							
				HDD	HDD	HDD	HDD								
1															
2															
3															
4	Residential	Concordia			-	(2)	0.11304	(2)							
5			January	1,014	1,087	870	986	13.15	370	4,864	0.1683	819	0.3390	1,649	2,468
6			February	830	925	1,014	1,087	8.30	371	3,078	0.1683	518	0.3390	1,044	1,562
7			March	525	620	830	925	10.76	370	3,982	0.1683	670	0.3390	1,350	2,020
8			April	351	349	525	620	10.74	366	3,931	0.1683	662	0.3390	1,332	1,994
9			May	130	119	351	349	(0.21)	366	(79)	0.1683	(13)	0.3390	(27)	(40)
10			June	-	4	130	119	(1.24)	362	(450)	0.1683	(76)	0.3390	(153)	(228)
11			July	-	1	-	4	0.41	363	148	0.1683	25	0.3390	50	75
12			August	-	0	-	1	0.11	366	41	0.1683	7	0.3390	14	21
13			September	54	49	-	0	0.02	365	8	0.1683	1	0.3390	3	4
14			October	365	305	54	49	(0.58)	366	(211)	0.1683	(36)	0.3390	(72)	(107)
15			November	476	643	365	305	(6.84)	365	(2,496)	0.1683	(420)	0.3390	(846)	(1,266)
16			December	881	986	476	643	18.89	366	6,914	0.1683	1,164	0.3390	2,344	3,507
17			Total	4,626	5,088	4,615	5,088	53.50	366	19,730		3,321		6,688	10,009
18															
274	Large Volume Firm	Topeka			0.05276	(2)	0.34243	(2)							
275			January	971	1,044	839	919	31.29	12	375	0.0680	26	0.3380	127	152
276			February	862	866	971	1,044	25.29	12	304	0.0680	21	0.3380	103	123
277			March	480	560	862	866	5.69	12	68	0.0680	5	0.3380	23	28
278			April	339	293	480	560	24.94	14	349	0.0680	24	0.3380	118	142
279			May	129	92	339	293	(17.70)	14	(248)	0.0680	(17)	0.3380	(84)	(101)
280			June	-	1	129	92	(12.77)	14	(179)	0.0680	(12)	0.3380	(60)	(73)
281			July	-	0	-	1	0.49	13	6	0.0680	0	0.3380	2	3
282			August	-	-	-	0	0.07	12	1	0.0680	0	0.3380	0	0
283			September	55	34	-	-	(1.10)	12	(13)	0.0680	(1)	0.3380	(4)	(5)
284			October	388	283	55	34	(12.69)	12	(152)	0.0680	(10)	0.3380	(51)	(62)
285			November	485	607	388	283	(29.68)	12	(356)	0.0680	(24)	0.3380	(120)	(145)
286			December	878	919	485	607	44.01	12	528	0.0680	36	0.3380	179	214
287			Total	4,587	4,700	4,548	4,700	57.85	13	684		46		231	278
288															
289	Large Volume Firm	Wichita			0.15408	(2)	0.40505	(2)							
290			January	877	943	804	869	36.46	15	547	0.0680	37	0.3380	185	222
291			February	792	790	877	943	26.19	17	445	0.0680	30	0.3380	151	181
292			March	439	499	792	790	8.37	17	142	0.0680	10	0.3380	48	58
293			April	296	255	439	499	18.00	17	306	0.0680	21	0.3380	103	124
294			May	103	75	296	255	(20.99)	17	(357)	0.0680	(24)	0.3380	(121)	(145)
295			June	-	1	103	75	(11.10)	17	(189)	0.0680	(13)	0.3380	(64)	(77)
296			July	-	0	-	1	0.56	17	9	0.0680	1	0.3380	3	4
297			August	-	-	-	0	0.08	18	1	0.0680	0	0.3380	0	1
298			September	50	16	-	-	(5.27)	18	(95)	0.0680	(6)	0.3380	(32)	(39)
299			October	353	222	50	16	(34.08)	18	(614)	0.0680	(42)	0.3380	(207)	(249)
300			November	449	551	353	222	(37.42)	18	(674)	0.0680	(46)	0.3380	(228)	(273)
301			December	834	869	449	551	46.84	19	890	0.0680	61	0.3380	301	361
302			Total	4,193	4,221	4,163	4,221	27.64	17	414		28		140	168

		A	B	C	D	E	F	G	H	I	J
		Sales			Transportation			Total			
Line No.	Year	Volume	Avg. Annual Customers	Use Per Customer	Volume	Avg. Annual Customers	Use Per Customer	Volume therms	Avg. Annual Customers	Use Per Customer Therms/Cust	
	<u>Historical (1)</u>										
1	2011	35,984,937	1,306	27,554	10,608,011	416	25,500	46,592,948	1,722	27,061	
2	2012	35,067,016	1,285	27,290	10,861,929	438	24,799	45,928,945	1,723	26,658	
3	2013	32,208,731	1,291	24,949	9,304,064	440	21,146	41,512,795	1,731	23,989	
4	2014	29,665,347	1,300	22,819	8,210,304	431	19,049	37,875,651	1,731	21,878	
5	2015	25,874,503	1,312	19,721	7,039,465	416	16,922	32,913,968	1,728	19,050	
6	2016	25,846,220	1,313	19,685	6,712,376	394	17,036	32,558,596	1,707	19,077	
7	2017	25,542,589	1,319	19,365	5,694,648	374	15,226	31,237,237	1,693	18,456	
8	2018	26,432,536	1,311	20,162	5,545,796	375	14,789	31,978,332	1,686	18,962	
9	2019	23,013,472	1,312	17,541	5,716,731	375	15,245	28,730,203	1,687	17,031	
10	2020	30,665,975	1,332	23,023	7,248,179	368	19,696	37,914,154	1,700	22,307	
11	10-yr Average	29,030,133	1,308	22,211	7,694,150	403	18,941	36,724,283	1,711	21,447	
12	8-yr Average	27,406,172	1,311	20,908	6,933,945	397	17,389	34,340,117	1,708	20,094	
13	5-yr. Average	26,300,158	1,317	19,955	6,183,546	377	16,398	32,483,704	1,694	19,167	
14	10-yr Adjustment	(1,635,842)	1,332	(1,228)	445,971	368	1,212	(1,189,871)	1,700	(700)	
15	8-yr Adjustment	(3,259,803)	1,332	(2,447)	(314,234)	368	(854)	(3,574,037)	1,700	(2,103)	
16	5-yr. Adjustment	(4,365,817)	1,332	(3,278)	(1,064,633)	368	(2,893)	(5,430,450)	1,700	(3,195)	

	A	B	C	D	E	F	G	H	I	J	K	L	M
Line No.	Description	Total Company	Residential	Small Commercial	Small Commercial Transportation	Small Volume Firm	Small Volume Transportation	Large Volume Firm	Large Volume Transportation	Irrigation (Interruptible)	Irrigation Transportation	Small Volume Interruptible	Large Volume Interruptible
1	<u>1. Number of Bills</u>												
2	For the Test Year												
3	Sales Service	1,382,180	1,237,769	110,073		16,666		475		15,981		992	224
4	Distribution Transportation Service	13,860			2,517		5,352		1,576		4,415		
5	Total For the Test Year	1,396,040	1,237,769	110,073	2,517	16,666	5,352	475	1,576	15,981	4,415	992	224
6	Average Number of Monthly Bills	116,338	103,147	9,173	210	1,389	446	40	131	1,332	368	83	19
7	<u>2. Volumes - therms</u>												
8	For the Test Year												
9	Sales Service	131,927,769	67,144,031	10,386,335		12,464,217		3,721,675		30,665,975		757,497	6,788,039
10	Distribution Transportation Service	56,129,005			702,645		7,332,862		40,845,319		7,248,179		
11	Weather Normalization	2,569,834	1,844,183	633,388		90,232		2,031					
12	Irrigation Adjustment	(5,430,450)								(4,365,817)	(1,064,633)		
13	Total For the Test Year Volumes	185,196,158	68,988,214	11,019,723	702,645	12,554,449	7,332,862	3,723,706	40,845,319	26,300,158	6,183,546	757,497	6,788,039
14	Weather Normalized												
15	Average Annual Therms per Customer		669	1,201	3,350	9,040	16,441	94,073	311,005	23,027	19,701	9,163	363,645
16	Average Therms per Bill		56	100	279	753	1,370	7,839	25,917	1,919	1,642	764	30,304
17	Winter Volumes												
18	November thru March	97,655,937	48,835,131	8,242,663	481,257	8,694,819	5,273,541	2,492,231	19,320,525	1,858,533	427,613	544,975	1,484,649
19	Weather Normalization	3,526,896	2,550,000	848,848		124,765		3,283					
20	Total	101,182,833	51,385,131	9,091,511	481,257	8,819,584	5,273,541	2,495,514	19,320,525	1,858,533	427,613	544,975	1,484,649
21	Number of Winter Bills	582,050	515,918	46,091	1,055	6,908	2,230	193	656	6,656	1,845	413	85
22	Average Therms per Winter Bill		100	197	456	1,277	2,365	12,930	29,452	279	232	1,320	17,466
23	Summer Volumes												
24	April thru October	90,400,837	18,308,900	2,143,672	221,388	3,769,398	2,059,321	1,229,444	21,524,794	28,807,442	6,820,566	212,522	5,303,390
25	Weather Normalization	(957,062)	(705,817)	(215,460)		(34,533)		(1,252)					
26	Irrigation Adjustment	(5,430,450)								(4,365,817)	(1,064,633)		
27	Total	89,443,775	17,603,083	1,928,212	221,388	3,734,865	2,059,321	1,228,192	21,524,794	28,807,442	6,820,566	212,522	5,303,390
28	Number of Summer Bills	813,990	721,851	63,982	1,462	9,758	3,122	282	920	9,325	2,570	579	139
29	Average Therms per Summer Bill		24	30	151	383	660	4,355	23,397	3,089	2,654	367	38,154

	A	B	C	D	E	F	G	H	I	J	K	L	M
Line No.	Description	Total Company	Residential	Small Commercial	Small Commercial Transportation	Small Volume Firm	Small Volume Transportation	Large Volume Firm	Large Volume Transportation	Irrigation (Interruptible)	Irrigation Transportation	Small Volume Interruptible	Large Volume Interruptible
30	<u>3. Current Rates</u>												
31	Gas Cost Adjustment (Weighted)		\$0.33899	\$0.34135		\$0.33777		\$0.33801		\$0.15152		\$0.19008	\$0.15920
32	Distribution Charge		\$0.16833	\$0.16833	\$0.16833	\$0.14700	\$0.14700	\$0.06800	\$0.06800	\$0.05100	\$0.05100	\$0.14700	\$0.06800
33	Transport Delivery Charge		\$0.16833	\$0.16833	\$0.16833	\$0.14700	\$0.14700	\$0.06800	\$0.06800	\$0.05100	\$0.05100	\$0.14700	\$0.06800
34	Monthly Charge		\$16.94	\$25.94	\$25.94	\$52.97	\$52.97	\$333.10	\$333.10	\$28.45	\$28.45	\$52.97	\$333.10
35	<u>4. Revenues Under Current Rates</u>												
36	Cost of Gas - \$												
37	Gas Cost Adjustment	37,645,532	22,761,090	3,545,409		4,210,052		1,257,981		4,646,372		143,981	1,080,646
38	Weather Normalization	872,531	625,158	216,209		30,478		687					
39	Irrigation Adjustment	(661,489)								(661,489)			
40	Total For the Test Year Cost of Gas - \$	37,856,574	23,386,248	3,761,618	0	4,240,529	0	1,258,667	0	3,984,883	0	143,981	1,080,646
41	Volumetric Charge - \$												
42	Distribution Charge	17,272,904	11,302,355	1,748,332	0	1,832,240	0	253,074	0	1,563,965	0	111,352	461,587
43	Transport Delivery Charge	4,343,346	0	0	118,276	0	1,077,931	0	2,777,482	0	369,657	0	0
44	Weather Normalization Adjustment	430,452	310,431	106,618		13,264		138					
45	Irrigation Adjustment	(276,953)								(222,657)	(54,296)		
46	Total For the Test Year Volumetric Charge -	21,769,748	11,612,786	1,854,950	118,276	1,845,504	1,077,931	253,212	2,777,482	1,341,308	315,361	111,352	461,587
47	Monthly Charge - \$												
48	Monthly Charge - Sales	25,445,941	20,967,807	2,855,294		882,798		158,223		454,659		52,546	74,614
49	Monthly Charge - Transportation	999,359			65,291		283,495		524,966		125,607		
50	Total For the Test Year Margin Revenue- \$	26,445,300	20,967,807	2,855,294	65,291	882,798	283,495	158,223	524,966	454,659	125,607	52,546	74,614
51	Total For the Test Year Margin Revenue- \$	48,215,048	32,580,593	4,710,244	183,567	2,728,302	1,361,426	411,435	3,302,447	1,795,968	440,968	163,898	536,201
52	Total Revenue - \$												
53	For the Test Year	85,707,081	55,031,252	8,149,034	183,567	6,925,090	1,361,426	1,669,277	3,302,447	6,664,996	495,264	307,880	1,616,847
54	Weather Normalization	1,302,983	935,589	322,827	0	43,742	0	825					
55	Irrigation Adjustment	(938,442)								(884,146)	(54,296)		
56	Total For the Test Year Revenue - \$	86,071,622	55,966,841	8,471,861	183,567	6,968,831	1,361,426	1,670,102	3,302,447	5,780,851	440,968	307,880	1,616,847

			A	B	C	D	E	F	G	H	I
			D = E - C			F = G - E			I = G + H		
Line No.	Account	Description	Billed Base Rate Revenue	Synchronization Adjustment		Calculated Base Rate Revenue 2020	Reduction due to Removal of State Tax	Calculated Base Rate Revenue 2021 Rates w/o State Tax	Weather Normalization Adjustment	Statement I Revenue	
				Calculated (-)	Billed						
1	480	Residential	\$32,490,334	\$163,536		\$32,653,870	(\$383,708)	\$32,270,162	\$310,431	\$32,580,593	
2	481	Commercial/Industrial	\$10,654,864	(\$197,015)		\$10,457,850	(\$129,023)	\$10,328,827	\$120,022	\$10,448,849	
		Total	\$43,145,199	(\$33,479)		\$43,111,720	(\$512,731)	\$42,598,989	\$430,453	\$43,029,442	
3	489	Transport	\$8,313,098	(\$128,371)		\$8,184,727	(\$51,389)	\$8,133,339		\$8,133,339	

	A	B	C	D	E	F	G
Line No.	Weather Station	Therms	WNA Therms	Total Therms	Percent of Total Therms	Load Factor	Weighted Average Load Factor\LF
1	Residential						
2	Concordia	242,329	19,730	262,059	0.38%	22.02%	0.08%
3	Dodge City	23,173,049	1,003,264	24,176,313	35.04%	21.67%	7.60%
4	Goodland	1,829,946	50,172	1,880,118	2.73%	24.07%	0.66%
5	Topeka	20,010,839	555,750	20,566,589	29.81%	20.57%	6.13%
6	Wichita	21,887,868	215,267	22,103,135	32.04%	19.38%	6.21%
7	Total	67,144,031	1,844,183	68,988,214	100.0%		20.68%
8	Commercial	SC	SV	LV	Winter Period		5 months
9	Adjusted Usage	11,722,368	19,887,311	44,569,025	Total		12 months
10	Winter Period Usage	9,572,768	14,093,125	21,816,039		41.67%	
11	Winter/Annual	81.66%	70.86%	48.95%			
12	Ratio to Average	1.96	1.70	1.17			
13	Peak to Average	5.00	4.00	1.50			
14	Load Factor - Use	20%	25%	67%			

BLACK HILLS/KANSAS GAS UTILITY COMPANY, LLC/

DBA BLACK HILLS ENERGY

MAINS CLASSIFICATION AND CUSTOMER WEIGHTING FACTOR STUDY

The purpose of this document is to describe the development of the mains classification and customer weighting factors for Black Hills Kansas gas operations. In this study the following relationships are analyzed:

1. Meters and Regulators – Accounts 381 through 385 – Development of weighting factors that recognize the relative cost of the combined meter and regulator installation for each customer class.
2. Services – Account 380 – Development of weighting factors that recognize the relative cost of service lines for each customer class.
3. Mains – Account 367 and Account 376 – Development of the classification of mains investment between capacity, commodity, and customer related cost.
4. Customer Accounting – Development of weighting factors that recognize the relative cost of providing customer accounting, meter reading, billing, and customer service for each customer class.

The data underlying these analyses are through December 31, 2020. The mains classification and weighting factors developed in this study are intended to be used in the class cost of service study performed in connection with Black Hills 2021 Kansas rate review which is based on a test year ended December 31, 2020 as adjusted for known and measurable adjustments.

Throughout these analyses, relative relationships are developed based on original costs restated to current cost levels (2020). The original cost levels are restated using Handy-Whitman cost indices for the North Central Region. By developing relationships based on current cost levels, inflationary impacts do not affect the analyses and more stable relationships result over time since the timing of renewals and replacements do not distort the analyses.

The analyses are based on detailed plant accounting data. The exhibits to the Direct Testimony of Douglas Hyatt summarize the detailed analyses of the Company’s plant accounting and customer data.

The attachments to this memorandum are as follows:

1. KSG Direct Exhibit DNH-9 – Analysis of Meters and Regulators – Accounts 381-385
2. KSG Direct Exhibit DNH-10 – Analysis of Account 380 – Services
3. KSG Direct Exhibit DNH-11 – Analysis of Mains – Accounts 367 and 376

Meters and Regulators

For purposes of cost allocation, the meters and regulators FERC Accounts 381 through 385 are combined. There are several reasons why this approach is reasonable. Typically, the meters and regulators are installed as a set and the assignment of the labor costs and the various piping components may be distributed through Accounts 381 through 384. In some cases, the cost of these installations may be split or allocated between Accounts 382 and 384; sometimes these accounts may not be used at all and these installation costs are booked to either Account 381 or 383. The approaches differ between utilities and may change over time within the same company (especially if the company is an amalgamation of acquisitions). Further, the accounting label of “industrial” for Account 385 is vague in the FERC Uniform System of Accounts especially compared to the definition of industrial that may be used in the development of rates. Furthermore, rates change over time and customers migrate between rates over time, but the plant accounting is not adjusted for this, nor would it be practical to do so. Finally, meters and regulators are fungible. Unlike piping, meters and regulators are commonly removed, rehabilitated or repaired, and then reinstalled in a different location. Based on all of these factors, it is most reasonable to treat Accounts 381 through 385 as a group and assign cost responsibility based on the installed cost of the entire meter and regulator set for each customer class regardless of where a customer’s specific meter may be booked.

Plant investment in meters and regulators (Accounts 381 - 385) is allocated to customer classes on the basis of the number of customers weighted to recognize relative differences in the unit investment cost of the different types and sizes of meter and regulator sets used to connect customers in that class.

The analysis primarily relies upon the data contained in the Company’s customer billing system and property records which provides an inventory and original cost of each type and size of meter and regulator. For the same reasons discussed below regarding mains and service lines, the original cost data should be restated in terms of current cost using Handy-Whitman indices for meters and regulators. The Company’s plant accounting records contain sufficient detail to determine which meters are used for each class of customer. Handy-Whitman indices are used to restate the original cost of this data into current cost. Dividing the total current cost by the number of meters for each customer class provides a unit cost per customer. The regulator size data is similar to the size information available for service lines and is also restated to current cost. The meter and regulator set also includes an encoder-receiver-transmitter (“ERT”) that is part of the automated meter reading system. This cost is also included in the estimated unit cost of each meter and regulator set for each class. The Large Volume customers are assigned a cost of \$2,200 to account for the additional materials and equipment, such as flow computers, needed to serve these large customers. The total unit cost for each customer class is the summation of each of these components. The relative unit cost is calculated for each class as the ratio of that class's unit cost relative to the unit cost of a Residential customer. These ratios are then used to develop weighting

factors for each customer class, again with consideration also given to the relative size of a typical customer in each customer class.

KSG Direct Exhibit DNH-9 shows the calculations and the resulting class meters and regulators weighting factors are as follows:

Customer Class	2014	2020
Residential	1	1
Small Commercial	2	2
Small Volume	15	10
Large Volume	45	25
Irrigation	15	9

These weighting factors are applied to the number of customers for each class in the CCOSS to determine the meters and regulators allocation basis for each class. For example, a weighting factor of 10 means that the relative unit cost for that class is 10 times that of a Residential customer. The primary difference between the weighting factors used in the Company’s last rate review in 2014 and the present case results from the significant increase in the investment in regulator equipment in Account 383. This unit cost of this investment was relatively uniform across customer classes thus increasing the relative unit cost of the installation for residential and small commercial customers relative to the larger customer classes, thus the decline in weighting factors.

Services

We allocate plant investment in service lines to customer classes based on number of customers weighted to recognize relative differences in the unit investment cost in service lines used to connect customers in that class. The investment incurred to connect customers is a function of 1) the average service line length and 2) the unit cost per foot. The unit cost per foot is primarily a function of the diameter of the service required.

The analyses are summarized in KSG Direct Exhibit DNH-10. As shown in KSG Direct Exhibit DNH-10, the first step is to determine the current cost of service lines by pipe diameter for service lines of 1-inch diameter or less and service lines greater than 1-inch from information in the Company’s property records. The smaller service lines are primarily used for Residential and Small Commercial customers. Next, the unit cost of each of the service line diameters was determined using the number of service lines contained in the DOT reports for each size.

As is generally the case, the number of service lines contained in the DOT report is less than the total number of customers. This is since some customers, primarily Residential, share one service line. For example, on a multi-unit residential customer, it is common that the combined

unit will have one service line that splits into multiple meter and regulator sets, one for each unit. Therefore, I assume that the number of services lines for the Small Commercial, Small Volume, Large Volume, and Irrigation customer classes are equal to the number of customers with the number of Residential service lines being the remainder. The information shown at the top of KSG Direct Exhibit DNH-10 is summarized from the Company's detailed plant accounting records. Information from the Company's 2019 Annual Report to the Department of Transportation is summarized. The trended original cost is developed using trend factors based on the Handy Whitman Index for Accounts 380 for the North Central Region. Steel and Plastic services are shown separately because Handy Whitman develops separate indices for steel and plastic service lines.

Combining the property record data with the DOT reported information, we show the calculated average service line length and the calculated trended per foot cost. From these values we calculate the average cost of service lines by size of services reported.

The next step is to allocate each size of service line to each customer class based on the following assumptions:

1. All the Residential service lines are 1-inch or less; and
2. The remainder of the 1-inch or less service lines are assigned to the Small Commercial class (which is less than the total number of Small Commercial total service lines) and the remainder of the Small Commercial are assigned to the greater than 1-inch to 2-inch;
3. Small Volume service lines are greater than 1-inch to 2-inch;
4. Large Volume service lines are greater than 2-inch.
5. The remainder of the greater than 1-inch to 2-inch and greater than 2-inch are assigned to the Irrigation class.

Next, the number of services lines allocated to each customer class is multiplied by the applicable unit cost for each size service line, and the result is divided by the number of customers in each customer class to determine an average unit cost for a service line per customer for each class. A relative unit cost for each class is calculated as the ratio of that class's unit cost relative to the unit cost of a Residential customer. These ratios are then used to assign weighting factors to each class considering the relative size (use per customer) of a typical customer in each of the customer classes.

The resulting class service line weighting factors are as follows:

Customer Class	2014	2020
Residential	1	1
Small Commercial	1.3	1.25
Small Volume	2.5	2
Large Volume	5	4
Irrigation	3	3

These weighting factors are applied to the number of customers for each class in the CCOSS to determine the service line and customer component of mains allocation bases for each class. For example, a weighting factor of four means that the relative unit cost for that class is four times that of a Residential customer. The results of the 2014 and 2020 studies are fairly close and the small differences are attributable to the significant investment in service line replacements since the last rate case.

Mains

There are three components of cost associated with service from a gas distribution system. These cost components are capacity (peak), energy (commodity or throughput), and customer related. Investment in mains is related to all three of these cost components. We generally consider transmission mains to serve capacity and energy functions, and distribution mains to serve customer¹ and capacity functions.

As a functional classification, transmission (from an engineering, cost allocation perspective) represents the movement of natural gas from sources of supply to general areas of consumption. The distribution function on the other hand represents the movement of gas within general areas of consumption to individual customers.

The definition of the transmission and distribution function is not the same things as the FERC Uniform System of Accounts Definition of transmission and distribution. As indicated above, the transmission function for cost allocation purposes includes facilities that move gas from sources of supply to general areas of consumption. This function is generally served by higher diameter, higher pressure mains that only directly serve very large customers. Facilities that are booked to both the transmission mains account (primarily Account 367) and distribution mains (primarily Account 376) serve this function. Therefore, higher diameter, higher pressure distribution mains also serve a transmission function.

¹ The customer-related function is not the same as the customer-related cost component. Within the distribution function primary accounts are the services, meters, and regulators which are for the most part used to serve individual customers. Costs associated with these items are considered customer related. There is also a customer component of distribution mains which recognizes the cost implications of the distance between individual customers or customer density on the cost of distribution mains.

The allocation of investment in facilities serving a transmission function should recognize that these facilities are used to meet both peak and annual requirements of customers. These facilities, though sized to meet system peak requirements, are also influenced by annual requirements. To recognize this dual nature, the cost of these facilities should be allocated on a basis that recognizes both peak and annual use of the facilities. A variety of methods have been used to recognize the dual nature of these facilities. For the purpose of allocating transmission-related costs on the BH Kansas Gas system, we have historically used a weighting of 2/3 peak and 1/3 annual responsibility.

The allocation of investment in facilities serving a distribution function should recognize that the cost of these facilities is driven by two principle factors. First is the cost of extending the system to connect individual customers. Second is the cost associated with the capacity (peak day) requirements of the customers connected. Though facilities serving a distribution function are also used to meet customers' annual requirements, due to the local nature of the facilities and their customer specific cost, we do not allocate any cost associated with the distribution function on the basis of annual throughput. By allocating costs of facilities, which are functionally classified as distribution on the basis of number of customers and peak period requirements, reasonable results are achieved.

We use a classification/allocation basis for transmission and distribution mains that recognizes the functional use (transmission/distribution) of these facilities by classifying costs on a basis that recognizes the customer, capacity, and commodity related components of cost embedded in the transmission and distribution mains investment. We develop this classification in two steps. First, we define what facilities serve a transmission function (regardless of which mains FERC account is used). This definition is based on mains larger than a certain size (usually 6- or 8-inches) that serve a transmission function. In the second step we determine how the remaining investment (distribution function) should be split between customer and capacity. We typically develop this split based on examination of relative capacity and cost relationships.

In evaluating what facilities serve a distribution function, we examine the relative capacity provided by various pipe sizes. Pipeline flow formulas generally suggest that the capacity of a pipeline is proportional to its diameter to something on the order of the 2.5 power. Raising the diameter to the 2.5 power and multiplying by distance results in an indication of the relative capacity of the system. Typically, the break point between the transmission and distribution function falls at approximately the midpoint of the cumulative relative capacity, such that half of the capacity is assigned to transmission and half to distribution.

In Exhibit DNH-11, we show the analysis of mains. The original cost (Column C) and length (Column D) are summarized from the Company's detailed property accounting records. The trended original cost (Column G) is developed using trend factors based on the Handy

Whitman Index for Accounts 367 and 376 for the North Central Region. The relative capacity (as discussed above) is shown in Column E. The trended original cost per foot is shown in Column H and trended original cost per unit of relative capacity is shown in Column I. Account 367 Transmission Mains are summarized in Lines 1 through 16 and Account 376 Distribution Mains are summarized in Lines 17 through 36. The sum of the transmission and distribution mains is shown in Line 37 through 47.

As shown in the cumulative relative capacity (Column F), 50 percent of the system capacity falls between 8 and 10 inch mains. Therefore, classifying mains that are 8 inches in diameter as distribution results in approximately 48 percent of the total system capacity being classified as distribution and 52 percent as transmission. Based on the trended original cost, 16.04 percent of the mains investment is for mains over 8 inches in diameter and 83.96 percent of the mains investment is for mains 8 inches in diameter or less.

Of the mains classified as transmission (16.04 percent of cost), we classify two-thirds as capacity related and one-third as commodity related. As shown on Lines 50 and 51, this results in 10.70 percent of mains (combined Accounts 367 and 376) being classified at Transmission-Capacity and 5.35 percent as Transmission-Commodity.

The mains classified as distribution (83.96 percent of cost), we classify between capacity and customer. The portion we classify as capacity is based on the unit cost of capacity of the 8-inch mains (the largest distribution function mains) which equals \$0.39 per unit of capacity (feet times diameter to the 2.5 power). This results in 38.06 percent of the investment in distribution mains being classified as capacity related and 61.94 percent as customer related. Applying these percentages to the 83.96 percent of cost that is distribution related results in 31.95 percent of mains being classified as Distribution – Capacity and 52.00 percent as Distribution Customer related. These calculations are shown in Lines 52 through 59 of Exhibit DNH-11.

The functionalization of transmission and distribution mains is shown below:

Allocation	2014	2020
Transmission – Capacity	12.93%	10.70%
Transmission – Commodity	6.47%	5.35%
Distribution – Capacity	40.68%	31.95%
Distribution – Customer	39.92%	52.00%

The differences between the 2014 and 2020 studies is primarily driven by the investment and retirements that have occurred since the last rate case. Generally, most of the investment has been made in smaller diameter pipe, the largest increase being in two-inch mains. The table below compares the booked cost and length in feet of transmission and distribution mains by size. As discussed above, the mains with a diameter of 8 inches and less are classified as distribution for functionalization. Investment in 2-inch mains increased by \$18,457,351 and 464,205 feet. These smaller diameter distribution mains primarily serve a customer function. As such, if the investment in smaller diameter mains increases relative to the investment in higher diameter mains, the relative percentage of mains serving a customer function should increase and the percentage serving commodity and capacity functions should decline.

Diameter Inches	2013		2020	
	Booked Cost \$	Length Feet	Booked Cost \$	Length Feet
1	\$2,691,565	336,462	\$3,238,458	350,273
2	\$38,561,831	7,441,259	\$57,019,182	7,905,464
3	\$1,721,740	642,941	\$1,886,135	715,950
4	\$21,939,275	2,800,950	\$30,873,342	2,974,397
6	\$12,215,845	1,353,127	\$21,821,393	1,587,216
8	\$6,364,564	263,636	\$9,662,638	358,399
10	\$4,582,624	342,984	\$5,821,085	391,649
12	\$6,548,068	304,138	\$9,730,165	368,673
14	\$411,805	5,257	\$79,798	638
16	\$33,999	1,149	\$371,927	76,589
Total	\$95,071,316	13,491,903	\$140,504,122	14,729,248

Customer Accounting

The Customer Accounting cost function includes operation and maintenance expenses booked to FERC Accounts 901 through 916 which include Customer Accounts Expenses, Customer Service and Information Expenses, and Sales Expenses. The customer accounting weighting factors used reflect the relative cost of reading meters, customer accounting and billing, collections, and customer service for each of the customer classes. I recommend using the same weighting factors for the current study with the Irrigation class weighting factor set at the same as the Small Commercial class.

The following customer accounting weighting factors are used in the CCOSS:

Customer Class	2014	2020
Residential	1	1
Small Commercial	2	2
Small Volume	4	4
Large Volume	20	20
Irrigation	n/a	2

The weighting factors used in the current case are the same as those used in prior rate cases.

Black Hills/Kansas Gas Utility Company, LLC
Meters Weighting Factor Study
For the Test Year Ended December 31, 2020

	A	B	C	D	E	F	G	H	I
Line						Additional Materials and Equipment (i.e. Flow Computers)	Total Meters, Regulators, Addl. Equipment	Relative Use Factors	Use
No.	Customer Class	Meters	TOC	Ave TOC/Meter	Regulators				
1	Residential	103,229	19,751,648	\$191	\$218	\$0	\$409	1.0	1.0
2	Small Commercial	9,349	4,164,548	\$445	\$508	\$0	\$953	2.3	2.0
3	Small Volume	1,930	3,761,601	\$1,949	\$2,222	\$0	\$4,171	10.2	10.0
4	Large Volume	423	1,583,741	\$3,744	\$4,269	\$2,200	\$10,213	24.9	25.0
5	Irrigation	1,824	3,285,040	\$1,801	\$2,053	\$0	\$3,854	9.4	9.0
6	Totals	116,755	\$32,546,578						
7									
8									
9	Retirement Unit	Quantity	TOC						
10	Meter Bar Regulator Assembly-<2"	38,277	28,496,579						
11	Meter Bar Regulator Assembly-2"	10	17,559						
12	Regulator, Gas - Less Than 2"	114,617	6,294,845						
13	Regulator, Gas - 2"	880	838,057						
14	Regulator, Gas - >=3"	21,076	1,460,963						
15	Totals	174,860	\$37,108,004						
16									
17	Regulator as a Percent of Meter		114.02%						

Line No. [A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K]
 1 Property Data

Company	Diam	Quantity	Book Cost	TOC	Ave Cost/Foot
Black Hills Kansas Gas, LLC	1" or less	7,881,272	\$59,359,266	\$112,278,791	\$14.25
Black Hills Kansas Gas, LLC	>1" thru 2"	310,492	\$2,760,300	\$4,438,932	\$14.30
Black Hills Kansas Gas, LLC	>2" thru 4"	74,934	\$651,731	\$1,236,360	\$16.50
Totals		8,266,698	62,771,297	117,954,082	\$14.27

2019 DOT Report - Number of Services

2019 DOT Report Summary

Company	Diam	DOT Number of Services
Black Hills Kansas Gas, LLC	Unknown	0
	1" or less	97,083
	>1" thru 2"	5,331
	>2" thru 4"	624
	>4" thru 8"	18

Diameter	DOT Number of Service Lines
1" or less	97,083
>1" thru 2"	5,331
> 2"	642
Total	103,056
Unknown	0
Total w/Unknown	103,056

2019 PHMSA Report
 Total Services 103,056
 Avg Serv Length 70
 Number of feet 7,213,920

Average Cost

Diameter	Quantity - ft	Quantity - #	TOC	Ave Cost per Foot	Average Length	Average Cost/ Service	Relative Cost per Foot	Relative Cost per Service	Use for Services
1" or less	7,881,272	97,083	112,278,791	\$14.25	81	\$1,156.52	1.00	1.00	1.00
>1" thru 2"	310,492	5,331	4,438,932	\$14.30	58	\$832.66	1.00	0.72	1.50
> 2"	74,934	642	1,236,360	\$16.50	117	\$1,925.79	1.16	1.67	2.00
Totals	8,266,698	103,056	\$117,954,082						

Adjusted Data

13.65

Diameter	Quantity - ft	Quantity - #	TOC	Ave Cost per Foot	Average Length	Average Cost/ Service
1" or less	7,572,474	97,083	103,364,270	\$13.65	78	\$1,064.70
>1" thru 2"	586,410	5,331	12,006,745	\$20.48	110	\$2,252.25
> 2"	96,300	642	2,628,990	\$27.30	150	\$4,095.00
Totals	8,255,184	103,056	\$118,000,005			

Customer Class Weighting Factors

Average Cost/ Customer	\$1,064.70	\$2,252.25	\$4,095.00
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Customer Class	Number of Customers	Number of Service Lines	1" or less	>1" thru 2"	> 2"	Unit Cost/ Customer	Relative Unit Cost	Weighting Factor
Residential	103,147	89,857	89,857			\$1,065	1	1
Small Commercial	9,383	9,383	7,226	2,157		\$1,338	1.26	1.25
Small Volume	1,918	1,918		1,918		\$2,252	2.12	2
Large Volume	198	198			198	\$4,095	3.85	4
Irrigation	1,700	1,700		1,256	444	\$2,734	2.57	3
Totals	116,346	103,056	97,083	5,331	642			

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
Line No.	Description	Diameter Inches	Original Cost \$	Length Feet	Relative Capacity (1)	Cumulative Relative Capacity	Trended Original Cost \$	Trended Cost per Foot \$/ft (2)	TOC per Capacity Unit (3)	Cumulative Trended Original Cost
1	Transmission Mains - Account 367									
2	Plastic	1	17,544	4,906	4,906	0.50%	26,031	5.31	\$5.31	2.12%
3	Plastic	2	485,764	50,699	286,797	28.94%	793,925	15.66	\$2.77	64.51%
4	Plastic	4	257,259	17,608	563,456	56.86%	345,171	19.60	\$0.61	28.05%
5	Plastic	8	57,722	750	135,765	13.70%	65,486	87.31	\$0.48	5.32%
6	Subtotal Transmission		818,289	73,963	990,923	100%	1,230,614			
7										
8	Steel	1	151,118	11,234	11,234	0.00%	561,353	49.97	\$49.97	0.35%
6	Steel	2	461,070	95,138	538,182	0.10%	2,147,313	22.57	\$3.99	1.34%
7	Steel	3	99,718	22,747	354,591	0.07%	784,711	34.50	\$2.21	0.49%
8	Steel	4	1,962,333	514,600	16,467,200	3.16%	12,662,795	24.61	\$0.77	7.92%
9	Steel	6	12,036,205	1,111,856	98,045,275	18.81%	74,053,738	66.60	\$0.76	46.32%
10	Steel	8	7,092,926	226,539	41,007,939	7.87%	9,581,990	42.30	\$0.23	5.99%
11	Steel	10	4,057,165	336,966	106,558,005	20.44%	24,682,440	73.25	\$0.23	15.44%
12	Steel	12	8,727,385	360,179	179,668,318	34.47%	34,852,331	96.76	\$0.19	21.80%
13	Steel	14	61,403	169	123,939	0.02%	89,226	527.96	\$0.72	0.06%
14	Steel	16	371,927	76,589	78,427,136	15.05%	442,523	5.78	\$0.01	0.28%
15	Subtotal Transmission		35,021,249	2,756,017	521,201,819	100%	159,858,420			
16	Total Transmission Mains - Account 367		35,839,538	2,829,980	522,192,743		161,089,034			
17	Distribution Mains - Account 376									
18	Plastic	1	2,608,326	250,313	250,313	0.25%	3,993,911	15.96	\$15.96	3.65%
19	Plastic	2	47,120,710	5,103,942	28,872,256	28.63%	68,449,601	13.41	\$2.37	62.50%
20	Plastic	3	825,021	289,154	4,507,465	4.47%	1,945,939	6.73	\$0.43	1.78%
21	Plastic	4	21,480,596	1,638,588	52,434,816	52.00%	30,090,688	18.36	\$0.57	27.48%
22	Plastic	6	4,591,882	138,566	12,218,976	12.12%	5,290,012	38.18	\$0.43	4.83%
23	Plastic	8	100,586	3,339	604,424	0.60%	-269,981	-80.86	-\$0.45	-0.25%
24	Plastic	10	14,309	6,155	1,946,382	1.93%	16,996	2.76	\$0.01	0.02%
25	Subtotal Distribution		76,741,400	7,430,057	100,834,631	100%	109,517,167			
26	Steel	1	461,470	83,820	83,820	0.07%	785,657	9.37	\$9.37	0.51%
27	Steel	2	8,951,637	2,655,685	15,022,823	12.53%	64,224,938	24.18	\$4.28	41.79%
28	Steel	3	961,396	404,049	6,298,501	5.25%	9,983,844	24.71	\$1.59	6.50%
29	Steel	4	7,173,154	803,601	25,715,232	21.45%	40,036,839	49.82	\$1.56	26.05%
30	Steel	6	5,193,306	336,794	29,699,044	24.77%	20,709,755	61.49	\$0.70	13.48%
31	Steel	8	2,411,434	127,771	23,129,022	19.29%	8,854,622	69.30	\$0.38	5.76%
32	Steel	10	1,749,611	48,528	15,345,901	12.80%	7,039,655	145.06	\$0.46	4.58%
33	Steel	12	1,002,780	8,494	4,237,067	3.53%	1,817,813	214.01	\$0.43	1.18%
34	Steel	14	18,394	469	343,948	0.29%	226,165	482.23	\$0.66	0.15%
35	Subtotal Distribution		27,923,184	4,469,211	119,875,358	1	153,679,288			
36	Total Distribution Mains - Account 376		104,664,584	11,899,268			263,196,455			

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	
Line No.	Description	Diameter Inches	Original Cost \$	Length Feet	Relative Capacity	Cumulative Relative Capacity	Trended Original Cost \$	Trended Cost per Foot \$/ft	TOC per Capacity Unit	Cumulative Trended Original Cost
37	Net Mains									
38	Plastic & Steel	1		350,273	350,273	0.05%	5,366,953	15.32	\$15.32	1.24%
39	Plastic & Steel	2		7,905,464	44,720,058	6.07%	135,615,778	17.15	\$3.03	32.70%
40	Plastic & Steel	3		715,950	11,160,556	7.57%	12,714,494	17.76	\$1.14	35.65%
41	Plastic & Steel	4		2,974,397	95,180,704	20.38%	83,135,494	27.95	\$0.87	54.93%
42	Plastic & Steel	6		1,587,216	139,963,295	39.22%	100,053,505	63.04	\$0.71	78.14%
43	Plastic & Steel	8		358,399	64,877,149	47.95%	25,087,930	70.00	\$0.39	83.96%
44	Plastic & Steel	10		391,649	123,850,288	64.63%	31,739,091	81.04	\$0.26	91.32%
45	Steel	12		368,673	183,905,386	89.38%	36,670,144	99.47	\$0.20	99.82%
46	Steel	14		638	467,887	89.44%	315,390	494.34	\$0.67	99.90%
	Steel	16		76,589	78,427,136	100.00%	442,523	5.78	\$0.01	100.00%
47	Total Distribution			14,729,248	742,902,732		431,141,302			
48	Classification of Distribution									
49	Total 10 inches and Over - Transmission Function			837,549	386,650,697		69,167,148			16.04%
50	Capacity Assignment				66.67%					10.70%
51	Commodity Assignment				33.33%					5.35%
52	Total 8 inches and Less - Distribution			13,891,699	356,252,035		361,974,155			83.96%
53	Distribution Capacity/Customer Assignment									
54	Relative Capacity of less than 10 inches				356,252,035	Column E, Line 56				
55	Unit TOC per Capacity of 8 inch				0.39	Column I, Line 47				
56	TOC of less than 10 inch that is Capacity Related				137,762,313	Line 58 times Line 59				
57	TOC of less than 10 inches				361,974,155	Sum on Column G, Lines 42 through 47				
58	Capacity Assignment				38.06%	Line 60 / Line 61				31.95%
59	Customer Assignment				61.94%	1 minus Line 62				52.00%
60	Overall Assignment									
61	Commodity				5.35%	Column J, Line 55				
62	Capacity				42.65%	Column J Line 54 plus Column J Line 62				
63	Customer				52.00%	Column J Line 63				
64	(1) Diameter (Column B) to the 2.5 power times length (Column D)									
65	(2) Trended Original Cost (Column G) divided by length (Column D).									
66	(3) Trended Original Cost (Column G) divided by relative capacity (Column E).									

Line Number	Acct. No.	Description	Total Gas Utility Adjusted	Gas Supply		Transmission		Distribution		Services	Meters and Regulators	Customer Accounts	Direct	Allocation Basis or Reference
				Demand	Commodity	Demand	Commodity	Demand	Customer					
				\$	\$	\$	\$	\$	\$					
1		Gas Plant in Service												
2		Intangible Plant												
3	301	Organization	186,932	0	0	7,465	6,393	22,301	36,296	36,584	33,222	44,671	0	Supervised O&M
4	302	Franchises & Consents	74,990	0	0	2,995	2,564	8,946	14,561	14,676	13,328	17,920	0	Supervised O&M
5	303	Miscellaneous Intangible Plant	3,246,838	0	0	129,654	111,034	387,354	630,430	635,425	577,042	775,899	0	Supervised O&M
6		Total Intangible Plant	3,508,760	0	0	140,113	119,991	418,602	681,286	686,685	623,592	838,490	0	Sum of Lines 3 thru 5
7		Production & Gathering Plant												
8	336	Purification Equipment	18,719			2,002	1,001	5,981	9,735					Mains Allocation
9		Total Product. & Gather. Plant	18,719	0	0	2,002	1,001	5,981	9,735	0	0	0	0	Sum of Line 8
10		Transmission Plant												
11	365	Land & Land Rights	978,392			104,641	52,321	312,625	508,806					Mains Allocation
12	366	Structures & Improvements	214,152			22,904	11,452	68,428	111,368					Mains Allocation
13	367	Mains	44,803,950			4,791,873	2,395,936	14,316,178	23,299,962					Mains Allocation
14	368	Compressor Station Equipment	2,475			265	132	791	1,287					Mains Allocation
15	369	Measuring & Reg. Station Eq.	4,425,949			473,364	236,682	1,414,221	2,301,682					Mains Allocation
16	371	Other Equipment	108,344			11,588	5,794	34,619	56,344					Mains Allocation
17		Total Transmission Plant	50,533,262	0	0	5,404,634	2,702,317	16,146,862	26,279,449	0	0	0	0	Sum of Lines 11 thru 16
18		Distribution Plant												
19	374	Land & Land Rights	392,378			41,966	20,983	125,376	204,053					Mains Allocation
20	375	Structures & Improvements	1,030,848			110,251	55,126	329,386	536,085					Mains Allocation
21	376	Mains	128,551,711			13,748,865	6,874,432	41,076,048	66,852,365					Mains Allocation
22	377	Compressor Station Equipment	175,304			18,749	9,375	56,015	91,165					Mains Allocation
23	378	Meas. & Reg. Sta. Equip.	7,340,810			785,114	392,557	2,345,604	3,817,534					Mains Allocation
24	379	Meas. & Reg. Sta. Equip. - CG	204,676			21,890	10,945	65,400	106,440					Mains Allocation
25	380	Services	76,360,950							76,360,950				Services
26	381	Meters	20,990,945								20,990,945			Meters and Regulators
27	382	Meter Installations	1,828,548								1,828,548			Meters and Regulators
28	383	House Regulators	33,169,196								33,169,196			Meters and Regulators
29	385	Indust. Meas. & Reg. Sta. Equip.	6,358,436								6,358,436			Meters and Regulators
30	387	Other Equipment	109,363			11,697	5,848	34,945	56,873					Mains Allocation
31		Total Distribution Plant	276,513,163	0	0	14,738,532	7,369,266	44,032,775	71,664,516	76,360,950	62,347,125	0	0	Sum of Lines 19 thru 30
32		General Plant												
33	389	Land & Land Rights	829,867	0	0	33,139	28,379	99,005	161,133	162,410	147,488	198,314	0	Supervised O&M
34	390	Structures and Improvements	11,242,251	0	0	448,931	384,458	1,341,223	2,182,877	2,200,174	1,998,022	2,686,566	0	Supervised O&M
35	391	Office Furniture & Equipment	1,513,310	0	0	60,430	51,752	180,541	293,835	296,164	268,952	361,637	0	Supervised O&M
36	392	Transportation Equipment	8,866,331	0	0	354,054	303,207	1,057,771	1,721,551	1,735,193	1,575,763	2,118,792	0	Supervised O&M
37	393	Stores Equipment	29,525	0	0	1,179	1,010	3,522	5,733	5,778	5,247	7,056	0	Supervised O&M
38	394	Tools & Work Equipment	2,929,845	0	0	116,996	100,194	349,536	568,880	573,388	520,705	700,147	0	Supervised O&M
39	395	Laboratory Equipment	11,714	0	0	468	401	1,398	2,275	2,293	2,082	2,799	0	Supervised O&M
40	396	Power Operated Equipment	1,049,376	0	0	41,904	35,886	125,193	203,754	205,369	186,500	250,770	0	Supervised O&M
41	397	Communication Equipment	1,526,897	0	0	60,973	52,216	182,162	296,473	298,823	271,367	364,883	0	Supervised O&M
42	398	Misc. Equipment	28,848	0	0	1,152	987	3,442	5,601	5,646	5,127	6,894	0	Supervised O&M
43		General Plant	28,027,965	0	0	1,119,225	958,490	3,343,793	5,442,112	5,485,236	4,981,251	6,697,857	0	Sum of Lines 33 thru 42
44	118	Other Utility Plant (Allocated on Customer Count)	2,965,931									2,965,931		Customer Accounts
45	118	Other Utility Plant (Allocated on Blended Ratio)	9,826,187	0	0	392,384	336,032	1,172,284	1,907,924	1,923,042	1,746,353	2,348,169	0	Supervised O&M
			12,792,118	0	0	392,384	336,032	1,172,284	1,907,924	1,923,042	1,746,353	5,314,100	0	
46		Total Plant in Service	371,393,987	0	0	21,796,891	11,487,097	65,120,297	105,985,021	84,455,912	69,698,321	12,850,447	0	Sum of Lines 6, 9, 17, 31 and 43

A		B		C		D		E		F		G		H		I		J		K		L		M		N		
Line Number	Acct. No.	Description	Total Gas Utility Adjusted	Gas Supply		Transmission		Distribution		Services	Meters and Regulators	Customer Accounts	Direct	Allocation Basis or Reference														
				Demand	Commodity	Demand	Commodity	Demand	Customer																			
			\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$		
47	<u>Accumulated Depreciation</u>																											
48		Intangible	(2,482,885)	0	0	(99,148)	(84,909)	(296,213)	(482,095)	(485,915)	(441,269)	(593,336)	0	Intangible Plant														
49		Production & Gathering	(13,086)	0	0	(1,400)	(700)	(4,181)	(6,805)	0	0	0	0	Prod. & Gathering Plant														
50		Transmission	(11,819,459)	0	0	(1,264,115)	(632,057)	(3,776,664)	(6,146,622)	0	0	0	0	Transmission Plant														
51		Distribution	(85,483,078)	0	0	(4,556,366)	(2,278,183)	(13,612,578)	(22,154,835)	(23,606,721)	(19,274,396)	0	0	Distribution Plant														
52		General	(6,586,665)	0	0	(263,022)	(225,248)	(785,802)	(1,278,915)	(1,289,049)	(1,170,611)	(1,574,019)	0	General Plant														
53		Other Utility Plant (Allocated on Customer Count)	(1,260,390)									(1,260,390)		Customer Accounts														
54		Other Utility Plant (Allocated on Blended Ratio)	(670,840)	0	0	(26,788)	(22,941)	(80,033)	(130,255)	(131,287)	(119,225)	(160,311)	0	Supervised O&M														
55		Total Accumulated Depreciation	(108,316,402)	0	0	(6,210,838)	(3,244,038)	(18,555,472)	(30,199,527)	(25,512,972)	(21,005,500)	(3,588,056)	0	Sum of Lines 48 thru 52														
56		Net Plant	263,077,585	0	0	15,586,053	8,243,059	46,564,825	75,785,495	58,942,941	48,692,821	9,262,392	0	Line 46 - Line 55														
57	<u>Other Rate Base Items</u>																											
58		Materials & Supplies	2,673,612	0	0	156,913	82,694	468,792	762,971	607,986	501,748	92,509	0	Plant in Service														
59		Gas Storage	1,787,128	1,787,128										Gas Supply - Demand														
60		Prepayments	90,098	0	0	5,338	2,823	15,947	25,955	20,187	16,676	3,172	0	Net Plant														
61		Customer Advances	(114,892)	0	0	(4,588)	(3,929)	(13,707)	(22,308)	(22,485)	(20,419)	(27,456)	0	Supervised O&M														
62		Customer Deposits	(1,433,558)									(1,433,558)		Customer Accounts														
63		Accum. Deferred Income Taxes	(35,742,194)	0	0	(2,117,549)	(1,119,917)	(6,326,381)	(10,296,354)	(8,008,094)	(6,615,494)	(1,258,405)	0	Net Plant														
64		Total Other Rate Base Items	(32,739,806)	1,787,128	0	(1,959,887)	(1,038,329)	(5,855,349)	(9,529,736)	(7,402,406)	(6,117,489)	(2,623,738)	0	Sum of Lines 58 thru 63														
65																												
66		Total Rate Base	230,337,778	1,787,128	0	13,626,167	7,204,730	40,709,476	66,255,758	51,540,534	42,575,332	6,638,653	0	Line 56 + Line 64														

Black Hills/Kansas Gas Utility Company, LLC
 Functional Classification of Operation and Maintenance Expenses
 For the Test Year Ended December 31, 2020 as Adjusted

Line Number	Acct. No.	Description	Total Gas Utility Adjusted	Gas Supply		Transmission		Distribution		Services	Meters and Regulators	Customer Accounts	Direct	Allocation Basis or Reference
				Demand	Commodity	Demand	Commodity	Demand	Customer					
				\$	\$	\$	\$	\$	\$					
1	<u>O & M Expenses</u>													
2	Transmission Expenses													
3	Operation													
4	850	Supervision & Engineering	115,040			12,304	6,152	36,759	59,826					Mains Allocation
5	851	Sys. Control & Load Dispatch.	248				248							Transmission - Commodity
6	852	Communication System Expenses	246			26	13	79	128					Mains Allocation
7	856	Mains Expenses	105,110			11,242	5,621	33,586	54,662					Mains Allocation
8	857	Meas. & Reg. Sta. Expenses	7,135			763	382	2,280	3,710					Mains Allocation
9	859	Other Expenses	157,377			16,832	8,416	50,287	81,843					Mains Allocation
10	860	Rents	21,857			2,338	1,169	6,984	11,366					Mains Allocation
11		Total Operation	407,012	0	0	43,504	22,000	129,973	211,534	0	0	0	0	Sum of Lines 4 thru 9
12	Maintenance													
13	861	Supervision & Engineering	17,489			1,870	935	5,588	9,095					Mains Allocation
14	863	Mains	97,661			10,445	5,223	31,206	50,788					Mains Allocation
15	864	Compressor Station Equipment	135			14	7	43	70					Mains Allocation
16	865	Meas. & Reg. Sta. Equip.	5,743			614	307	1,835	2,986					Mains Allocation
17	867	Other Equipment	4,846			518	259	1,549	2,520					Mains Allocation
18		Total Maintenance	125,874	0	0	13,463	6,731	40,221	65,460	0	0	0	0	Sum of Lines 13 thru 17
19		Total Transmission Expenses	532,886	0	0	56,967	28,732	170,194	276,995	0	0	0	0	Line 11 + Line 18
20	Distribution Expenses													
21	Operation													
22	870	Supervision & Engineering	1,699,194			90,520	45,261	270,436	440,142	551,637	301,198			Accounts 871 - 880
23	871	Load Dispatching	5				5							Transmission - Commodity
24	872	Compressor Station Expenses	0				0							Transmission - Commodity
25	874	Mains & Services	2,451,332			164,475	82,238	491,385	799,742	913,492				Accounts 376 and 380
26	875	Measuring & Regulating Sta. Equip. - General	351,276			37,570	18,785	112,243	182,678					Account 378
27	876	Measuring & Regulating Sta. Equip. - Ind.	24,038								24,038			Meters and Regulators
28	877	Measuring & Regulating Sta. Equip. - CG	119,743			12,807	6,403	38,261	62,272					Account 379
29	878	Meters & House Regulators	610,137								610,137			Meters and Regulators
30	879	Customer Installation Expenses	477,486							477,486				Services
31	880	Other Expenses	1,677,686			89,423	44,711	267,160	434,810	463,304	378,278			Distribution Plant
32	881	Rents	5,847			312	156	931	1,515	1,615	1,318			Distribution Plant
33		Total Operation	7,416,743	0	0	395,106	197,559	1,180,416	1,921,159	2,407,533	1,314,970	0	0	Sum of Lines 22 thru 32
34	Maintenance													
35	885	Supervision & Engineering	51,130	0	0	2,081	1,040	6,216	10,117	5,555	26,121	0	0	Accounts 886 - 894
36	886	Structures & Improvements	3,423	0	0	366	183	1,094	1,780	0	0	0	0	Account 375
37	887	Mains	497,153			53,172	26,586	158,855	258,541					Account 376
38	888	Main. Of Compressor Sta. Eq.	58,340			6,240	3,120	18,641	30,339					Account 377
39	889	Meas. & Reg. Sta. Eq. - Gen.	213,297			22,813	11,406	68,155	110,924					Mains Allocation
40	890	Meas. & Reg. Sta. Eq. - Ind.	29,002								29,002			Meters and Regulators
41	891	Meas. & Reg. Sta. Eq. - City Gate	166,714								166,714			Meters and Regulators
42	892	Services	217,161							217,161				Services
43	893	Meters & House Regulators	852,259								852,259			Meters and Regulators
44	894	Other Equipment	25,009			1,333	667	3,982	6,482	6,906	5,639			Distribution Plant
45		Total Maintenance	2,113,488	0	0	86,003	43,002	256,943	418,182	229,622	1,079,735	0	0	Sum of Lines 35 thru 44
46		Total Distribution	9,530,230	0	0	481,109	240,560	1,437,360	2,339,341	2,637,155	2,394,705	0	0	Line 33 + Line 45

Black Hills/Kansas Gas Utility Company, LLC
 Functional Classification of Operation and Maintenance Expenses
 For the Test Year Ended December 31, 2020 as Adjusted

KSG Direct Exhibit DNH-12
 Table 3
 Page 2 of 2

Line Number	Acct. No.	Description	Total Gas Utility Adjusted	Gas Supply		Transmission		Distribution		Services	Meters and Regulators	Customer Accounts	Direct	Allocation Basis or Reference
				Demand	Commodity	Demand	Commodity	Demand	Customer					
				\$	\$	\$	\$	\$	\$					
47		Customer Accounts Expenses												
48	901	Supervision	192,632									192,632		Customer Accounts
49	902	Meter Reading Expenses	361,463									361,463		Customer Accounts
50	903	Customer Records & Collection	2,387,118									2,387,118		Customer Accounts
51	904	Uncollectible Accounts	654,912									654,912		Customer Accounts
52	905	Miscellaneous	85,568									85,568		Customer Accounts
53		Total Customer Accounts Expenses	3,681,694	0	0	0	0	0	0	0	0	3,681,694	0	Sum of Lines 48 thru 52
54		Customer Service & Inform. Exp.												
55	907	Supervision	44,146				22,073					22,073		50% Trans Com., 50% Cust Accts.
56	908	Customer Assistance Expenses	176,517				88,259					88,259		50% Trans Com., 50% Cust Accts.
57	909	Information & Instruction Exp.	16,308				8,154					8,154		50% Trans Com., 50% Cust Accts.
58	910	Miscellaneous	3,945				1,972					1,972		50% Trans Com., 50% Cust Accts.
59		Total Cust. Service & Inf. Exp.	240,916	0	0	0	120,458	0	0	0	0	120,458	0	Sum of Lines 55 thru 58
60		Sales Expenses												
61	911	Supervision	0				0					0		50% Trans Com., 50% Cust Accts.
62	912	Demonstrating & Selling Exp.	121,843				60,921					60,921		50% Trans Com., 50% Cust Accts.
63	913	Advertising Expenses	19,998				9,999					9,999		50% Trans Com., 50% Cust Accts.
64	916	Miscellaneous	39				20					20		50% Trans Com., 50% Cust Accts.
65		Total Sales Expenses	141,880	0	0	0	70,940	0	0	0	0	70,940	0	Sum of Lines 61 thru 64
66		Administrative & General Expenses												
67		Operation												
68	920	A & G Salaries	6,479,803	0	0	258,754	221,594	773,054	1,258,165	1,268,135	1,151,619	1,548,482	0	Supervised O&M
69	921	Office Supplies & Expenses	1,889,648	0	0	75,458	64,621	225,439	366,908	369,815	335,837	451,570	0	Supervised O&M
70	922	Transfers	(1,226,286)	0	0	(48,969)	(41,936)	(146,298)	(238,105)	(239,991)	(217,941)	(293,046)	0	Supervised O&M
71	923	Outside Services Employed	1,136,556	0	0	45,385	38,868	135,593	220,682	222,431	201,994	271,603	0	Supervised O&M
72	924	Property Insurance	6,890	0	0	408	216	1,220	1,985	1,544	1,275	243	0	Net Plant
73	925	Injuries & Damages	576,743	0	0	23,031	19,723	68,807	111,985	112,872	102,501	137,825	0	Supervised O&M
74	926	Employee Pensions & Benefits	1,442,184	0	0	57,590	49,319	172,055	280,025	282,244	256,311	344,639	0	Supervised O&M
75	928	Regulatory Commission Expense	422,497				422,497							Transmission - Commodity
76	929	Duplicate Charges - Credit	4	0	0	0	0	1	1	1	1	1	0	Supervised O&M
77	930	Miscellaneous	378,143	0	0	15,100	12,932	45,113	73,423	74,005	67,205	90,365	0	Supervised O&M
78	931	Rents	801,070	0	0	31,989	27,395	95,569	155,541	156,774	142,370	191,432	0	Supervised O&M
79	932	Maintenance of General Plant	1,019,592	0	0	40,715	34,868	121,639	197,971	199,540	181,206	243,652	0	Supervised O&M
80		Total A & G Expenses	12,926,844	0	0	499,462	850,097	1,492,191	2,428,581	2,447,369	2,222,377	2,986,766	0	Sum of Lines 68 thru 78
81		Total Operation & Maintenance	27,054,450	0	0	1,037,538	1,310,787	3,099,745	5,044,917	5,084,524	4,617,082	6,859,858	0	Sum of Lines 19,46,53,59,65,80
82														
83		Supervised O & M before General	13,466,847	0	0	537,764	460,534	1,606,622	2,614,820	2,635,540	2,393,386	3,218,179	0	Lines 19 + 46-32 + 53 - 51 + 59 + 65

Black Hills/Kansas Gas Utility Company, LLC
 Functional Classification of Other Cost of Service Components
 For the Test Year Ended December 31, 2020 as Adjusted

KSG Direct Exhibit DNH-12
 Table 4
 Page 1 of 1

A		B		C		D		E		F		G		H		I		J		K		L		M		N		
Line Number	Acct. No.	Description	Total Gas Utility Adjusted	Gas Supply		Transmission		Distribution		Services	Meters and Regulators	Customer Accounts	Direct	Allocation Basis or Reference														
				Demand	Commodity	Demand	Commodity	Demand	Customer																			
			\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1		<u>Depreciation Expense</u>																										
2		Intangible	112,355	0	0	4,487	3,842	13,404	21,816	21,989	19,968	26,850	0	Intangible Plant														
3		Production & Gathering	517	0	0	55	28	165	269	0	0	0	0	Prod. & Gathering Plant														
4		Transmission	790,428	0	0	84,538	42,269	252,565	411,056	0	0	0	0	Transmission Plant														
5		Distribution	6,986,362	0	0	372,383	186,191	1,112,529	1,810,671	1,929,330	1,575,258	0	0	Distribution Plant														
6		General	743,910	0	0	29,706	25,440	88,750	144,443	145,587	132,211	177,772	0	General Plant														
7		Other Utility Plant (Allocated on Customer Count)	120,417									120,417	0	Customer Accounts														
8		Other Utility Plant (Allocated on Blended Ratio)	1,265,059	0	0	50,517	43,262	150,924	245,633	247,579	224,832	302,312	0	Supervised O&M														
9		Total Depreciation Expense	10,019,048	0	0	541,686	301,032	1,618,337	2,633,887	2,344,486	1,952,269	627,351	0	Sum of Lines 2 thru 6														
10		<u>Taxes Other Than Income Taxes</u>																										
11		Property Taxes	5,293,400	0	0	313,608	165,859	936,934	1,524,885	1,185,995	979,751	186,369	0	Net Plant														
12		Payroll Taxes	1,003,147	0	0	40,058	34,305	119,678	194,778	196,322	178,284	239,723	0	Supervised O&M														
13		Miscellaneous	76,662	0	0	3,061	2,622	9,146	14,885	15,003	13,625	18,320	0	Supervised O&M														
14		Total Taxes Other than Income Taxes	6,373,210	0	0	356,727	202,786	1,065,757	1,734,548	1,397,320	1,171,660	444,412	0	Sum of Lines 11 thru 13														
15		<u>Other Operating Revenues</u>																										
16	487	Forfeited Discounts	362,722										362,722	Direct														
17	488	Misc. Service Revenues	735,233	0	0	29,360	25,143	87,715	142,758	143,889	130,669	175,699	0	Supervised O&M														
18	489	Negotiated Margin Revenues	2,947,731			315,266	157,633	941,887	1,532,946					Mains Allocation														
19		Total Other Operating Revenues	4,045,686	0	0	344,625	182,776	1,029,601	1,675,704	143,889	130,669	175,699	362,722	Sum of Lines 16 thru 18														

Black Hills/Kansas Gas Utility Company, LLC
 Functional Classification of Cost of Service and Rate Base
 For the Test Year Ended December 31, 2020 as Adjusted

KSG Direct Exhibit DNH-12
 Table 1
 Page 1 of 1

A		B	C	D	E	F	G	H	I	J	K	L	M	N
Line Number	Acct. No.	Description	Total Gas Utility Adjusted	Gas Supply		Transmission		Distribution		Services	Meters and Regulators	Customer Accounts	Direct	Allocation Basis or Reference
				Demand	Commodity	Demand	Commodity	Demand	Customer					
			\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1	<u>Summary</u>													
2		Rate Base	230,337,778	1,787,128	0	13,626,167	7,204,730	40,709,476	66,255,758	51,540,534	42,575,332	6,638,653	0	Table 2 Line 66
3		Rate of Return	7.05%	7.05%	7.05%	7.05%	7.05%	7.05%	7.05%	7.05%	7.05%	7.05%	7.05%	
4		Total Cost of Service												
5		Operation & Maintenance Expenses	27,054,450	0	0	1,037,538	1,310,787	3,099,745	5,044,917	5,084,524	4,617,082	6,859,858	0	Table 3 Line 81
6		Depreciation Expenses	10,019,048	0	0	541,686	301,032	1,618,337	2,633,887	2,344,486	1,952,269	627,351	0	Table 4 Line 9
7		Taxes Other Than Income Taxes	6,373,210	0	0	356,727	202,786	1,065,757	1,734,548	1,397,320	1,171,660	444,412	0	Table 4 Line 14
8		Return	16,238,813	125,993	0	960,645	507,933	2,870,018	4,671,031	3,633,608	3,001,561	468,025	0	Line 2 x Line 3
9		Income Taxes	2,775,158	21,532	0	164,171	86,804	490,476	798,263	620,971	512,956	79,984	0	Rate Base
10		Other Operating Revenues	(4,045,686)	0	0	(344,625)	(182,776)	(1,029,601)	(1,675,704)	(143,889)	(130,669)	(175,699)	(362,722)	Table 4 Line 19
11		Total Cost of Service	58,414,993	147,524	0	2,716,141	2,226,566	8,114,732	13,206,943	12,937,018	11,124,859	8,303,930	(362,722)	Sum of Lines 5 thru 10

Black Hills/Kansas Gas Utility Company, LLC
Rate of Return Under Current and Traditional Rate Design
For the Test Year Ended December 31, 2020 as Adjusted

KSG Direct Exhibit DNH-13
Table 1
Page 1 of 1

Line Number	A Description	B Total Gas Utility Adjusted \$	C Residential Service \$	D			E		F		I Interruption Large Volume \$	J Basis of Allocation or Reference
				Firm and Transportation			Irrigation		Sales \$	Transportation \$		
				Small Commercial \$	Small Volume \$	Large Volume \$	Sales \$	Transportation \$				
1	<u>Return Under Existing Rates</u>											
2	Rate Base	230,337,778	164,638,897	23,209,495	18,258,164	13,049,757	8,098,442	2,195,292	887,731	Table 3 Line 18		
3	Sales Revenues	86,071,622	55,966,841	8,655,428	8,638,137	4,972,549	5,780,851	440,968	1,616,847	Exhibit DNH-7		
4	Cost of Gas	37,856,574	23,386,248	3,761,618	4,384,511	1,258,667	3,984,883	0	1,080,646	Exhibit DNH-7		
5	Sales Revenues Excluding Gas Cost	48,215,048	32,580,593	4,893,811	4,253,626	3,713,882	1,795,968	440,968	536,201	Line 3 - Line 4		
6	Net Cost of Service	58,414,993	41,755,638	6,166,166	4,489,190	3,045,719	2,144,187	579,373	234,720	Table 2 Line 19		
7	Revenue Deficiency	10,199,945	9,175,045	1,272,356	235,564	(668,163)	348,220	486,625	(969,644)	Line 6 - Line 5		
8	Additional Customer Charge Revenues from Negotiated LV	0	0	0	0	0	0	0	0	Not applicable w/o LV rate change		
9	Net Revenue Deficiency	10,199,945	9,175,045	1,272,356	235,564	(668,163)	348,220	138,405	(301,481)			
10	Percent	11.85%	16.39%	14.70%	2.73%	-13.44%	6.02%	31.39%	-18.65%	Line 9 / Line 3		
11	Increase Under Proposed Rates	10,199,750	7,779,231	1,698,322	235,506	0	390,558	96,133	0			
12	Percent	11.85%	13.90%	19.62%	2.73%	0.00%	6.76%	21.80%	0.00%	Line 11 / Line 3		
13	Increase Under Proposed Rates (Incl LV Credit)	10,199,750	7,779,231	1,698,322	235,506	0	390,558	96,133	0	Not applicable w/o LV rate change		
14	Incremental Taxes at	21.00%	2,141,948	1,633,639	356,648	49,456	0	82,017	20,188	0	Line 13 x 21.00%	
15	Incremental Return	8,057,803	6,145,593	1,341,674	186,049	0	308,541	75,945	0	Line 13 - Line 14		
16	Return Under Proposed Rates	16,238,659	10,504,349	1,972,783	1,287,155	1,447,856	604,388	121,374	300,755	Line 15 + Line 18		
17	Rate of Return Under Proposed Rates	7.05%	6.38%	8.50%	7.05%	11.09%	7.46%	5.53%	33.88%	Line 16 / Line 2		
18	Return Under Current Rates	8,180,857	4,358,757	631,109	1,101,105	1,447,856	295,847	45,428	300,755	(Line 2 X 7.05%) - Line 7 X (100 - 21.00%)		
19	Rate of Return Under Current Rates	3.55%	2.65%	2.72%	6.03%	11.09%	3.65%	2.07%	33.88%	Line 18 / Line 2		
20												
21												
22												
23												
24												
25	Rate of Return Under Current Rates											
26	Residential + Small Commercial	2.66%							6.64%			
27	Small Volume (Firm + Full Margin Trans.)	6.03%							7.05%			
28	Large Volume (Firm + Interruption + Full Margin Trans.)	12.55%							12.55%			
29	Irrigation (Firm + Full Margin Trans.)	3.32%							7.05%			
30	Total	3.55%							7.05%			

Line Number	A Description	B Total Gas Utility Adjusted \$	C Residential Service \$	D			E		F		G		H		I		J Basis of Allocation or Reference
				Firm and Transportation			Irrigation		Sales \$	Transportation \$	Interruptible Large Volume \$						
				Small Commercial \$	Small Volume \$	Large Volume \$											
1	<u>Total Cost of Service</u>																
2	Gas Supply																
3	Demand	147,524	107,385	18,353	18,326	3,461	0	0	0	0	0	0	0	0	0	50% Peak (Sales), 50% Firm Winter Period Sale	
4	Commodity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Annual Sales	
5	Total Gas Supply	147,524	107,385	18,353	18,326	3,461	0	0	0	0	0	0	0	0	0	Line 3 + Line 4	
6	Transmission																
7	Demand	2,716,141	1,542,583	278,504	408,193	466,474	0	0	20,388	50% Peak, 50% Winter Period Throughput							
8	Commodity	2,226,566	829,428	140,935	248,207	535,842	316,200	74,343	81,611	Annual Throughput							
9	Total Transmission	4,942,708	2,372,011	419,439	656,400	1,002,316	316,200	74,343	101,998	Line 7 + Line 8							
10	Distribution																
11	Demand	8,114,732	4,608,614	832,057	1,219,516	1,393,636	0	0	60,910	50% Peak, 50% Winter Period Throughput							
12	Customer	13,206,943	10,935,518	1,243,468	406,688	72,517	423,651	117,045	8,057	Distribution - Customer							
13	Total Distribution	21,321,675	15,544,132	2,075,525	1,626,204	1,466,153	423,651	117,045	68,967	Line 11 + Line 12							
14	Services	12,937,018	10,712,016	1,218,053	398,376	71,035	414,992	114,653	7,893	Services							
15	Meters and Regulators	11,124,859	7,120,979	1,295,552	1,324,133	295,134	827,618	228,651	32,793	Meters & Regulators							
16	Customer Accounting	8,303,930	6,261,838	1,139,244	465,751	207,621	161,726	44,681	23,069	Customer Accounting							
17	Direct																
18	Forfeited Discounts	(362,722)	(362,722)							Direct - Residential							
19	Total Cost of Service	58,414,993	41,755,638	6,166,166	4,489,190	3,045,719	2,144,187	579,373	234,720	Sum of Lines 5,9,13,14,15,16 and 18							

Line Number	A Description	B Total Gas Utility Adjusted \$	C Residential Service \$	D			E		F		G		H		I		J Basis of Allocation or Reference
				Firm and Transportation			Irrigation		Interruptible								
				Small Commercial \$	Small Volume \$	Large Volume \$	Sales \$	Transportation \$	Large Volume \$								
1	Rate Base																
2	Gas Supply																
3	Demand	1,787,128	1,300,875	222,326	222,003	41,924	0	0	0	0	0	0	0	0	0	0	50% Peak (Sales), 50% Firm Winter Period Sale
4	Commodity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Annual Sales
5	Total Gas Supply	1,787,128	1,300,875	222,326	222,003	41,924	0	0	0	0	0	0	0	0	0	0	Line 3 + Line 4
6	Transmission																
7	Demand	13,626,167	7,738,732	1,397,181	2,047,797	2,340,177	0	0	102,279	0	102,279	0	0	102,279	0	0	50% Peak, 50% Winter Period Throughput
8	Commodity	7,204,730	2,683,865	456,038	803,150	1,733,879	1,023,161	240,560	264,077	0	264,077	0	0	264,077	0	0	Annual Throughput
9	Total Transmission	20,830,897	10,422,597	1,853,219	2,850,947	4,074,057	1,023,161	240,560	366,356	0	366,356	0	0	366,356	0	0	Line 7 + Line 8
10	Distribution																
11	Demand	40,709,476	23,120,203	4,174,213	6,117,988	6,991,504	0	0	305,568	0	305,568	0	0	305,568	0	0	50% Peak, 50% Winter Period Throughput
12	Customer	66,255,758	54,860,614	6,238,150	2,040,247	363,798	2,125,346	587,183	40,422	0	40,422	0	0	40,422	0	0	Distribution - Customer
13	Total Distribution	106,965,234	77,980,818	10,412,362	8,158,235	7,355,302	2,125,346	587,183	345,990	0	345,990	0	0	345,990	0	0	Line 11 + Line 12
14	Services	51,540,534	42,676,221	4,852,674	1,587,113	282,999	1,653,312	456,771	31,444	0	31,444	0	0	31,444	0	0	Services
15	Meters and Regulators	42,575,332	27,252,302	4,958,135	5,067,517	1,129,491	3,167,330	875,058	125,499	0	125,499	0	0	125,499	0	0	Meters & Regulators
16	Customer Accounting	6,638,653	5,006,084	910,779	372,349	165,985	129,293	35,721	18,443	0	18,443	0	0	18,443	0	0	Customer Accounting
17	Direct	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Direct
18	Total Rate Base	230,337,778	164,638,897	23,209,495	18,258,164	13,049,757	8,098,442	2,195,292	887,731	0	887,731	0	0	887,731	0	0	Sum of Lines 5,9,13,14,15,16 and 17

Line Number	Description	A	B	C	D	E	F	G	H	I	J									
												Total Gas Utility Adjusted	Residential Service	Firm and Transportation			Irrigation		Interruptible	Basis of Allocation or Reference
												\$	\$	Small Commercial	Small Volume	Large Volume	Sales	Transportation	Large Volume	
\$	\$	\$	\$	\$	\$	\$	\$	\$												
1	Allocation Bases																			
2	Firm Winter Peak Demand	Load Factor		20.68%	20.00%	25.00%	67.00%	0.00%	0.00%	0.00%	Load Factor Study									
3	Peak Day - therms/Day	1,483,043	913,969	160,580	226,244	182,249	0	0	0	0	Line 15 / 365 / Line 2									
4	Allocation Factor	100.0000%	61.6280%	10.8278%	15.2554%	12.2889%	0.0000%	0.0000%	0.0000%	0.0000%	Line 3 / Line 3 Column B									
5	Firm Winter Peak Demand - Sales Only																			
6	Peak Day - therms/Day	1,226,035	913,969	150,955	145,884	15,227	0	0	0	0	Line 18 / 365 / Line 2									
7	Allocation Factor	100.0000%	74.5467%	12.3125%	11.8989%	1.2420%	0.0000%	0.0000%	0.0000%	0.0000%	Line 6 / Line 6 Column B									
8	Winter Period Throughput																			
9	Winter (Nov-Mar) Throughput - therms	98,896,687	51,385,131	9,572,768	14,638,100	21,816,039	0	0	1,484,649		Exhibit DNH-10									
10	Allocation Factor	100.0000%	51.9584%	9.6796%	14.8014%	22.0594%	0.0000%	0.0000%	1.5012%		Line 9 / Line 9 Column B									
11	Firm Winter Period Sales																			
12	Winter (Nov-Mar) Sales - therms	72,336,715	51,385,131	9,091,511	9,364,559	2,495,514	0	0	0		Line 9 excluding interruptible and transportation									
13	Allocation Factor	100.0000%	71.0360%	12.5683%	12.9458%	3.4499%	0.0000%	0.0000%	0.0000%		Line 12 / Line 12 Column B									
14	Commodity																			
15	Annual Throughput - therms	185,196,158	68,988,214	11,722,368	20,644,808	44,569,025	26,300,158	6,183,546	6,788,039		Exhibit DNH-10									
16	Allocation Factor	100.0000%	37.2514%	6.3297%	11.1475%	24.0658%	14.2012%	3.3389%	3.6653%		Line 15 / Line 15 Column B									
17	Commodity - Firm Sales																			
18	Annual Sales - therms	97,043,589	68,988,214	11,019,723	13,311,946	3,723,706	0	0	0		Line 15 excluding interruptible and transportation									
19	Allocation Factor	100.0000%	71.0899%	11.3554%	13.7175%	3.8371%	0.0000%	0.0000%	0.0000%		Line 18 / Line 18 Column B									
20	Commodity - Sales																			
21	Annual Sales - therms	130,131,786	68,988,214	11,019,723	13,311,946	3,723,706	26,300,158	0	6,788,039		Exhibit DNH-10									
22	Allocation Factor	100.0000%	53.0141%	8.4681%	10.2296%	2.8615%	20.2104%	0.0000%	5.2163%		Line 21 / Line 21 Column B									
23	Distribution - Customer																			
24	Average Number of Customers	116,338	103,147	9,383	1,918	171	1,332	368	19		Exhibit DNH-10									
25	Weighting Factor		1	1.3	2	4	3	3	4		Weighting Factor Study									
26	Weighted Number of Customers	124,572	103,147	11,729	3,836	684	3,996	1,104	76		Line 24 x Line 25									
27	Allocation Factor	100.0000%	82.8013%	9.4153%	3.0793%	0.5491%	3.2078%	0.8862%	0.0610%		Line 26 / Line 26 Column B									
28	Services																			
29	Average Number of Customers	116,338	103,147	9,383	1,918	171	1,332	368	19		Exhibit DNH-10									
30	Weighting Factor		1	1.3	2	4	3	3	4		Weighting Factor Study									
31	Weighted Number of Customers	124,572	103,147	11,729	3,836	684	3,996	1,104	76		Line 29 x Line 30									
32	Services Cost Allocator	100.0000%	82.8013%	9.4153%	3.0793%	0.5491%	3.2078%	0.8862%	0.0610%		Line 31 / Line 31 Column B									
33	Meters & Regulators																			
34	Average Number of Customers	116,338	103,147	9,383	1,918	171	1,332	368	19		Exhibit DNH-10									
35	Weighting Factor		1	2	10	25	9	9	25		Weighting Factor Study									
36	Weighted Number of Customers	161,143	103,147	18,766	19,180	4,275	11,988	3,312	475		Line 34 x Line 35									
37	Meters & Regulators Cost Allocator	100.0000%	64.0096%	11.6456%	11.9025%	2.6529%	7.4394%	2.0553%	0.2948%		Line 36 / Line 36 Column B									
38	Customer Accounting																			
39	Average Number of Customers	116,338	103,147	9,383	1,918	171	1,332	368	19		Exhibit DNH-10									
40	Weighting Factor		1	2	4	20	2	2	20		Weighting Factor Study									
41	Weighted Number of Customers	136,785	103,147	18,766	7,672	3,420	2,664	736	380		Line 39 x Line 40									
42	Customer Accounts Cost Allocator	100.0000%	75.4081%	13.7193%	5.6088%	2.5003%	1.9476%	0.5381%	0.2778%		Line 41 / Line 41 Column B									
43	Use per Customer	1,592	669	1,249	10,764	260,638	19,745	16,803	357,265		Line 15 / Line 24									

Line Number	A Description	B Total Gas Utility Adjusted \$	C Residential Service \$	D			E		F		I Interruption Large Volume \$	J Basis of Allocation or Reference
				Firm and Transportation			Irrigation		Sales \$	Transportation \$		
				Small Commercial \$	Small Volume \$	Large Volume \$						
1	Other Gas Supply											
2	Demand - \$	147,524	107,385	18,353	18,326	3,461	0	0	0	0	Line 3 ,Table 2	
3	\$/therm	0.00080	0.00156	0.00157	0.00089	0.00008	0.00000	0.00000	0.00000	0.00000	Line 2 / Line 15 ,Table 4	
4	Commodity - \$	0	0	0	0	0	0	0	0	0	Line 4 ,Table 2	
5	\$/therm	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	Line 4 / Line 15 ,Table 4	
6	Customer - Related											
7	Services	12,937,018	10,712,016	1,218,053	398,376	71,035	414,992	114,653	7,893	0	Line 14 ,Table 2	
8	\$/month		8.65	10.82	17.31	34.62	25.96	25.96	34.62	0	Line 7 / Line 39 ,Table 4	
9	Meters & Regulators	11,124,859	7,120,979	1,295,552	1,324,133	295,134	827,618	228,651	32,793	0	Line 15 ,Table 2	
10	\$/month		5.75	11.51	57.53	143.83	51.78	51.78	143.83	0	Line 9 / Line 39 ,Table 4	
11	Customer Accounting	7,941,208	5,899,116	1,139,244	465,751	207,621	161,726	44,681	23,069	0	Line 16 ,Table 2	
12	\$/month		4.77	10.12	20.24	101.18	10.12	10.12	101.18	0	Line 11 / Line 39 ,Table 4	
13	Distribution - Customer	13,206,943	10,935,518	1,243,468	406,688	72,517	423,651	117,045	8,057	0	Line 12 ,Table 2	
14	\$/bill/month	9.46	8.83	11.04	17.67	35.34	26.50	26.50	35.34	0	Line 13 / Line 15 ,Table 4	
15	Trans/Distr - Demand	10,830,874	6,151,197	1,110,561	1,627,708	1,860,110	0	0	81,297	0	Line 7 + Line 11, Table 2	
16	\$/therm	0.05848	0.08916	0.09474	0.07884	0.04174	0.00000	0.00000	0.01198	0.00000	Line 15 / Line 15 ,Table 4	
17	Transmission - Commodity	2,226,566	829,428	140,935	248,207	535,842	316,200	74,343	81,611	0	Line 8 ,Table 2	
18	\$/therm	0.01202	0.01202	0.01202	0.01202	0.01202	0.01202	0.01202	0.01202	0.00000	Line 17 / Line 15 ,Table 4	
19	Customer Costs - \$	45,210,029	34,667,629	4,896,317	2,594,948	646,307	1,827,987	505,029	71,812	0	Line 6 + Line 13	
20	Demand Costs - \$	10,978,398	6,258,582	1,128,914	1,646,034	1,863,571	0	0	81,297	0	Line 2 + Line 15	
21	Commodity Costs - \$	2,226,566	829,428	140,935	248,207	535,842	316,200	74,343	81,611	0	Line 17	
22	Total Cost of Service - \$	58,414,993	41,755,638	6,166,166	4,489,190	3,045,719	2,144,187	579,373	234,720	0	Sum of Lines 19 thru 21	
23	Calculated Unit Rates											
24	Customer Costs - \$/bill.month		28.01	43.49	112.75	314.96	114.36	114.36	314.96	0	Line 8 + Line 10 + Line 12 + Line 14	
25	Demand Costs - \$/therm		0.09072	0.09630	0.07973	0.04181	0.00000	0.00000	0.01198	0.00000	Line 3 + Line 16	
26	Commodity Costs - \$/therm		0.01202	0.01202	0.01202	0.01202	0.01202	0.01202	0.01202	0.00000	Line 18	
27	Calculated Cost of Service Rates											
28	Customer Costs - \$/bill.month		28.01	43.49	112.75	314.96	114.36	114.36	314.96	0	Line 23	
29	Commodity Costs - \$/therm		0.10274	0.10833	0.09175	0.05384	0.01202	0.01202	0.02400	0.00000	Line 25 + Line 26	
30	Proposed Rates											
31	Customer Costs - \$/bill.month		20.00	35.00	70.00	333.10	35.00	35.00	333.10	0		
32	Commodity Costs - \$/therm		0.22619	0.22619	0.14279	0.06800	0.06187	0.06187	0.06800	0.00000	Rate Design	

Line Number	Description	Total Company	Residential	Small Commercial		Small Volume		Large Volume			Irrigation		Reference
				Sales	Transportation	Firm	Transportation	Firm	Interruptible	Transportation	Sales	Transportation	
1	1. Billing Determinants												
2	Average Number of Monthly Bills	116,338	103,147	9,173	210	1,472	446	40	19	131	1,332	368	Exhibit DNH-5
3	Total Test Period Volumes	185,196,158	68,988,214	11,019,723	702,645	13,311,946	7,332,862	3,723,706	6,788,039	40,845,319	26,300,158	6,183,546	Exhibit DNH-5
4	2. Current Rates												
5	Customer Charge - \$/month		16.94	25.94	25.94	52.97	52.97	333.10	333.10	333.10	28.45	28.45	Current Tariff
6	Commodity Charge - \$/therm		0.16833	0.16833	0.16833	0.14700	0.14700	0.06800	0.06800	0.06800	0.05100	0.05100	Current Tariff
7	Cost of Gas - \$/therm		0.33899	0.34135	-	0.33777	-	0.33801	0.15920	-	0.15152	-	Exhibit DNH-5
8	3. Revenue Under Current Rates	1,747,310	1,747,310										
9	Customer Charge - \$	26,445,300	20,967,807	2,855,294	65,291	935,344	283,495	158,223	74,614	524,966	454,659	125,607	Exhibit DNH-5
10	Delivery Charge - \$	21,769,748	11,612,786	1,854,950	118,276	1,956,856	1,077,931	253,212	461,587	2,777,482	1,341,308	315,361	Exhibit DNH-5
11	Margin - \$	48,215,048	32,580,593	4,710,244	183,567	2,892,200	1,361,426	411,435	536,201	3,302,447	1,795,968	440,968	Line 10 + Line 11
12	Cost of Gas - \$	37,856,574	23,386,248	3,761,618	-	4,384,511	-	1,258,667	1,080,646	-	3,984,883	-	Exhibit DNH-5
13	Total - \$	86,071,622	55,966,841	8,471,861	183,567	7,276,711	1,361,426	1,670,102	1,616,847	3,302,447	5,780,851	440,968	Line + Line 13
14	4. Proposed Rates												
15	Customer Charge - \$/month		20.00	35.00	35.00	70.00	70.00	333.10	333.10	333.10	35.00	35.00	
16	Commodity Charge - \$/therm		0.22619	0.22619	0.22619	0.14279	0.14279	0.06800	0.06800	0.06800	0.06187	0.06187	
17	Cost of Gas - \$/therm		0.33899	0.34135	-	0.33777	-	0.33801	0.15920	-	0.15152	-	
18	5. Revenue Under Proposed Rates												
19	Customer Charge - \$	31,708,953	24,755,380	3,852,555	88,095	1,166,620	374,640	158,223	74,614	524,966	559,335	154,525	Line 16 x Line 19 x 12
20	Delivery Charge - \$	26,705,846	15,604,444	2,492,551	158,931	1,900,813	1,047,059	253,212	461,587	2,777,482	1,627,191	382,576	Line 17 x Line 20
21	Margin - \$	58,414,798	40,359,824	6,345,106	247,026	3,067,433	1,421,699	411,435	536,201	3,302,447	2,186,526	537,101	Line 23 + Line
22	Cost of Gas - \$	37,856,574	23,386,248	3,761,618	-	4,384,511	-	1,258,667	1,080,646	-	3,984,883	-	Line 17 x Line 21
23	Total - \$	96,271,372	63,746,072	10,106,724	247,026	7,451,944	1,421,699	1,670,102	1,616,847	3,302,447	6,171,409	537,101	Line 24 + Line 26
24	6. Difference												
25	Customer Charge - \$	5,263,653	3,787,573	997,261	22,804	231,276	91,145	-	-	-	104,676	28,918	Line 23 - Line 10
26	Delivery Charge - \$	4,936,097	3,991,658	637,601	40,655	(56,043)	(30,871)	-	-	-	285,883	67,215	Line - Line 11
27	Cost of Gas - \$	-	-	-	-	-	-	-	-	-	-	-	Line 26 - Line 13
28	Total - \$ (2)	10,199,750	7,779,231	1,634,863	63,459	175,232	60,273	-	-	-	390,558	96,133	Sum of Lines 29 through 31
29	Percent Difference												
30	Customer Charge - %	19.9%	18.1%	34.9%	34.9%	24.7%	32.2%	0.0%	0.0%	0.0%	23.0%	23.0%	
31	Delivery Charge - %	22.7%	34.4%	34.4%	34.4%	-2.9%	-2.9%	0.0%	0.0%	0.0%	21.3%	21.3%	
32	Cost of Gas - %	0.0%	0.0%	0.0%	n/a	0.0%	n/a	0.0%	0.0%	n/a	0.0%	n/a	
33	Total - %	11.9%	13.9%	19.3%	34.6%	2.4%	4.4%	0.0%	0.0%	0.0%	6.8%	21.8%	
	Net Revenue Deficiency		9,477,757			235,564		0			486,625		(969,644)
	Customer Charge - \$		4,807,639			322,420		-			133,594		

Line Number	A Description	B Residential	C Small Commercial		D Small Volume		E Large Volume			F Irrigation		L Reference
			Sales	Transportation	Firm	Transportation	Firm	Interruptible	Transportation	Sales	Transportation	
1	<u>1. Billing Determinants</u>											
2	Average Number of Monthly Bills	103,147	9,173	210	1,472	446	40	19	131	1,332	368	Exhibit DNH-5
3	Total Test Period Volumes	68,988,214	11,019,723	702,645	13,311,946	7,332,862	3,723,706	6,788,039	40,845,319	26,300,158	6,183,546	Exhibit DNH-5
4	Average Therms per Bill	56	100	279	754	1,370	7,758	29,772	25,983	1,645	1,400	
5	<u>2. Current Rates</u>											
6	Customer Charge - \$/month	\$16.94	\$25.94	\$25.94	\$52.97	\$52.97	\$333.10	\$333.10	\$333.10	\$28.45	\$28.45	Current Tariff
7	GSRs	\$2.39	\$5.96	\$5.96	\$37.72	\$37.72	\$279.07	\$279.07	\$279.07	\$4.60	\$4.60	Current Tariff
8	Commodity Charge - \$/therm	\$0.16833	\$0.16833	\$0.16833	\$0.14700	\$0.14700	\$0.06800	\$0.06800	\$0.06800	\$0.05100	\$0.05100	Current Tariff
9	PGA - \$/therm	\$0.38938	\$0.38938		\$0.38938		\$0.38938	\$0.24321		\$0.24321		
10	<u>3. Average Monthly Bill (Current Rates)</u>											
11	Monthly	\$19.33	\$31.90	\$31.90	\$90.69	\$90.69	\$612.17	\$612.17	\$612.17	\$33.05	\$33.05	
12	Volumetric	\$31.08	\$55.83	\$46.94	\$404.23	\$201.41	\$3,548.23	\$9,265.40	\$1,766.85	\$484.10	\$71.41	
13	Total Average Bill	\$50.41	\$87.73	\$78.84	\$494.92	\$292.10	\$4,160.40	\$9,877.57	\$2,379.02	\$517.15	\$104.46	
14	<u>4. Proposed Rates</u>											
15	Customer Charge - \$/month	\$20.00	\$35.00	\$35.00	\$70.00	\$70.00	\$333.10	\$333.10	\$333.10	\$35.00	\$35.00	
16	GSRs - \$/month	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
17	Commodity Charge - \$/therm	\$0.22619	\$0.22619	\$0.22619	\$0.14279	\$0.14279	\$0.06800	\$0.06800	\$0.06800	\$0.06187	\$0.06187	
18	PGA - \$/therm	\$0.38938	\$0.38938		\$0.38938		\$0.38938	\$0.24321		\$0.24321		
19	<u>5. Average Monthly Bill (Proposed Rates)</u>											
20	Monthly	\$20.00	\$35.00	\$35.00	\$70.00	\$70.00	\$333.10	\$333.10	\$333.10	\$35.00	\$35.00	
21	Volumetric	\$34.31	\$61.62	\$63.07	\$401.05	\$195.64	\$3,548.23	\$9,265.40	\$1,766.85	\$501.98	\$86.63	
22	Total Average Bill	\$54.31	\$96.62	\$98.07	\$471.05	\$265.64	\$3,881.33	\$9,598.50	\$2,099.95	\$536.98	\$121.63	
23	<u>6. Average Customer Bill Impact</u>											
24	Change in Average Monthly Bill - \$	\$3.89	\$8.89	\$19.23	(\$23.86)	(\$26.46)	(\$279.07)	(\$279.07)	(\$279.07)	\$19.84	\$17.17	
25	Change in Average Monthly Bill - %	7.7%	10.1%	24.4%	-4.8%	-9.1%	-6.7%	-2.8%	-11.7%	3.8%	16.4%	
26	<u>7. Average Monthly Bill (Proposed Rates with TA Rider Refund)</u>											
27	TA Rider Refund	-4.9729%	-4.2921%	-4.2921%	-4.9582%	-4.9582%	-3.9977%	-3.9977%	-3.9977%	-4.6074%	-4.6074%	
28	Average Monthly Rider Refund	(\$1.62)	(\$2.47)	(\$4.21)	(\$8.81)	(\$13.17)	(\$34.41)	(\$94.25)	(\$83.95)	(\$6.30)	(\$5.60)	
29	Total Average Bill	\$52.69	\$94.15	\$93.86	\$462.25	\$252.47	\$3,846.93	\$9,504.25	\$2,016.00	\$530.68	\$116.03	
30	<u>8. Change in Average Monthly Bill with TA Rider Refund</u>											
31	Change in Average Monthly Bill - \$	\$2.27	\$6.42	\$15.02	(\$32.67)	(\$39.63)	(\$313.48)	(\$373.32)	(\$363.02)	\$13.53	\$11.57	
32	Change in Average Monthly Bill - %	4.5%	7.3%	19.1%	-6.6%	-13.6%	-7.5%	-3.8%	-15.3%	2.6%	11.1%	