

Before the
STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of Kansas
Gas Service, a Division of ONE Gas, Inc., for
Adjustment of its Natural Gas Rates in the
State of Kansas.

Docket 18-KGSG-560-RTS

DIRECT TESTIMONY OF MICHAEL L. BROSCHE, ON BEHALF OF
INTERVENORS THE KANSAS FARM BUREAU AND KANSAS CORN GROWERS ASSOCIATION

1 **Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.**

2 A. My name is Michael L. Brosch. I am the President of Utilitech, Inc., a regulatory and
3 management consulting firm. My business address is P.O. Box 481934, Kansas City, Mo.

4 **Q. ON WHOSE BEHALF ARE YOU APPEARING TODAY?**

5 A. I am appearing as an independent consultant on behalf of the following Intervenor: The
6 Kansas Farm Bureau and Kansas Corn Growers Association, which I will refer to
7 collectively as "KFB/KCGA".

8 **I. QUALIFICATIONS**

9 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?**

10 A. I have a Bachelors of Business Administration with an emphasis in Accounting from the
11 University of Missouri, Kansas City and completed the uniform Certified Public Accounting
12 ("CPA") examination upon graduation. Since graduation and throughout my professional
13 career I have attended and taught numerous utility regulation seminars and classes.

1 **Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE.**

2 A. Upon graduation in 1978, I was employed as a senior regulatory accountant within the
3 Staff of the Missouri Public Service Commission where I held positions of increasing
4 responsibility for approximately four years. I then accepted employment at Troupe,
5 Kehoe, Whiteaker and Kent and later at Lubow, McKay, Stevens & Lewis from 1982 to
6 1985, serving as a regulatory consultant to both utility company and regulatory agency
7 clients. In 1985, I joined the firm that later became Utilitech, Inc., where I have provided
8 utility regulatory and management consulting services continuously for the past 33 years.
9 My entire professional career has been dedicated to the analysis of utility regulation
10 issues and the development and presentation of reports and recommendations dealing
11 with revenue requirement, cost allocation, rate design and other unique proceedings
12 involving regulated public utilities.

13 **Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE COMMISSIONS IN REGULATORY**
14 **PROCEEDINGS?**

15 A. Yes. I have prepared Exhibit MLB-1 to summarize my professional experience and to list
16 the many previous cases in which I have sponsored written testimony in Kansas and
17 elsewhere addressing utility regulation matters.

18 **II. PURPOSE OF TESTIMONY**

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

20 A. My testimony will respond to the class cost of service ("CCOS") testimony and rate design
21 proposals of Kansas Gas Service ("KGS") witness Mr. Paul Raab. I will address two
22 significant deficiencies in the COS studies sponsored by Mr. Raab that are relied upon to

support his proposal to increase the rates to the Company's irrigation sales and irrigation transportation customers by approximately 19 percent. My testimony supports a conclusion that KGS irrigation customers should receive none of the revenue increase that may be approved by the Commission in this docket.

III. IDENTIFICATION OF EXHIBITS

Q. WHAT EXHIBITS ARE YOU SPONSORING?

A. I am sponsoring the following exhibits in support of my testimony:

Exhibit MLB-1	Brosch Qualifications and Prior Testimonies
Exhibit MLB-2	KGS Response to Data Request KFB-001.
Exhibit MLB-3	KGS Response to Data Requests KFB-002 and KFB-007.
Exhibit MLB-4	KGS Response to Data Requests KFB-004 and KFB 005.
Exhibit MLB-5	Revised and Corrected CCOS Study.
Exhibit MLB-6	KGS Response to Data Request KFB-003
Exhibit MLB-7	Direct Testimony of Paul Raab from Docket No. 16-KGSG-491-RTS, no exhibits
Exhibit MLB-8	Rebuttal Testimony of Paul Raab from Docket No. 16-KGSG-491-RTS, no exhibits

Q. ARE ANY OF YOUR EXHIBITS RESPONSIVE TO THE COS EVIDENCE OF COMMISSION STAFF OR THE CITIZENS UTILITY RATEPAYER BOARD ("CURB")?

A. Not at this time. I understand that cross-answering testimony is due for filing on November 14 and I will address Staff and CURB cost of service and rate design positions that impact irrigation customers at that time.

1 It appears that KGS witness Mr. Raab has anticipated certain COS positions will be
2 taken by Staff and CURB and he has prepared two alternative CCOS studies applying
3 methods that have apparently been used previously by Staff and CURB within his Exhibits
4 PHR-8 and PHR-9, respectively.¹ Mr. Raab states, “(w)hile I disagree with both
5 approaches, I recognize the truth in the Commission’s statement that ‘[t]here is no single,
6 universally accepted method for allocating costs to customers classes’ and trying to
7 ‘prove’ the superiority of one method over the other is a feckless endeavor. As a result, I
8 have prepared three difference CCOS studies for the Commission’s consideration in this
9 case.”² Since Mr. Raab claims to “disagree” with the two alternative studies
10 claimed to be representative of Staff and CURB positions, I will respond in this testimony
11 to only the “Customer/Demand” form of CCOS that Mr. Raab actually supports, as
12 presented within his Exhibit PHR-7.³ My response to CCOS positions advocated by Staff
13 and CURB will appear in later cross-answering testimony, based upon positions actually
14 advanced in their direct testimony in this docket.

15 **IV. ORGANIZATION OF TESTIMONY**

16 **Q. HOW IS THE BALANCE OF YOUR TESTIMONY ORGANIZED?**

17 A. My testimony is limited in scope to CCOS issues. I will begin with a general discussion of
18 CCOS concepts and the typical issues encountered by gas utility cost analysts. I will then
19 describe why “cost causation” is the foundational basis for determining costs attributable
20 to particular customer classes, with a focus in my testimony upon the costs that are

¹ Direct Testimony of Paul Raab, page 3, line 6 – page 4, line 32.

² *Id.* Page 5, lines 1-5.

³ *Id.* page 5, lines 7-20.

1 incurred by KGS to serve irrigation demands. My testimony will then describe the off-
2 peak nature of irrigation services provided by KGS and quantify the dramatically higher
3 level of costs now being attributed by Mr. Raab to irrigation customer classes, compared
4 to Mr. Raab's results in the prior KGS rate case. I will discuss why Mr. Raab's CCOS study
5 methods used to allocate gas distribution main costs in the Company's immediately
6 preceding Kansas rate case more reasonably allocated certain costs to the irrigation
7 customer classes and should be employed again in the pending rate case.⁴ I will also
8 describe a significant error that is embedded in Mr. Raab's filed CCOS studies in the
9 pending rate case and sponsor an alternative CCOS presentation that corrects the error,
10 while also applying KGS's previous and more appropriate distribution mains cost
11 allocation method.

12 **Q. WHAT INFORMATION DID YOU RELY UPON IN PREPARING YOUR TESTIMONY?**

13 A. I relied upon the prefiled evidence of KGS, as well as the supporting workpapers and the
14 Company's responses to data requests. After informal discussion with Mr. Raab of his
15 CCOS analyses and supporting workpapers, focused data requests were submitted by
16 KFB/KCGA, yielding responses and electronic files that are relied upon in support of this
17 testimony. I have included as Exhibits the specific responses to data requests that are
18 referenced herein.

⁴ Mr. Raab previously provided direct and rebuttal testimony on behalf of Kansas Gas Service to the Kansas Corporation Commission in Docket No. 16-KGSG-491-RTS. A copy of his direct and rebuttal testimony from Docket No. 16-KGSG-491-RTS, without exhibits, are attached hereto as Exhibits MLB-7 and MLB-8, respectively.

1 V. CLASS COST OF SERVICE

2 Q. FOR WHAT REASONS ARE CLASS COST OF SERVICE STUDIES PERFORMED IN UTILITY
3 RATE CASES?

4 A. After the utility's overall revenue requirement has been quantified, it is necessary to
5 decide how to "spread" the total revenue change, determining which customer classes
6 should pay higher or lower prices overall. After determining the amount of revenues
7 needed from each rate class, the final step is then how the "design" of specific rate
8 changes should occur, including the extent to which monthly recurring service charges,
9 volumetric delivery charges or other tariff elements should be revised.

10 Q. ARE THE CCOS PERFORMED IN GAS UTILITY CASES USUALLY BASED UPON ACTUAL TEST
11 YEAR ACCOUNTING, ALSO KNOWN AS "EMBEDDED" COSTS?

12 A. Yes. It is fairly common in gas utility rate cases for CCOS studies to be developed that
13 analyze actual embedded or "accounting" costs for the test year. Alternative forms of
14 cost of service analyses could be prepared that focus upon marginal or incremental costs
15 to provide service, but these approaches are not commonly used in gas distribution rate
16 cases.

17 Q. HOW DOES KGS PROPOSE TO USE THE CCOS STUDY RESULTS THAT ARE SPONSORED BY
18 MR. RAAB?

19 A. Mr. Raab summarizes the conclusions of his CCOS, noting that, "...the residential class
20 bears most of the responsibility for the deficiency" and "[i]n all cases, an increase appears
21 warranted for the irrigation customers (both sales and transport)." He then proposes an
22 allocation of the Company's asserted \$44.56 million revenue deficiency in Exhibit PHR-10,

page 2, with residential (RS), general service large (GSL), general service transport eligible (GSTE) and irrigation (GIS,GIT) classes receiving most of the proposed revenue increase.⁵ Given KGS' recommendations that only a few non-residential classes be allocated any of the proposed revenue increase, a 19.12% rate increase is needed from residential and irrigation customers in order to increase the Company's total revenue by the requested 15.21%.

Q. WHAT GENERAL PROCESS IS EMPLOYED IN THE CONDUCT OF CCOS STUDIES?

A. Test year rate base and income statement costs are analyzed within CCOS studies in the following three-step sequence:

- **Functionalization:** isolating elements of rate base and expenses by the "function" being performed: typically between gas production, transmission, distribution, customer service and administrative activities, then,
- **Classification:** where costs accumulated within each function are classified as either primarily driven or "caused" by the relative number of customers being served in each class, seasonal peak demands of each class, or the volume of gas commodity that is delivered to each class, then finally,
- **Allocation:** where classified costs within each function are mathematically allocated using factors for each class based upon numbers of customers served, seasonal peak demand statistics, or test year gas volumes delivered to each rate class, respectively.

⁵ Revenue increases of 19% are also proposed for the KGSSD and CNGt classes that contain one and two customers, respectively, where the total revenue impact of such increases is not large.

1 Each step in this process involves the analysis of available data and numerous judgmental
2 determinations by the analyst.

3 After this three-step process is completed, the results can be summarized to
4 determine the extent to which revenues from each class of service are partially or fully
5 recovering the sum of all costs allocated to that class, with the result expressed as the
6 class rate of return ("ROR") at present rate levels. The results are often recalculated at
7 "proposed" rate levels, after all proposed rate case revenue adjustments are attributed
8 among classes, to see if improved ROR parity, with all classes earning closer to the same
9 ROR, is achieved from the recommended distribution of the rate change among classes.
10 Cost of service information can be useful as a guide for the Commission's decisions in the
11 rate design process, along with additional non-cost considerations that are also
12 important.

13 **Q. SHOULD THE COMMISSION RELY SOLELY UPON CCOS RESULTS TO DETERMINE THE**
14 **DISTRIBUTION OF RATE INCREASES AND RATE DESIGN CHANGES IN THIS CASE?**

15 A. No. COSS results represent only estimates that are based upon methods and judgments
16 of cost analysts that can be controversial. In addition, CCOS results can change
17 significantly from one test period to another, due to shifts in load conditions, varying
18 expense levels or cost allocation methodology changes. Therefore, cost of service results
19 should be used only as a "guide" in the general direction rate changes should occur, while
20 other factors must also be considered by the Commission.

1 **Q. WHAT OTHER CONSIDERATIONS, BEYOND CCOS RESULTS, SHOULD INFLUENCE THE**
2 **TRANSLATION OF A UTILITY’S OVERALL REVENUE REQUIREMENT INTO SPECIFIC**
3 **CHANGES IN RATES?**

4 **A.** Beyond cost of service, other important considerations in the distribution of revenue
5 increases and in the design of rates include:

- 6 • Revenue stability and adequacy for the utility - rates should not be abruptly
7 changed, creating a risk that customers may modify their demand levels or
8 migrate between rates, producing unexpected revenue impacts.
- 9 • Gradualism in customer impacts - customer acceptance of rate changes is
10 dependent upon the avoidance of unexpected monthly bill impacts when
11 usage patterns are unchanged.
- 12 • Administrative practicality – rate structures and the relationship between
13 rates must be rational, understandable by customers and simple to
14 understand and apply.
- 15 • Public policy priorities such as conservation, economic development or low-
16 income assistance, recognizing that purely cost-based rates may fail to meet
17 other desirable public policy objectives.

18 While CCOS allocations may appear to represent objective quantitative evidence of
19 cost-based pricing, these other ratemaking objectives are equally important and
20 should not be discounted by regulators.

1 **Q. WHAT IS THE PRIMARY GUIDING PRINCIPLE BEHIND CCOS STUDIES?**

2 A. “Cost causation” is the primary concept and principle behind CCOS studies. The
3 analyst is seeking to determine what service requirements and utility activities
4 actually cause the costs being allocated to be incurred. In some areas the cost
5 causation determination is simple. For example, every gas customer requires a
6 meter, so the existence of a customer “causes” the utility to incur meter investments
7 that are included in Plant in Service within rate base, such that the meters account is
8 reasonably allocated based upon the number of customers. Most customers also
9 require service lines to connect their residence or building to gas mains, justifying a
10 “customer” classification and allocation approach.⁶ Similarly, meter reading,
11 customer accounting, billing and collection and other customer service activities are
12 reasonably classified as customer-related, to be allocated based upon factors derived
13 from the number of customers in each class.

14 Cost classification in other areas is more complicated, where more
15 controversial judgments are often involved. For gas utilities, significant investment
16 and expense amounts are associated with gas distribution mains. Gas distribution
17 mains are clearly needed both to connect and serve each customer and with
18 sufficient capacity to safely meet the maximum demand level expected to be placed
19 upon the main. For this reason, some combination of a “customer” and “demand”
20 classification is commonly applied to distribution main investments and related

⁶ While nearly every customer requires a meter and service line, the cost and complexity of different types of meters and service arrangement may require additional studies to isolate and quantify such differences.

1 expenses in gas CCOS studies. According to KGS witness Raab, the proper
2 classification of the Company's gas mains has been controversial in prior KGS rate
3 cases, with both the Staff and CURB contending that no portion of mains costs are
4 reasonably classified as customer-related.⁷

5 **Q. DO YOU AGREE WITH MR. RAAB THAT SOME PORTION OF MAINS COSTS SHOULD**
6 **BE CLASSIFIED AS CAUSED BY CUSTOMERS?**

7 A. Yes. After explaining how Staff and CURB proposed to classify none of the Company's
8 mains costs for allocation on a customer basis, Mr. Raab states that he disagrees with
9 both the Staff and CURB alternative approaches.⁸ While there is considerable
10 judgment involved in disaggregating and reasonably estimating what portion of
11 mains costs should be classified as customer-related, it would be impossible to
12 connect and serve customers without investing in and maintaining distribution
13 system gas mains. Moreover, the overall mileage required within the Company's
14 network of distribution mains is at least indirectly related to the geographic size of
15 the population being served. As new subdivisions, retail and office centers or
16 industrial parks are developed, new investments in main extensions are often
17 required.⁹ Mr. Raab has adopted a zero-intercept approach to classify mains costs

⁷ Direct Testimony of Paul Raab, page 4, lines 1-32.

⁸ *Id.*, page 5, lines 1-5.

⁹ There is no direct correlation between customer counts and mains investment, because of the diversity of customer types that influence the density of dwelling units. For example, multi-family residential development within apartments and condominiums require relative less mains investment per customer than single family subdivisions. More importantly, any system of minimum installed size would provide some capacity to meet demand, resulting in a double counting of capacity costs on both a "customer" and "demand" basis. For this reason, estimation of the customer-related portion of mains costs should be based upon regression calculations determining a zero-intercept calculation for mains with no capacity, which is conceptually superior to use of theoretical minimum-sized system calculations.

1 in the pending rate case, in order to minimize controversy surrounding classifying
2 some portion of distribution mains costs as customer-related.¹⁰

3 **Q. FOR THE PORTION OF GAS DISTRIBUTION MAINS COSTS THAT ARE NOT TREATED**
4 **AS CUSTOMER-RELATED IN THE CCOS, WHAT COST CAUSATION CONCEPT SHOULD**
5 **BE APPLIED?**

6 A. The portion of distribution mains costs that are not customer-related should be
7 classified as peak demand related. A gas main of only minimal size would be needed
8 to physically connect the gas distribution system to each customer, but the size and
9 cost of the mains actually installed by the utility in a particular area is a function of
10 the maximum anticipated demand in that area over a relevant future planning
11 horizon. For a typical gas utility in the Midwest, gas mains are designed to provide
12 reliable service on the coldest of winter days, when the space heating loads of
13 residential and commercial customers create maximum demand on the system.

14 **Q. WHAT MEASURE OF “DEMAND” SHOULD BE USED TO ALLOCATE THE COST OF GAS**
15 **MAINS THAT ARE NOT TREATED AS CUSTOMER RELATED?**

16 A. For transmission mains that serve the diversified demands of all customers over
17 relatively large areas, an allocation factor based upon estimated loads on the coldest
18 of design days should be used to estimate the demands that each customer class
19 would be expected to contribute to peak loads across the entire system. For gas
20 distribution mains that serve more localized areas, the weather normalized monthly
21 demands of each customer class during the coldest winter month of January can

¹⁰ Direct Testimony of Paul Raab, page 43, line 29 to page 44, line 9.

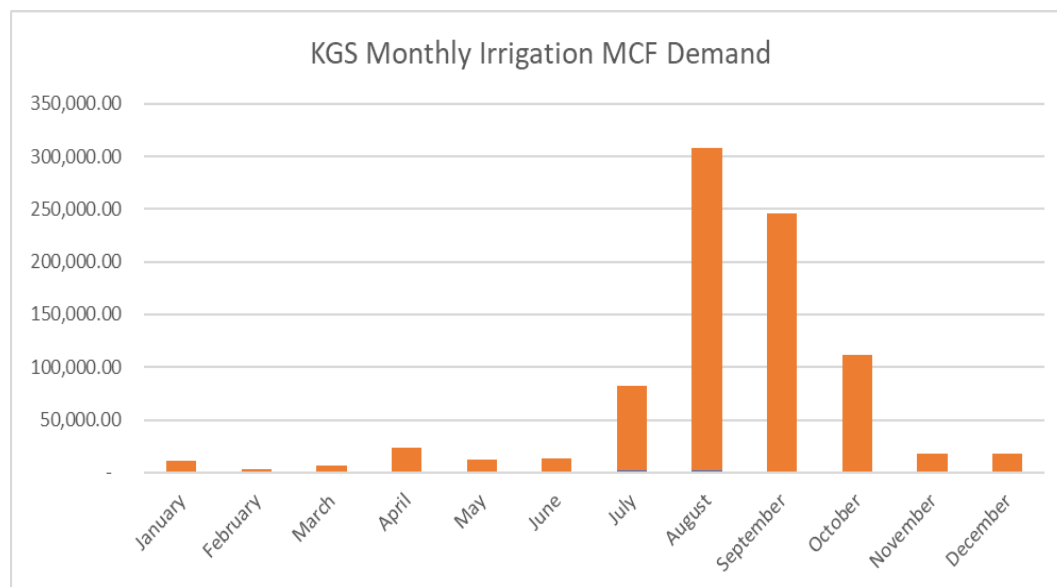
1 serve as a reasonable basis to allocate the “demand” portion of costs that are not
2 treated as customer-related.

3 **a. IRRIGATION SERVICE CHARACTERISTICS AND COST ALLOCATIONS**

4 **Q. WHEN DO IRRIGATION CUSTOMERS IMPOSE DEMAND UPON KGS?**

5 A. Irrigation customers impose demand upon KGS in the summer months, when crops require
6 irrigation to supplement available rainfall during the growing season. The adjusted test year
7 MCF for irrigation service (both sales and transportation) within the Company’s filed case by
8 month is depicted below.

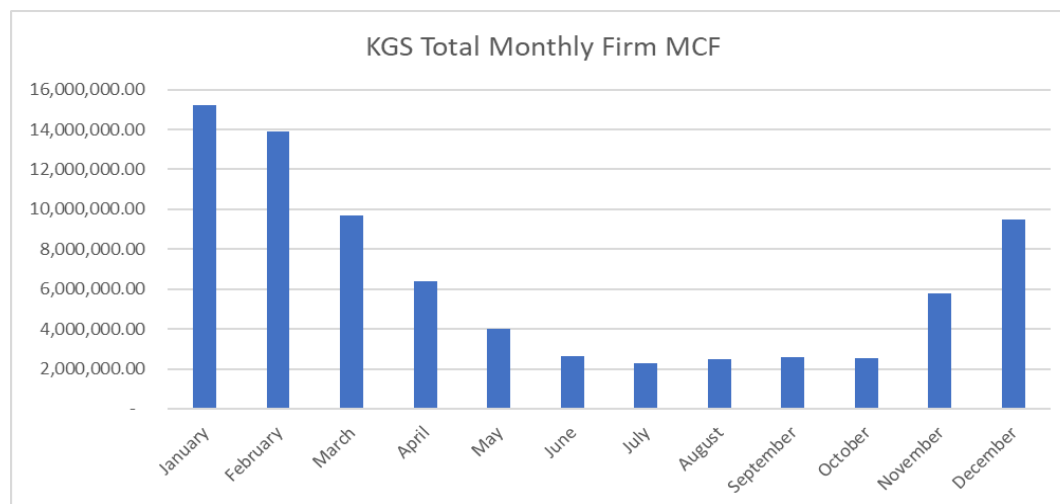
9 Figure 1:



10
11 Irrigation demands in the summer are entirely off-peak for KGS, relative to monthly overall
12 system demands, such that irrigators are using a small portion of the gas utility’s otherwise
13 under-utilized winter load-serving capacity. In contrast, the following table depicts the

Company's test year total sales and irrigation transport monthly MCF volumes, illustrating the strong seasonal winter demands placed upon the KGS system.¹¹

Figure 2:



January peak month volumes served by KGS are approximately seven times as large as summer firm sales and transportation volumes. It should be noted that, in the Company's peak winter month of January, irrigation volumes represent only 0.7 percent of throughput, while in the off-peak month of August, irrigation demands represent 12.6 percent of total firm demand on the system.

The CCOS performed for a gas distribution utility such as KGS should recognize that system investment and expenses, beyond customer-related amounts incurred to connect and serve all customers, are caused by the need to construct and maintain capacity to meet maximum seasonal demands imposed on the system during winter peak conditions. In contrast, irrigation demands upon a gas distribution utility are experienced during the off-peak summer months, when gas distribution system capacity that is necessarily sized to meet the much larger

¹¹ Total MCF in this graph are firm sales and transport volumes that exclude certain negotiated discounted rate and interruptible customers' volumes that are not included in the Company's CCOS allocations, because the revenues from such customers are revenue-credited as an offset to the overall KGS cost of service.

1 winter heating season demands of temperature sensitive customer classes tends to be under-
2 utilized. Some irrigation customers are likely connected directly to KGS transmission facilities
3 and therefore use none of the Company's distribution system, yet all of the demands of
4 irrigators are used in the Company's CCOS to allocate costs to the irrigation classes.

5 **Q. DID MR. RAAB REASONABLY ATTRIBUTE DEMAND-RELATED COSTS TO THE PEAK PERIODS**
6 **WHEN KGS VOLUMES UTILIZE THE CAPACITY WITHIN THE SYSTEM?**

7 A. No, not in his CCOS studies in the pending rate case. However, in the Company's prior rate case,
8 Docket No. 16-KGSG-491-RTS, Mr. Raab properly considered peak seasonal demands in
9 allocating demand-related distribution mains costs. At this time, Mr. Raab has completely
10 abandoned this principle and is now allocating the demand-related costs of gas distribution
11 mains using each class' non-coincident peak in the pending CCOS studies.

12 **Q. WHAT IS THE DIFFERENCE BETWEEN COINCIDENT AND NON-COINCIDENT PEAK DEMANDS?**

13 A. Coincident peaks are the maximum demand levels that are experienced at the time the overall
14 utility system peak is experienced. For a Kansas gas utility, the annual system peak is usually
15 experienced during a prolonged period of extremely cold weather, when space heating
16 demands across the region are the largest. Gas utilities must plan the capacity of their
17 transmission and distribution facilities as well as their reservation of gas supplies and capacity
18 on upstream pipelines to meet the overall coincident demand on the system.

19 In contrast, non-coincident demands occur whenever maximum demand for the rate
20 class is experienced, without regard to whether the timing of that event coincides with the
21 system peak demand. The Company's inappropriate allocation of gas distribution main
22 demand-related costs, using non-coincident peaks, causes costs to be more heavily allocated to
23 the August demand levels of irrigators, even though off-peak irrigation demands have no impact
24 upon the winter coincident demands actually used for system planning. This is illogical and

produces unreasonable results that should be rejected by the Commission as not being reflective of cost causation. There has been no showing by Mr. Raab or KGS that summer irrigation demands cause any incremental distribution mains costs to be incurred by the utility. In fact, the Company's discovery responses support an opposite conclusion.

Q. HOW DO MR. RAAB'S COST ALLOCATION RESULTS FOR THE IRRIGATION TRANSPORTATION CLASS IN THE PENDING CASE COMPARE TO HIS CCOS RESULTS FOR THE SAME IRRIGATORS IN THE PREVIOUS KGS RATE CASE, DOCKET NO. 16-KGSG-491-RTS?

A. Mr. Raab's results are vastly different, to the distinct disadvantage of KGS irrigation customers in the pending case. The following table compares the revenues, total expenses, net income, Rate Base and ROR at existing rate levels Mr. Raab allocated to the irrigation transportation class¹² in the Company's prior rate case,¹³ compared to the allocated results in his Exhibit PHR-7 in the pending case.

Figure 3:

Summary of Raab CCOS Results	Irrigation Transportation Class		
	Prior Case	Pending Case	Difference
Revenues - Present Rates	\$ 1,741,933	\$ 1,776,448	\$ 34,515
Total Expenses	332,966	2,990,136	2,657,170
Net Income - After Taxes	972,246	(956,986)	(1,929,232)
Rate Base	\$ 730,692	\$ 14,981,684	\$ 14,250,992
Class ROR - Present Rates	133.1%	-6.4%	

Notably, there has been no significant change in the revenues or volumes associated with irrigation transportation gas. What has changed is Mr. Raab's allocation methods in the pending case, compared to the prior rate case.

¹² Only the Irrigation Transportation class is shown here for simplicity. The amounts for the much smaller Irrigation Sales class exhibited similar dramatic increases in allocated costs in the pending rate case, compared to revenues of \$361,829 and a Class ROR of 112% shown in Exhibit PHR-5 in the prior rate case.

¹³ Docket No. 16-KGSG-491-RTS, Direct Testimony of Paul Raab, Exhibit PHR-5, page 2.

1 **Q. HOW DOES MR. RAAB EXPLAIN THE CHANGES TO HIS CCOS METHODS THAT CAUSE THE**
2 **IRRIGATION TRANSPORTATION CLASS TO MOVE FROM THE SINGLE MOST PROFITABLE CLASS**
3 **OF SERVICE IN THE PRIOR RATE CASE,¹⁴ TO A NEGATIVE RETURN IN THE PENDING RATE CASE?**

4 A. First, an error in development of CCOS inputs explains some of the change. After informal
5 discussions and inquiry into how winter peak demand values were determined for the Irrigation
6 classes, Mr. Raab confirmed in response to Data Request 18-560-KFB-001 that the “CP demands
7 for the irrigation classes used to allocate transmission investments and expenses were
8 miscalculated.” When his CCOS studies are corrected for this problem, the same response
9 indicates that the Irrigation Transportation class, “...is now allocated only about three times as
10 much test year O&M expense, approximately \$0.8 million.”

11 This response continues with an explanation of other reasons for higher cost allocations
12 in the pending rate case to the irrigation classes, one of which is “...the prior study relied more
13 heavily on coincident peak (CP) as an allocator of demand-related costs than non-coincident
14 peak (NCP), which assigns more of the cost to the GIT class because the GIT class is heavily
15 summer peaking (has a relatively higher NCP than CP).” A copy of this response is included
16 within my Exhibit MLB-2, without voluminous attachments.

17 **Q. DOES MR. RAAB’S CORRECTION OF THE INPUTS TO THE COMPANY’S CCOS IN THE PENDING**
18 **RATE CASE NOW PRODUCE REASONABLE RESULTS THAT SHOULD BE RELIED UPON BY THE**
19 **COMMISSION?**

20 A. No. The KFB/KCGA appreciates Mr. Raab’s willingness to correct the error we advised him
21 about, but the Company’s adoption of NCP methods to allocate distribution mains costs in the

¹⁴ In 16-KGSG-491-RTS, Exhibit PHR-5 showed the Irrigation Transportation Class ROR to be 27 times the system average ROR of 4.9% and the Irrigation Sales class ROR to be 23 times the system average ROR. These two irrigation classes had the highest of relative ROR values across all customer classes in the 2015 test year used in that case.

1 pending rate case, to the distinct disadvantage of irrigation class customers, should also be
2 remedied. Thus, a second revision to the Company's filed CCOS evidence is required, to employ
3 a seasonal peak winter measure of demand to allocate distribution mains in the same manner
4 advocated by KGS in the Company's previous rate case.

5 **Q. HOW DID MR. RAAB EXPLAIN HIS POSITION REGARDING DISTRIBUTION MAIN COST**
6 **ALLOCATIONS IN THE PREVIOUS KGE RATE CASE, DOCKET NO. 16-KGSG-491-RTS?**

7 A. In his Direct Testimony in 16-KGSG-491-RTS, Mr. Raab disparages Staff's preference to use non-
8 coincident demand data for cost allocations, stating:

9 I completely disagree with the use of each class' non-coincident peak to allocate
10 demand-related distribution costs. It is not logical and does not reflect the cost
11 causer relationship, in that it treats interruptible and irrigation customers as if
12 they impose the same costs on the system as firm heating customers. It does
13 not recognize that natural gas facilities are built and sized to meet winter
14 heating loads. As a result, Staff's class cost of service approach distorts the cost
15 responsibility of these customers because it does not recognize that these
16 customers utilize the system when there is significant excess capacity. The
17 logical consequence of such a cost allocation is to force these customers off of
18 the system entirely (requiring the remaining customers to absorb an additional
19 share of common costs). This is in no one's interest.¹⁵

20
21 In his rebuttal testimony in the prior case, Mr. Raab repeated his objections to the specific
22 demand methods he has now adopted within the Company's studies in the pending rate case,
23 stating:

24 I do not agree that it is appropriate to allocate these costs on the basis of each
25 class' non-coincident peak. As I stated in my Direct Testimony, it is not logical
26 and does not reflect the cost causer relationship, in that it treats interruptible
27 customers as if they impose the same cost on the system as firm customers. As
28 a result, Staff's class cost of service study distorts the cost responsibility of
29 interruptible (and to a lesser extent, irrigation and SGS) customers because it
30 does not recognize that these customers receive a lower quality service than
31 firm customers.¹⁶

¹⁵ Docket No. 16-KGSG-491-RTS, Direct Testimony of Paul Raab, page 34, line 23 – page 35, line 7.

¹⁶ Docket No. 16-KGSG-491-RTS, Rebuttal Testimony of Paul Raab, page 7, lines 12-19.

1 I personally agree with Mr. Raab's previously stated position and reject the much different CCOS
2 distribution main allocation method changes he is now proposing. The Commission should
3 reject Mr. Raab's decision in this case to inexplicably adopt use of admitted illogical non-
4 coincident and off-peak demand data to allocate the cost of distribution mains that are clearly
5 designed, built and maintained at capacity levels needed to serve KGS' much larger winter
6 seasonal demands.

7 **Q. DOES KGS DISPUTE YOUR CONCLUSION THAT IRRIGATION VOLUMES ARE OFF-PEAK IN**
8 **NATURE AND THAT THE CLASS COST OF SERVICE METHODS USED BY THE COMPANY IN THE**
9 **PENDING CASE PROVIDE NO RECOGNITION OF THIS FACT?**

10 A. No. In its response to Data Request 18-560-KFB-002, the Company confirmed that the CCOS
11 methods used by the company in the pending rate case provide no recognition of the off-peak
12 nature of irrigation service demands. According to this response, the only reason that Mr. Raab
13 modified his proposed allocation of demand-related costs in the current case was to use "Staff's
14 classification and allocation factors as the starting point in this case" in order to "minimize the
15 controversy over the class cost of service analysis in this case." Then, in response Data Request
16 18-560-KFB-007, the Company seems to confirm its advocacy from the previous rate case,
17 stating:

18 Mr. Raab would rely on Coincident Peak, rather than Non-Coincident to allocate
19 demand-related distribution costs in the pending rate case to more reasonably
20 and logically allocate demand-related distribution costs in keeping with Mr.
21 Raab's previous quoted testimony.

22
23 I have included a copy of these responses within Exhibit MLB-3.

24 **Q. DOES KGS AGREE THAT ITS DISTRIBUTION MAINS AND OTHER DISTRIBUTION FACILITIES ARE,**
25 **IN FACT, DESIGNED AND INSTALLED WITH CAPACITY SUFFICIENT TO MEET ANTICIPATED PEAK**
26 **DAY AND SEASONAL DEMAND LEVELS?**

1 A. Yes. In its response to Data Request 18-560-KFB-004, the Company confirmed this fact and
2 provided an illustrative example of how peak flow data is used to determine proper pipe size for
3 a selected main replacement project. In its response to Data Request 18-560-KFB-005, the
4 Company stated, "There have been no changes in how KGS' gas facilities are 'built and sized to
5 meet winter heating loads' that have occurred since the Company's previous rate case." I have
6 included a copy of these responses within Exhibit MLB-4.

7
8 **b. Corrected and Revised Class Cost of Service / Revenue Distribution**

9 **Q. PLEASE DESCRIBE EXHIBIT MLB-5 AND HOW IT WAS DEVELOPED.**

10 A. Exhibit MLB-5 is a corrected and modified version of Mr. Raab's Exhibit PHR-7, his
11 "Customer/Demand Class Cost of Service Study". It employs as its starting point the
12 electronic file provided in the Company's response to Data Request 18-560-KFB-001 that
13 corrects Exhibit PHR-7, in order to remedy the miscalculated coincident peak demand
14 values embedded in the filed version of Exhibit PHR-7. The need for such correction is
15 confirmed in the Company's response.

16 In addition to adopting KGS' correction to the inputs to the transmission mains
17 allocation factor, Exhibit MLB-5 also replaces the Company's inappropriate use of a non-
18 coincident demand data with test year coincident demand values in a manner comparable
19 to the Company's approach in the previous rate case. Implementing this change involved
20 modifying the selected "Allocation Basis" appearing at Exhibit PHR-7, pages 37, 38, 45,
21 46, 65 and 66 from the "NCP-Demand-Retail Customers" demand factor used in the
22 Company's filed study to a "Monthly CP demand – Retail Customers" factor used in my
23 Exhibit MLB-5 (and within the KGS study employed in the previous rate case).

1 **Q. WHAT IRRIGATION MCF VOLUMES ARE REFLECTED WITHIN THE FACTOR YOU ARE**
2 **USING TO ALLOCATE DEMAND-RELATED DISTRIBUTION MAINS COSTS AFTER THIS**
3 **CHANGE?**

4 A. For the Irrigation Transportation (GIT) class, this change includes January MCF demand of
5 10,947 shown at Exhibit PHR-7, page 111 at numbered factor "10.0," rather than August
6 MCF demand for GIT of 306,836 that appears on the same page 111 at numbered factor
7 "15.0". These monthly values are depicted within Figure 1 appearing at page 13 of this
8 testimony.

9 **Q. HOW ARE THE CLASS RATE OF RETURN RESULTS FOR IRRIGATION CUSTOMERS**
10 **IMPACTED BY THE CORRECTION AND MODIFICATION CONTAINED WITHIN YOUR**
11 **EXHIBIT MLB-5?**

12 A. The Rate of Return – Existing Rates of the irrigation sales and irrigation transportation
13 classes (GIS and GIT on pages 1 and 2) improve to 112% and 173%, respectively. This is a
14 massive improvement over Mr. Raab's filed version of Exhibit PHR-7, pages 1 and 2, where
15 the Rates of Return at existing rate levels for both classes are significantly negative. Thus,
16 the CCOS results that were apparently relied upon for Mr. Raab to recommend large rate
17 increases to irrigation customers is no longer valid after these changes.

18 **Q. HAVE YOU MODIFIED THE COMPANY'S PROPOSED REVENUE INCREASES ATTRIBUTED**
19 **TO EACH CUSTOMER CLASS WITHIN YOUR EXHIBIT MLB-5?**

20 A. No. I have not analyzed the Company's asserted overall revenue requirement or
21 formulated any alternative view of what overall revenue change should ultimately be

1 approved by the Commission. For this reason, I have not modified the KGS-proposed
2 overall revenue requirement or class revenue changes within Exhibit MLB-5.

3 **Q. IS THERE ANOTHER REASON WHY THE IRRIGATION CLASS RETURN LEVELS CALCULATED**
4 **BY MR. RAAB AND IN YOUR EXHIBIT MLB-5 MAY TEND TO OVERSTATE THE COST**
5 **RESPONSIBILITIES OF THE COMPANY’S IRRIGATION CUSTOMERS?**

6 A. Yes. In response to Data Request 18-560-KFB-003, the Company identified 41 of its
7 irrigation sales (“GIS”) customers and 201 of its irrigation transportation (“GIT”) customers with significant annual gas usage that are located within 40 feet of
8 transmission pipeline facilities and that may be directly served from transmission
9 facilities. When customers are directly connected to transmission facilities, there should
10 be no allocation of distribution mains because customers directly served from
11 transmission lines do not use or “cause” any costs within the distribution system.
12 Unfortunately, the Company does not have the data that would allow it to determine
13 which customers are directly served by transmission facilities. No special studies have
14 been performed to remove directly served transmission system customers from CCOS
15 distribution system cost allocations in the Company’s study. This undoubtedly causes
16 excessive amounts of distribution system cost to be allocated to GIS and GIT classes, even
17 after the changes I have made within Exhibit MLB-5. A copy of the KGS response to Data
18 Request 18-560-KFB-003 is included within Exhibit MLB-6.

19
20 **Q. WHAT ARE YOUR RECOMMENDATIONS TO THE COMMISSION, GIVEN YOUR REVISED**
21 **AND CORRECTED CCOS RESULTS AND THE CONCERNS DESCRIBED IN YOUR TESTIMONY?**

1 A. I recommend that a portion of KGS' distribution mains costs be allocated on a customer
2 basis, with the remaining portion allocated using only coincident or winter peak month
3 measures of demand. When these procedures are employed and the Company's
4 recommended CCOS is corrected for the input error admitted by KGS in discovery
5 responses, the irrigation sales and irrigation transportation customer classes are earning
6 above-average returns at present rates and should not be assigned any responsibility for
7 the revenue increases that may be approved by the Commission in the pending rate case.

8 Additionally, I recommend that in future KGS rate cases, additional studies be
9 performed to identify and properly exclude the demands of any irrigation customers who
10 are directly served by connection to the Company's transmission facilities from any future
11 CCOS allocation of distribution system costs that are not used to serve such customers.

12 **VI. CONCLUSION**

13 **Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?**

14 A. Yes, it does.

LIST OF EXHIBITS

Exhibit MLB-1	Brosch Qualifications and Prior Testimonies
Exhibit MLB-2	KGS Response to Data Request KFB-001.
Exhibit MLB-3	KGS Response to Data Requests KFB-002 and KFB-007.
Exhibit MLB-4	KGS Response to Data Requests KFB-004 and KFB 005.
Exhibit MLB-5	Revised and Corrected CCOS Study.
Exhibit MLB-6	KGS Response to Data Request KFB-003.
Exhibit MLB-7	Direct Testimony of Paul Raab from Docket No. 16-KGSG-491-RTS, no exhibits.
Exhibit MLB-8	Rebuttal Testimony of Paul Raab from Docket No. 16-KGSG-491-RTS, no exhibits.

VERIFICATION

STATE OF KANSAS)
)
COUNTY OF Johnson)


SS:

THERESA C GURRY
Notary Public - State of Kansas
My Commission Expires 8 02 2022

Michael L. Brosch, being duly sworn upon his oath, deposes and states that he is an independent consultant for The Kansas Farm Bureau and Kansas Corn Growers Association; that he has read and is familiar with the foregoing Testimony filed herewith; and that the statements therein are true and correct to the best of his knowledge, information, and belief.


Michael L. Brosch

SUBSCRIBED AND SWORN to before me this 31st day of October, 2018.


Notary Public

My Commission expires: 8/02/2022

Michael L. Brosch

Utilitech, Inc. – President

Bachelor of Business Administration (Accounting)

University of Missouri-Kansas City (1978)

Certified Public Accountant Examination (1979)

GENERAL

Mr. Brosch serves as the director of regulatory projects for the firm and is responsible for the planning, supervision and conduct of firm engagements. His academic background is in business administration and accounting and he holds CPA certificates in Kansas and Missouri. Expertise is concentrated within regulatory policy, financial and accounting areas with an emphasis in revenue requirements, business reorganization, cost allocations, rate design and alternative regulation.

EXPERIENCE

Mr. Brosch has supervised and conducted the preparation of rate case exhibits and testimony in support of revenue requirements and regulatory policy issues involving more than 100 electric, gas, telephone, water, and sewer proceeding across the United States. Responsible for virtually all facets of revenue requirement determination, cost of service allocations and tariff implementation in addition to involvement in numerous utility merger, alternative regulation and other special project investigations.

Industry restructuring analysis for gas utility rate unbundling, electric deregulation, competitive bidding and strategic planning, with testimony on regulatory processes, asset identification and classification, revenue requirement and unbundled rate designs and class cost of service studies.

Analyzed and presented testimony regarding income tax related issues within ratemaking proceedings involving interpretation of relevant IRS code provisions and regulatory restrictions.

Has substantial experience in the application of lead-lag study concepts and methodologies in determination of working capital investment to be included in rate base.

Conducted alternative regulation analyses for clients in Arizona, California, Hawaii, Illinois, Texas and Oklahoma, focused upon challenges introduced by cost-based regulation, incentive effects available through alternative regulation and balancing of risks, opportunities and benefits among stakeholders. Analyses included targeted rate adjustment clauses, regulatory deferral accounting mechanisms, revenue/price cap arrangements and formula rate adjustment programs, including advisory work in the design of such plans as well as analyses and administration of alternative regulation plans after implementation.

Mr. Brosch managed the detailed regulatory review of utility mergers and acquisitions, diversification studies and holding company formation issues in energy and telecommunications transactions in multiple states. Sponsored testimony regarding merger synergies, merger accounting and tax implications, regulatory planning and price path strategies. Traditional horizontal utility mergers as well as leveraged buyouts of utility properties by private equity investors have been addressed in several states.

Analyzed and developed alternative regulation plans for electric and gas utilities in multiple states. Participated in the development, implementation and administration of decoupling and formula rate adjustment mechanisms. Advised and assisted in legislative advocacy regarding electric and gas infrastructure rate adjustment mechanisms.

WORK HISTORY

- 1985 - Present **President** - Utilitech, Inc.
Regulatory project management and advisory/consulting services on behalf of industry and governmental agencies.
- 1983 - 1985: **Project manager** - Lubow McKay Stevens and Lewis.
Responsible for supervision and conduct of utility regulatory projects on behalf of industry and regulatory agency clients.
- 1982 - 1983: **Regulatory consultant** - Troupe Kehoe Whiteaker and Kent.
Responsible for management of rate case activities involving analysis of utility operations and results, preparation of expert testimony and exhibits, and issue development including research and legal briefs. Also involved in numerous special projects including financial analysis and utility systems planning. Taught firm's professional education course on "utility income taxation - ratemaking and accounting considerations" in 1982.
- 1978 - 1982: **Senior Regulatory Accountant** - Missouri Public Service Commission.
Supervised and conducted rate case investigations of utilities subject to PSC jurisdiction in response to applications for tariff changes. Responsibilities included development of staff policy on ratemaking issues, planning and evaluating work of outside consultants, and the production of comprehensive testimony and exhibits in support of rate case positions taken.

OTHER QUALIFICATIONS

Bachelor of Business Administration - Accounting, 1978
University of Missouri - Kansas City

Member American Institute of Certified Public Accountants
Missouri Society of Certified Public Accountants
Kansas Society of Certified Public Accountants

Attended Iowa State Regulatory Conference 1981, 1985
Regulated Industries Symposium 1979, 1980
Michigan State Regulatory Conference 1981
United States Telephone Association Round Table 1984
NARUC/NASUCA Annual Meeting 1988, Speaker
NARUC/NASUCA Annual Meeting 2000, Speaker
NASUCA Regional Consumer Protection Meeting 2007, Speaker

Instructor INFOCAST Ratemaking Courses
Arizona Staff Training
Hawaii Staff Training

Utility Company	State	Tribunal	Case Number	Client	Year	Issues Addressed
Green Hills Telephone Company	Missouri	PSC	TR-78-282	Staff	1978	Rate Base, Operating Income
Kansas City Power and Light Co.	Missouri	PSC	ER-78-252	Staff	1978	Rate Base, Operating Income
Missouri Public Service Company	Missouri	PSC	ER-79-59	Staff	1979	Rate Base, Operating Income
Nodaway Valley Telephone Company	Missouri	PSC	16,567	Staff	1979	Rate Base, Operating Income
Gas Service Company	Missouri	PSC	GR-79-114	Staff	1979	Rate Base, Operating Income
United Telephone Company	Missouri	PSC	TO-79-227	Staff	1979	Rate Base, Operating Income
Southwestern Bell Telephone Co.	Missouri	PSC	TR-79-213	Staff	1979	Rate Base, Operating Income
Missouri Public Service Company	Missouri	PSC	ER-80-118 GR-80-117	Staff	1980	Rate Base, Operating Income
Southwestern Bell Telephone Co.	Missouri	PSC	TR-80-256	Staff	1980	Affiliate Transactions
United Telephone Company	Missouri	PSC	TR-80-235	Staff	1980	Affiliate Transactions, Cost Allocations
Kansas City Power and Light Co.	Missouri	PSC	ER-81-42	Staff	1981	Rate Base, Operating Income
Southwestern Bell Telephone	Missouri	PSC	TR-81-208	Staff	1981	Rate Base, Operating Income, Affiliated Interest
Northern Indiana Public Service	Indiana	PSC	36689	Consumers Counsel	1982	Rate Base, Operating Income
Northern Indiana Public Service	Indiana	URC	37023	Consumers Counsel	1983	Rate Base, Operating Income, Cost Allocations
Mountain Bell Telephone	Arizona	ACC	9981-E1051-81-406	Staff	1982	Affiliated Interest
Sun City Water	Arizona	ACC	U-1656-81-332	Staff	1982	Rate Base, Operating Income
Sun City Sewer	Arizona	ACC	U-1656-81-331	Staff	1982	Rate Base, Operating Income
El Paso Water	Kansas	City Counsel	Unknown	Company	1982	Rate Base, Operating Income, Rate of Return
Ohio Power Company	Ohio	PUCO	83-98-EL-AIR	Consumer Counsel	1983	Operating Income, Rate Design, Cost Allocations
Dayton Power & Light Company	Ohio	PUCO	83-777-GA-AIR	Consumer Counsel	1983	Rate Base
Walnut Hill Telephone	Arkansas	PSC	83-010-U	Company	1983	Operating Income, Rate Base
Cleveland Electric Illum.	Ohio	PUCO	84-188-EL-AIR	Consumer Counsel	1984	Rate Base, Operating Income, Cost Allocations
Cincinnati Gas & Electric	Ohio	PUCO	84-13-EL-EFC	Consumer Counsel	1984	Fuel Clause
Cincinnati Gas & Electric	Ohio	PUCO	84-13-EL-EFC (Subfile A)	Consumer Counsel	1984	Fuel Clause
General Telephone - Ohio	Ohio	PUCO	84-1026-TP-AIR	Consumer Counsel	1984	Rate Base
Cincinnati Bell Telephone	Ohio	PUCO	84-1272-TP-AIR	Consumer Counsel	1985	Rate Base
Ohio Bell Telephone	Ohio	PUCO	84-1535-TP-AIR	Consumer Counsel	1985	Rate Base

Utility Company	State	Tribunal	Case Number	Client	Year	Issues Addressed
United Telephone - Missouri	Missouri	PSC	TR-85-179	Staff	1985	Rate Base, Operating Income
Wisconsin Gas	Wisconsin	PSC	05-UI-18	Staff	1985	Diversification-Restructuring
United Telephone - Indiana	Indiana	URC	37927	Consumer Counsel	1986	Rate Base, Affiliated Interest
Indianapolis Power & Light	Indiana	URC	37837	Consumer Counsel	1986	Rate Base
Northern Indiana Public Service	Indiana	URC	37972	Consumer Counsel	1986	Plant Cancellation Costs
Northern Indiana Public Service	Indiana	URC	38045	Consumer Counsel	1986	Rate Base, Operating Income, Cost Allocations, Capital Costs
Arizona Public Service	Arizona	ACC	U-1435-85-367	Staff	1987	Rate Base, Operating Income, Cost Allocations
Kansas City, KS Board of Public Utilities	Kansas	BPU	87-1	Municipal Utility	1987	Operating Income, Capital Costs
Detroit Edison	Michigan	PSC	U-8683	Industrial Customers	1987	Income Taxes
Consumers Power	Michigan	PSC	U-8681	Industrial Customers	1987	Income Taxes
Consumers Power	Michigan	PSC	U-8680	Industrial Customers	1987	Income Taxes
Northern Indiana Public Service	Indiana	URC	38365	Consumer Counsel	1987	Rate Design
Indiana Gas	Indiana	URC	38080	Consumer Counsel	1987	Rate Base
Northern Indiana Public Service	Indiana	URC	38380	Consumers Counsel	1988	Rate Base, Operating Income, Rate Design, Capital Costs
Terre Haute Gas	Indiana	URC	38515	Consumers Counsel	1988	Rate Base, Operating Income, Capital Costs
United Telephone -Kansas	Kansas	KCC	162,044-U	Consumers Counsel	1989	Rate Base, Capital Costs, Affiliated Interest
US West Communications	Arizona	ACC	E-1051-88-146	Staff	1989	Rate Base, Operating Income, Affiliate Interest
All Kansas Electrics	Kansas	KCC	140,718-U	Consumers Counsel	1989	Generic Fuel Adjustment Hearing
Southwest Gas	Arizona	ACC	E-1551-89-102 E-1551-89-103	Staff	1989	Rate Base, Operating Income, Affiliated Interest
American Telephone and Telegraph	Kansas	KCC	167,493-U	Consumers Counsel	1990	Price/Flexible Regulation, Competition, Revenue Requirements
Indiana Michigan Power	Indiana	URC	38728	Consumer Counsel	1989	Rate Base, Operating Income, Rate Design
People Gas, Light and Coke Company	Illinois	ICC	90-0007	Public Counsel	1990	Rate Base, Operating Income
United Telephone Company	Florida	PSC	891239-TL	Public Counsel	1990	Affiliated Interest
Southwestern Bell Telephone Company	Oklahoma	OCC	PUD-000662	Attorney General	1990	Rate Base, Operating Income (Testimony not admitted)
Arizona Public Service Company	Arizona	ACC	U-1345-90-007	Staff	1991	Rate Base, Operating Income

Utility Company	State	Tribunal	Case Number	Client	Year	Issues Addressed
Indiana Bell Telephone Company	Indiana	URC	39017	Consumer Counsel	1991	Test Year, Discovery, Schedule
Southwestern Bell Telephone Company	Oklahoma	OCC	39321	Attorney General	1991	Remand Issues
UtiliCorp United/ Centel	Kansas	KCC	175,476-U	Consumer Counsel	1991	Merger/Acquisition
Southwestern Bell Telephone Company	Oklahoma	OCC	PUD-000662	Attorney General	1991	Rate Base, Operating Income
United Telephone - Florida	Florida	PSC	910980-TL	Public Counsel	1992	Affiliated Interest
Hawaii Electric Light Company	Hawaii	PUC	6999	Consumer Advocate	1992	Rate Base, Operating Income, Budgets/Forecasts
Maui Electric Company	Hawaii	PUC	7000	Consumer Advocate	1992	Rate Base, Operating Income, Budgets/Forecasts
Southern Bell Telephone Company	Florida	PSC	920260-TL	Public Counsel	1992	Affiliated Interest
US West Communications	Washington	WUTC	U-89-3245-P	Attorney General	1992	Alternative Regulation
UtiliCorp United/ MPS	Missouri	PSC	ER-93-37	Staff	1993	Affiliated Interest
Oklahoma Natural Gas Company	Oklahoma	OCC	PUD-1151, 1144, 1190	Attorney General	1993	Rate Base, Operating Income, Take or Pay, Rate Design
Public Service Company of Oklahoma	Oklahoma	OCC	PUD-1342	Staff	1993	Rate Base, Operating Income, Affiliated Interest
Illinois Bell Telephone	Illinois	ICC	92-0448 92-0239	Citizens Board	1993	Rate Base, Operating Income, Alt. Regulation, Forecasts, Affiliated Interest
Hawaii Electric Company	Hawaii	PUC	7700	Consumer Advocate	1993	Rate Base, Operating Income
US West Communications	Arizona	ACC	E-1051-93-183	Staff	1994	Rate Base, Operating Income
PSI Energy, Inc.	Indiana	URC	39584	Consumer Counselor	1994	Rate Base, Operating Income, Alt. Regulation, Forecasts, Affiliated Interest
Arkla, a Division of NORAM Energy	Oklahoma	OCC	PUD-940000354	Attorney General	1994	Cost Allocations, Rate Design
PSI Energy, Inc.	Indiana	URC	39584-S2	Consumer Counselor	1994	Merger Costs and Cost Savings, Non-Traditional Ratemaking
Transok, Inc.	Oklahoma	OCC	PUD-1342	Staff	1994	Rate Base, Operating Income, Affiliated Interest, Allocations
Oklahoma Natural Gas Company	Oklahoma	OCC	PUD-940000477	Attorney General	1995	Rate Base, Operating Income, Cost of Service, Rate Design
US West Communications	Washington	WUTC	UT-950200	Attorney General/ TRACER	1995	Operating Income, Affiliate Interest, Service Quality
PSI Energy, Inc.	Indiana	URC	40003	Consumer Counselor	1995	Rate Base, Operating Income

Utility Company	State	Tribunal	Case Number	Client	Year	Issues Addressed
Oklahoma Natural Gas Company	Oklahoma	OCC	PUD-880000598	Attorney General	1995	Stand-by Tariff
GTE Hawaiian Telephone Co., Inc.	Hawaii	PUC	PUC 94-0298	Consumer Advocate	1996	Rate Base, Operating Income, Affiliate Interest, Cost Allocations
Mid-American Energy Company	Iowa	ICC	APP-96-1	Consumer Advocate	1996	Non-Traditional Ratemaking
Oklahoma Gas and Electric Company	Oklahoma	OCC	PUD-960000116	Attorney General	1996	Rate Base, Operating Income, Rate Design, Non-Traditional Ratemaking
Southwest Gas Corporation	Arizona	ACC	U-1551-96-596	Staff	1997	Operating Income, Affiliated Interest, Gas Supply
Utilicorp United - Missouri Public Service Division	Missouri	PSC	EO-97-144	Staff	1997	Operating Income
US West Communications	Utah	PSC	97-049-08	Consumer Advocate	1997	Rate Base, Operating Income, Affiliate Interest, Cost Allocations
US West Communications	Washington	WUTC	UT-970766	Attorney General	1997	Rate Base, Operating Income
Missouri Gas Energy	Missouri	PSC	GR 98-140	Public Counsel	1998	Affiliated Interest
ONEOK	Oklahoma	OCC	PUD980000177	Attorney General	1998	Gas Restructuring, rate Design, Unbundling
Nevada Power/Sierra Pacific Power Merger	Nevada	PSC	98-7023	Consumer Advocate	1998	Merger Savings, Rate Plan and Accounting
PacifiCorp / Utah Power	Utah	PSC	97-035-1	Consumer Advocate	1998	Affiliated Interest
MidAmerican Energy / CalEnergy Merger	Iowa	PUB	SPU-98-8	Consumer Advocate	1998	Merger Savings, Rate Plan and Accounting
American Electric Power / Central and South West Merger	Oklahoma	OCC	980000444	Attorney General	1998	Merger Savings, Rate Plan and Accounting
ONEOK Gas Transportation	Oklahoma	OCC	970000088	Attorney General	1998	Cost of Service, Rate Design, Special Contract
U S West Communications	Washington	WUTC	UT-98048	Attorney General	1999	Directory Imputation and Business Valuation
U S West / Qwest Merger	Iowa	PUB	SPU 99-27	Consumer Advocate	1999	Merger Impacts, Service Quality and Accounting
U S West / Qwest Merger	Washington	WUTC	UT-991358	Attorney General	2000	Merger Impacts, Service Quality and Accounting
U S West / Qwest Merger	Utah	PSC	99-049-41	Consumer Advocate	2000	Merger Impacts, Service Quality and Accounting
PacifiCorp / Utah Power	Utah	PSC	99-035-10	Consumer Advocate	2000	Affiliated Interest
Oklahoma Natural Gas, ONEOK Gas Transportation	Oklahoma	OCC	980000683, 980000570, 990000166	Attorney General	2000	Operating Income, Rate Base, Cost of Service, Rate Design, Special Contract
U S West Communications	New Mexico	PRC	3008	Staff	2000	Operating Income, Directory Imputation
U S West Communications	Arizona	ACC	T-0105B-99-0105	Staff	2000	Operating Income, Rate Base, Directory Imputation
Northern Indiana Public Service Company	Indiana	IURC	41746	Consumer Counsel	2001	Operating Income, Rate Base, Affiliate Transactions

Utility Company	State	Tribunal	Case Number	Client	Year	Issues Addressed
Nevada Power Company	Nevada	PUCN	01-10001	Attorney General-BCP	2001	Operating Income, Rate Base, Merger Costs, Affiliates
Sierra Pacific Power Company	Nevada	PUCN	01-11030	Attorney General-BCP	2002	Operating Income, Rate Base, Merger Costs, Affiliates
The Gas Company, Division of Citizens Communications	Hawaii	PUC	00-0309	Consumer Advocate	2001	Operating Income, Rate Base, Cost of Service, Rate Design
SBC Pacific Bell	California	PUC	I.01-09-002 R.01-09-001	Office of Ratepayer Advocate	2002	Depreciation, Income Taxes and Affiliates
Midwest Energy, Inc.	Kansas	KCC	02-MDWG-922-RTS	Agriculture Customers	2002	Rate Design, Cost of Capital
Qwest Communications – Dex Sale	Utah	PSC	02-049-76	Consumer Advocate	2003	Directory Publishing
Qwest Communications – Dex Sale	Washington	WUTC	UT-021120	Attorney General	2003	Directory Publishing
Qwest Communications – Dex Sale	Arizona	ACC	T-0105B-02-0666	Staff	2003	Directory Publishing
PSI Energy, Inc.	Indiana	IURC	42359	Consumer Counsel	2003	Operating Income, Rate Trackers, Cost of Service, Rate Design
Qwest Communications – Price Cap Review	Arizona	ACC	T-0105B-03-0454	Staff	2004	Operating Income, Rate Base, Fair Value, Alternative Regulation
Verizon Northwest Corp	Washington	WUTC	UT-040788	Public Counsel	2004	Directory Publishing, Rate Base, Operating Income
Citizens Gas & Coke Utility	Indiana	IURC	42767	Consumer Counsel	2005	Operating Income, Debt Service, Working Capital, Affiliate Transactions, Alternative Regulation
Hawaiian Electric Company	Hawaii	HPUC	04-0113	Consumer Advocate	2005	Operating Income, Rate Base, Cost of Service, Rate Design
Sprint/Nextel Corporation	Washington	WUTC	UT-051291	Public Counsel	2006	Directory Publishing, Corporate Reorganization
Puget Sound Energy, Inc.	Washington	WUTC	UE-060266 and UG-060267	Public Counsel	2006	Alternative Regulation
Hawaiian Electric Company	Hawaii	HPUC	05-0146	Consumer Advocate	2006	Community Benefits / Rate Discounts
Cascade Natural Gas Company	Washington	WUTC	UG-060259	Public Counsel	2006	Alternative Regulation
Arizona Public Service Company	Arizona	ACC	E-01345A-05-0816	Staff	2006	Cost of Service Allocations
Hawaiian Electric Company	Hawaii	HPUC	05-0146	Consumer Advocate	2006	Capital Improvements and Discounted Rates
Hawaii Electric Light Company	Hawaii	HPUC	05-0315	Consumer Advocate	2006	Operating Income, Rate Base, Cost of Service, Rate Design

Utility Company	State	Tribunal	Case Number	Client	Year	Issues Addressed
Union Electric Company d/b/a AmerenUE	Missouri	PSC	2007-0002	Attorney General	2007	Operating Income, Rate Base, Fuel Adjustment Clause
Hawaiian Electric Company	Hawaii	PUC	2006-0386	Consumer Advocate	2007	Operating Income, Cost of Service, Rate Design
Maui Electric Company	Hawaii	PUC	2006-0387	Consumer Advocate	2007	Operating Income, Cost of Service, Rate Design
The Peoples Gas Light & Coke Company / North Shore Gas Company	Illinois	ICC	07-0241 07-0242	Attorney General	2007	Rate Adjustment Clauses
Commonwealth Edison	Illinois	ICC	07-0566	Attorney General, City	2008	Ratemaking Policy, Rate Trackers
Illinois Power Company, Illinois Public Service Co., Central Illinois Public Service Co.	Illinois	ICC	07-0585 cons.	Attorney General/CUB	2008	Rate Adjustment Clauses
Southwestern Public Service Company	Texas	PUCT	35763	Municipalities	2008	Operating Income, Rate Base, Affiliate Transactions
The Gas Company	Hawaii	PUC	2008-0081	Consumer Advocate	2009	Operating Income, Rate Base, Affiliate Transactions, Cost of Service, Rate Design
Hawaiian Electric Company	Hawaii	PUC	2008-0083	Consumer Advocate	2009	Operating Income, Rate Base, Affiliate Transactions, Cost of Service, Rate Design
Commonwealth Edison Company	Illinois	ICC	09-0263	Attorney General	2009	Rate Adjustment Clauses
Avista Corporation Washington WUTC	Washington	WUTC	UG-060518	Attorney General	2009	Rate Adjustment Clauses
Kauai Island Utility Cooperative	Hawaii	PUC	2009-0050	Consumer Advocate	2009	Operating Income, Cooperative Ratemaking Policies, Cost of Service
Maui Electric Company	Hawaii	PUC	2009-0163	Consumer Advocate	2010	Operating Income, Rate Base, Cost of Service, Rate Design
Hawaii Electric Light Company	Hawaii	PUC	2009-0164	Consumer Advocate	2010	Operating Income, Rate Base, Cost of Service, Rate Design
Commonwealth Edison Company	Illinois	ICC	10-0467	AG / CUB	2010	Operating Income, Rate Base
Commonwealth Edison Company	Illinois	ICC	10-0527	Attorney General	2010	Alternative Regulation
Atmos Pipeline - Texas	Texas	RCT	GUD 10000	ATM Cities	2010	Operating Income, Rate Base, Cost of Service, Rate Adjustment Clause
Ameren Missouri	Missouri	PSC	2011-0028	Industrial Customers	2011	Operating Income, Rate Base

Utility Company	State	Tribunal	Case Number	Client	Year	Issues Addressed
Hawaiian Electric Company	Hawaii	PUC	2010-0080	Consumer Advocate	2011	Operating Income, Rate Base, Affiliate Transactions, Cost of Service, Rate Design
Utilities, Inc.	Illinois	ICC	11-0561..0566	Attorney General	2011	Operating Income, Rate Base, Rate Design
Commonwealth Edison Company	Illinois	ICC	11-0721	AG / CUB	2011	Alternative Regulation
Utilities, Inc.	Illinois	ICC	11-0059 RH	AG	2012	Rate Design
Maui Electric, Ltd.	Hawaii	PUC	2011-0092	Consumer Advocate	2012	Operating Income, Rate Base, Cost of Service, Rate Design
Ameren Illinois Company	Illinois	ICC	12-0001	AG/AARP	2012	Alternative Regulation
Commonwealth Edison Company	Illinois	ICC	12-0321	AG	2012	Alternative Regulation
Ameren Illinois Company	Illinois	ICC	12-0293	AG	2012	Alternative Regulation
Ameren Missouri	Missouri	PSC	ER2012-0166	Industrials	2012	Income Taxes, Alternative Reg
Atmos Energy	Texas	RCT	10170	Municipals	2012	Operating Income, Rate Base
The Peoples Gas Light & Coke Company / North Shore Gas Company	Illinois	ICC	12-0511/0512	AG	2012	Operating Income, Rate Base
Ameren Illinois Company	Illinois	ICC	13-0192	AG	2013	Operating Income, Rate Base
Ameren Illinois Company	Illinois	ICC	13-0301	AG	2013	Alternative Regulation
Commonwealth Edison Company	Illinois	ICC	13-0318	AG	2013	Alternative Regulation
Commonwealth Edison Company	Illinois	ICC	13-0553	AG	2013	Alternative Regulation
Commonwealth Edison Company	Illinois	ICC	13-0589	AG	2014	Refund of Rider Revenues
Commonwealth Edison Company	Illinois	ICC	14-0312	AG	2014	Alternative Regulation
Ameren Illinois Company	Illinois	ICC	14-0317	AG	2014	Alternative Regulation
Southwestern Public Service Company	Texas	PUCT	43695	Municipals	2015	Operating Income, Rate Base
Ameren Missouri	Missouri	PSC	2014-0258	Industrials	2015	Income Taxes
Kansas City Power & Light Company	Missouri	PSC	2014-0370	Industrials	2015	Alternative Regulation, Taxes
Commonwealth Edison Company	Illinois	ICC	15-0287	AG	2015	Alternative Regulation
Ameren Illinois Company	Illinois	ICC	15-0305	AG	2015	Alternative Regulation
Hawaiian Electric Company / NextEra	Hawaii	PUC	2015-0012	Consumer Advocate	2015	Merger Approval
Florida Power & Light	Florida	PSC	160021-EI	AARP	2016	Regulatory Policy, Forecasts

Utility Company	State	Tribunal	Case Number	Client	Year	Issues Addressed
Southwestern Public Service Company	Texas	PUCT	45524	Municipals	2016	Operating Income, Rate Base
Young Brothers Ltd.	Hawaii	PUC	2016-0014	Consumer Advocate	2016	Revenue Requirement, Jurisdictional Allocations
Texas-Kansas-Oklahoma Gas, LLC	Kansas	KCC	15-TKOG-236-COM	Farmers	2016	Billing Dispute
Kansas City Power & Light Company	Missouri	PSC	2016-0285	Industrials	2016	Alternative Regulation
Hawaii Electric Light Company	Hawaii	PUC	2015-0170	Consumer Advocate	2017	Revenue Requirement, Cost of Service Allocations, Rate Design
Puget Sound Energy, Inc.	Washington	WUTC	UE-17003	AG	2017	Decoupling, Alternative Regulation
Commonwealth Edison Company	Illinois	ICC	17-0196	AG	2017	Alternative Regulation
Hawaiian Electric Company	Hawaii	PUC	2016-0328	Consumer Advocate	2017	Revenue Requirement, Class Allocations, Rate Design
Southwestern Public Service Company	Texas	PUCT	46936	Municipals	2017	Regulatory Policy, Resource Plans
Great Plains Energy	Missouri	PSC	EM-2018-0012	Industrials	2018	Merger Issues
Dayton Power & Light	Ohio	PUCO	15-1830	Consumer Advocate	2018	Revenue Requirement
Maui Electric Co.	Hawaii	PUC	2017-0150	Consumer Advocate	2018	Revenue Requirement, Class Allocations, Rate Design
Kansas City P&L / Greater MO Operations	Missouri	PSC	2018-0145/0146	Industrials	2018	Income Taxes

Kansas Farm Bureau/Kansas Corn Growers Association

Docket Number 18-KGSG-560-RTS

Information Request

Data Request: 18-560 KFB-001: Interruptible Service

Company Name: Kansas Gas Service, a Division of ONE Gas, Inc.

Request Date: 10/17/2018

Date Information Requested: 10/25/2018

Requested By: Michael Brosch

Page 1 of 2

Please provide the following:

Ref: Exhibit PHR-7, page 2, line 5 "Irrigation Transport GIT" column. In the Company's class cost of service study in the pending case, the GIT class is allocated approximately \$1.8 million of test year O&M expense. In the Company's previous case, Docket No. 16-KGSG-491-RTS, Mr. Raab's class cost of service study (Exhibit PHR-5, page 2) allocated only \$268,060 of O&M expense to the GIT class. Please provide the following information:

- Explain each known reason why the GIT class, with essentially unchanged revenues of \$1.8 million in both test years, is being allocated approximately six times as much O&M expense in the pending case when compared to the prior rate case.
- Describe whether the methods used in the Company's previous study are believed to be more equitable to the irrigation class than the currently proposed methods, providing any supporting studies, reports, analyses, workpapers and other data supportive of your response.
- Provide comparable explanations and supporting analyses for the much larger amounts of Depreciation & Amortization expenses, Taxes Other than Income Taxes and Rate Base now being attributed to the GIT class, compared to Mr. Raab's previously submitted study.
- Explain whether the same reasons and changes in cost allocation methods identified in your responses to parts (a) through (c) also explain the much higher costs attributed to the GIS class in the pending rate case, compared to the previous KGS rate case.

If for some reason, the above information cannot be provided by the date requested, please provide a written explanation of the reason why.

KGS Response:

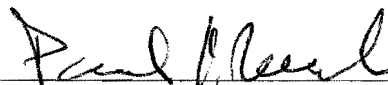
- After reviewing the allocation factors calculated in 2018_wn_summary_final.xlsx, it was discovered that the CP demands for the irrigation classes used to allocate transmission investments and expenses were miscalculated. The corrections appear in highlighted cells G31 and G39 of the "summary" tab of the attached spreadsheet entitled 2018_wn_summary_corrected.xlsx. The results from using these new allocation factors in the three class cost of service studies that support exhibits PHR-7, PHR-8 and PHR-9 are provided in the attached spreadsheets COSA_KGS_corrected.xlsx, COSA_Staff-corrected.xlsx and COSA_CURB_corrected.xlsx. These results do not change either the proposed allocation of the revenue deficiency or the proposed rate designs, as summarized in the attached spreadsheet entitled Proof of Revenue_corrected.xlsx, which support exhibits PHR-10, PHR-11 and PHR-12.

As can be seen by examining COSA_KGS_corrected.xlsx, the GIT class is now allocated only about three times as much test year O&M expense, approximately \$0.8 million. The three primary reasons that the GIT class is being allocated more O&M expense in the pending case when compared to the prior rate case are: (1) the updated zero intercept study classifies more of the distribution mains investments as demand related (47% in the prior case versus 53% in the current case); (2) The prior study relied more heavily on coincident

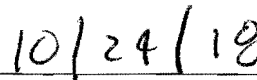
Verification of Response

I have read the foregoing Information Request and answer(s) thereto and find answer(s) to be true, accurate, full and complete and contain no material misrepresentations or omissions to the best of my knowledge and belief; and I will disclose to the Commission Staff any matter subsequently discovered which affects the accuracy or completeness of the answer(s) to this Information Request.

Signed: _____



Date: _____



Kansas Farm Bureau/Kansas Corn Growers Association

Docket Number 18-KGSG-560-RTS

Information Request

Data Request: 18-560 KFB-001: Interruptible Service

Company Name: Kansas Gas Service, a Division of ONE Gas, Inc.

Request Date: 10/17/2018

Date Information Requested: 10/25/2018

Requested By: Michael Brosch

Page 2 of 2

peak (CP) as an allocator of demand-related costs than non-coincident peak (NCP), which assigns more of the cost to the GIT class because the GIT class is heavily summer peaking (has a relatively higher NCP than CP); and (3) various other allocation factors have been changed to more closely resemble the Staff's preferred allocation approach.

- b. If one believes that demand-related distribution costs are driven by the NCP that a particular class places on the system, then the methods used in the Company's current study are more equitable to all classes, as they better reflect the cost of service than the Company's previous study, which relied more heavily on the CP that a particular class places on the system. If one believes that demand-related distribution costs are driven by the CP that a particular class places on the system, then the methods used in the Company's current study are less equitable to all classes, as they assign more costs to the irrigation classes and, assuming that rates are designed based on these results, require the irrigation classes to provide a subsidy to other classes.
- c. Please see the response to Kansas Farm Bureau/Kansas Corn Growers Association Data Request No. 1(a).
- d. The same reasons and changes in cost allocation methods identified in the responses to parts (a) through (c) also explain the higher costs attributed to the GIS class in the pending rate case, compared to the previous KGS rate case.

Prepared by: Paul Raab

Verification of Response

I have read the foregoing Information Request and answer(s) thereto and find answer(s) to be true, accurate, full and complete and contain no material misrepresentations or omissions to the best of my knowledge and belief; and I will disclose to the Commission Staff any matter subsequently discovered which affects the accuracy or completeness of the answer(s) to this Information Request.

Signed: _____

Paul Raab

Date: _____

10/24/18

Kansas Farm Bureau/Kansas Corn Growers Association

Docket Number 18-KGSG-560-RTS

Information Request

Data Request: 18-560 KFB-002: Irrigation Service
Company Name: Kansas Gas Service, a Division of ONE Gas, Inc.
Request Date: 10/17/2018
Date Information Requested: 10/25/2018
Requested By: Michael Brosch

Page 1 of 1

Please provide the following:

Ref: KGS Response to KCC-001; file 2018_wn_summary_final.xls. The Company's workpapers supportive of test year billing determinants contain monthly volume data for the GIS and GIT. Please provide the following information:

- a. Confirm that the vast majority of irrigation volumes occur during the Company's off-peak summer months, or explain any inability to provide such confirmation.
- b. Describe whether and how the class cost of service methods used by the Company in the pending rate case provide any recognition of the off-peak nature of irrigation service demands.
- c. Explain whether and how, in Mr. Raab's previously submitted study in Docket No. 16-KGSG-491-RTS, recognition was provided for the off-peak nature of irrigation service demands.
- d. For what reasons has Mr. Raab modified his proposed allocation of demand-related costs in the pending rate case, compared to the previous rate case?

KGS Response:

- a. The majority of irrigation volumes occur during the Company's off-peak summer months.
- b. The class cost of service methods used by the Company in the pending rate case provide no recognition of the off-peak nature of irrigation service demands.
- c. In Mr. Raab's previously submitted study in Docket No. 16-KGSG-491-RTS, recognition was provided for the off-peak nature of irrigation service demands by allocating demand-related costs on the basis of Coincident Peak rather than Non-Coincident Peak.
- d. The reason that Mr. Raab has modified his proposed allocation of demand-related costs in the pending rate case, compared to the previous rate case are provided in his Direct Testimony in the current case. Specifically, on page 49, lines 3-6, Mr. Raab states:

Q. HOW DID YOU DECIDE ON THE SPECIFIC ALLOCATORS TO USE IN YOUR STUDIES?

- A. As in the case of the classification study discussed above, the starting point for my allocation study was Staff's traditional allocation factors.

Using Staff's classification and allocation factors as the starting point in this case was an attempt to minimize the controversy over the class cost of service analysis in this case.

Prepared by: Paul Raab

Verification of Response

I have read the foregoing Information Request and answer(s) thereto and find answer(s) to be true, accurate, full and complete and contain no material misrepresentations or omissions to the best of my knowledge and belief; and I will disclose to the Commission Staff any matter subsequently discovered which affects the accuracy or completeness of the answer(s) to this Information Request.

Signed: _____

Paul Raab

Date: _____

10/24/18

Kansas Farm Bureau/Kansas Corn Growers Association

Docket Number 18-KGSG-560-RTS

Information Request

Data Request: 18-560 KFB-007: Demand Cost Allocation

Company Name: Kansas Gas Service, a Division of ONE Gas, Inc.

Request Date: 10/17/2018

Date Information Requested: 10/25/2018

Requested By: Michael Brosch

Page 1 of 1

Please provide the following:

Ref: Docket No. 16-KGSG-491-RTS, Direct Testimony of Paul Raab, page 34. In the Company's previous rate case, Mr. Raab testified, "I completely disagree with the use of each class' non-coincident peak to allocate demand-related distribution costs. It is not logical and does not reflect the cost causer relationship, in that it treats interruptible and irrigation customers as if they impose the same costs on the system as firm heating customers. It does not recognize that natural gas facilities are built and sized to meet winter heating loads." Please respond to the following:

- a. Explain specifically what changes, if any, would be required within Mr. Raab's Exhibits PHR-7, 8 and 9 in the pending rate case to more reasonably and logically allocate demand-related distribution costs in keeping with Mr. Raab's previous quoted testimony.
- b. Provide electronic excel files modified to include the adjustments to PHR-7, 8 and 9 that are described in your response to part (a) so as to more reasonably and logically allocate demand-related distribution costs within the Company's pending rate case.

KGS Response:

KGS has sent a formal objection to Data Request No. 7 on October 22, 2018 to Ms. Wendee Grady. As stated in the formal objection, KGS will provide a response to part (a) but will not respond to part (b).

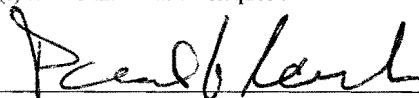
- a. Mr. Raab would rely on Coincident Peak, rather than Non-Coincident Peak to allocate demand-related distribution costs in the pending rate case to more reasonably and logically allocate demand-related distribution costs in keeping with Mr. Raab's previous quoted testimony.

Prepared by: Paul Raab

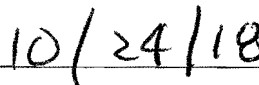
Verification of Response

I have read the foregoing Information Request and answer(s) thereto and find answer(s) to be true, accurate, full and complete and contain no material misrepresentations or omissions to the best of my knowledge and belief; and I will disclose to the Commission Staff any matter subsequently discovered which affects the accuracy or completeness of the answer(s) to this Information Request.

Signed: _____



Date: _____



Kansas Farm Bureau/Kansas Corn Growers Association

Docket Number 18-KGSG-560-RTS

Information Request

Data Request: 18-560 KFB-004: Demand and Capacity of Facilities

Company Name: Kansas Gas Service, a Division of ONE Gas, Inc.

Request Date: 10/17/2018

Date Information Requested: 10/25/2018

Requested By: Michael Brosch

Page 1 of 1

Please provide the following:

- a. Does the Company design and install distribution mains and other distribution facilities with capacity sufficient to meet anticipated peak day and seasonal demand levels?
- b. Please explain how this is done and what measures of daily and/or seasonal historical and projected demand are employed to determine needed capacity.
- c. Provide illustrative copies of documentation relied upon by management to evaluate demand and determine the appropriate design capacity for mains and other demand-sensitive distribution network facilities.
- d. Provide a summary of the Company's definitions of peak day and winter season demands that are relied upon in the design of distribution facilities.

KGS Response:

- a. Yes.
- b. There are a variety of methods KGS may use to arrive at the proper main selection, including Synergy network modeling, historical system pressure charts, SCADA and TBS hourly flows.
- c. Please see, "18-560 KFB 004 Attachment" for an illustrative example of a Synergy network model for Ottawa, Kansas with TBS peak flow data used to determine proper pipe size for a main replacement along E. 7th Street between S. Poplar Street and S. Mulberry Street.
- d. KGS defines "peak day" and "winter season demands" as the largest volume of natural gas delivered during any one day during the year.

Prepared by: Tony Cellitti

Verification of Response

I have read the foregoing Information Request and answer(s) thereto and find answer(s) to be true, accurate, full and complete and contain no material misrepresentations or omissions to the best of my knowledge and belief; and I will disclose to the Commission Staff any matter subsequently discovered which affects the accuracy or completeness of the answer(s) to this Information Request.

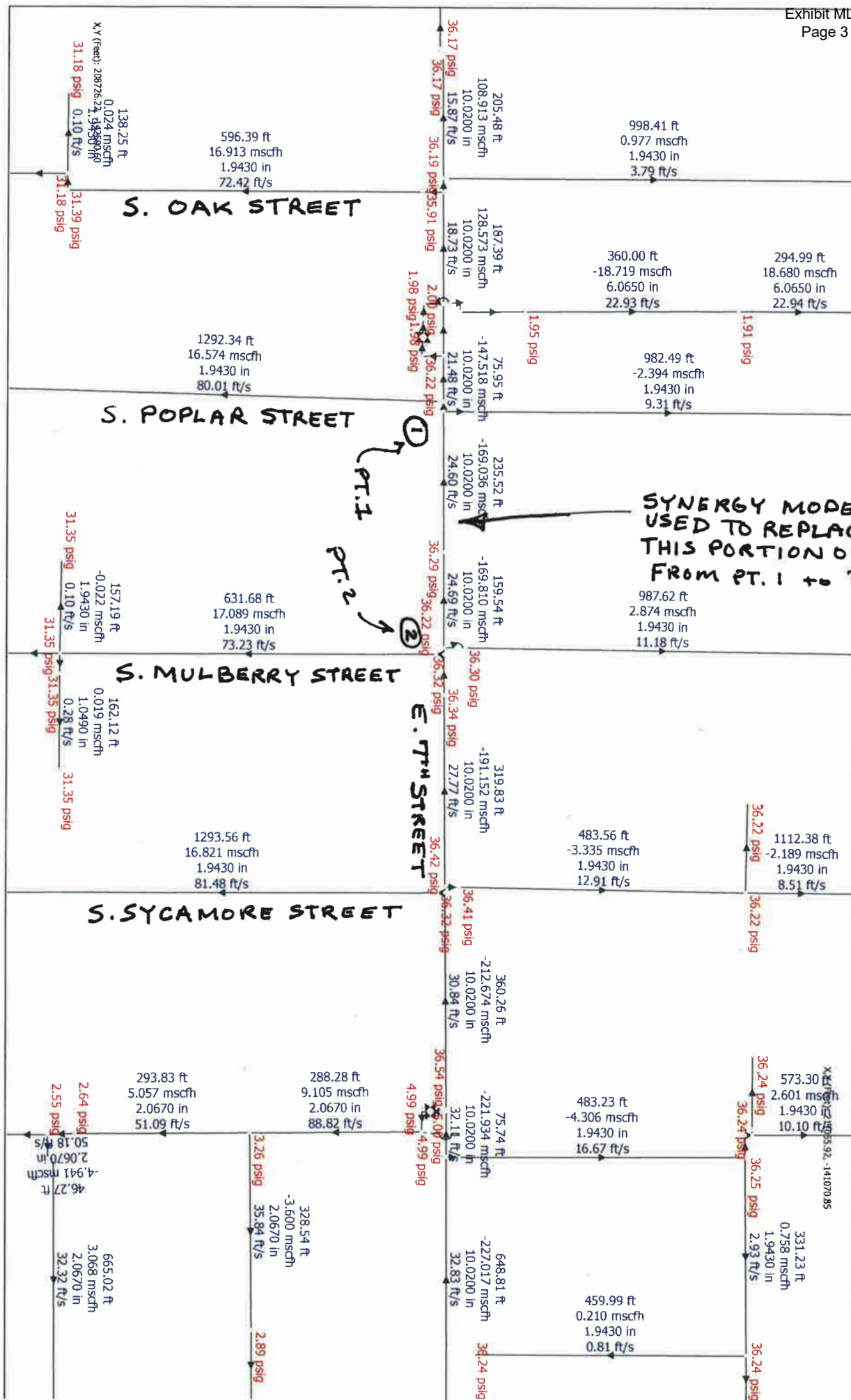
Signed: Lorna Ector

Date: 10/24/2018

OTTAWA EAST TBS

Date	Flow (mcf/d)	DAILY Flow (mcf/h)	Peak Hourly Flows (mcf/h)
3/2/2014	3503	146.0	175.2
1/5/2014	3474	144.8	173.7
1/6/2014	3414	142.3	170.7
2/5/2014	3152	131.3	157.6
1/23/2014	3113	129.7	155.7
1/17/2016	3873	161.4	193.7
12/18/2016	3551	148.0	177.6
1/9/2016	3488	145.3	174.4
12/17/2016	3447	143.6	172.4
2/13/2016	3418	142.4	170.9
1/6/2017	3481	145.0	174.1
1/5/2017	3376	140.7	168.8
1/7/2017	3230	134.6	161.5
12/31/2017	3079	128.3	154.0
1/4/2017	2890	120.4	144.5

OTTAWA EAST TBS
PEAK FLOWS USED
TO SELECT PROPER
PIPE SIZE FOR REPLACEMENT
BETWEEN PT. 1 and PT. 2



Kansas Farm Bureau/Kansas Corn Growers Association

Docket Number 18-KGSG-560-RTS

Information Request

Data Request: 18-560 KFB-005: Demand Cost Allocation

Company Name: Kansas Gas Service, a Division of ONE Gas, Inc.

Request Date: 10/17/2018

Date Information Requested: 10/25/2018

Requested By: Michael Brosch

Page 1 of 1

Please provide the following:

Ref: Docket No. 16-KGSG-491-RTS, Direct Testimony of Paul Raab, page 34. In the Company's previous rate case, Mr. Raab testified, "I completely disagree with the use of each class' non-coincident peak to allocate demand-related distribution costs. It is not logical and does not reflect the cost causer relationship, in that it treats interruptible and irrigation customers as if they impose the same costs on the system as firm heating customers. It does not recognize that natural gas facilities are built and sized to meet winter heating loads." Please respond to the following:

- Confirm that these statements accurately reflect Mr. Raab's and the Company's views of cost causation and appropriate class cost allocations, or explain any inability to provide such confirmation.
- Identify and describe any changes in how KGS' gas facilities are "built and sized to meet winter heating loads" that have occurred since the Company's previous rate case.
- Confirm that all of Mr. Raab's class cost allocation studies (Exhibits PHR-7, 8 and 9) employ non-coincident peak demand statistics to allocate demand-related distribution costs, or explain any inability to provide such confirmation, with references to where different statistics are used.
- Explain whether any why Mr. Raab is now employing cost allocation methods he claimed to "completely disagree" with in the previous rate case and why such changes have been adopted in the pending rate case.

KGS Response:

- The statements above accurately reflect Mr. Raab's views of cost causation and appropriate class cost allocations.
- There have been no changes in how KGS' gas facilities are "built and sized to meet winter heating loads" that have occurred since the Company's previous rate case.
- All of Mr. Raab's class cost allocation studies (Exhibits PHR-7, 8 and 9) employ non-coincident peak demand statistics to allocate demand-related distribution costs.
- Please see the response to Kansas Farm Bureau/Kansas Corn Growers Association Data Request No. 2(d).

Prepared by: Paul Raab

Verification of Response

I have read the foregoing Information Request and answer(s) thereto and find answer(s) to be true, accurate, full and complete and contain no material misrepresentations or omissions to the best of my knowledge and belief; and I will disclose to the Commission Staff any matter subsequently discovered which affects the accuracy or completeness of the answer(s) to this Information Request.

Signed: _____

Paul B. Raab

Date: _____

10/24/18

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
SUMMARY OF RESULTS														
				General Service			Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small	
			Total	Residential	Small	Large	Trans. Eligible	Generator	Supply	Resale	Resale	Transport	Transport	
			Company	RS	GSS	GSL	GSTE	SGS	GIS	KGSSD	SSRk	SSR-BHK	STk	STt
			\$											
1	Operating Revenues		299,614,018	218,004,170	21,775,491	16,020,616	2,132,178	438,275	345,364	25,333	84,338	4,428	12,208,676	4,657,954
2														
3	Operating Expenses:													
4														
5	Operating & Maintenance		152,960,859	122,718,305	10,380,795	7,129,249	939,436	108,977	41,066	11,133	3,263	1,184	3,443,487	1,498,111
6	Depreciation & Amortization		63,306,825	51,464,736	3,881,284	2,880,451	384,368	48,146	16,180	5,408	287	1,361	1,384,957	652,806
7	Taxes Other Than Income		26,480,941	21,366,981	1,658,981	1,260,996	171,585	19,203	6,653	2,711	358	497	574,780	287,228
8														
9	Total Operating Expenses		242,748,625	195,550,023	15,921,060	11,270,696	1,495,389	176,327	63,900	19,252	3,909	3,042	5,403,225	2,438,145
10														
11	Income Before Taxes		56,865,393	22,454,147	5,854,431	4,749,920	636,789	261,947	281,465	6,080	80,429	1,386	6,805,452	2,219,809
12														
13	Income Taxes:													
14														
15	State Income Taxes	7.00%	465,845	183,946	47,960	38,912	5,217	2,146	2,306	50	659	11	55,751	18,185
16	Federal Income Taxes	21.00%	1,299,709	513,209	133,808	108,564	14,554	5,987	6,433	139	1,838	32	155,545	50,736
17														
18	Total Income Taxes		1,765,554	697,155	181,768	147,475	19,771	8,133	8,739	189	2,497	43	211,295	68,921
19														
18	Adjustments to After-Tax Income:													
19														
20	Amortization		10,390,605	4,102,885	1,069,738	867,919	116,356	47,864	51,430	1,111	14,696	253	1,243,511	405,610
21	Other		(128,796)	(50,857)	(13,260)	(10,758)	(1,442)	(593)	(637)	(14)	(182)	(3)	(15,414)	(5,028)
22														
23	Total Adjustments to After-Tax Income		10,261,809	4,052,028	1,056,478	857,161	114,914	47,270	50,793	1,097	14,514	250	1,228,098	400,582
24														
25	Net Income		44,838,030	17,704,963	4,616,185	3,745,284	502,105	206,544	221,933	4,794	63,418	1,093	5,366,059	1,750,307
26														
27	Total Rate Base		1,016,084,260	824,324,506	60,772,850	48,999,475	6,814,844	665,188	197,400	116,944	40,925	23,001	20,985,954	11,019,421
28														
29	Rate of Return - Existing Rates		4.4128%	2.1478%	7.5958%	7.6435%	7.3678%	31.0505%	112.4281%	4.0998%	154.9601%	4.7516%	25.5698%	15.8838%
30	Relative Rate of Return		1.00	0.49	1.72	1.73	1.67	7.04	25.48	0.93	35.12	1.08	5.79	3.60
31														
32	Equalized ROR:													
33														
34	Net Income Increase		33,477,681	45,830,672	67,943	31,399	23,156	(155,274)	(206,718)	4,219	(60,263)	680	(3,748,546)	(900,974)
35	Income Taxes		12,088,783	16,549,445	24,534	11,338	8,362	(56,069)	(74,646)	1,524	(21,761)	246	(1,353,599)	(325,341)
36	Revenue Increase		45,566,464	62,380,117	92,478	42,738	31,518	(211,343)	(281,364)	5,743	(82,025)	925	(5,102,144)	(1,226,315)
37	Gross Revenue After Increase		345,180,481	280,384,287	21,867,969	16,063,354	2,163,696	226,931	64,000	31,075	2,313	5,354	7,106,532	3,431,639
38	Rate of Return	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%	7.7076%
39	Percent Increase	15.2084%	28.6142%	0.4247%	0.2668%	1.4782%	-48.2217%	-81.4689%	22.6689%	-97.2573%	20.8992%	-41.7911%	-26.3273%	
40														
41	Proposed Rate Levels:													
42														
43	Net Income Increase		33,477,681	30,618,088	0	2,250,052	299,459	0	48,505	3,558	0	0	0	0
44	Income Taxes		12,088,783	11,056,185	0	812,493	108,134	0	17,515	1,285	0	0	0	0
45	Gross Revenue After Increase		345,180,481	259,678,442	21,775,491	19,083,161	2,539,771	438,275	411,385	30,175	84,338	4,428	12,208,676	4,657,954
46	Revenue Increase	45,566,464	41,674,273	0	3,062,545	407,593	0	66,021	4,843	0	0	0	0	0
47	Rate of Return	7.7076%	5.8621%	7.5958%	12.2355%	11.7620%	31.0505%	137.0002%	7.1422%	154.9601%	4.7516%	25.5698%	15.8838%	
48	Relative Rate of Return	1.00	0.76	0.99	1.59	1.53	4.03	17.77	0.93	20.10	0.62	3.32	2.06	
49	Percent Increase	15.2084%	19.1163%	0.0000%	19.1163%	19.1163%	0.0000%	19.1163%	19.1163%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE														
TEST YEAR ENDING 12/31/2017														
SUMMARY OF RESULTS														
			CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTt-T1	Large Vol Transport LVTt-T2	Large Vol Transport LVTt-T3	Large Vol Transport LVTt-T4	Wholesale Transport WtT
1	Operating Revenues		190,316	60,675	1,776,448	1,748,409	1,821,696	1,561,390	7,330,426	622,416	798,034	645,892	6,061,634	1,299,860
2														
3	Operating Expenses:													
4														
5	Operating & Maintenance		45,656	7,651	142,198	664,286	648,648	435,473	2,074,772	261,303	272,923	123,974	1,779,842	229,126
6	Depreciation & Amortization		16,934	3,124	53,181	255,346	242,454	161,211	752,848	107,942	114,563	50,302	715,502	113,435
7	Taxes Other Than Income		7,174	1,455	22,404	107,251	102,514	68,330	320,567	47,980	51,506	22,463	321,263	58,059
8														
9	Total Operating Expenses		69,764	12,230	217,783	1,026,883	993,615	665,014	3,148,187	417,225	438,992	196,738	2,816,606	400,620
10														
11	Income Before Taxes		120,551	48,445	1,558,665	721,525	828,080	896,376	4,182,239	205,191	359,042	449,154	3,245,028	899,240
12														
13	Income Taxes:													
14														
15	State Income Taxes	7.00%	988	397	12,769	5,911	6,784	7,343	34,261	1,681	2,941	3,680	26,584	7,367
16	Federal Income Taxes	21.00%	2,755	1,107	35,625	16,491	18,926	20,487	95,589	4,690	8,206	10,266	74,168	20,553
17														
18	Total Income Taxes		3,743	1,504	48,393	22,402	25,710	27,831	129,850	6,371	11,148	13,945	100,751	27,920
19														
20	Adjustments to After-Tax Income:													
21														
22	Amortization		22,027	8,852	284,804	131,839	151,309	163,788	764,191	37,493	65,605	82,071	592,941	164,312
23	Other		(273)	(110)	(3,530)	(1,634)	(1,876)	(2,030)	(9,472)	(465)	(813)	(1,017)	(7,350)	(2,037)
24														
25	Total Adjustments to After-Tax Income		21,754	8,742	281,273	130,205	149,434	161,758	754,718	37,028	64,792	81,053	585,591	162,275
26														
27	Net Income		95,054	38,198	1,228,998	568,918	652,936	706,787	3,297,671	161,792	283,103	354,155	2,558,686	709,045
28														
29	Total Rate Base		231,518	46,762	710,247	3,953,601	3,747,603	2,483,183	11,584,564	1,846,762	1,995,215	853,641	12,262,941	2,407,716
30														
31	Rate of Return - Existing Rates		41.0569%	81.6873%	173.0381%	14.3899%	17.4228%	28.4630%	28.4661%	8.7608%	14.1891%	41.4876%	20.8652%	29.4489%

KANSAS GAS SERVICE COMPANY													
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY													
TEST YEAR ENDING 12/31/2017													
SUMMARY OF CUSTOMER COSTS													
				General Service			Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small
		Total	Residential	Small	Large	Trans. Eligible	Generator	Sales	Supply	Resale	Resale	Transport	Transport
		Company	RS	GSS	GSL	GSTE	SGS	GIS	KGSSD	SSRk	SSR-BHK	STk	STt
1	Rate Base	603,457,926	549,492,237	33,272,840	11,553,762	462,998	617,092	165,561	(1,590)	(2,030)	22,243	4,878,474	1,655,685
2													
3	Return @ Current Rates	26,629,548	13,159,303	2,617,114	1,450,013	140,030	132,466	133,940	(288)	36,502	1,028	2,852,210	823,782
4	O&M Expenses	96,554,772	86,442,471	6,741,156	2,173,166	98,345	101,293	30,517	159	1,017	1,132	581,447	202,627
5	Depreciation Expense	41,074,302	37,020,497	2,434,718	914,407	51,089	45,445	14,392	138	691	1,367	349,960	120,985
6	Taxes, Other	16,451,257	14,809,771	1,003,438	367,522	19,934	18,057	5,675	51	261	495	133,995	46,368
7													
8	Income Taxes:												
9													
10	State Income Taxes	7.00%	276,668	109,247	28,484	23,110	3,098	1,274	1,369	30	391	7	33,111
11	Federal Income Taxes	21.00%	771,904	304,798	79,469	64,477	8,644	3,556	3,821	83	1,092	19	92,379
12													
13	Total Income Taxes		1,048,572	414,044	107,953	87,586	11,742	4,830	5,190	112	1,483	26	125,489
14													
15	Adjustments to After-Tax Income:												
16													
17	Amortization	6,171,037	2,436,726	635,323	515,462	69,104	28,427	30,545	660	8,728	150	738,528	240,894
18	Other	(76,493)	(30,204)	(7,875)	(6,389)	(857)	(352)	(379)	(8)	(108)	(2)	(9,154)	(2,986)
19													
20	Total Adjustments to After-Tax Income	6,094,544	2,406,521	627,448	509,072	68,248	28,074	30,166	652	8,620	149	729,374	237,908
21													
22	Total Customer-Related Costs @ Current Rates	187,852,995	154,252,608	13,531,828	5,501,766	389,389	330,166	219,880	824	48,573	4,196	4,772,475	1,472,603
23	Total Customers	638,736	583,050	36,896	11,621	500	676	214	1	7	1	3,483	1,203
24	Customer Costs \$(/customer/month)	\$ 24.51	\$ 22.05	\$ 30.56	\$ 39.45	\$ 64.93	\$ 40.71	\$ 85.66	\$ 68.68	\$ 552.10	\$ 349.65	\$ 114.20	\$ 102.00
25													
26													
27	Incremental Return @ Equalized ROR	19,882,575	29,193,360	(52,577)	(559,495)	(104,344)	(84,903)	(121,179)	165	(36,659)	687	(2,476,197)	(696,168)
28	Incremental Income Taxes	7,179,593	10,541,716	(18,985)	(202,034)	(37,679)	(30,658)	(43,758)	60	(13,237)	248	(894,154)	(251,386)
29													
30	Total Customer-Related Costs @ Equalized ROR	214,915,164	193,987,684	13,460,266	4,740,237	247,366	214,605	54,943	1,049	(1,323)	5,130	1,402,124	525,048
31	Total Customers	638,736	583,050	36,896	11,621	500	676	214	1	7	1	3,483	1,203
32	Customer Costs \$(/customer/month)	\$ 28.04	\$ 27.73	\$ 30.40	\$ 33.99	\$ 41.25	\$ 26.46	\$ 21.41	\$ 87.40	\$ (15.03)	\$ 427.53	\$ 33.55	\$ 36.37
33													
34													
35	Incremental Return @ Proposed Rates	19,882,575	20,158,525	(92,929)	758,174	59,753	7,315	30,400	(228)	(868)	283	(249,915)	(161,075)
36	Incremental Income Taxes	7,179,593	7,279,239	(33,556)	273,777	21,577	2,642	10,977	(82)	(313)	102	(90,244)	(58,164)
37													
38	Total Customer-Related Costs @ Proposed Rates	214,915,164	181,690,371	13,405,343	6,533,717	470,719	340,123	261,257	514	47,392	4,581	4,432,315	1,253,363
39	Total Customers	638,736	583,050	36,896	11,621	500	676	214	1	7	1	3,483	1,203
40	Customer Costs \$(/customer/month)	\$ 28.04	\$ 25.97	\$ 30.28	\$ 46.85	\$ 78.49	\$ 41.94	\$ 101.78	\$ 42.86	\$ 538.67	\$ 381.72	\$ 106.06	\$ 86.82

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
SUMMARY OF CUSTOMER COSTS														
			CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Wholesale Transport WTt
1	Rate Base		(13,978)	(5,772)	440,256	425,921	199,743	95,133	37,391	76,869	65,796	19,068	(29,757)	29,987
2														
3	Return @ Current Rates		49,769	21,206	730,722	253,063	298,380	358,884	1,656,546	51,081	118,749	188,804	1,196,917	359,328
4	O&M Expenses		1,527	395	73,624	39,258	18,116	9,317	11,893	7,476	6,218	2,533	6,324	4,759
5	Depreciation Expense		1,136	285	36,807	28,752	14,487	7,673	10,348	5,539	5,040	1,951	5,235	3,362
6	Taxes, Other		426	107	14,401	10,792	5,395	2,851	3,826	2,076	1,875	729	1,944	1,266
7														
8	Income Taxes:													
9														
10	State Income Taxes	7.00%	587	236	7,583	3,510	4,029	4,361	20,348	998	1,747	2,185	15,788	4,375
11	Federal Income Taxes	21.00%	1,636	658	21,158	9,794	11,241	12,168	56,771	2,785	4,874	6,097	44,049	12,206
12														
13	Total Income Taxes		2,223	893	28,741	13,305	15,269	16,529	77,119	3,784	6,621	8,282	59,837	16,582
14														
15	Adjustments to After-Tax Income:													
16														
17	Amortization		13,082	5,257	169,146	78,300	89,863	97,275	453,857	22,267	38,963	48,742	352,151	97,586
18	Other		(162)	(65)	(2,097)	(971)	(1,114)	(1,206)	(5,626)	(276)	(483)	(604)	(4,365)	(1,210)
19														
20	Total Adjustments to After-Tax Income		12,920	5,192	167,050	77,329	88,749	96,069	448,231	21,991	38,480	48,138	347,786	96,376
21														
22	Total Customer-Related Costs @ Current Rates		68,000	28,078	1,051,345	422,500	440,396	491,323	2,207,963	91,948	176,984	250,437	1,618,042	481,673
23	Total Customers		9	2	513	214	94	44	61	44	30	14	32	27
24	Customer Costs (\$/customer/month)		\$ 624.81	\$ 985.21	\$ 170.87	\$ 164.40	\$ 391.15	\$ 921.19	\$ 3,023.43	\$ 176.13	\$ 487.05	\$ 1,539.83	\$ 4,195.44	\$ 1,486.65
25														
26														
27	Incremental Return @ Equalized ROR		(50,846)	(21,651)	(696,789)	(220,235)	(282,984)	(351,551)	(1,653,664)	(45,156)	(113,678)	(187,334)	(1,199,210)	(357,016)
28	Incremental Income Taxes		(18,360)	(7,818)	(251,610)	(79,527)	(102,186)	(126,945)	(597,138)	(16,306)	(41,049)	(67,646)	(433,035)	(128,919)
29														
30	Total Customer-Related Costs @ Equalized ROR		(1,207)	(1,391)	102,946	122,738	55,226	12,827	(42,840)	30,485	22,257	(4,544)	(14,203)	(4,262)
31	Total Customers		9	2	513	214	94	44	61	44	30	14	32	27
32	Customer Costs (\$/customer/month)		\$ (11.09)	\$ (48.79)	\$ 16.73	\$ 47.76	\$ 49.05	\$ 24.05	\$ (58.66)	\$ 58.40	\$ 61.25	\$ (27.94)	\$ (36.83)	\$ (13.15)
33														
34														
35	Incremental Return @ Proposed Rates		(4,991)	3,956	148,785	(63,330)	(66,751)	(45,456)	(225,453)	(33,604)	(36,874)	(16,076)	(240,940)	(46,126)
36	Incremental Income Taxes		(1,802)	1,428	53,726	(22,869)	(24,104)	(16,414)	(81,411)	(12,135)	(13,315)	(5,805)	(87,003)	(16,656)
37														
38	Total Customer-Related Costs @ Proposed Rates		61,207	33,463	1,253,857	336,301	349,540	429,452	1,901,099	46,208	126,794	228,556	1,290,099	418,892
39	Total Customers		9	2	513	214	94	44	61	44	30	14	32	27
40	Customer Costs (\$/customer/month)		\$ 562.39	\$ 1,174.13	\$ 203.79	\$ 130.86	\$ 310.45	\$ 805.19	\$ 2,603.23	\$ 88.51	\$ 348.93	\$ 1,405.30	\$ 3,345.11	\$ 1,292.88

KANSAS GAS SERVICE COMPANY													
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY													
TEST YEAR ENDING 12/31/2017													
SUMMARY OF DEMAND COSTS													
				General Service			Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small
		Total	Residential	Small	Large	Trans. Eligible	Generator	Sales	Supply	Resale	Resale	Transport	Transport
		Company	RS	GSS	GSL	GSTE	SGS	GIS	KGSSD	SSRk	SSR-BHK	STk	STt
1	Rate Base	410,577,708	273,660,807	27,398,230	37,282,627	6,321,448	47,745	27,876	118,416	42,644	748	15,968,861	9,321,495
2													
3	Return @ Existing Rates	18,118,080	4,531,610	1,990,679	2,284,883	360,327	73,706	87,389	5,078	26,778	64	2,498,780	922,112
4	O&M Expenses	54,905,628	35,297,437	3,554,633	4,819,875	815,702	7,391	7,239	10,699	1,520	27	2,796,992	1,275,662
5	Depreciation Expense	22,054,900	14,334,369	1,437,483	1,954,127	331,157	2,641	1,506	5,266	(416)	(7)	1,024,218	528,526
6	Taxes, Other	9,924,028	6,492,746	649,942	884,499	149,978	1,127	760	2,648	64	1	434,863	239,055
7													
8	Income Taxes:												
9													
10	State Income Taxes	7.00%	188,238	74,329	19,380	15,723	2,108	867	932	20	266	5	22,528
11	Federal Income Taxes	21.00%	525,184	207,377	54,069	43,868	5,881	2,419	2,599	56	743	13	62,852
12													
13	Total Income Taxes	713,422	281,705	73,449	59,592	7,989	3,286	3,531	76	1,009	17	85,380	27,849
14													
15	Adjustments to After-Tax Income:												
16													
17	Amortization	4,198,619	1,657,887	432,258	350,707	47,017	19,341	20,782	449	5,938	102	502,476	163,898
18	Other	(52,044)	(20,550)	(5,358)	(4,347)	(583)	(240)	(258)	(6)	(74)	(1)	(6,228)	(2,032)
19													
20	Total Adjustments to After-Tax Income	4,146,576	1,637,337	426,900	346,360	46,434	19,101	20,524	443	5,865	101	496,248	161,867
21													
22	Total Demand-Related Costs	109,862,634	62,575,204	8,133,085	10,349,335	1,711,587	107,252	120,948	24,209	34,821	203	7,336,480	3,155,070
23	Total Customers	638,736	583,050	36,896	11,621	500	676	214	1	7	1	3,483	1,203
24	Customer Costs (\$/customer/month)	\$ 14.33	\$ 8.94	\$ 18.37	\$ 74.21	\$ 285.39	\$ 13.22	\$ 47.12	\$ 2,017.45	\$ 395.78	\$ 16.95	\$ 175.55	\$ 218.54
25													
26													
27	Incremental Return @ Equalized ROR	13,527,608	16,561,070	121,067	588,713	126,905	(70,026)	(85,240)	4,049	(23,491)	(7)	(1,267,964)	(203,649)
28	Incremental Income Taxes	4,884,816	5,980,199	43,717	212,584	45,825	(25,286)	(30,780)	1,462	(8,483)	(2)	(457,862)	(73,537)
29													
30	Total Demand-Related Costs @ Equalized ROR	128,275,058	85,116,473	8,297,869	11,150,632	1,884,318	11,940	4,928	29,721	2,847	194	5,610,654	2,877,884
31	Customers	638,736	583,050	36,896	11,621	500	676	214	1	7	1	3,483	1,203
32	Dollars/Customer/Month	\$ 16.74	\$ 12.17	\$ 18.74	\$ 79.96	\$ 314.19	\$ 1.47	\$ 1.92	\$ 2,476.76	\$ 32.36	\$ 16.18	\$ 134.25	\$ 199.34
33													
34													
35	Incremental Return @ Proposed Rates	13,527,608	10,413,994	93,612	1,485,223	238,553	(7,283)	17,890	3,782	860	(282)	246,742	160,415
36	Incremental Income Taxes	4,884,816	3,760,491	33,803	536,314	86,141	(2,630)	6,460	1,366	311	(102)	89,098	57,926
37													
38	Total Demand-Related Costs @ Proposed Rates	128,275,058	76,749,689	8,260,501	12,370,871	2,036,282	97,340	145,299	29,357	35,992	(180)	7,672,320	3,373,412
39	Customers	638,736	583,050	36,896	11,621	500	676	214	1	7	1	3,483	1,203
40	Dollars/Customer/Month	\$ 16.74	\$ 10.97	\$ 18.66	\$ 88.71	\$ 339.53	\$ 12.00	\$ 56.61	\$ 2,446.45	\$ 409.09	\$ (14.99)	\$ 183.58	\$ 233.66

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
SUMMARY OF DEMAND COSTS														
		CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTt-T1	Large Vol Transport LVTt-T2	Large Vol Transport LVTt-T3	Large Vol Transport LVTt-T4	Wholesale Transport WtT	
1	Rate Base	241,135	51,133	250,347	3,500,932	3,513,586	2,356,827	11,387,507	1,762,568	1,919,021	825,664	12,200,364	2,377,729	
2														
3	Return @ Existing Rates	44,922	16,858	494,994	313,880	352,061	345,322	1,628,461	110,225	163,501	164,320	1,353,627	348,502	
4	O&M Expenses	42,083	6,598	59,356	612,476	614,448	411,505	1,987,954	250,390	261,824	117,259	1,730,189	224,367	
5	Depreciation Expense	15,466	2,732	14,854	224,543	225,354	151,160	730,361	101,843	108,730	47,673	703,248	110,070	
6	Taxes, Other	6,562	1,288	7,164	95,317	95,655	64,145	309,919	45,591	49,187	21,353	315,374	56,792	
7														
8	Income Taxes:													
9														
10	State Income Taxes	7.00%	399	160	5,160	2,388	2,741	2,967	13,844	679	1,189	1,487	10,742	2,977
11	Federal Income Taxes	21.00%	1,113	447	14,395	6,664	7,648	8,279	38,625	1,895	3,316	4,148	29,970	8,305
12														
13	Total Income Taxes		1,512	608	19,555	9,052	10,389	11,246	52,470	2,574	4,504	5,635	40,711	11,282
14														
15	Adjustments to After-Tax Income:													
16														
17	Amortization	8,901	3,577	115,083	53,273	61,141	66,183	308,793	15,150	26,510	33,163	239,595	66,395	
18	Other	(110)	(44)	(1,427)	(660)	(758)	(820)	(3,828)	(188)	(329)	(411)	(2,970)	(823)	
19														
20	Total Adjustments to After-Tax Income	8,791	3,533	113,657	52,613	60,383	65,363	304,965	14,962	26,181	32,752	236,625	65,572	
21														
22	Total Demand-Related Costs	119,336	31,617	709,579	1,307,880	1,358,290	1,048,740	5,014,130	525,586	613,928	388,993	4,379,773	816,585	
23	Total Customers	9	2	513	214	94	44	61	44	30	14	32	27	
24	Customer Costs (\$/customer/month)	\$ 1,096.50	\$ 1,109.36	\$ 115.33	\$ 508.91	\$ 1,206.40	\$ 1,966.31	\$ 6,865.99	\$ 1,006.77	\$ 1,689.49	\$ 2,391.75	\$ 11,356.37	\$ 2,520.32	
25														
26														
27	Incremental Return @ Equalized ROR	(26,336)	(12,917)	(475,699)	(44,042)	(81,248)	(163,667)	(750,757)	25,626	(15,591)	(100,681)	(413,271)	(165,237)	
28	Incremental Income Taxes	(9,510)	(4,664)	(171,775)	(15,904)	(29,339)	(59,100)	(271,098)	9,254	(5,630)	(36,356)	(149,232)	(59,667)	
29														
30	Total Demand-Related Costs @ Equalized ROR	83,490	14,036	62,105	1,247,935	1,247,703	825,973	3,992,274	560,466	592,707	251,955	3,817,270	591,682	
31	Customers	9	2	513	214	94	44	61	44	30	14	32	27	
32	Dollars/Customer/Month	\$ 767.14	\$ 492.49	\$ 10.09	\$ 485.59	\$ 1,108.18	\$ 1,548.64	\$ 5,466.73	\$ 1,073.58	\$ 1,631.09	\$ 1,549.17	\$ 9,897.85	\$ 1,826.18	
33														
34														
35	Incremental Return @ Proposed Rates	4,863	4,506	99,609	62,712	65,871	44,592	220,962	33,486	36,664	15,839	238,712	46,286	
36	Incremental Income Taxes	1,756	1,627	35,969	22,645	23,786	16,102	79,789	12,092	13,239	5,719	86,199	16,714	
37														
38	Total Demand-Related Costs @ Proposed Rates	125,954	37,749	845,157	1,393,237	1,447,947	1,109,435	5,314,881	571,163	663,831	410,551	4,704,684	879,585	
39	Customers	9	2	513	214	94	44	61	44	30	14	32	27	
40	Dollars/Customer/Month	\$ 1,157.31	\$ 1,324.53	\$ 137.36	\$ 542.13	\$ 1,286.04	\$ 2,080.11	\$ 7,277.82	\$ 1,094.07	\$ 1,826.82	\$ 2,524.30	\$ 12,198.84	\$ 2,714.77	

KANSAS GAS SERVICE COMPANY													
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY													
TEST YEAR ENDING 12/31/2017													
SUMMARY OF COMMODITY COSTS													
				General Service									
		Total	Residential	Small	Large	Trans. Eligible	Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small
		Company	RS	GSS	GSL	GSTE	Generator	Sales	Supply	Resale	Resale	Transport	Transport
							SGS	GIS	KGSSD	SSRk	SSR-BHk	STk	STt
1	Rate Base	2,048,626	1,171,463	101,780	163,086	30,398	351	3,964	118	312	11	138,619	42,241
2													
3	Return @ Existing Rates	90,402	14,050	8,391	10,388	1,747	373	605	4	138	1	15,069	4,413
4	O&M Expenses	1,500,459	978,397	85,006	136,208	25,388	293	3,311	275	726	25	65,048	19,822
5	Depreciation Expense	177,623	109,870	9,083	11,918	2,122	60	283	5	12	1	10,780	3,295
6	Taxes, Other	105,655	64,464	5,601	8,974	1,673	19	218	12	33	1	5,923	1,805
7													
8	Income Taxes:												
9													
10	State Income Taxes	7.00%	939	371	97	78	11	4	5	0	1	112	37
11	Federal Income Taxes	21.00%	2,620	1,035	270	219	29	12	13	0	4	314	102
12													
13	Total Income Taxes	3,560	1,406	366	297	40	16	18	0	5	0	426	139
14													
15	Adjustments to After-Tax Income:												
16													
17	Amortization	20,950	8,272	2,157	1,750	235	97	104	2	30	1	2,507	818
18	Other	(260)	(103)	(27)	(22)	(3)	(1)	(1)	(0)	(0)	(0)	(31)	(10)
19													
20	Total Adjustments to After-Tax Income	20,690	8,170	2,130	1,728	232	95	102	2	29	1	2,476	808
21													
22	Total Commodity-Related Costs @ Realized Return	1,898,389	1,176,357	110,578	169,515	31,202	856	4,536	299	944	29	99,721	30,281
23	Throughput	76,887,238	40,611,980	3,528,494	5,653,823	1,053,833	12,164	137,416	20,808	54,950	1,911	5,982,320	1,822,971
24	Commodity-Related Costs (\$/dth)	\$ 0.0247	\$ 0.0290	\$ 0.0313	\$ 0.0300	\$ 0.0296	\$ 0.0704	\$ 0.0330	\$ 0.0144	\$ 0.0172	\$ 0.0151	\$ 0.0167	\$ 0.0166
25													
26													
27	Incremental Return @ Equalized ROR	67,498	76,242	(547)	2,182	596	(346)	(299)	5	(114)	0	(4,385)	(1,157)
28	Incremental Income Taxes	24,373	27,531	(197)	788	215	(125)	(108)	2	(41)	0	(1,583)	(418)
29													
30	Total Commodity-Related Costs @ Equalized ROR	1,990,260	1,280,129	109,834	172,484	32,012	386	4,129	305	789	29	93,753	28,707
31	Throughput	76,887,238	40,611,980	3,528,494	5,653,823	1,053,833	12,164	137,416	20,808	54,950	1,911	5,982,320	1,822,971
32	Commodity-Related Costs (\$/dth)	\$ 0.0022	\$ 0.0026	\$ 0.0026	\$ 0.0025	\$ 0.0025	\$ 0.0026	\$ 0.0025	\$ 0.0012	\$ 0.0012	\$ 0.0013	\$ 0.0013	\$ 0.0013
33													
34													
35	Incremental Return @ Proposed Rates	67,498	45,570	(684)	6,655	1,153	(33)	215	3	8	(1)	3,173	660
36	Incremental Income Taxes	24,373	16,455	(247)	2,403	416	(12)	78	1	3	(0)	1,146	238
37													
38	Total Commodity-Related Costs @ Proposed Rates	1,990,260	1,238,382	109,648	178,573	32,770	812	4,829	304	954	27	104,040	31,179
39	Throughput	76,887,238	40,611,980	3,528,494	5,653,823	1,053,833	12,164	137,416	20,808	54,950	1,911	5,982,320	1,822,971
40	Commodity-Related Costs (\$/dth)	\$ 0.0022	\$ 0.0025	\$ 0.0026	\$ 0.0026	\$ 0.0026	\$ 0.0056	\$ 0.0029	\$ 0.0012	\$ 0.0014	\$ 0.0012	\$ 0.0014	\$ 0.0014

KANSAS GAS SERVICE COMPANY													
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY													
TEST YEAR ENDING 12/31/2017													
SUMMARY OF COMMODITY COSTS													
		CNG	CNG	Irrigation	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Wholesale
		Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport
		CNGk	CNGt	GIT	LVTk-T1	LVTk-T2	LVTk-T3	LVTk-T4	LVTt-T1	LVTt-T2	LVTt-T3	LVTt-T4	WTt
1	Rate Base	4,361	1,401	19,645	26,747	34,274	31,223	159,667	7,324	10,399	8,909	92,334	0
2													
3	Return @ Existing Rates	363	135	3,282	1,976	2,495	2,582	12,664	485	852	1,031	8,142	1,215
4	O&M Expenses	2,046	658	9,218	12,551	16,083	14,652	74,925	3,437	4,880	4,181	43,329	0
5	Depreciation Expense	332	107	1,520	2,051	2,614	2,377	12,139	560	793	678	7,019	2
6	Taxes, Other	186	60	839	1,143	1,464	1,334	6,822	313	444	381	3,945	0
7													
8	Income Taxes:												
9													
10	State Income Taxes	7.00%	2	1	26	12	14	69	3	6	7	54	15
11	Federal Income Taxes	21.00%	6	2	72	33	38	41	193	9	17	150	41
12													
13	Total Income Taxes		8	3	98	45	52	56	262	13	22	203	56
14													
15	Adjustments to After-Tax Income:												
16													
17	Amortization	44	18	574	266	305	330	1,541	76	132	165	1,195	331
18	Other	(1)	(0)	(7)	(3)	(4)	(4)	(19)	(1)	(2)	(2)	(15)	(4)
19													
20	Total Adjustments to After-Tax Income	44	18	567	263	301	326	1,522	75	131	163	1,181	327
21													
22	Total Commodity-Related Costs @ Realized Return	2,980	979	15,524	18,029	23,010	21,327	108,333	4,883	7,123	6,463	63,819	1,601
23	Throughput	188,197	60,476	847,802	1,154,296	1,479,155	1,347,463	6,890,667	316,079	448,775	384,502	3,984,817	904,340
24	Commodity-Related Costs (\$/dth)	\$ 0.0158	\$ 0.0162	\$ 0.0183	\$ 0.0156	\$ 0.0156	\$ 0.0158	\$ 0.0157	\$ 0.0154	\$ 0.0159	\$ 0.0168	\$ 0.0160	\$ 0.0018
25													
26													
27	Incremental Return @ Equalized ROR	(27)	(27)	(1,767)	86	146	(175)	(357)	79	(51)	(345)	(1,026)	(1,215)
28	Incremental Income Taxes	(10)	(10)	(638)	31	53	(63)	(129)	29	(18)	(124)	(370)	(439)
29													
30	Total Commodity-Related Costs @ Equalized ROR	2,942	943	13,119	18,146	23,209	21,088	107,847	4,991	7,054	5,994	62,423	(53)
31	Throughput	188,197	60,476	847,802	1,154,296	1,479,155	1,347,463	6,890,667	316,079	448,775	384,502	3,984,817	904,340
32	Commodity-Related Costs (\$/dth)	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ 0.0013	\$ (0.0000)
33													
34													
35	Incremental Return @ Proposed Rates	128	60	1,103	619	880	864	4,491	119	210	237	2,228	(160)
36	Incremental Income Taxes	46	22	398	223	318	312	1,622	43	76	86	804	(58)
37													
38	Total Commodity-Related Costs @ Proposed Rates	3,154	1,061	17,026	18,871	24,208	22,503	114,446	5,044	7,409	6,785	66,851	1,383
39	Throughput	188,197	60,476	847,802	1,154,296	1,479,155	1,347,463	6,890,667	316,079	448,775	384,502	3,984,817	904,340
40	Commodity-Related Costs (\$/dth)	\$ 0.0014	\$ 0.0015	\$ 0.0017	\$ 0.0014	\$ 0.0014	\$ 0.0014	\$ 0.0014	\$ 0.0013	\$ 0.0014	\$ 0.0015	\$ 0.0014	\$ 0.0001

KANSAS GAS SERVICE COMPANY													
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY													
TEST YEAR ENDING 12/31/2017													
TOTAL COST OF SERVICE													
				General Service			Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small
		Total	Residential	Small	Large	Trans. Eligible	Generator	Sales	Supply	Resale	Resale	Transport	Transport
		Company	RS	GSS	GSL	GSTE	SGS	GIS	KGSSD	SSRk	SSR-BHk	STk	STt
1	Rate Base	1,016,084,260	824,324,506	60,772,850	48,999,475	6,814,844	665,188	197,400	116,944	40,925	23,001	20,985,954	11,019,421
2													
3	Return @ Existing Rates	78,315,710	17,704,963	4,616,185	3,745,284	502,105	206,544	221,933	4,794	63,418	1,093	5,366,059	1,750,307
4	O&M Expenses	152,960,859	122,718,305	10,380,795	7,129,249	939,436	108,977	41,066	11,133	3,263	1,184	3,443,487	1,498,111
5	Depreciation Expense	63,306,825	51,464,736	3,881,284	2,880,451	384,368	48,146	16,180	5,408	287	1,361	1,384,957	652,806
6	Taxes, Other	26,480,941	21,366,981	1,658,981	1,260,996	171,585	19,203	6,653	2,711	358	497	574,780	287,228
7													
8	Income Taxes:												
9													
10	State Income Taxes	465,845	183,946	47,960	38,912	5,217	2,146	2,306	50	659	11	55,751	18,185
11	Federal Income Taxes	1,299,709	513,209	133,808	108,564	14,554	5,987	6,433	139	1,838	32	155,545	50,736
12													
13	Total Income Taxes	1,765,554	697,155	181,768	147,475	19,771	8,133	8,739	189	2,497	43	211,295	68,921
14													
15	Adjustments to After-Tax Income:												
16													
17	Amortization	10,390,605	4,102,885	1,069,738	867,919	116,356	47,864	51,430	1,111	14,696	253	1,243,511	405,610
18	Other	(128,796)	(50,857)	(13,260)	(10,758)	(1,442)	(593)	(637)	(14)	(182)	(3)	(15,414)	(5,028)
19													
20	Total Adjustments to After-Tax Income	10,261,809	4,052,028	1,056,478	857,161	114,914	47,270	50,793	1,097	14,514	250	1,228,098	400,582
21													
22	Total Costs @ Realized ROR	299,614,018	218,004,170	21,775,491	16,020,616	2,132,178	438,275	345,364	25,333	84,338	4,428	12,208,676	4,657,954
23													
24													
25	Incremental Return @ Equalized ROR	33,477,681	45,830,672	67,943	31,399	23,156	(155,274)	(206,718)	4,219	(60,263)	680	(3,748,546)	(900,974)
26	Incremental Income Taxes	12,088,783	16,549,445	24,534	11,338	8,362	(56,069)	(74,646)	1,524	(21,761)	246	(1,353,599)	(325,341)
27													
28	Total Costs @ Equalized ROR	345,180,481	280,384,287	21,867,969	16,063,354	2,163,696	226,931	64,000	31,075	2,313	5,354	7,106,532	3,431,639
29													
30													
31	Incremental Return @ Proposed Rates	33,477,681	30,618,088	0	2,250,052	299,459	0	48,505	3,558	0	(0)	0	0
32	Incremental Income Taxes	12,088,783	11,056,185	0	812,493	108,134	0	17,515	1,285	0	0	0	0
33													
34	Total Costs @ Proposed Rates	345,180,481	259,678,442	21,775,491	19,083,161	2,539,771	438,275	411,385	30,175	84,338	4,428	12,208,676	4,657,954

KANSAS GAS SERVICE COMPANY													
CUSTOMER/DEMAND CLASS COST OF													
TEST YEAR ENDING 12/31/2017													
TOTAL COST OF SERVICE													
		CNG	CNG	Irrigation	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Wholesale
		Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport
		CNGk	CNGt	GI	LVTk-T1	LVTk-T2	LVTk-T3	LVTk-T4	LVTt-T1	LVTt-T2	LVTt-T3	LVTt-T4	WTt
1	Rate Base	231,518	46,762	710,247	3,953,601	3,747,603	2,483,183	11,584,564	1,846,762	1,995,215	853,641	12,262,941	2,407,716
2													
3	Return @ Existing Rates	95,054	38,198	1,228,998	568,918	652,936	706,787	3,297,671	161,792	283,103	354,155	2,558,686	709,045
4	O&M Expenses	45,666	7,651	142,198	664,286	648,648	435,473	2,074,772	261,303	272,923	123,974	1,779,842	229,126
5	Depreciation Expense	16,934	3,124	53,181	255,346	242,454	161,211	752,848	107,942	114,563	50,302	715,502	113,435
6	Taxes, Other	7,174	1,455	22,404	107,251	102,514	68,330	320,567	47,980	51,506	22,463	321,263	58,059
7													
8	Income Taxes:												
9													
10	State Income Taxes	988	397	12,769	5,911	6,784	7,343	34,261	1,681	2,941	3,680	26,584	7,367
11	Federal Income Taxes	2,755	1,107	35,625	16,491	18,926	20,487	95,589	4,690	8,206	10,266	74,168	20,553
12													
13	Total Income Taxes	3,743	1,504	48,393	22,402	25,710	27,831	129,850	6,371	11,148	13,945	100,751	27,920
14													
15	Adjustments to After-Tax Income:												
16													
17	Amortization	22,027	8,852	284,804	131,839	151,309	163,788	764,191	37,493	65,605	82,071	592,941	164,312
18	Other	(273)	(110)	(3,530)	(1,634)	(1,876)	(2,030)	(9,472)	(465)	(813)	(1,017)	(7,350)	(2,037)
19													
20	Total Adjustments to After-Tax Income	21,754	8,742	281,273	130,205	149,434	161,758	754,718	37,028	64,792	81,053	585,591	162,275
21													
22	Total Costs @ Realized ROR	190,316	60,675	1,776,448	1,748,409	1,821,696	1,561,390	7,330,426	622,416	798,034	645,892	6,061,634	1,299,860
23													
24													
25	Incremental Return @ Equalized ROR	(77,210)	(34,594)	(1,174,255)	(264,191)	(364,086)	(515,393)	(2,404,779)	(19,451)	(129,319)	(288,360)	(1,613,507)	(523,468)
26	Incremental Income Taxes	(27,880)	(12,492)	(424,023)	(95,399)	(131,471)	(186,108)	(868,365)	(7,024)	(46,697)	(104,127)	(582,637)	(189,024)
27													
28	Total Costs @ Equalized ROR	85,226	13,588	178,170	1,388,819	1,326,138	859,888	4,057,282	595,941	622,017	253,405	3,865,490	587,367
29													
30													
31	Incremental Return @ Proposed Rates	(0)	8,522	249,497	0	0	0	0	(0)	0	0	0	0
32	Incremental Income Taxes	(0)	3,077	90,093	0	0	0	0	(0)	0	0	(0)	0
33													
34	Total Costs @ Proposed Rates	190,316	72,273	2,116,039	1,748,409	1,821,696	1,561,390	7,330,426	622,416	798,034	645,892	6,061,634	1,299,860

KANSAS GAS SERVICE COMPANY								
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY								
TEST YEAR ENDING 12/31/2017								
CLASSIFICATION OF GROSS PLANT IN SERVICE								
				Test Year	Classif.	Classif.	Customer	Demand
				\$	Factor	Basis	\$	\$
								Commodity
								\$
1			Intangible Plant:					
2								
3			Organization	0	99.0	-	-	-
4			Franchises and Consents	6,045	7.0	PST&D Plant	3,754	2,277
5			Miscellaneous Intangible Plant	0	99.0	-	-	-
6								
7			Total Intangible Plant	6,045			3,754	2,277
8								14
9			Production Plant	852,915	4.2	Load Factor	-	493,675
10								359,240
11			Storage Plant	0	99.0	-	-	-
12								-
13			Transmission					
14								
15			Land and land rights	826,609	2.0	Demand	-	826,609
16			Rights-of-way	11,907,924	2.0	Demand	-	11,907,924
17			Structures and imp. - compressor stations	4,817,143	2.0	Demand	-	4,817,143
18			Structures and imp. - meas. & reg. stations	1,394,765	2.0	Demand	-	1,394,765
19			Mains	219,426,814	2.0	Demand	-	219,426,814
20			Compressor station equipment	14,394,955	2.0	Demand	-	14,394,955
21			Measuring and regulating station equip.	20,802,245	2.0	Demand	-	20,802,245
22			Other Equipment	(2,957)	2.0	Demand	-	(2,957)
23								-
24			Total Transmission Plant	273,567,498			0	273,567,498
25								0

KANSAS GAS SERVICE COMPANY								
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY								
TEST YEAR ENDING 12/31/2017								
CLASSIFICATION OF GROSS PLANT IN SERVICE								
				Test Year	Classif.	Classif.	Customer	Demand
				\$	Factor	Basis	\$	\$
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								

[illegible]

KANSAS GAS SERVICE COMPANY								
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY								
TEST YEAR ENDING 12/31/2017								
CLASSIFICATION OF RESERVE FOR DEPRECIATION AND AMORTIZATION								
				Test Year	Classif.	Classif.	Customer	Demand
				\$	Factor	Basis	\$	\$
1	Intangible Plant:							
2								
3		Organization		0	99.0	-	-	-
4		Miscellaneous Intangible Plant		(329)	7.0	PST&D Plant	(204)	(124)
5		Leasehold Improvements		3,242,030	7.2	Distribution Plant - X	2,391,640	842,188
6								
7	Total Intangible Plant			3,241,701			2,391,436	842,064
8								
9		Production Plant		649,667	4.2	Load Factor	-	376,033
10								
11		Storage Plant		0	99.0	-	-	-
12								
13	Transmission							
14								
15		Rights-of-way		3,667,429	2.0	Demand	-	3,667,429
16		Structures and imp. - compressor stations		3,838,400	2.0	Demand	-	3,838,400
17		Structures and imp. - meas. & reg. stations		1,045,698	2.0	Demand	-	1,045,698
18		Mains		59,068,378	2.0	Demand	-	59,068,378
19		Compressor station equipment		11,054,255	2.0	Demand	-	11,054,255
20		Measuring and regulating station equipment		5,923,449	2.0	Demand	-	5,923,449
21		Other Equipment		2,977	2.0	Demand	-	2,977
22								
23	Total Transmission Plant			84,600,586			0	84,600,586
24								

[illegible]

KANSAS GAS SERVICE COMPANY								
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY								
TEST YEAR ENDING 12/31/2017								
CLASSIFICATION OF RESERVE FOR DEPRECIATION AND AMORTIZATION								
				Test Year	Classif.	Classif.	Customer	Demand
				\$	Factor	Basis	\$	\$
45		General Plant:						
46								
47		Land		(21,240)	7.0	PST&D Plant	(13,191)	(7,999)
48		Structures and improvements - owned		12,291,782	7.0	PST&D Plant	7,633,714	4,629,346
49		Office furniture and equipment		2,654,005	12.0	Labor - A&G	1,651,157	973,409
50		Computers and other electronic equipment		5,527,516	12.0	Labor - A&G	3,438,877	2,027,327
51		Transportation equipment		11,786,528	12.0	Labor - A&G	7,332,846	4,322,945
52		Stores equipment		(75,712)	7.0	PST&D Plant	(47,020)	(28,515)
53		Tools Shop and Garage Equipment		1,568,477	7.0	PST&D Plant	974,090	590,722
54		Laboratory equipment		(222,523)	7.0	PST&D Plant	(138,196)	(83,807)
55		Power operated equipment		7,273,453	7.0	PST&D Plant	4,517,120	2,739,337
56		Communication equipment		2,320,895	12.0	Labor - A&G	1,443,917	851,235
57		Miscellaneous equipment		131,775	7.0	PST&D Plant	81,838	49,629
58								
59		Total General Plant		43,234,956			26,875,152	16,063,629
60								
61		Corporate Allocated Plant		16,294,218	7.4	General Plant	10,127,023	6,068,170
62								
63		TOTAL ACCUMULATED DEPRECIATION		618,264,167			386,560,810	229,281,153

KANSAS GAS SERVICE COMPANY								
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY								
TEST YEAR ENDING 12/31/2017								
CLASSIFICATION OF OTHER RATE BASE								
				Test Year	Classif.	Classif.	Customer	Demand
				\$	Factor	Basis	\$	\$
1			Working Capital:					
2								
3			Prepayments	5,415,598	11.0	O&M less A&G	3,466,502	1,898,095
4			Long Term Prepayments	522,245	11.0	O&M less A&G	334,287	183,040
5			Materials and Supplies	8,809,676	11.0	O&M less A&G	5,639,038	3,087,674
6			Gas Storage Inventory & Line Pack	27,375,068	2.0	Demand	-	27,375,068
7			Cash Working Capital	-	99.0	-	-	-
8			Other	-	99.0	-	-	-
9								
10			Total Working Capital	42,122,587			9,439,827	32,543,877
11								
12			Rate Base Adjustments:					
13								
14			Accumulated Deferred Income Taxes	293,711,220	8.0	Gross Plant	182,419,935	110,501,790
15			Investment Tax Credit Adjustment	0	99.0	-	-	-
16			Customer Deposits	18,742,198	1.0	Customer	18,742,198	-
17			CIAC - Reimbursables	0	99.0	-	-	-
18			Customer Advances for Construction	10,536,008	6.6	Distribution Plant	7,772,397	2,736,958
19			Other	0	99.0	-	-	-
20								
21			Total Rate Base Adjustments	322,989,427			208,934,530	113,238,748
22								
23			TOTAL OTHER RB	(280,866,840)			(199,494,703)	(80,694,871)
								(677,265)

KANSAS GAS SERVICE COMPANY							
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY							
TEST YEAR ENDING 12/31/2017							
CLASSIFICATION OF O&M EXPENSE							

KANSAS GAS SERVICE COMPANY							
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY							
TEST YEAR ENDING 12/31/2017							
CLASSIFICATION OF O&M EXPENSE							
			Test Year	Classif.	Classif.	Customer	Demand
			\$	Factor	Basis	\$	\$
							Commodity
							\$
35	Underground Storage:						
36	Operation						
37	Op., Sup., & Eng.	0	99.0	-		-	-
38	Maps & Records	167	2.0	Demand		-	167
39	Wells Expense	0	99.0	-		-	-
40	Lines Expense	0	99.0	-		-	-
41	Compressor Station Expense	0	99.0	-		-	-
42	Compressor Station Fuel & Power	62,600	2.0	Demand		-	62,600
43	Meas. & Regul. Station Expenses	0	99.0	-		-	-
44	Purification Expenses	69	2.0	Demand		-	69
45	Exploration & Development	0	99.0	-		-	-
46	Gas Losses	0	99.0	-		-	-
47	Other Expenses	0	99.0	-		-	-
48	Storage Well Royalties	0	99.0	-		-	-
49	Rents	0	99.0	-		-	-
50	Maintenance						
51	Maint. Sup., & Eng.	0	99.0	-		-	-
52	Structures and Improvements	0	99.0	-		-	-
53	Reservoirs & Wells Maintenance	0	99.0	-		-	-
54	Line Maintenance	0	99.0	-		-	-
55	Compressor Station Equip Maint	0	99.0	-		-	-
56	Meas. & Regul. Station Equip Maint	0	99.0	-		-	-
57	Purification Equipment Maintenance	0	99.0	-		-	-
58	Other Equipment Maintenance	0	99.0	-		-	-
59	Total Underground Storage Expense	62,836				0	62,836
60							0

KANSAS GAS SERVICE COMPANY							
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY							
TEST YEAR ENDING 12/31/2017							
CLASSIFICATION OF O&M EXPENSE							
			Test Year	Classif.	Classif.	Customer	Demand
			\$	Factor	Basis	\$	\$
							Commodity
							\$
84	Distribution:						
85	Operation						
86	Supervision & Eng.	1,573,727	14.2	Distribution O&M - Operations	1,226,978	341,340	5,409
87	Load Dispatching	621,543	2.0	Demand	-	621,543	-
88	Mains & Services Expense	11,168,791	5.0	Mains & Services	7,801,064	3,367,726	-
89	Meas. & Reg Station Expense - Gen	1,647,846	2.0	Demand	-	1,647,846	-
90	Meas. & Reg Station Expense - Gen GSS	0	1.0	Customer	-	-	-
90	Meas. & Reg Station Expense - Ind	562,638	1.0	Customer	562,638	-	-
91	Meas. & Reg Station Expense - City Gate	233,655	4.2	Load Factor	-	135,242	98,413
92	Meter & House Regulator Expense	7,932,753	1.0	Customer	7,932,753	-	-
93	Customer Installations Expense	5,310,354	1.0	Customer	5,310,354	-	-
94	Other Expenses	4,371,576	6.6	Distribution Plant	3,224,905	1,135,612	11,059
95	Rents	1,982	6.6	Distribution Plant	1,462	515	5
96	Maintenance						
97	Supervision & Eng.	333,991	14.4	Distribution O&M - Maintenance	88,897	239,013	6,082
98	Structure & Improv.	501,612	2.0	Demand	-	501,612	-
99	Mains	9,845,977	2.0	Demand	-	9,845,977	-
100	Meas. & Reg Station Expense - Gen	708,786	2.0	Demand	-	708,786	-
101	Meas. & Reg Station Expense - Ind	259,808	1.0	Customer	259,808	-	-
102	Meas. & Reg Station Expense - City Gate	692,210	4.2	Load Factor	-	400,658	291,552
103	Services	2,125,014	1.0	Customer	2,125,014	-	-
104	Meters & House Regulators	1,876,857	1.0	Customer	1,876,857	-	-
105	Maintenance of Other Equipment	1,179	2.0	Demand	-	1,179	-
106	Total Distribution	49,770,301			30,410,732	18,947,049	412,521
107							
108	Customer Accounts:						
109	Operation						
110	Supervision	451,783	1.0	Customer	451,783	-	-
111	Meter Reading Expenses	3,958,840	1.0	Customer	3,958,840	-	-
112	Customer Records and Collection Exp.	10,635,800	1.0	Customer	10,635,800	-	-
113	Uncollectible Accounts	2,766,167	1.0	Customer	2,766,167	-	-
114	Miscellaneous Customer Accounts Exp.	835,232	1.0	Customer	835,232	-	-
115	Total Customer Accounts	18,647,822			18,647,822	0	0
116							

KANSAS GAS SERVICE COMPANY							
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY							
TEST YEAR ENDING 12/31/2017							
CLASSIFICATION OF O&M EXPENSE							
		Test Year	Classif.	Classif.	Customer	Demand	Commodity
		\$	Factor	Basis	\$	\$	\$
117	Customer Service and Information:						
118	Operation						
119	Supervision	0	99.0	-	-	-	-
120	Customer Assistance Expenses	221,137	1.0	Customer	221,137	-	-
121	Information and Instructional Expenses	0	99.0	-	-	-	-
122	Misc. Customer Service and Information	0	99.0	-	-	-	-
123	Total Customer Service and Information	221,137			221,137	0	0
124							
125	Sales:						
126	Operation						
127	Supervision	0	99.0	-	-	-	-
128	Demonstration & Selling Expenses	630,264	1.0	Customer	630,264	-	-
129	Advertising Expenses	0	99.0	-	-	-	-
130	Miscellaneous Sales Expenses	0	99.0	-	-	-	-
131	Total Sales	630,264			630,264	0	0
132							
133	Administrative & General:						
134	Operation						
135	Salaries	11,475,951	12.0	Labor - A&G	7,139,625	4,209,035	127,292
136	Office Supplies and Expenses	3,834,828	7.0	PST&D Plant	2,381,589	1,444,277	8,961
137	Administrative Expense Transfer	(2,576,070)	12.0	Labor - A&G	(1,602,671)	(944,825)	(28,574)
138	Outside Services Employed	913,563	12.0	Labor - A&G	568,362	335,068	10,133
139	Property Insurance	517,336	7.0	PST&D Plant	321,288	194,840	1,209
140	Injuries and Damages	1,931,364	7.0	PST&D Plant	1,199,458	727,393	4,513
141	Pensions & Benefits	23,379,832	12.0	Labor - A&G	14,545,480	8,575,021	259,331
142	Franchise Requirements	18,607	7.0	PST&D Plant	11,556	7,008	43
143	Regulatory Expense	644,725	12.0	Labor - A&G	401,108	236,466	7,151
144	Duplicate Charges - Credit	(1,419,587)	12.0	Labor - A&G	(883,179)	(520,662)	(15,746)
145	General Advertising Expenses	45,293	7.0	PST&D Plant	28,129	17,058	106
146	Miscellaneous General Expenses	34,220,083	12.0	Labor - A&G	21,289,612	12,550,899	379,572
147	Rents	1,533,008	7.4	General Plant	952,780	570,911	9,316
148	Maintenance						
149	Maintenance of General Plant	469,308	7.4	General Plant	291,680	174,776	2,852
150	Total A&G	74,988,242			46,644,817	27,577,265	766,160
151							
152	Other Utility Plant Related O&M	0	99.0	-	-	-	-
153							
154	TOTAL O&M EXPENSE	152,960,859			96,554,772	54,905,628	1,500,459

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KANSAS GAS SERVICE COMPANY								
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY								
TEST YEAR ENDING 12/31/2017								
CLASSIFICATION OF PAYROLL								
			Test Year	Classif.	Classif.	Customer	Demand	Commodity
			\$	Factor	Basis	\$	\$	\$
84	Distribution:							
85	Operation							
86		Supervision & Eng.	1,531,445	14.2	Distribution O&M - Operations	1,194,012	332,169	5,264
87		Load Dispatching	608,718	14.2	Distribution O&M - Operations	474,596	132,030	2,092
88		Mains & Services Expense	4,394,562	14.2	Distribution O&M - Operations	3,426,281	953,177	15,105
89		Meas. & Reg Station Expense - Gen	1,031,860	14.2	Distribution O&M - Operations	804,504	223,809	3,547
90		Meas. & Reg Station Expense - Gen GSS	-	99.0	-	-	-	-
90		Meas. & Reg Station Expense - Ind	430,134	14.2	Distribution O&M - Operations	335,360	93,296	1,478
91		Meas. & Reg Station Expense - City Gate	101,674	14.2	Distribution O&M - Operations	79,271	22,053	349
92		Meter & House Regulator Expense	6,159,403	14.2	Distribution O&M - Operations	4,802,263	1,335,969	21,171
93		Customer Installations Expense	4,765,243	14.2	Distribution O&M - Operations	3,715,288	1,033,577	16,379
94		Other Expenses	1,398,756	14.2	Distribution O&M - Operations	1,090,559	303,389	4,808
95		Rents	-	99.0	-	-	-	-
96	Maintenance							
97		Supervision & Eng.	325,135	14.4	Distribution O&M - Maintenance	86,539	232,675	5,920
98		Structure & Improv.	21,567	14.4	Distribution O&M - Maintenance	5,740	15,434	393
99		Mains	5,787,692	14.4	Distribution O&M - Maintenance	1,540,479	4,141,825	105,388
100		Meas. & Reg Station Expense - Gen	539,122	14.4	Distribution O&M - Maintenance	143,495	385,810	9,817
101		Meas. & Reg Station Expense - Ind	191,104	14.4	Distribution O&M - Maintenance	50,865	136,759	3,480
102		Meas. & Reg Station Expense - City Gate	517,949	14.4	Distribution O&M - Maintenance	137,860	370,658	9,431
103		Services	1,443,093	14.4	Distribution O&M - Maintenance	384,100	1,032,716	26,277
104		Meters & House Regulators	1,507,869	14.4	Distribution O&M - Maintenance	401,341	1,079,071	27,457
105		Maintenance of Other Equipment	461	14.4	Distribution O&M - Maintenance	123	330	8
106	Total Distribution		30,755,787			18,672,676	11,824,746	258,365
107								
108	Customer Accounts:							
109	Operation							
110		Supervision	435,448	1.0	Customer	435,448	-	-
111		Meter Reading Expenses	1,354,552	1.0	Customer	1,354,552	-	-
112		Meter Reading Expenses - GSS	-	1.0	Customer	-	-	-
113		Customer Records and Collection Exp.	5,550,499	1.0	Customer	5,550,499	-	-
114		Uncollectible Accounts	-	1.0	Customer	-	-	-
115		Miscellaneous Customer Accounts Exp.	699,817	1.0	Customer	699,817	-	-
116	Total Customer Accounts		8,040,317			8,040,317	0	0
117								

KANSAS GAS SERVICE COMPANY								
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY								
TEST YEAR ENDING 12/31/2017								
CLASSIFICATION OF PAYROLL								
				Test Year	Classif.	Classif.	Customer	Demand
				\$	Factor	Basis	\$	\$
							\$	\$
118	Customer Service and Information:							
119	Operation							
120		Supervision		-	1.0	Customer	-	-
121		Customer Assistance Expenses		152,826	1.0	Customer	152,826	-
122		Information and Instructional Expenses		-	1.0	Customer	-	-
123		Misc. Customer Service and Information		-	1.0	Customer	-	-
124		Total Customer Service and Information		152,826			152,826	0
125								
126	Sales:							
127	Operation							
128		Supervision		-	1.0	Customer	-	-
129		Demonstration & Selling Expenses		470,454	1.0	Customer	470,454	-
130		Advertising Expenses		-	1.0	Customer	-	-
131		Miscellaneous Sales Expenses		-	1.0	Customer	-	-
132		Total Sales		470,454			470,454	0
133								
134	Administrative & General:							
135	Operation							
136		Salaries		8,103,239	12.0	Labor - A&G	5,041,332	2,972,025
137		Office Supplies and Expenses		-	99.0	-	-	-
138		Administrative Expense Transfer		-	99.0	-	-	-
139		Outside Services Employed		-	99.0	-	-	-
140		Property Insurance		-	99.0	-	-	-
141		Injuries and Damages		-	99.0	-	-	-
142		Pensions & Benefits		-	99.0	-	-	-
143		Franchise Requirements		-	99.0	-	-	-
144		Regulatory Expense		-	99.0	-	-	-
145		Duplicate Charges - Credit		-	99.0	-	-	-
146		General Advertising Expenses		-	99.0	-	-	-
147		Miscellaneous General Expenses		-	99.0	-	-	-
148		Rents		-	99.0	-	-	-
149	Maintenance							
150		Maintenance of General Plant		-	99.0	-	-	-
151		Total A&G		8,103,239			5,041,332	2,972,025
152								
153	Other Utility Plant Related Payroll			-	99.0	-	-	-
154								
155	TOTAL O&M EXPENSES - PAYROLL			52,042,487			32,377,605	19,087,622
								577,259

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KANSAS GAS SERVICE COMPANY								
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY								
TEST YEAR ENDING 12/31/2017								
CLASSIFICATION OF DEPRECIATION EXPENSE								
				Test Year	Classif.	Classif.	Customer	Demand
				\$	Factor	Basis	\$	\$
								Commodity
								\$
19			Distribution:					
20								
21			Land & Land rights	0	99.0	-	-	-
22			Rights of way	0	99.0	-	-	-
23			Structures	0	99.0	-	-	-
24			Mains	0	99.0	-	-	-
25			Mains - Metallic	0	99.0	-	-	-
26			M&R station equipment - general	0	99.0	-	-	-
27			M&R station equipment - city gate	0	99.0	-	-	-
28			Services	0	99.0	-	-	-
29			Services-Metallic	0	99.0	-	-	-
30			Meters	0	99.0	-	-	-
31			Meter installations	0	99.0	-	-	-
32			House regulators	0	99.0	-	-	-
33			Other Property on Customer Premises	0	99.0	-	-	-
34			Other equipment	48,806,372	6.6	Distribution Plant	36,004,386	12,678,519
35								
36			Total Distribution Plant	48,806,372			36,004,386	12,678,519
37								

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KANSAS GAS SERVICE COMPANY							
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY							
TEST YEAR ENDING 12/31/2017							
CLASSIFICATION OF TAXES, OTHER THAN INCOME & NET DEDUCTIONS FOR INCOME TAX							
			Test Year	Classif.	Classif.	Customer	Demand
			\$	Factor	Basis	\$	Commodity
							\$
1	Taxes Other Than Income:						
2							
3	Payroll		\$3,875,865	12.0	Labor - A&G	2,411,323	1,421,551
4	Real Estate and Personal Property		\$21,144,627	8.0	Gross Plant	13,132,632	7,955,158
5	Other		\$1,460,448	19.0	Other Taxes	907,302	547,319
6							
7	Total Taxes, Other		26,480,941			16,451,257	9,924,028
8							
9	Adjustments to Pre-Tax Income:						
10							
11	Interest on Long-Term Debt		16,174,128	9.0	Net Plant	10,013,530	6,126,604
12	Other		-	12.0	Labor - A&G	-	-
13							
14	Total Adjustments to Pre-Tax Income		16,174,128			10,013,530	6,126,604
15							
16	Income Taxes:						
17							
18	State Income Taxes		465,845	18.0	Income Before Taxes	276,668	188,238
19	Federal Income Taxes		1,299,709	18.0	Income Before Taxes	771,904	525,184
20							
21	Total Income Taxes		1,765,554			1,048,572	713,422
22							
23	Adjustments to After-Tax Income:						
24							
25	Deferred Income Tax		10,390,605	18.0	Income Before Taxes	6,171,037	4,198,619
26	Investment Tax Credit		(128,796)	18.0	Income Before Taxes	(76,493)	(52,044)
27							
28	Total Adjustments to After-Tax Income		10,261,809			6,094,544	4,146,576
							20,690

KANSAS GAS SERVICE COMPANY						
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY						
TEST YEAR ENDING 12/31/2017						
CLASSIFICATION FACTORS						
			Total			
			Company	Customer	Demand	Commodity
	Input	Values	1	1	0	0
1.0	Customer	%	100.0000%	100.0000%	0.0000%	0.0000%
	Input	Values	1	0	1	0
2.0	Demand	%	100.0000%	0.0000%	100.0000%	0.0000%
	Input	Values	1	0	0	1
3.0	Commodity	%	100.0000%	0.0000%	0.0000%	100.0000%
	Input	Values	3,714,472,288	1,758,871,560	1,955,600,729	0
4.0	Mains	%	100.0000%	47.3519%	52.6481%	0.0000%
	Input	Values	1	0.00	0.58	0.42
4.2	Load Factor	%	100.0000%	0.0000%	57.8809%	42.1191%
	Internally Generated	Values	1,155,479,204	807,067,466	348,411,738	0
5.0	Mains & Services	%	100.0000%	69.8470%	30.1530%	0.0000%
	Internally Generated	Values	52,042,487	32,377,605	19,087,622	577,259
6.0	Functionalized Payroll	%	100.0000%	62.2138%	36.6770%	1.1092%
	Internally Generated	Values	852,915	0	493,675	359,240
6.2	Production Plant	%	100.0000%	0.0000%	57.8809%	42.1191%
	Internally Generated	Values	273,567,498	0	273,567,498	0
6.4	Transmission Plant	%	100.0000%	0.0000%	100.0000%	0.0000%
	Internally Generated	Values	1,460,928,082	1,077,724,402	379,507,899	3,695,782
6.6	Distribution Plant	%	100.0000%	73.7698%	25.9772%	0.2530%
	Internally Generated	Values	0	0	0	0
6.8	Storage Plant	%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Values	1,735,348,495	1,077,724,402	653,569,072	4,055,021
7.0	PST&D Plant	%	100.0000%	62.1042%	37.6621%	0.2337%
	Internally Generated	Values	1,458,558,455	1,075,976,331	378,892,337	3,689,787
7.2	Distribution Plant - X	%	100.0000%	73.7698%	25.9772%	0.2530%
	Internally Generated	Values	113,550,468	70,572,779	42,287,614	690,075
7.4	General Plant	%	100.0000%	62.1510%	37.2413%	0.6077%
	Internally Generated	Values	1,915,215,266	1,189,513,440	720,553,732	5,148,095
8.0	Gross Plant	%	100.0000%	62.1086%	37.6226%	0.2688%
	Internally Generated	Values	1,296,951,100	802,952,629	491,272,579	2,725,891
9.0	Net Plant	%	100.0000%	61.9108%	37.8790%	0.2102%

KANSAS GAS SERVICE COMPANY						
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY						
TEST YEAR ENDING 12/31/2017						
CLASSIFICATION FACTORS						
			Total			
			Company	Customer	Demand	Commodity
	Internally Generated	Values	1,016,084,260	603,457,926	410,577,708	2,048,626
10.0	Rate Base	%	100.0000%	59.3905%	40.4078%	0.2016%
	Internally Generated	Values	77,972,616	49,909,955	27,328,363	734,299
11.0	O&M less A&G	%	100.0000%	64.0096%	35.0487%	0.9417%
	Internally Generated	Values	43,939,248	27,336,273	16,115,598	487,378
12.0	Labor - A&G	%	100.0000%	62.2138%	36.6770%	1.1092%
	Internally Generated	Values	28,899,208	17,392,125	11,259,903	247,180
13.0	Distribution Labor	%	100.0000%	60.1820%	38.9627%	0.8553%
	Internally Generated	Values	43,491,007	25,869,953	17,231,084	389,971
14.0	Distribution O&M	%	100.0000%	59.4835%	39.6199%	0.8967%
	Internally Generated	Values	31,851,138	24,833,178	6,908,483	109,477
14.2	Distribution O&M - Operations	%	100.0000%	77.9664%	21.6899%	0.3437%
	Internally Generated	Values	16,011,445	4,261,680	11,458,213	291,552
14.4	Distribution O&M - Maintenance	%	100.0000%	26.6165%	71.5626%	1.8209%
	Internally Generated	Values	7,876,283	0	7,876,283	0
15.0	Transmission O&M	%	100.0000%	0.0000%	100.0000%	0.0000%
	Internally Generated	Values	6,368,255	0	6,368,255	0
15.2	Transmission O&M - Operations	%	100.0000%	0.0000%	100.0000%	0.0000%
	Internally Generated	Values	1,508,028	0	1,508,028	0
15.4	Transmission O&M - Maintenance	%	100.0000%	0.0000%	100.0000%	0.0000%
	Internally Generated	Values	3,709,187	0	3,709,187	0
16.0	Transmission Labor	%	100.0000%	0.0000%	100.0000%	0.0000%
	Internally Generated	Values	44,838,030	26,629,548	18,118,080	90,402
17.0	Net Income	%	100.0000%	59.3905%	40.4078%	0.2016%
	Internally Generated	Values	56,865,393	33,772,664	22,978,077	114,652
18.0	Income Before Taxes	%	100.0000%	59.3905%	40.4078%	0.2016%
	Internally Generated	Values	25,020,492	15,543,955	9,376,709	99,828
19.0	Other Taxes	%	100.0000%	62.1249%	37.4761%	0.3990%
		Values	0	0	0	0
99.0	-	%	0.0000%	0.0000%	0.0000%	0.0000%

KANSAS GAS SERVICE COMPANY									
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY									
TEST YEAR ENDING 12/31/2017									
SUMMARY OF CLASSIFICATION									

[illegible]

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION OF RESERVE FOR DEPRECIATION														
	Allocation Factor	Allocation Basis	CNG Transport CNGK	CNG Transport CNGT	Irrigation Transport GHT	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Wholesale Transport WHT
Total Reserve for Depreciation														
1	Intangible Plant:													
2	Organization		0	0	0	0	0	0	0	0	0	0	0	0
3	Miscellaneous Intangible Plant		0	(0)	(0)	(1)	(1)	(1)	(1)	(1)	(1)	(0)	(4)	(11)
4	Leasehold Improvements		1,003	84	2,869	15,114	14,348	9,543	44,550	4,343	4,161	2,013	27,858	200
5	Total Intangible Plant		1,003	84	2,868	15,113	14,348	9,542	44,546	4,342	4,160	2,013	27,854	200
6	Production Plant		0	0	0	0	0	0	0	0	0	0	0	0
7	Storage Plant		0	0	0	0	0	0	0	0	0	0	0	0
8	Transmission													
9	Rights-of-way		0	797	1,824	0	0	0	0	16,284	20,859	7,679	115,204	54,256
10	Structures and imp. - compressor stations		0	835	1,909	0	0	0	0	17,843	21,831	8,037	120,574	56,786
11	Structures and imp. - meas. & reg. stations		0	0	520	0	0	0	0	4,843	5,947	2,189	32,848	15,470
12	Mains		0	12,843	29,370	0	0	0	0	262,269	335,957	123,675	1,855,492	873,865
13	Compressor station equipment		0	2,404	5,496	0	0	0	0	49,082	62,872	23,145	347,243	163,538
14	Measuring and regulating station equipment		0	1,288	2,945	0	0	0	0	26,301	33,690	12,402	186,071	87,632
15	Other Equipment		0	1	1	0	0	0	0	13	17	6	94	44
16	Total Transmission Plant		0	18,395	42,065	0	0	0	0	375,634	481,173	177,133	2,657,526	1,251,592
17	Distribution:													
18	Rights-of-way		166	14	476	2,507	2,380	1,583	7,390	720	690	334	4,621	33
19	Structures and improvements		140	12	399	2,104	1,998	1,329	6,203	605	579	280	3,879	28
20	Mains - Metallic		66,921	4,594	88,443	978,516	971,689	650,267	3,128,733	291,459	278,222	135,322	1,963,869	0
21	Mains - Plastic		50,573	3,472	66,838	739,478	734,318	491,415	2,364,425	220,259	210,256	102,265	1,484,122	0
22	Mains - Cathodic Protection		545	37	721	7,974	7,919	5,299	25,497	2,375	2,267	1,103	16,004	0
23	Meas. and reg. sta. equip. - general		12,198	810	8,200	177,070	177,714	119,219	576,037	53,063	50,831	24,742	361,668	0
24	Meas. and reg. sta. equip. - city gate		6,921	1,561	21,212	64,248	71,844	56,351	280,997	18,568	21,139	14,102	168,585	0
25	Services - Plastic		2,890	955	128,608	101,463	47,894	25,784	27,106	18,033	17,055	8,287	16,248	12,194
26	Services - Metallic		(37)	(12)	(1,647)	(1,299)	(613)	(330)	(347)	(231)	(218)	(81)	(208)	(156)
27	Meters		3,588	765	60,139	76,427	42,957	23,093	35,835	15,554	14,941	5,687	16,360	11,159
28	Meters-AMR		0	0	4,928	212	0	0	0	0	0	0	0	0
29	Meter installations		425	95	21,929	10,114	4,537	2,410	3,119	1,843	1,607	662	1,607	1,465
30	House regulators		321	61	4,766	5,950	2,842	1,533	2,377	1,145	1,005	448	1,138	939
31	Other Property Customer Premise		3	1	178	74	33	15	21	15	10	5	11	0
32	Other Equipment		(0)	(0)	(2)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0
33	Total Distribution Plant		144,654	12,366	405,189	2,164,838	2,065,511	1,377,967	6,457,395	623,409	598,385	291,155	4,037,903	25,662
34	General Plant:													
35	Land		(6)	(1)	(17)	(83)	(79)	(53)	(246)	(39)	(42)	(18)	(259)	(51)
36	Structures and improvements - owned		3,200	690	10,120	48,242	45,800	30,458	142,195	22,485	24,301	10,482	149,785	29,306
37	Office furniture and equipment		840	132	2,505	12,179	11,929	8,016	38,254	4,629	4,797	2,200	31,582	3,632
38	Computers and other electronic equipment		1,749	276	5,218	25,365	24,845	16,695	79,673	9,641	9,991	4,582	65,776	7,565
39	Transportation equipment		3,728	588	11,126	54,087	52,978	35,599	169,889	20,557	21,304	9,770	140,256	16,132
40	Stores equipment		(20)	(4)	(62)	(297)	(282)	(188)	(876)	(138)	(150)	(65)	(923)	(181)
41	Tools Shop and Garage Equipment		408	88	1,291	6,156	5,844	3,887	18,145	2,867	3,101	1,338	19,113	3,740
42	Laboratory equipment		(59)	(12)	(183)	(873)	(829)	(551)	(2,574)	(407)	(440)	(190)	(2,712)	(531)
43	Power operated equipment		1,894	408	5,988	28,546	27,102	18,023	84,142	13,293	14,380	6,203	88,633	17,342
44	Communication equipment		734	116	2,191	10,650	10,432	7,010	33,453	4,048	4,195	1,924	27,618	3,177
45	Miscellaneous equipment		34	7	108	517	491	327	1,524	241	261	112	1,606	314
46	Total General Plant		12,504	2,287	38,284	184,489	178,232	119,222	563,579	77,156	81,699	36,338	520,477	80,446
47	Corporate Allocated Plant		4,632	871	14,255	68,574	66,065	44,152	208,305	29,198	31,034	13,729	196,567	31,779
48	TOTAL RESERVE FOR DEPRECIATION		162,793	34,004	502,660	2,433,014	2,324,156	1,550,882	7,273,825	1,109,740	1,196,451	520,367	7,440,327	1,389,679

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF OTHER RATE BASE																
			Allocation Factor	Allocation Basis	CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Wholesale Transport WTK
		Customer														
1		Working Capital:														
2																
3		Prepayments - Misc.	65.2	O&M less A&G - Customer	52	14	2,627	1,345	614	314	399	257	210	86	213	164
4		Prepayments	65.2	O&M less A&G - Customer	5	1	253	130	59	30	39	25	20	8	21	16
5		Materials and Supplies	65.2	O&M less A&G - Customer	85	22	4,274	2,188	999	510	650	417	341	140	347	267
6		Gas Storage Inventory & Line Pack	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
7		Cash Working Capital	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
8		Other	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
9																
10		Total Working Capital			143	37	7,154	3,662	1,672	854	1,087	699	572	235	581	446
11																
12		Rate Base Adjustments:														
13																
14		Accumulated Deferred Income Taxes	63.2	Gross Plant - Customer	5,075	1,274	163,811	128,429	64,751	34,305	46,279	24,745	22,530	8,716	23,403	15,015
15		Investment Tax Credit Adjustment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
16		Customer Deposits	34.0	Customer Deposits	32,456	10,333	134,242	32,951	33,509	28,483	132,031	12,034	15,299	12,320	114,486	24,391
17		CIAC - Reimbursables	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
18		Customer Advances for Construction	49.2	Distribution Plant - Customer	220	55	7,027	5,573	2,816	1,493	2,016	1,074	980	379	1,018	651
19		Other	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
20																
21		Total Rate Base Adjustments			37,751	11,662	305,081	166,952	101,076	64,281	180,326	37,853	38,808	21,415	138,908	40,057
22																
23		TOTAL OTHER RB - CUSTOMER			(37,608)	(11,625)	(297,926)	(163,290)	(99,404)	(63,427)	(179,239)	(37,155)	(38,236)	(21,180)	(138,327)	(39,610)

KANSAS GAS SERVICE COMPANY																	
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																	
TEST YEAR ENDING 12/31/2017																	
ALLOCATION OF OTHER RATE BASE																	
			Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTE	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSRk	Sales for Resale SSR-BHK	Small Transport STk	Small Transport STI	
			Demand														
1			Working Capital:														
2																	
3			Prepayments - Misc.	65.1	O&M less A&G - Demand	1,898,095	1,223,078	123,090	166,969	28,263	251	254	386	54	1	95,007	44,208
4			Prepayments	65.1	O&M less A&G - Demand	183,040	117,946	11,870	16,101	2,726	24	25	37	5	0	9,162	4,263
5			Materials and Supplies	65.1	O&M less A&G - Demand	3,087,674	1,989,608	200,233	271,612	45,976	409	414	628	88	2	154,550	71,914
6			Gas Storage Inventory & Line Pack	7.0	Monthly CP Demand - Sales Customers	27,375,068	21,629,854	2,212,875	2,972,051	500,431	6,587	2,558	7,961	42,014	737	-	-
7			Cash Working Capital	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
8			Other	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
9																	
10			Total Working Capital			32,543,877	24,960,486	2,548,068	3,426,733	577,396	7,272	3,250	9,011	42,161	739	258,718	120,385
11																	
12			Rate Base Adjustments:														
13																	
14			Accumulated Deferred Income Taxes	63.1	Gross Plant - Demand	110,501,790	72,585,493	7,256,338	9,883,071	1,676,515	12,026	7,256	31,291	253	4	4,661,383	2,682,394
15			Investment Tax Credit Adjustment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
16			Customer Deposits	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
17			CIAC - Reimbursables	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
18			Customer Advances for Construction	49.1	Distribution Plant - Demand	2,736,958	1,661,805	170,013	228,340	38,448	506	196	-	-	-	196,761	60,440
19			Other	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
20																	
21			Total Rate Base Adjustments			113,238,748	74,247,297	7,426,351	10,111,412	1,714,962	12,532	7,453	31,291	253	4	4,858,144	2,742,833
22																	
23			TOTAL OTHER RB - DEMAND			(80,694,871)	(49,286,811)	(4,878,283)	(6,684,679)	(1,137,566)	(5,260)	(4,203)	(22,280)	41,908	735	(4,599,426)	(2,622,448)

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF OTHER RATE BASE																
		Allocation Factor	Allocation Basis	CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Large Vol Transport LVT1-T1	Large Vol Transport LVT1-T2	Large Vol Transport LVT1-T3	Large Vol Transport LVT1-T4	Wholesale Transport WTK	
Demand																
1	Working Capital:															
2																
3	Prepayments - Misc.	65.1	O&M less A&G - Demand	1,429	232	2,076	20,803	20,869	13,975	67,513	8,646	9,074	4,050	59,775	8,093	
4	Prepayments	65.1	O&M less A&G - Demand	138	22	200	2,006	2,013	1,348	6,510	834	875	391	5,764	780	
5	Materials and Supplies	65.1	O&M less A&G - Demand	2,325	377	3,376	33,840	33,949	22,734	109,824	14,064	14,761	6,587	97,238	13,165	
6	Gas Storage Inventory & Line Pack	7.0	Monthly CP Demand - Sales Customers	-	-	-	-	-	-	-	-	-	-	-	-	
7	Cash Working Capital	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	Other	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
9																
10	Total Working Capital			3,892	632	5,652	56,649	56,830	38,057	183,847	23,543	24,711	11,027	162,778	22,039	
11																
12	Rate Base Adjustments:															
13																
14	Accumulated Deferred Income Taxes	63.1	Gross Plant - Demand	70,391	14,611	71,936	1,021,953	1,025,651	687,995	3,324,198	508,279	552,191	238,077	3,517,195	673,290	
15	Investment Tax Credit Adjustment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
16	Customer Deposits	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
17	CIAC - Reimbursables	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
18	Customer Advances for Construction	49.1	Distribution Plant - Demand	2,972	197	1,998	43,140	43,297	29,046	140,343	12,928	12,384	6,028	88,115	-	
19	Other	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
20																
21	Total Rate Base Adjustments			73,363	14,808	73,933	1,065,093	1,068,948	717,041	3,464,541	521,207	564,575	244,105	3,605,310	673,290	
22																
23	TOTAL OTHER RB - DEMAND			(69,472)	(14,177)	(68,281)	(1,008,444)	(1,012,118)	(678,984)	(3,280,693)	(497,663)	(539,864)	(233,078)	(3,442,532)	(651,251)	

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF OTHER RATE BASE																
		Allocation Factor	Allocation Basis	CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Large Vol Transport LVTt-T1	Large Vol Transport LVTt-T2	Large Vol Transport LVTt-T3	Large Vol Transport LVTt-T4	Wholesale Transport WtT	
	Commodity															
1	Working Capital:															
2																
3	Prepayments - Misc.	65.3	O&M less A&G - Commodity	71	23	320	436	558	509	2,601	119	169	145	1,504	-	
4	Prepayments	65.3	O&M less A&G - Commodity	7	2	31	42	54	49	251	12	16	14	145	-	
5	Materials and Supplies	65.3	O&M less A&G - Commodity	116	37	521	709	908	827	4,231	194	276	236	2,447	-	
6	Gas Storage Inventory & Line Pack	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	Cash Working Capital	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	Other	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
9																
10	Total Working Capital			193	62	871	1,187	1,520	1,385	7,083	325	461	395	4,096	0	
11																
12	Rate Base Adjustments:															
13																
14	Accumulated Deferred Income Taxes	63.3	Gross Plant - Commodity	1,660	534	7,480	10,184	13,051	11,889	60,796	2,789	3,960	3,392	35,158	-	
15	Investment Tax Credit Adjustment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
16	Customer Deposits	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
17	CIAC - Reimbursables	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
18	Customer Advances for Construction	49.3	Distribution Plant - Commodity	66	21	298	405	519	473	2,420	111	158	135	1,399	-	
19	Other	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	
20																
21	Total Rate Base Adjustments			1,727	555	7,778	10,590	13,570	12,362	63,216	2,900	4,117	3,527	36,557	0	
22																
23	TOTAL OTHER RB - COMMODITY			(1,533)	(493)	(6,906)	(9,403)	(12,050)	(10,977)	(56,133)	(2,575)	(3,656)	(3,132)	(32,461)	0	

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF OTHER RATE BASE															
		Allocation	Allocation	CNG	CNG	Irrigation	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Wholesale
		Factor	Basis	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport
				CNGk	CNGt	GIT	LVTK-T1	LVTK-T2	LVTK-T3	LVTK-T4	LVT1-T1	LVT1-T2	LVT1-T3	LVT1-T4	WTt
Total Other Rate Base															
1	Working Capital:														
2															
3	Prepayments - Misc.			1,553	268	5,023	22,583	22,042	14,798	70,513	9,021	9,454	4,281	61,493	8,257
4	Prepayments			150	26	484	2,178	2,126	1,427	6,800	870	912	413	5,930	796
5	Materials and Supplies			2,526	437	8,171	36,737	35,856	24,071	114,705	14,675	15,378	6,964	100,032	13,432
6	Gas Storage Inventory & Line Pack			0	0	0	0	0	0	0	0	0	0	0	0
7	Cash Working Capital			0	0	0	0	0	0	0	0	0	0	0	0
8	Other			0	0	0	0	0	0	0	0	0	0	0	0
9															
10	Total Working Capital			4,228	731	13,678	61,498	60,023	40,296	192,018	24,567	25,743	11,658	167,455	22,485
11															
12	Rate Base Adjustments:														
13															
14	Accumulated Deferred Income Taxes			77,127	16,418	243,227	1,160,566	1,103,453	734,188	3,431,274	535,812	578,680	250,186	3,575,757	688,304
15	Investment Tax Credit Adjustment			0	0	0	0	0	0	0	0	0	0	0	0
16	Customer Deposits			32,456	10,333	134,242	32,951	33,509	28,483	132,031	12,034	15,299	12,320	114,486	24,391
17	CIAC - Reimbursables			0	0	0	0	0	0	0	0	0	0	0	0
18	Customer Advances for Construction			3,258	274	9,322	49,118	46,632	31,012	144,778	14,113	13,522	6,542	90,532	651
19	Other			0	0	0	0	0	0	0	0	0	0	0	0
20															
21	Total Rate Base Adjustments			112,841	27,025	386,792	1,242,635	1,183,594	793,683	3,708,083	561,960	607,500	269,048	3,780,775	713,346
22															
23	TOTAL OTHER RATE BASE			(108,613)	(26,294)	(373,114)	(1,181,137)	(1,123,572)	(753,387)	(3,516,066)	(537,393)	(581,757)	(257,390)	(3,613,320)	(690,862)

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KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF O&M EXPENSES																
						General Service					Kansas Gas	Sales for	Sales for	Small	Small	
		Allocation	Allocation	Total	Residential	Small	Large	Trans. Eligible	Small	Irrigation	Supply	Retail	Resale	Transport	Transport	
		Factor	Basis	Company	RS	GSS	GSL	GSTE	Generator	Sales	KGSSD	SSRk	SSR-BHK	Stk	Stk	
									SGS	GIS						
83																
84	Distribution:															
85	Operation															
86	Supervision & Eng.	66.1	Distribution O&M Operations - Demand	341,340	206,232	21,099	28,337	4,771	63	112	-	-	-	-	24,811	7,616
87	Load Dispatching	15.0	NCP Demand - Retail Customers	621,643	356,735	36,496	49,017	8,253	109	1,816	-	-	-	-	50,183	15,310
88	Meters & Services - Expense	48.1	Meters & Services - Demand	3,387,725	2,044,720	209,195	280,954	47,309	623	242	-	-	-	-	242,168	7,369
89	Meters & Reg Station Expense - Gen	10.0	Monthly CP Demand - Retail Customers	1,647,646	1,000,526	102,360	137,477	23,148	305	118	-	-	-	-	118,465	36,389
90	Meters & Reg Station Expense - Gen GSS	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
91	Meters & Reg Station Expense - Ind	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
92	Meters & Reg Station Expense - City Gate	10.0	Monthly CP Demand - Retail Customers	135,242	82,115	8,401	11,283	1,900	25	10	-	-	-	-	9,723	2,987
93	Meter & House Regulator Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
94	Customer Installations Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
95	Other Expenses	49.1	Distribution Plant - Demand	1,135,612	689,512	70,542	94,742	15,953	210	82	-	-	-	-	81,640	25,078
96	Rents	49.1	Distribution Plant - Demand	515	313	32	43	7	0	0	-	-	-	-	37	11
97	Maintenance															
98	Supervision & Eng.	67.1	Distribution O&M Maintenance - Demand	239,013	145,122	14,847	19,940	3,358	44	17	-	-	-	-	17,183	5,278
99	Structure & Improv.	10.0	Monthly CP Demand - Retail Customers	501,612	304,565	31,159	41,849	7,046	83	36	-	-	-	-	36,681	11,077
100	Meters	10.0	Monthly CP Demand - Retail Customers	9,845,977	5,978,204	611,609	821,435	138,312	1,821	707	-	-	-	-	707,633	217,427
101	Meters & Reg Station Expense - Gen	10.0	Monthly CP Demand - Retail Customers	708,786	430,355	44,028	59,133	9,957	131	51	-	-	-	-	50,955	15,652
102	Meters & Reg Station Expense - Ind	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
103	Meters & Reg Station Expense - City Gate	10.0	Monthly CP Demand - Retail Customers	400,656	243,268	24,888	33,426	5,628	74	29	-	-	-	-	28,804	8,848
104	Services	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
105	Meters & House Regulators	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
106	Maintenance of Other Equipment	10.0	Monthly CP Demand - Retail Customers	1,179	716	73	98	17	0	0	-	-	-	-	85	26
107	Total Distribution			18,947,049												

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KANSAS GAS SERVICE COMPANY																		
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																		
TEST YEAR ENDING 12/31/2017																		
ALLOCATION OF O&M EXPENSES																		

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF O&M EXPENSES															
		Allocation	Allocation	Total	Residential	Small	General Service	Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small	
		Factor	Basis	Company	RS	GSS	Large GSL	Trans. Eligible GSTE	SGS	GIS	Supply KGSSD	Resale SSRk	Resale SSR-BHk	Transport STk	Transport STt
Total O&M Expenses															
1	Production & Gathering:														
2	Operation														
3	Op. Sup. & Eng.														
4	Production Maps & Records														
5	Field Lines Expenses														
6	Field Compressor Station Expense														
7	Field Compressor Sta. Fuel & Pwr.														
8	Field Meas. & Regul. Station Exp														
9	Purification Expense														
10	Other Expenses														
11	Maintenance:														
12	Maint. Sup. & Eng.														
13	Structures and Improvements														
14	Field Line Maintenance														
15	Compressor Station Equip. Maint.														
16	Meas. & Regul. Station Equip Maint														
17	Purification Equipment Maintenance														
18	Other Equipment Maintenance														
19	Gas Processed By Others														
20	Total Production & Gathering														
21															
22	Other Gas Supply Expenses:														
23	Operation														
24	Gas processed by others			142,453	112,857	10,810	15,594	2,745	34	169	48	191	4	0	0
25	Purchased Gas Expenses			0	0	0	0	0	0	0	0	0	0	0	0
26	Gas Delivery Processing Credit			0	0	0	0	0	0	0	0	0	0	0	0
27	Gas Used for Compressor Sta. Fuel			(103,399)	(81,917)	(7,847)	(11,318)	(1,993)	(25)	(123)	(35)	(139)	(3)	0	0
28	Gas Used for Production Ext			(142,453)	(112,857)	(10,810)	(15,593)	(2,745)	(34)	(169)	(48)	(191)	(4)	0	0
29	Gas Used for Other Utility Cos			(37,772)	(29,924)	(2,866)	(4,135)	(728)	(9)	(45)	(13)	(51)	(1)	0	0
30	Other Gas Supply Expenses			905,144	717,091	68,688	99,081	17,443	217	1,075	308	1,214	28	0	0
31	Maintenance			0	0	0	0	0	0	0	0	0	0	0	0
32	Maint. Of Purch. Gas Meas. Sta.			0	0	0	0	0	0	0	0	0	0	0	0
33	Total Other Gas Supply Expenses			763,973	605,250	57,975	83,628	14,723	183	907	260	1,025	24	0	0
34															
35	Underground Storage:														
36	Operation														
37	Op. Sup. & Eng.			0	0	0	0	0	0	0	0	0	0	0	0
38	Maps & Records			167	132	13	18	3	0	0	0	0	0	0	0
39	Wells Expense			0	0	0	0	0	0	0	0	0	0	0	0
40	Lines Expense			0	0	0	0	0	0	0	0	0	0	0	0
41	Compressor Station Expense			0	0	0	0	0	0	0	0	0	0	0	0
42	Compressor Station Fuel & Power			62,600	49,462	5,060	6,796	1,144	15	6	18	96	2	0	0
43	Meas. & Regul. Station Expenses			0	0	0	0	0	0	0	0	0	0	0	0
44	Purification Expenses			69	54	6	7	1	0	0	0	0	0	0	0
45	Exploration & Development			0	0	0	0	0	0	0	0	0	0	0	0
46	Gas Losses			0	0	0	0	0	0	0	0	0	0	0	0
47	Other Expenses			0	0	0	0	0	0	0	0	0	0	0	0
48	Storage Well Royalties			0	0	0	0	0	0	0	0	0	0	0	0
49	Rents			0	0	0	0	0	0	0	0	0	0	0	0
50	Maintenance			0	0	0	0	0	0	0	0	0	0	0	0
51	Maint. Sup. & Eng.			0	0	0	0	0	0	0	0	0	0	0	0
52	Structures and Improvements			0	0	0	0	0	0	0	0	0	0	0	0
53	Reservoirs & Wells Maintenance			0	0	0	0	0	0	0	0	0	0	0	0
54	Line Maintenance			0	0	0	0	0	0	0	0	0	0	0	0
55	Compressor Station Equip Maint			0	0	0	0	0	0	0	0	0	0	0	0
56	Meas. & Regul. Station Equip Maint			0	0	0	0	0	0	0	0	0	0	0	0
57	Purification Equipment Maintenance			0	0	0	0	0	0	0	0	0	0	0	0
58	Other Equipment Maintenance			0	0	0	0	0	0	0	0	0	0	0	0
59	Total Underground Storage Expense			62,836	49,649	5,079	6,822	1,149	15	6	18	96	2	0	0
60															
61	Transmission:														
62	Operation														
63	Operation supervision and engineering			197,900	143,925	13,987	19,382	3,318	0	10	136	0	0	0	5,436
64	System control and load dispatching			655,308	476,580	46,315	64,181	10,985	0	33	450	0	0	0	18,007
65	Communication system expense			723	526	51	71	12	0	0	0	0	0	0	20
66	Compressor station labor and expense			594,551	432,394	42,021	58,230	9,957	0	30	408	0	0	0	16,337
67	Gas for compressor station fuel			40,872	29,725	2,889	4,003	685	0	2	28	0	0	0	1,123
68	Other fuel and power for compressor stations			12,232	8,896	865	1,198	205	0	1	8	0	0	0	586
69	Mains expenses			4,092,406	2,976,251	289,236	400,810	68,604	0	205	2,809	0	0	0	112,453
70	Measuring and regulating station expenses			758,670	551,752	53,620	74,304	12,718	0	38	521	0	0	0	20,847
71	Transmission and compression of gas by others			0	0	0	0	0	0	0	0	0	0	0	0
72	Other expenses			13,522	9,834	956	1,324	227	0	1	9	0	0	0	372
73	Rents			2,072	1,507	146	203	35	0	0	1	0	0	0	57
74	Maintenance			0	0	0	0	0	0	0	0	0	0	0	0
75	Maint. Sup. & Eng.			95,675	69,508	6,755	9,261	1,602	0	5	66	0	0	0	2,626
76	Structures and Improvements			14,608	10,624	1,032	1,431	245	0	1	10	0	0	0	401
77	Mains			494,970	359,973	34,983	48,477	8,298	0	25	340	0	0	0	13,601
78	Compressor Station Equip Maint			279,032	202,929	19,721	27,328	4,678	0	14	192	0	0	0	7,667
79	Meas. & Regul. Station Equip Maint			623,671	453,572	44,079	61,082	10,455	0	31	428	0	0	0	17,138
80	Communication Equipment Maintenance			0	0	0	0	0	0	0	0	0	0	0	0
81	Other Equipment Maintenance			172	125	12	17	3	0	0	0	0	0	0	5
82	Total Transmission Expense			7,876,283	5,728,120	556,667	771,403	132,036	0	395	5,407	0	0	0	216,429

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF O&M EXPENSES																
		Allocation	Allocation	CNG	CNG	Irrigation	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Wholesale
		Factor	Basis	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport
				CNGk	CNGi	GIT	LVTk-T1	LVTk-T2	LVTk-T3	LVTk-T4	LVTk-T1	LVTk-T2	LVTk-T3	LVTk-T4	LVTk-T1	WT1
Total O&M Expenses																
1	Production & Gathering:															
2	Operation															
3	Op., Sup., & Eng.			0	0	0	0	0	0	0	0	0	0	0	0	0
4	Production Maps & Records			0	0	0	0	0	0	0	0	0	0	0	0	0
5	Field Lines Expenses			0	0	0	0	0	0	0	0	0	0	0	0	0
6	Field Compressor Station Expense			0	0	0	0	0	0	0	0	0	0	0	0	0
7	Field Compressor Sta. Fuel & Pwr.			0	0	0	0	0	0	0	0	0	0	0	0	0
8	Field Meas. & Regul. Station Exp			0	0	0	0	0	0	0	0	0	0	0	0	0
9	Purification Expense			0	0	0	0	0	0	0	0	0	0	0	0	0
10	Other Expenses			0	0	0	0	0	0	0	0	0	0	0	0	0
11	Maintenance															
12	Maint. Sup. & Eng.			0	0	0	0	0	0	0	0	0	0	0	0	0
13	Structures and Improvements			0	0	0	0	0	0	0	0	0	0	0	0	0
14	Field Line Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	0
15	Compressor Station Equip. Maint.			0	0	0	0	0	0	0	0	0	0	0	0	0
16	Meas. & Regul. Station Equip Maint			0	0	0	0	0	0	0	0	0	0	0	0	0
17	Purification Equipment Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	0
18	Other Equipment Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	0
19	Gas Processed By Others			0	0	0	0	0	0	0	0	0	0	0	0	0
20	Total Production & Gathering			0	0	0	0	0	0	0	0	0	0	0	0	0
21																
22	Other Gas Supply Expenses:															
23	Operation															
24	Gas processed by others			0	0	0	0	0	0	0	0	0	0	0	0	0
25	Purchased Gas Expenses			0	0	0	0	0	0	0	0	0	0	0	0	0
26	Gas Delivery Processing Credit			0	0	0	0	0	0	0	0	0	0	0	0	0
27	Gas Used for Compressor Sta. Fuel			0	0	0	0	0	0	0	0	0	0	0	0	0
28	Gas Used for Production Ext.			0	0	0	0	0	0	0	0	0	0	0	0	0
29	Gas Used for Other Utility Cos			0	0	0	0	0	0	0	0	0	0	0	0	0
30	Other Gas Supply Expenses			0	0	0	0	0	0	0	0	0	0	0	0	0
31	Maintenance															
32	Maint. Of Purch. Gas Meas. Sta.			0	0	0	0	0	0	0	0	0	0	0	0	0
33	Total Other Gas Supply Expenses			0	0	0	0	0	0	0	0	0	0	0	0	0
34																
35	Underground Storage:															
36	Operation															
37	Op., Sup., & Eng.			0	0	0	0	0	0	0	0	0	0	0	0	0
38	Maps & Records			0	0	0	0	0	0	0	0	0	0	0	0	0
39	Wells Expense			0	0	0	0	0	0	0	0	0	0	0	0	0
40	Lines Expense			0	0	0	0	0	0	0	0	0	0	0	0	0
41	Compressor Station Expense			0	0	0	0	0	0	0	0	0	0	0	0	0
42	Compressor Station Fuel & Power			0	0	0	0	0	0	0	0	0	0	0	0	0
43	Meas. & Regul. Station Expenses			0	0	0	0	0	0	0	0	0	0	0	0	0
44	Purification Expenses			0	0	0	0	0	0	0	0	0	0	0	0	0
45	Exploration & Development			0	0	0	0	0	0	0	0	0	0	0	0	0
46	Gas Losses			0	0	0	0	0	0	0	0	0	0	0	0	0
47	Other Expenses			0	0	0	0	0	0	0	0	0	0	0	0	0
48	Storage Well Royalties			0	0	0	0	0	0	0	0	0	0	0	0	0
49	Rents			0	0	0	0	0	0	0	0	0	0	0	0	0
50	Maintenance															
51	Maint. Sup. & Eng.			0	0	0	0	0	0	0	0	0	0	0	0	0
52	Structures and Improvements			0	0	0	0	0	0	0	0	0	0	0	0	0
53	Reservoirs & Wells Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	0
54	Line Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	0
55	Compressor Station Equip Maint			0	0	0	0	0	0	0	0	0	0	0	0	0
56	Meas. & Regul. Station Equip Maint			0	0	0	0	0	0	0	0	0	0	0	0	0
57	Purification Equipment Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	0
58	Other Equipment Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	0
59	Total Underground Storage Expense			0	0	0	0	0	0	0	0	0	0	0	0	0
60																
61	Transmission:															
62	Operation															
63	Operation supervision and engineering			0	43	98	0	0	0	0	879	1,126	414	6,217	2,928	
64	System control and load dispatching			0	142	328	0	0	0	0	2,910	3,727	1,372	20,585	9,695	
65	Communication system expense			0	0	0	0	0	0	0	3	4	2	23	11	
66	Compressor station labor and expense			0	129	296	0	0	0	0	2,640	3,382	1,245	18,676	8,796	
67	Gas for compressor station fuel			0	9	20	0	0	0	0	181	236	86	1,284	605	
68	Other fuel and power for compressor stations			0	3	6	0	0	0	0	54	70	26	384	181	
69	Mains expenses			0	890	2,035	0	0	0	0	18,171	23,276	8,568	128,553	60,544	
70	Measuring and regulating station expenses			0	165	377	0	0	0	0	3,369	4,315	1,588	23,832	11,224	
71	Transmission and compression of gas by others			0	0	0	0	0	0	0	0	0	0	0	0	
72	Other expenses			0	3	7	0	0	0	0	60	77	28	425	200	
73	Rents			0	0	1	0	0	0	0	9	12	4	65	31	
74	Maintenance															
75	Maint. Sup. & Eng.			0	21	48	0	0	0	0	424	544	200	3,022	1,414	
76	Structures and Improvements			0	3	7	0	0	0	0	65	83	31	459	216	
77	Mains			0	108	246	0	0	0	0	2,198	2,815	1,036	15,548	7,323	
78	Compressor Station Equip Maint			0	61	139	0	0	0	0	1,239	1,587	584	8,765	4,128	
79	Meas. & Regul. Station Equip Maint			0	136	310	0	0	0	0	2,769	3,547	1,306	19,591	9,227	
80	Communication Equipment Maintenance			0	0	0	0	0	0	0	0	0	0	0	0	
81	Other Equipment Maintenance			0	0	0	0	0	0	0	1	1	0	5	3	
82	Total Transmission Expense			0	1,713	3,916	0	0	0	0	34,971	44,797	16,491	247,415	116,523	

[illegible]

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[illegible]

[illegible]

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF PAYROLL																

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF PAYROLL															
		Allocation Factor	Allocation Basis	CNG Transport CNGk	CNG Transport CNGl	Irrigation Transport GIT	Large Vol Transport LVTr-T1	Large Vol Transport LVTr-T2	Large Vol Transport LVTr-T3	Large Vol Transport LVTr-T4	Large Vol Transport LVTr-T1	Large Vol Transport LVTr-T2	Large Vol Transport LVTr-T3	Large Vol Transport LVTr-T4	Wholesale Transport WTr
83															
84	Distribution:														
85	Operation														
86	Supervision & Eng.	66.2	Distribution O&M Operations - Customer	19	5	881	502	234	123	154	93	82	33	82	59
87	Load Dispatching	66.2	Distribution O&M Operations - Customer	8	2	350	200	93	49	61	37	33	13	33	24
88	Mains & Services Expense	66.2	Distribution O&M Operations - Customer	55	14	2,529	1,440	672	354	442	267	235	93	236	170
89	Meas. & Reg Station Expense - Gen	66.2	Distribution O&M Operations - Customer	13	3	594	338	158	83	104	63	55	22	55	40
90	Meas. & Reg Station Expense - Gen GSS	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
90	Meas. & Reg Station Expense - Ind	66.2	Distribution O&M Operations - Customer	5	1	247	141	66	35	43	26	23	9	23	17
91	Meas. & Reg Station Expense - City Gate	66.2	Distribution O&M Operations - Customer	1	0	59	33	16	8	10	6	5	2	5	4
92	Meter & House Regulator Expense	66.2	Distribution O&M Operations - Customer	77	20	3,544	2,019	941	497	623	374	320	131	330	239
93	Customer Installations Expense	66.2	Distribution O&M Operations - Customer	59	15	2,742	1,562	728	384	480	290	255	101	256	185
94	Other Expenses	66.2	Distribution O&M Operations - Customer	17	4	805	458	214	113	141	85	75	30	75	54
95	Rents	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
96	Maintenance														
97	Supervision & Eng.	67.2	Distribution O&M Maintenance - Customer	1	0	59	37	17	9	10	7	6	2	6	5
98	Structure & Improv.	67.2	Distribution O&M Maintenance - Customer	0	0	4	2	1	1	1	0	0	0	0	0
99	Mains	67.2	Distribution O&M Maintenance - Customer	22	6	1,042	662	307	165	186	119	109	42	106	85
100	Meas. & Reg Station Expense - Gen	67.2	Distribution O&M Maintenance - Customer	2	1	97	62	29	15	17	11	10	4	10	8
101	Meas. & Reg Station Expense - Ind	67.2	Distribution O&M Maintenance - Customer	1	0	34	22	10	5	6	4	4	1	3	3
102	Meas. & Reg Station Expense - City Gate	67.2	Distribution O&M Maintenance - Customer	2	1	93	59	27	15	17	11	10	4	9	8
103	Services	67.2	Distribution O&M Maintenance - Customer	5	2	260	165	77	41	46	30	27	10	26	21
104	Meters & House Regulators	67.2	Distribution O&M Maintenance - Customer	6	2	271	172	80	43	48	31	28	11	28	22
105	Maintenance of Other Equipment	67.2	Distribution O&M Maintenance - Customer	0	0	0	0	0	0	0	0	0	0	0	0
106	Total Distribution			293	76	13,611	7,875	3,669	1,940	2,388	1,453	1,288	509	1,284	943
107	Customer Accounts:														
108	Operation														
110	Supervision	3.0	Total Customers	6	2	350	146	64	30	41	30	21	9	22	18
111	Meter Reading Expenses	3.0	Total Customers	19	5	1,087	454	199	94	129	92	64	29	68	57
112	Meter Reading Expenses - GSS	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
113	Customer Records and Collection Exp.	3.0	Total Customers	79	21	4,456	1,861	815	386	529	378	263	118	279	235
114	Uncollectible Accounts	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
115	Miscellaneous Customer Accounts Exp.	3.0	Total Customers	10	3	562	235	103	49	67	48	33	15	35	30
116	Total Customer Accounts			114	30	6,454	2,696	1,181	559	766	548	381	171	405	340
117	Customer Service and Information:														
118	Operation														
119	Supervision	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
121	Customer Assistance Expenses	3.0	Total Customers	2	1	123	51	22	11	15	10	7	-	8	6
122	Information and Instructional Expenses	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
123	Misc. Customer Service and Information	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
124	Total Customer Service and Information			2	1	123	51	22	11	15	10	7	3	8	6
125	Sales:														
127	Operation														
128	Supervision	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
129	Demonstration & Selling Expenses	3.0	Total Customers	7	2	378	158	69	33	45	32	22	10	24	20
130	Advertising Expenses	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
131	Miscellaneous Sales Expenses	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
132	Total Sales			7	2	378	158	69	33	45	32	22	10	24	20
133	Administrative & General:														
135	Operation														
136	Salaries	43.2	Labor - A&G - Customer	77	20	3,793	1,988	911	469	593	377	313	128	317	241
137	Office Supplies and Expenses	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
138	Administrative Expense Transfer	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
139	Outside Services Employed	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
140	Property Insurance	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
141	Injuries and Damages	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
142	Pensions & Benefits	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
143	Franchise Requirements	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
144	Regulatory Expense	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
145	Duplicate Charges - Credit	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
146	General Advertising Expenses	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
147	Miscellaneous General Expenses	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
148	Rents	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
149	Maintenance														
150	Maintenance of General Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
151	Total A&G			77	20	3,793	1,988	911	469	593	377	313	128	317	241
152	Other Utility Plant Related Payroll	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
153	TOTAL LABOR EXPENSE - CUSTOMER			493	128	24,358	12,768	5,853	3,012	3,806	2,420	2,012	820	2,037	1,550

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF PAYROLL															
		Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTE	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSRK	Sales for Resale SSR-BRK	Small Transport STK	Small Transport STI
			Demand												
1	Production & Gathering:														
2	Operation														
3	Op., Sup., & Eng.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
4	Production Maps & Records	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
5	Field Lines Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
6	Field Compressor Station Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
7	Field Compressor Sta. Fuel & Pwr.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
8	Field Meas. & Regul. Station Exp	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
9	Purification Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
10	Other Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
11	Maintenance														
12	Maint. Sup., & Eng.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
13	Structures and Improvements	7.0	Monthly CP Demand - Sales Customers	653	516	53	71	12	0	0	0	1	0	-	-
14	Field Line Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
15	Compressor Station Equip. Maint.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
16	Meas. & Regul. Station Equip Maint	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
17	Purification Equipment Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
18	Other Equipment Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
19	Gas Processed By Others	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
20	Total Production & Gathering			653	516	53	71	12	0	0	0	1	0	0	0
21															
22	Other Gas Supply Expenses:														
23	Wellhead Purchases														
24	Field Line Purchases	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
25	Transmission Line Purchases	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
26	City Gate Purchases	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
27	Other Gas Purchases	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
28	Exchange Gas	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
29	Purchased Gas Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
30	Storage Gas Withdrawal	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
31	Company Used Gas														
32	Other Gas Supply Expenses	7.0	Monthly CP Demand - Sales Customers	314,062	248,149	25,387	34,097	5,741	76	29	91	482	8	-	-
33	Total Other Gas Supply Expenses			314,062	248,149	25,387	34,097	5,741	76	29	91	482	8		

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF PAYROLL																
			Allocation	Allocation	CNG	CNG	Irrigation	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Wholesale
			Factor	Basis	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport
					CNGk	CNGt	gIt	LVtk-T1	LVtk-T2	LVtk-T3	LVtk-T4	LVtk-T1	LVtk-T2	LVtk-T3	LVtk-T4	Wtk
Demand																
1	Production & Gathering:															
2	Operation															
3	Op. Sup. & Eng.	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
4	Production Maps & Records	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
5	Field Line Expenses	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
6	Field Compressor Station Expense	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
7	Field Compressor Sta. Fuel & Pwr.	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
8	Field Meas. & Regul. Station Exp	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
9	Purification Expense	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
10	Other Expenses	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
11	Maintenance															
12	Maint. Sup. & Eng.	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
13	Structures and Improvements	7.0		Monthly CP Demand - Sales Customers	-	-	-	-	-	-	-	-	-	-	-	-
14	Field Line Maintenance	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
15	Compressor Station Equip. Maint.	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
16	Meas. & Regul. Station Equip Maint	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
17	Purification Equipment Maintenance	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
18	Other Equipment Maintenance	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
19	Gas Processed By Others	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
20	Total Production & Gathering				0	0	0	0	0	0	0	0	0	0	0	0
21																
22	Other Gas Supply Expenses:															
23	Wellhead Purchases															
24	Field Line Purchases	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
25	Transmission Line Purchases	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
26	City Gate Purchases	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
27	Other Gas Purchases	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
28	Exchange Gas	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
29	Purchased Gas Expenses	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
30	Storage Gas Withdrawal	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
31	Company Used Gas															
32	Other Gas Supply Expenses	7.0		Monthly CP Demand - Sales Customers	-	-	-	-	-	-	-	-	-	-	-	-
33	Total Other Gas Supply Expenses				0	0	0	0	0	0	0	0	0	0	0	0
34																
35	Underground Storage:															
36	Operation															
37	Op. Sup. & Eng.	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
38	Maps & Records	8.0		Monthly CP Demand - Transport Customers	1	0	0	10	10	6	31	3	3	1	19	8
39	Wells Expense	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
40	Lines Expense	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
41	Compressor Station Expense	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
42	Compressor Station Fuel & Power	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
43	Meas. & Regul. Station Expenses	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
44	Purification Expenses	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
45	Exploration & Development	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
46	Gas Losses	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
47	Other Expenses	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
48	Storage Well Royalties	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
49	Rents	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
50	Maintenance															
51	Maint. Sup. & Eng.	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
52	Structures and Improvements	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
53	Reservoirs & Wells Maintenance	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
54	Line Maintenance	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
55	Compressor Station Equip Maint	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
56	Meas. & Regul. Station Equip Maint	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
57	Purification Equipment Maintenance	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
58	Other Equipment Maintenance	8.0		Monthly CP Demand - Transport Customers	-	-	-	-	-	-	-	-	-	-	-	-
59	Total Underground Storage Expense				1	0	0	10	10	6	31	3	3	1	19	8
60																
61	Transmission:															
62	Operation															
63	Op. Sup. & Eng.	41.5		Transmission O&M - Demand	-	38	87	-	-	-	-	778	997	367	5,504	2,592
64	System Control & Load Dispatching	41.5		Transmission O&M - Demand	-	132	303	-	-	-	-	2,703	3,462	1,274	19,121	9,005
65	Communication Systems Expense	41.5		Transmission O&M - Demand	-	0	0	-	-	-	-	3	4	2	23	11
66	Compressor Station Labor Expense	41.5		Transmission O&M - Demand	-	64	147	-	-	-	-	1,311	1,680	618	9,278	4,369
67	Compressor Station Fuel Gas	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
68	Mains Expense	41.5		Transmission O&M - Demand	-	367	840	-	-	-	-	7,891	9,609	3,337	53,069	24,923
69	Meas. & Regul. Station Expenses	41.5		Transmission O&M - Demand	-	88	201	-	-	-	-	1,792	2,296	845	12,678	5,971
70	Meas. & Regul. Station Expenses - GSS	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
71	Trans. and Comp. of Gas by Others	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
72	Other Expenses	41.5		Transmission O&M - Demand	-	7	16	-	-	-	-	144	185	68	1,019	480
73	Rents	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
74	Maintenance															
75	Maint. Sup. & Eng.	41.5		Transmission O&M - Demand	-	20	46	-	-	-	-	407	521	192	2,877	1,355
76	Structures and Improvements	41.5		Transmission O&M - Demand	-	2	4	-	-	-	-	33	43	16	236	111
77	Mains	41.5		Transmission O&M - Demand	-	59	136	-	-	-	-	1,213	1,554	572	8,594	4,043
78	Compressor Station Equip Maint	41.5		Transmission O&M - Demand	-	36	83	-	-	-	-	742	950	350	5,246	2,471
79	Meas. & Regul. Station Equip Maint	41.5		Transmission O&M - Demand	-	50	115	-	-	-	-	1,026	1,314	484	7,256	3,417
80	Communication Equipment Maintenance	99.0	-		-	-	-	-	-	-	-	-	-	-	-	-
81	Other Equipment Maintenance	41.5		Transmission O&M - Demand	-	0	0	-	-	-	-	1	1	0	5	2
82	Total Transmission Expense				0	865	1,977	0	0	0	0	17,654	22,614	8,325	124,696	58,921

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF PAYROLL																
			Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTE	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSR%	Sales for Resale SSR-Brk	Small Transport ST%	Small Transport ST%
83																
84		Distribution:														
85		Operation														
86		Supervision & Eng.		Distribution O&M Operations - Demand	332,169	200,691	20,532	27,576	4,643	61	109	-	-	-	24,144	7,411
87		Load Dispatching	66.1	Distribution O&M Operations - Demand	132,030	79,771	8,161	10,961	1,846	24	43	-	-	-	9,597	2,946
88		Mains & Services Expense	66.1	Distribution O&M Operations - Demand	953,177	575,893	58,918	79,131	13,324	175	313	-	-	-	69,283	21,267
89		Meas. & Reg Station Expense - Gen	66.1	Distribution O&M Operations - Demand	223,800	135,222	13,634	18,580	3,129	41	73	-	-	-	16,268	4,994
90		Meas. & Reg Station Expense - Gen GSS	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
90		Meas. & Reg Station Expense - Ind	66.1	Distribution O&M Operations - Demand	93,296	56,368	5,767	7,745	1,304	17	31	-	-	-	6,781	2,082
91		Meas. & Reg Station Expense - City Gate	66.1	Distribution O&M Operations - Demand	22,053	13,324	1,363	1,831	308	4	-	-	-	-	1,603	492
92		Meters & House Regulator Expense	66.1	Distribution O&M Operations - Demand	1,335,369	807,170	82,579	110,909	18,675	246	439	-	-	-	97,107	29,808
93		Customer Installations Expense	66.1	Distribution O&M Operations - Demand	1,033,577	624,470	63,887	85,805	14,448	190	339	-	-	-	75,127	23,061
94		Other Expenses	66.1	Distribution O&M Operations - Demand	303,389	183,302	18,753	25,187	4,241	56	100	-	-	-	22,052	6,769
95		Rents	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
96		Maintenance														
97		Supervision & Eng.	67.1	Distribution O&M Maintenance - Demand	232,675	141,274	14,453	19,412	3,269	43	17	-	-	-	16,727	5,138
98		Structure & Improv.	67.1	Distribution O&M Maintenance - Demand	15,434	9,371	959	1,288	217	3	1	-	-	-	1,110	341
99		Mains	67.1	Distribution O&M Maintenance - Demand	4,141,825	2,514,801	257,281	345,546	58,183	766	297	-	-	-	297,758	91,463
100		Meas. & Reg Station Expense - Gen	67.1	Distribution O&M Maintenance - Demand	385,810	234,253	23,966	32,188	5,420	71	128	-	-	-	27,736	8,520
101		Meas. & Reg Station Expense - Ind	67.1	Distribution O&M Maintenance - Demand	136,759	83,036	8,495	11,410	1,921	25	10	-	-	-	9,832	3,020
102		Meas. & Reg Station Expense - City Gate	67.1	Distribution O&M Maintenance - Demand	370,618	225,063	23,024	30,923	5,207	69	28	-	-	-	26,647	8,185
103		Services	67.1	Distribution O&M Maintenance - Demand	1,032,716	627,036	64,150	86,158	14,507	191	74	-	-	-	74,243	22,805
104		Meters & House Regulators	67.1	Distribution O&M Maintenance - Demand	1,079,071	655,182	67,029	90,025	15,158	200	200	-	-	-	77,675	23,829
105		Maintenance of Other Equipment	67.1	Distribution O&M Maintenance - Demand	0	0	0	0	0	0	0	-	-	-	24	7
106		Total Distribution			11,824,746	7,166,418	733,171	984,702	165,803	2,183	1,985	0	0	0	853,614	262,140
107		Customer Accounts:														
108		Operation														
110		Supervision	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
111		Meter Reading Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
112		Meter Reading Expenses - GSS	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
113		Customer Records and Collection Exp.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
114		Uncollectible Accounts	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
115		Miscellaneous Customer Accounts Exp.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
116		Total Customer Accounts			0	0	0	0	0	0	0	0	0	0	0	0
117		Customer Service and Information:														
118		Operation														
119		Supervision	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
120		Customer Assistance Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
121		Information and Instructional Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
122		Misc. Customer Service and Information	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
123		Total Customer Service and Information			0	0	0	0	0	0	0	0	0	0	0	0
124		Sales:														
125		Operation														
126		Supervision	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
127		Demonstration & Selling Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
128		Advertising Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
129		Miscellaneous Sales Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
130		Total Sales			0	0	0	0	0	0	0	0	0	0	0	0
131		Administrative & General:														
132		Operation														
133		Salaries	43.1	Labor - A&G - Demand	2,972,025	1,900,747	191,726	259,713	43,930	416	408	520	89	2	157,431	68,495
134		Office Supplies and Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
135		Administrative Expense Transfer	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
136		Outside Services Employed	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
137		Property Insurance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
138		Injuries and Damages	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
139		Pensions & Benefits	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
140		Franchise Requirements	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
141		Regulatory Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
142		Duplicate Charges - Credit	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
143		General Advertising Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
144		Miscellaneous General Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
145		Rents	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
146		Maintenance														
147		Maintenance of General Plant	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
148		Total A&G			2,972,025	1,900,747	191,726	259,713	43,930	416	408	520	89	2	157,431	68,495
149		Other Utility Plant Related Payroll	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
150		Total Labor Expense - Demand			19,087,622	12,207,414	1,231,345	1,667,991	282,139	2,675	2,622	3,341	572	10	1,011,088	439,901

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KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF PAYROLL															
		Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTE	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSRx	Sales for Resale SSR-Bnk	Small Transport STk	Small Transport STL
	Commodity														
1	Production & Gathering:														
2	Operation														
3	Op., Sup., & Eng.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
4	Production Maps & Records	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
5	Field Lines Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
6	Field Compressor Station Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
7	Field Compressor Sta. Fuel & Pwr.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
8	Field Meas. & Regul. Station Exp	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
9	Purification Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
10	Other Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
11	Maintenance														
12	Maint. Sup., & Eng.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
13	Structures and Improvements	20.0	MCF - Sales Customers	475	378	33	53	10	0	1	0	1	0	0	-
14	Field Line Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
15	Compressor Station Equip. Maint.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
16	Meas. & Regul. Station Equip Maint	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
17	Purification Equipment Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
18	Other Equipment Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
19	Gas Processed By Others	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
20	Total Production & Gathering			475	378	33	53	10	0	1	0	1	0	0	0
21	Other Gas Supply Expenses:														
22	Wellhead Purchases														
23	Field Line Purchases	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
24	Transmission Line Purchases	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
25	City Gate Purchases	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
26	Other Gas Purchases	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
27	Exchange Gas	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
28	Purchased Gas Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
29	Storage Gas Withdrawal	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
30	Company Used Gas	20.0	MCF - Sales Customers	228,538	181,719	15,788	25,298	4,715	54	615	93	246	9	-	-
31	Other Gas Supply Expenses														
32	Total Other Gas Supply Expenses			228,538	181,719	15,788	25,298	4,715	54	615	93	246	9	0	0
33	Underground Storage:														
34	Operation														
35	Op., Sup., & Eng.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
36	Maps & Records	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
37	Wells Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
38	Lines Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
39	Compressor Station Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
40	Compressor Station Fuel & Power	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
41	Meas. & Regul. Station Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
42	Purification Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
43	Exploration & Development	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
44	Gas Losses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
45	Other Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
46	Storage Well Royalties	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
47	Rents	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
48	Maintenance														
49	Maint. Sup., & Eng.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
50	Structures and Improvements	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
51	Reservoirs & Wells Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
52	Line Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
53	Compressor Station Equip Maint	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
54	Meas. & Regul. Station Equip Maint	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
55	Purification Equipment Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
56	Other Equipment Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
57	Total Underground Storage Expense			0	0	0	0	0	0	0	0	0	0	0	0
58	Transmission:														
59	Operation														
60	Op., Sup., & Eng.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
61	System Control & Load Dispatching	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
62	Communication Systems Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
63	Compressor Station Labor Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
64	Compressor Station Fuel Gas	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
65	Mains Expense	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
66	Meas. & Regul. Station Expenses - GSS	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
67	Trans. and Comp. of Gas by Others	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
68	Other Expenses	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
69	Rents	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
70	Maintenance														
71	Maint. Sup., & Eng.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
72	Structures and Improvements	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
73	Mains	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
74	Compressor Station Equip Maint	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
75	Meas. & Regul. Station Equip Maint	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
76	Communication Equipment Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
77	Other Equipment Maintenance	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
78	Total Transmission Expense			0	0	0	0	0	0	0	0	0	0	0	0

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KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION OF PAYROLL														
	Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTE	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSR%	Sales for Resale SSR-RR%	Small Transport ST%	Small Transport ST%
83														
84		Distribution:												
85		Operation												
86		Supervision & Eng.	1,531,445	1,266,248	108,589	56,319	6,005	1,310	484	2	11	19	31,898	10,105
87		Load Dispatching	608,718	503,308	43,162	22,386	2,387	521	192	1	4	7	12,679	4,017
88		Mains & Services Expense	4,394,562	3,633,567	311,602	161,611	17,230	3,760	1,388	5	32	54	91,532	28,997
89		Meas. & Reg Station Expense - Gen	1,031,860	853,175	73,165	37,947	4,046	883	326	1	8	13	21,492	6,880
90		Meas. & Reg Station Expense - Gen GSS	0	0	0	0	0	0	0	0	0	0	0	0
90		Meas. & Reg Station Expense - Ind	430,134	355,649	30,499	15,818	1,686	368	136	1	3	5	8,959	2,838
91		Meas. & Reg Station Expense - City Gate	101,674	84,067	7,209	3,739	399	87	32	0	1	1	2,118	671
92		Meter & House Regulator Expense	6,159,403	5,092,795	436,740	226,513	24,150	5,271	1,846	8	45	76	128,322	40,642
93		Customer Installations Expense	4,765,243	3,940,058	337,885	175,243	18,654	4,078	1,505	6	35	58	99,253	31,443
94		Other Expenses	1,398,756	1,156,537	99,180	51,439	5,484	1,197	442	2	10	17	29,134	9,230
95		Rents	0	0	0	0	0	0	0	0	0	0	0	0
96		Maintenance												
97		Supervision & Eng.	325,135	218,460	23,387	22,611	3,475	131	52	0	1	1	17,716	5,465
98		Structure & Improv.	21,567	14,491	1,551	1,500	231	9	3	0	0	0	1,175	362
99		Mains	5,787,692	3,888,780	416,309	402,489	61,860	2,326	926	2	15	22	315,359	97,278
100		Meas. & Reg Station Expense - Gen	539,122	362,239	38,779	37,492	5,762	217	86	0	1	2	28,376	9,061
101		Meas. & Reg Station Expense - Ind	191,104	126,403	13,746	13,290	2,043	77	31	0	1	1	10,413	3,212
102		Meas. & Reg Station Expense - City Gate	517,949	348,013	37,256	36,019	5,536	208	83	0	1	2	28,222	8,706
103		Services	1,443,093	969,622	103,802	100,356	15,424	580	231	1	4	6	78,631	24,255
104		Meters & House Regulators	1,507,869	1,013,145	108,461	104,861	16,116	606	241	1	4	6	82,161	25,344
105		Maintenance of Other Equipment	461	310	33	32	5	0	0	0	0	0	25	8
106		Total Distribution	30,755,787	23,828,867	2,191,356	1,469,664	190,522	21,629	8,105	29	177	291	988,434	308,441
107		Customer Accounts:												
108		Operation												
109		Supervision	435,448	397,485	25,153	7,922	341	461	146	1	5	1	2,374	820
111		Meter Reading Expenses	1,354,552	1,236,462	78,244	24,644	1,060	1,433	454	2	16	2	7,386	2,551
112		Meter Reading Expenses - GSS	0	0	0	0	0	0	0	0	0	0	0	0
113		Customer Records and Collection Exp.	5,550,499	5,066,602	320,619	100,984	4,343	5,873	1,859	9	64	9	30,264	

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF DEPRECIATION EXPENSE															
							General Service		Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small
		Allocation	Allocation	Total	Residential	Small	Large	Trans. Eligible	Generator	Sales	Supply	Resale	Resale	Transport	Transport
	Customer	Factor	Basis	Company	RS	GSS	GSL	GSTE	SGS	GIS	KGSSD	SSRk	SSR-BHk	STk	STi
1	Intangible Plant	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
2															
3	Production Plant	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
4															
5	Storage Plant	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
6															
7	Transmission:														
8															
9	Land and land rights	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
10	Rights-of-way	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
11	Structures and imp. - compressor stations	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
12	Structures and imp. - meas. & reg. stations	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
13	Mains	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
14	Compressor station equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
15	Measuring and regulating station equip.	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
16															
17	Total Transmission Plant			0	0	0	0	0	0	0	0	0	0	0	0
18															
19	Distribution:														
20															
21	Land & Land rights	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
22	Rights of way	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
23	Structures	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
24	Mains	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
25	Mains - Metallic	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
26	M&R station equipment - general	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
27	M&R station equipment - city gate	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
28	Services	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
29	Services-Metallic	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
30	Meters	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
31	Meter installations	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
32	House regulators	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
33	Other Property on Customer Premises	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
34	Other equipment	49.2	Distribution Plant - Customer	36,004,386	32,466,020	2,110,313	800,457	45,229	39,959	12,690	124	619	1,243	311,976	107,816
35															
36	Total Distribution Plant			36,004,386	32,466,020	2,110,313	800,457	45,229	39,959	12,690	124	619	1,243	311,976	107,816
37															
38	General Plant:														
39															
40	Land & Land rights	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
41	Structures	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
42	Leasehold Improvements (1)	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
43	Office furniture and equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
44	Computers and other electronic equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
45	Transportation equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
46	Stores equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
47	Tools, shop and garage equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
48	Laboratory equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
49	Power operated equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
50	Communications equipment	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
51	Miscellaneous equipment	51.2	General Plant - Customer	1,694,936	1,522,604	108,476	38,096	1,959	1,834	569	4	24	42	12,693	4,401
52															
53	Total General Plant			1,694,936	1,522,604	108,476	38,096	1,959	1,834	569	4	24	42	12,693	4,401
54															
55	Corporate Allocated	51.2	General Plant - Customer	3,362,010	3,020,178	215,169	75,565	3,885	3,638	1,128	9	48	82	25,178	8,729
56															
57	TOTAL DEPRECIATION EXPENSE			41,061,332	37,008,801	2,433,958	914,118	51,073	45,431	14,387	138	690	1,367	349,847	120,946
58															
59	Amortization Expense:														
60															
61	Intangible Plant	64.2	PST&D Plant - Customer	12,970	11,696	760	288	16	14	5	0	0	0	112	39
62	Distribution Plant	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
63	General Plant	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
64	Acquisition Premium	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
65	Regulatory Debit	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
66	Corporate Allocated	99.0	-	0	-	-	-	-	-	-	-	-	-	-	-
67															
68	Total Amortization Expense			12,970	11,696	760	288	16	14	5	0	0	0	112	39
69															
70	TOTAL DEP. AND AMORT. EXPENSE - CUSTOMER			41,074,302	37,020,497	2,434,718	914,407	51,089	45,445	14,392	138	691	1,367	349,960	120,985

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF DEPRECIATION EXPENSE																
		Allocation Factor	Allocation Basis	CNG Transport CNGK	CNG Transport CNGT	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Wholesale Transport WtT	
Customer																
1	Intangible Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2																
3	Production Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4																
5	Storage Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6																
7	Transmission:															
8																
9	Land and land rights	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Rights-of-way	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Structures and imp. - compressor stations	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Structures and imp. - meas. & reg. stations	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Mains	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Compressor station equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Measuring and regulating station equip.	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16																
17	Total Transmission Plant			0	0	0	0	0	0	0	0	0	0	0	0	0
18																
19	Distribution:															
20																
21	Land & Land rights	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Rights of way	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	Structures	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Mains	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	Mains - Metallic	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	M&R station equipment - general	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	M&R station equipment - city gate	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Services	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Services-Metallic	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Meters	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	Meter installations	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	House regulators	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	Other Property on Customer Premises	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	Other equipment	49.2	Distribution Plant - Customer	1,021	256	32,551	25,815	13,043	6,914	9,339	4,976	4,539	1,754	4,718	3,015	
35																
36	Total Distribution Plant			1,021	256	32,551	25,815	13,043	6,914	9,339	4,976	4,539	1,754	4,718	3,015	
37																
38	General Plant:															
39																
40	Land & Land rights	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	Structures	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Leasehold Improvements (1)	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	Office furniture and equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	Computers and other electronic equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	Transportation equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	Stores equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	Tools, shop and garage equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	Laboratory equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	Power operated equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	Communications equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	Miscellaneous equipment	51.2	General Plant - Customer	39	10	1,422	981	482	254	337	188	167	66	173	116	
52																
53	Total General Plant			39	10	1,422	981	482	254	337	188	167	66	173	116	
54																
55	Corporate Allocated	51.2	General Plant - Customer	76	19	2,821	1,947	957	503	668	373	332	130	343	230	
56																
57	TOTAL DEPRECIATION EXPENSE			1,136	285	36,795	28,743	14,482	7,671	10,344	5,537	5,038	1,950	5,235	3,361	
58																
59	Amortization Expense:															
60																
61	Intangible Plant	64.2	PST&D Plant - Customer	0	0	12	9	5	2	3	2	2	1	2	1	
62	Distribution Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	General Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	Acquisition Premium	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	Regulatory Debit	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	Corporate Allocated	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67																
68	Total Amortization Expense			0	0	12	9	5	2	3	2	2	1	2	1	
69																
70	TOTAL DEP. AND AMORT. EXPENSE - CUSTOMER			1,136	285	36,807	28,752	14,487	7,673	10,348	5,539	5,040	1,951	5,235	3,362	

[illegible]

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF DEPRECIATION EXPENSE															
		Allocation Factor	Allocation Basis	CNG Transport CNGK	CNG Transport CNGT	Irrigation Transport GI	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Large Vol Transport LVTK-T1	Large Vol Transport LVTK-T2	Large Vol Transport LVTK-T3	Large Vol Transport LVTK-T4	Wholesale Transport WT
Demand															
1	Intangible Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
2															
3	Production Plant	7.0	Monthly CP Demand - Sales Customers	-	-	-	-	-	-	-	-	-	-	-	-
4															
5	Storage Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
6															
7	Transmission:														
8															
9	Land and land rights	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Rights of way	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Structures and imp. - compressor stations	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Structures and imp. - meas. & reg. stations	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Mains	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Compressor station equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Measuring and regulating station equip.	54.1	Transmission Plant - Demand	-	1,464	3,348	-	-	-	-	29,893	38,291	14,096	211,483	99,600
16															
17	Total Transmission Plant			0	1,464	3,348	0	0	0	0	29,893	38,291	14,096	211,483	99,600
18															
19	Distribution:														
20															
21	Land & Land rights	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Rights of way	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
23	Structures	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Mains	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
25	Mains - Metallic	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
26	M&R station equipment - general	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
27	M&R station equipment - city gate	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Services	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Services-Metallic	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Meters	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
31	Meter installations	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
32	House regulators	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
33	Other Property on Customer Premises	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
34	Other equipment	49.1	Distribution Plant - Demand	13,767	914	9,254	199,841	200,568	134,550	650,115	59,886	57,367	27,923	408,178	-
35															
36	Total Distribution Plant			13,767	914	9,254	199,841	200,568	134,550	650,115	59,886	57,367	27,923	408,178	0
37															
38	General Plant:														
39															
40	Land & Land rights	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
41	Structures	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Leasehold Improvements (1)	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
43	Office furniture and equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
44	Computers and other electronic equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
45	Transportation equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
46	Stores equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
47	Tools, shop and garage equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
48	Laboratory equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
49	Power operated equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
50	Communications equipment	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
51	Miscellaneous equipment	51.1	General Plant - Demand	711	128	850	10,341	10,376	6,955	33,603	4,656	4,967	2,181	32,192	5,203
52															
53	Total General Plant			711	128	850	10,341	10,376	6,955	33,603	4,656	4,967	2,181	32,192	5,203
54															
55	Corporate Allocated	51.1	General Plant - Demand	1,411	254	1,685	20,512	20,582	13,796	66,653	9,236	9,852	4,325	63,855	10,320
56															
57	TOTAL DEPRECIATION EXPENSE			15,889	2,759	15,137	230,693	231,527	155,301	750,371	103,671	110,477	48,526	715,707	115,123
58															
59	Amortization Expense:														
60															
61	Intangible Plant	64.1	PST&D Plant - Demand	5	1	5	72	72	48	234	36	39	17	250	49
62	Distribution Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
63	General Plant	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
64	Acquisition Premium	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
65	Regulatory Debit	9.0	Monthly CP Demand - Total Customers	(429)	(28)	(288)	(6,223)	(6,246)	(4,190)	(20,244)	(1,865)	(1,786)	(870)	(12,710)	(5,102)
66	Corporate Allocated	99.0	-	-	-	-	-	-	-	-	-	-	-	-	-
67															
68	Total Amortization Expense			(424)	(27)	(283)	(6,151)	(6,173)	(4,141)	(20,010)	(1,829)	(1,747)	(853)	(12,460)	(5,053)
69															
70	TOTAL DEP. AND AMORT. EXPENSE - DEMAND			15,466	2,732	14,854	224,543	225,354	151,160	730,361	101,843	108,730	47,673	703,248	110,070

[illegible]

[illegible]

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION OF DEPRECIATION EXPENSE														
	Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTE	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSRK	Sales for Resale SSR-BHK	Small Transport STK	Small Transport STI
Total Depreciation Expense														
1		Intangible Plant	0	0	0	0	0	0	0	0	0	0	0	0
2														
3		Production Plant	11,060	8,762	839	1,211	213	3	13	4	15	0	0	0
4														
5		Storage Plant	0	0	0	0	0	0	0	0	0	0	0	0
6														
7		Transmission:												
8														
9		Land and land rights	0	0	0	0	0	0	0	0	0	0	0	0
10		Rights of way	0	0	0	0	0	0	0	0	0	0	0	0
11		Structures and imp. - compressor stations	0	0	0	0	0	0	0	0	0	0	0	0
12		Structures and imp. - meas. & reg. stations	0	0	0	0	0	0	0	0	0	0	0	0
13		Mains	0	0	0	0	0	0	0	0	0	0	0	0
14		Compressor station equipment	0	0	0	0	0	0	0	0	0	0	0	0
15		Measuring and regulating station equip.	6,732,425	4,896,236	475,823	659,374	112,861	0	338	4,622	0	0	0	184,997
16														
17		Total Transmission Plant	6,732,425	4,896,236	475,823	659,374	112,861	0	338	4,622	0	0	0	184,997
18														
19		Distribution:												
20														
21		Land & Land rights	0	0	0	0	0	0	0	0	0	0	0	0
22		Rights of way	0	0	0	0	0	0	0	0	0	0	0	0
23		Structures	0	0	0	0	0	0	0	0	0	0	0	0
24		Mains	0	0	0	0	0	0	0	0	0	0	0	0
25		Mains - Metallic	0	0	0	0	0	0	0	0	0	0	0	0
26		M&R station equipment - general	0	0	0	0	0	0	0	0	0	0	0	0
27		M&R station equipment - city gate	0	0	0	0	0	0	0	0	0	0	0	0
28		Services-Metallic	0	0	0	0	0	0	0	0	0	0	0	0
29		Services-Metallic	0	0	0	0	0	0	0	0	0	0	0	0
30		Meters	0	0	0	0	0	0	0	0	0	0	0	0
31		Meter installations	0	0	0	0	0	0	0	0	0	0	0	0
32		House regulators	0	0	0	0	0	0	0	0	0	0	0	0
33		Other Property on Customer Premises	0	0	0	0	0	0	0	0	0	0	0	0
34		Other equipment	48,806,372	40,230,123	2,903,612	1,867,404	225,046	42,323	13,824	124	619	1,243	1,233,173	390,759
35														
36		Total Distribution Plant	48,806,372	40,230,123	2,903,612	1,867,404	225,046	42,323	13,824	124	619	1,243	1,233,173	390,759
37														
38		General Plant:												
39														
40		Land & Land rights	0	0	0	0	0	0	0	0	0	0	0	0
41		Structures	0	0	0	0	0	0	0	0	0	0	0	0
42		Leasehold Improvements (1)	0	0	0	0	0	0	0	0	0	0	0	0
43		Office furniture and equipment	0	0	0	0	0	0	0	0	0	0	0	0
44		Computers and other electronic equipment	0	0	0	0	0	0	0	0	0	0	0	0
45		Transportation equipment	0	0	0	0	0	0	0	0	0	0	0	0
46		Stores equipment	0	0	0	0	0	0	0	0	0	0	0	0
47		Tools, shop and garage equipment	0	0	0	0	0	0	0	0	0	0	0	0
48		Laboratory equipment	0	0	0	0	0	0	0	0	0	0	0	0
49		Power operated equipment	0	0	0	0	0	0	0	0	0	0	0	0
50		Communications equipment	0	0	0	0	0	0	0	0	0	0	0	0
51		Miscellaneous equipment	2,727,126	2,193,275	175,617	129,569	17,483	1,961	700	251	44	42	60,689	28,804
52														
53		Total General Plant	2,727,126	2,193,275	175,617	129,569	17,483	1,961	700	251	44	42	60,689	28,804
54														
55		Corporate Allocated	5,409,420	4,359,138	348,636	254,838	34,175	3,918	1,329	493	75	84	119,036	56,734
56														
57		TOTAL DEPRECIATION EXPENSE	63,686,402	51,687,534	3,904,527	2,912,395	389,778	48,204	16,203	5,494	753	1,369	1,412,898	661,294
58														
59		Amortization Expense:												
60														
61		Intangible Plant	20,885	16,912	1,280	994	136	15	5	2	0	0	441	230
62		Distribution Plant	0	0	0	0	0	0	0	0	0	0	0	0
63		General Plant	0	0	0	0	0	0	0	0	0	0	0	0
64		Acquisition Premium	0	0	0	0	0	0	0	0	0	0	0	0
65		Regulatory Debit	(400,461)	(239,710)	(24,524)	(32,937)	(5,546)	(73)	(28)	(88)	(466)	(8)	(28,382)	(8,718)
66		Corporate Allocated	0	0	0	0	0	0	0	0	0	0	0	0
67														
68		Total Amortization Expense	(379,576)	(222,798)	(23,244)	(31,944)	(5,410)	(58)	(23)	(86)	(465)	(8)	(27,941)	(8,488)
69														
70		TOTAL DEP. AND AMORT. EXPENSE	63,306,825	51,464,736	3,881,284	2,880,451	384,368	48,146	16,180	5,408	287	1,361	1,384,957	652,806

KANSAS GAS SERVICE COMPANY CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY TEST YEAR ENDING 12/31/2017														
ALLOCATION OF DEPRECIATION EXPENSE														
	Allocation Factor	Allocation Basis	CNG Transport CNGK	CNG Transport CNGT	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Wholesale Transport WTk
Total Depreciation Expense														
1 Intangible Plant			0	0	0	0	0	0	0	0	0	0	0	0
2 Production Plant			0	0	0	0	0	0	0	0	0	0	0	0
4 Storage Plant			0	0	0	0	0	0	0	0	0	0	0	0
6 Transmission:														
8 Land and land rights			0	0	0	0	0	0	0	0	0	0	0	0
10 Rights-of-way			0	0	0	0	0	0	0	0	0	0	0	0
11 Structures and imp. - compressor stations			0	0	0	0	0	0	0	0	0	0	0	0
12 Structures and imp. - meas. & reg. stations			0	0	0	0	0	0	0	0	0	0	0	0
13 Mains			0	0	0	0	0	0	0	0	0	0	0	0
14 Compressor station equipment			0	0	0	0	0	0	0	0	0	0	0	0
15 Measuring and regulating station equip.			0	1,464	3,348	0	0	0	0	29,893	38,291	14,096	211,483	99,600
16 Total Transmission Plant			0	1,464	3,348	0	0	0	0	29,893	38,291	14,096	211,483	99,600
19 Distribution:														
20 Land & Land rights			0	0	0	0	0	0	0	0	0	0	0	0
22 Rights of way			0	0	0	0	0	0	0	0	0	0	0	0
23 Structures			0	0	0	0	0	0	0	0	0	0	0	0
24 Mains			0	0	0	0	0	0	0	0	0	0	0	0
25 Mains - Metallic			0	0	0	0	0	0	0	0	0	0	0	0
26 M&R station equipment - general			0	0	0	0	0	0	0	0	0	0	0	0
27 M&R station equipment - city gate			0	0	0	0	0	0	0	0	0	0	0	0
28 Services			0	0	0	0	0	0	0	0	0	0	0	0
29 Services-Metallic			0	0	0	0	0	0	0	0	0	0	0	0
30 Meters			0	0	0	0	0	0	0	0	0	0	0	0
31 Meter installations			0	0	0	0	0	0	0	0	0	0	0	0
32 House regulators			0	0	0	0	0	0	0	0	0	0	0	0
33 Other Property on Customer Premises			0	0	0	0	0	0	0	0	0	0	0	0
34 Other equipment			15,093	1,268	43,184	227,533	216,017	143,656	670,663	65,376	62,636	30,303	419,377	3,015
35 Total Distribution Plant			15,093	1,268	43,184	227,533	216,017	143,656	670,663	65,376	62,636	30,303	419,377	3,015
37 General Plant:														
38 Land & Land rights			0	0	0	0	0	0	0	0	0	0	0	0
40 Structures			0	0	0	0	0	0	0	0	0	0	0	0
42 Leasehold Improvements (1)			0	0	0	0	0	0	0	0	0	0	0	0
43 Office furniture and equipment			0	0	0	0	0	0	0	0	0	0	0	0
44 Computers and other electronic equipment			0	0	0	0	0	0	0	0	0	0	0	0
45 Transportation equipment			0	0	0	0	0	0	0	0	0	0	0	0
46 Stores equipment			0	0	0	0	0	0	0	0	0	0	0	0
47 Tools, shop and garage equipment			0	0	0	0	0	0	0	0	0	0	0	0
48 Laboratory equipment			0	0	0	0	0	0	0	0	0	0	0	0
49 Power operated equipment			0	0	0	0	0	0	0	0	0	0	0	0
50 Communications equipment			0	0	0	0	0	0	0	0	0	0	0	0
51 Miscellaneous equipment			775	146	2,386	11,477	11,057	7,390	34,864	4,887	5,194	2,298	32,899	5,319
52 Total General Plant			775	146	2,386	11,477	11,057	7,390	34,864	4,887	5,194	2,298	32,899	5,319
54 Corporate Allocated			1,488	273	4,534	22,477	21,549	14,304	67,328	9,613	10,187	4,457	64,201	10,552
55 TOTAL DEPRECIATION EXPENSE			17,357	3,151	53,452	261,488	248,622	165,350	772,854	109,769	116,309	51,154	727,960	118,487
58 Amortization Expense:														
60 Intangible Plant			5	1	17	81	77	51	238	38	41	18	252	50
62 Distribution Plant			0	0	0	0	0	0	0	0	0	0	0	0
63 General Plant			0	0	0	0	0	0	0	0	0	0	0	0
64 Acquisition Premium			0	0	0	0	0	0	0	0	0	0	0	0
65 Regulatory Debit			(429)	(28)	(288)	(6,223)	(6,246)	(4,190)	(20,244)	(1,865)	(1,786)	(870)	(12,710)	(5,102)
66 Corporate Allocated			0	0	0	0	0	0	0	0	0	0	0	0
67 Total Amortization Expense			(423)	(27)	(271)	(6,142)	(6,169)	(4,139)	(20,006)	(1,827)	(1,745)	(852)	(12,458)	(5,052)
70 TOTAL DEP. AND AMORT. EXPENSE			16,934	3,124	53,181	255,346	242,454	161,211	752,848	107,942	114,563	50,302	715,502	113,435

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR DEMAND 12/31/2017																
ALLOCATION OF TAXES, OTHER THAN INCOME & NET DEDUCTIONS FOR INCOME TAX																
			Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTe	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSRK	Sales for Resale SSR-BHK	Small Transport STK	Small Transport STL
Customer																
1	Taxes Other Than Income:															
2																
3			43.2	Labor - A&G - Customer	2,411,323	2,155,183	171,711	54,985	2,462	2,520	754		24		14,263	4,976
4			63.2	Gross Plant - Customer	13,132,632	11,837,815	776,387	292,269	16,373	14,541	4,608	44	222	441	112,342	38,835
5			68.2	Other Taxes - Customer	907,302	816,773	55,341	20,269	1,099	996	313	3	14	27	7,390	2,557
6																
7				Total Taxes, Other	16,451,257	14,809,771	1,003,438	367,522	19,934	18,057	5,675	51	261	495	133,995	46,368
8																
9	Adjustments to Pre-Tax Income:															
10																
11			58.0	Rate Base Less Working Capital	10,013,530	8,130,572	591,779	466,252	64,008	6,662	1,962	1,109	(14)	228	212,469	111,838
12			62.2	Other Labor - Customer	0	-	-	-	-	-	-	-	-	-	-	-
13																
14				Total Adjustments to Pre-Tax Income	10,013,530	8,130,572	591,779	466,252	64,008	6,662	1,962	1,109	(14)	228	212,469	111,838
15																
16	Income Taxes:															
17																
18			45.0	Income Before Taxes	276,668	109,247	28,484	23,110	3,098	1,274	1,369	30	391	7	33,111	10,800
19			45.0	Income Before Taxes	771,904	304,798	79,469	64,477	8,644	3,556	3,821	83	1,082	19	92,379	30,132
20																
21				Total Income Taxes	1,048,572	414,044	107,953	87,586	11,742	4,830	5,190	112	1,483	26	125,489	40,932
22																
23	Adjustments to After-Tax Income:															
24																
25			45.0	Income Before Taxes	6,171,037	2,436,726	635,323	515,462	69,104	28,427	30,545	660	8,728	150	738,528	240,894
26			45.0	Income Before Taxes	(76,493)	(30,204)	(7,875)	(6,389)	(857)	(352)	(379)	(8)	(108)	(2)	(9,154)	(2,986)
27																
28				Total Adjustments to After-Tax Income	6,094,544	2,406,521	627,448	509,072	68,248	28,074	30,166	652	8,620	149	729,374	237,908

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF TAXES, OTHER THAN INCOME & NET DEDUCTIONS FOR INCOME															
	Allocation	Allocation	CNG	CNG	Irrigation	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Wholesale	
	Factor	Basis	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	
			CNGk	CNGl	GIT	LVTk-T1	LVTk-T2	LVTk-T3	LVTk-T4	LVTl-T1	LVTl-T2	LVTl-T3	LVTl-T4	WTl	
Customer															
1	Taxes Other Than Income:														
2															
3	Payroll	43.2	Labor - A&G - Customer	37	10	1,814	951	436	224	283	180	150	61	152	115
4	Real Estate and Personal Property	63.2	Gross Plant - Customer	365	92	11,793	9,246	4,661	2,470	3,332	1,781	1,622	627	1,685	1,081
5	Other	68.2	Other Taxes - Customer	23	6	794	595	298	157	211	115	103	40	107	70
6															
7	Total Taxes, Other		426	107	14,401	10,792	5,395	2,851	3,826	2,076	1,875	729	1,944	1,266	
8															
9	Adjustments to Pre-Tax Income:														
10															
11	Interest on Long-Term Debt	58.0	Rate Base Less Working Capital	2,337	473	7,162	40,016	37,913	25,116	117,129	18,734	20,249	8,657	124,357	24,523
12	Other	62.2	Labor - Customer	-	-	-	-	-	-	-	-	-	-	-	-
13															
14	Total Adjustments to Pre-Tax Income		2,337	473	7,162	40,016	37,913	25,116	117,129	18,734	20,249	8,657	124,357	24,523	
15															
16	Income Taxes:														
17															
18	State Income Taxes	45.0	Income Before Taxes	587	236	7,583	3,510	4,029	4,361	20,348	998	1,747	2,185	15,788	4,375
19	Federal Income Taxes	45.0	Income Before Taxes	1,636	658	21,158	9,794	11,241	12,168	56,771	2,785	4,874	6,097	44,049	12,206
20															
21	Total Income Taxes		2,223	893	28,741	13,305	15,269	16,529	77,119	3,784	6,621	8,282	59,837	16,582	
22															
23	Adjustments to After-Tax Income:														
24															
25	Amortization	45.0	Income Before Taxes	13,082	5,257	169,146	78,300	89,863	97,275	453,857	22,267	38,963	48,742	352,151	97,586
26	Other	45.0	Income Before Taxes	(162)	(65)	(2,097)	(971)	(1,114)	(1,206)	(5,626)	(276)	(483)	(604)	(4,365)	(1,210)
27															
28	Total Adjustments to After-Tax Income		12,920	5,192	167,050	77,329	88,749	96,069	448,231	21,991	38,480	48,138	347,786	96,376	

KANSAS GAS SERVICE COMPANY																
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY																
TEST YEAR ENDING 12/31/2017																
ALLOCATION OF TAXES, OTHER THAN INCOME & NET DEDUCTIONS FOR INCOME TAX																
			Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTe	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSRk	Sales for Resale SSR-BHK	Small Transport STk	Small Transport STt
Demand																
1	Taxes Other Than Income:															
2																
3			43.1	Labor - A&G - Demand	1,421,551	909,147	91,704	124,224	21,012	199	195	249	43	1	75,301	32,762
4			63.1	Gross Plant - Demand	7,955,158	5,225,518	522,393	711,494	120,694	866	522	2,253	18	0	335,579	193,109
5			68.1	Other Taxes - Demand	547,319	358,081	35,845	48,781	8,271	62	42	146	4	0	23,983	13,184
6																
7				Total Taxes - Other	9,924,028	6,492,746	649,942	884,499	149,978	1,127	760	2,648	64	1	434,863	239,055
8																
9				Adjustments to Pre-Tax Income:												
10																
11			58.0	Rate Base Less Working Capital	6,126,604	4,974,549	362,069	285,268	39,162	4,076	1,201	679	(9)	139	129,996	68,426
12			62.1	Labor - Demand	0	-	-	-	-	-	-	-	-	-	-	-
13																
14				Total Adjustments to Pre-Tax Income	6,126,604	4,974,549	362,069	285,268	39,162	4,076	1,201	679	(9)	139	129,996	68,426
15																
16				Income Taxes:												
17																
18			45.0	Income Before Taxes	188,238	74,329	19,380	15,723	2,108	967	932	20	266	5	22,528	7,348
19			45.0	Income Before Taxes	525,184	207,377	54,069	43,868	5,881	2,419	2,599	56	743	13	62,852	20,501
20																
21				Total Income Taxes	713,422	281,705	73,449	59,592	7,989	3,286	3,531	76	1,009	17	85,380	27,849
22																
23				Adjustments to After-Tax Income:												
24																
25			45.0	Income Before Taxes	4,198,619	1,657,887	432,258	350,707	47,017	19,341	20,782	449	5,938	102	502,476	163,898
26			45.0	Income Before Taxes	(52,044)	(20,550)	(5,358)	(4,347)	(583)	(240)	(258)	(6)	(74)	(1)	(6,228)	(2,032)
27																
28				Total Adjustments to After-Tax Income	4,146,576	1,637,337	426,900	346,360	46,434	19,101	20,524	443	5,865	101	496,248	161,867

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF TAXES, OTHER THAN INCOME & NET DEDUCTIONS FOR INCOME															
	Allocation Factor	Allocation Basis	CNG Transport CNGk	CNG Transport CNGl	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTl-T1	Large Vol Transport LVTl-T2	Large Vol Transport LVTl-T3	Large Vol Transport LVTl-T4	Wholesale Transport WtT	
		Demand													
1		Taxes Other Than Income:													
2															
3	43.1	Labor - A&G - Demand	1,133	166	1,590	16,488	16,541	11,077	53,514	6,485	6,721	3,036	44,773	5,189	
4	63.1	Real Estate and Personal Property	5,068	1,052	5,179	73,572	73,838	49,530	239,313	36,592	39,753	17,139	253,207	48,471	
5	68.1	Other	362	71	395	5,257	5,275	3,538	17,092	2,514	2,713	1,178	17,393	3,132	
6															
7		Total Taxes, Other	6,562	1,288	7,164	95,317	95,655	64,145	309,919	45,591	49,187	21,353	315,374	56,792	
8															
9		Adjustments to Pre-Tax Income:													
10															
11	58.0	Rate Base Less Working Capital	1,430	290	4,382	24,483	23,196	15,367	71,664	11,462	12,389	5,296	76,085	15,004	
12	62.1	Other	-	-	-	-	-	-	-	-	-	-	-	-	
13															
14		Total Adjustments to Pre-Tax Income	1,430	290	4,382	24,483	23,196	15,367	71,664	11,462	12,389	5,296	76,085	15,004	
15															
16		Income Taxes:													
17															
18	45.0	State Income Taxes	399	160	5,160	2,388	2,741	2,967	13,844	679	1,189	1,487	10,742	2,977	
19	45.0	Federal Income Taxes	1,113	447	14,395	6,664	7,648	8,279	38,625	1,895	3,316	4,148	29,970	8,305	
20															
21		Total Income Taxes	1,512	608	19,555	9,052	10,389	11,246	52,470	2,574	4,504	5,635	40,711	11,282	
22															
23		Adjustments to After-Tax Income:													
24															
25	45.0	Amortization	8,901	3,577	115,083	53,273	61,141	66,183	308,793	15,150	26,510	33,163	239,595	66,395	
26	45.0	Other	(110)	(44)	(1,427)	(660)	(758)	(820)	(3,828)	(188)	(329)	(411)	(2,970)	(823)	
27															
28		Total Adjustments to After-Tax Income	8,791	3,533	113,657	52,613	60,383	65,363	304,965	14,962	26,181	32,752	236,625	65,572	

KANSAS GAS SERVICE COMPANY															
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY															
TEST YEAR ENDING 12/31/2017															
ALLOCATION OF TAXES, OTHER THAN INCOME & NET DEDUCTIONS FOR INCOME															
	Allocation Factor	Allocation Basis	CNG Transport CNGK	CNG Transport CNGI	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTi-T1	Large Vol Transport LVTi-T2	Large Vol Transport LVTi-T3	Large Vol Transport LVTi-T4	Wholesale Transport WTT	
Commodity															
1	Taxes Other Than Income:														
2															
3	Payroll	43.3	Labor - A&G - Commodity	57	18	255	347	444	405	2,069	95	135	115	1,196	-
4	Real Estate and Personal Property	63.3	Gross Plant - Commodity	120	38	539	733	940	856	4,377	201	285	244	2,531	-
5	Other	68.3	Other Taxes - Commodity	10	3	46	63	81	74	376	17	25	21	218	-
6															
7	Total Taxes, Other			186	60	839	1,143	1,464	1,334	6,822	313	444	381	3,945	0
8															
9	Adjustments to Pre-Tax Income:														
10															
11	Interest on Long-Term Debt	58.0	Rate Base Less Working Capital	8	2	24	136	129	85	398	64	69	29	422	83
12	Other	62.3	Labor - Commodity	-	-	-	-	-	-	-	-	-	-	-	-
13															
14	Total Adjustments to Pre-Tax Income			8	2	24	136	129	85	398	64	69	29	422	83
15															
16	Income Taxes:														
17															
18	State Income Taxes	45.0	Income Before Taxes	2	1	26	12	14	15	69	3	6	7	54	15
19	Federal Income Taxes	45.0	Income Before Taxes	6	2	72	33	38	41	193	9	17	21	150	41
20															
21	Total Income Taxes			8	3	98	45	52	56	262	13	22	28	203	56
22															
23	Adjustments to After-Tax Income:														
24															
25	Amortization	45.0	Income Before Taxes	44	18	574	266	305	330	1,541	76	132	165	1,195	331
26	Other	45.0	Income Before Taxes	(1)	(0)	(7)	(3)	(4)	(4)	(19)	(1)	(2)	(2)	(15)	(4)
27															
28	Total Adjustments to After-Tax Income			44	18	567	263	301	326	1,522	75	131	163	1,181	327

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION OF TAXES, OTHER THAN INCOME & NET DEDUCTIONS FOR INCOME TAX														
	Allocation Factor	Allocation Basis	Total Company	Residential RS	Small GSS	General Service Large GSL	Trans. Eligible GSTe	Small Generator SGS	Irrigation Sales GIS	Kansas Gas Supply KGSSD	Sales for Resale SSRK	Sales for Resale SSR-BHK	Small Transport STK	Small Transport STI
Total Taxes Other														
1 Taxes Other Than Income:														
2 Payroll			3,875,865	3,092,587	265,870	183,142	24,208	2,728	1,045	261	89	28	91,360	38,285
4 Real Estate and Personal Property			21,144,627	17,095,986	1,301,617	1,008,309	137,915	15,416	5,241	2,301	249	442	451,721	233,101
5 Other			1,460,448	1,178,409	91,494	69,545	9,463	1,059	367	150	20	27	31,700	15,841
7 Total Taxes, Other			26,480,941	21,366,981	1,658,981	1,260,996	171,585	19,203	6,653	2,711	358	497	574,780	287,228
9 Adjustments to Pre-Tax Income:														
11 Interest on Long-Term Debt			16,174,128	13,132,722	955,857	753,104	103,388	10,761	3,170	1,792	(23)	368	343,186	180,644
12 Other			0	0	0	0	0	0	0	0	0	0	0	0
14 Total Adjustments to Pre-Tax Income			16,174,128	13,132,722	955,857	753,104	103,388	10,761	3,170	1,792	(23)	368	343,186	180,644
16 Income Taxes:														
18 State Income Taxes			465,845	183,946	47,960	38,912	5,217	2,146	2,306	50	659	11	55,751	18,185
19 Federal Income Taxes			1,299,709	513,209	133,808	108,564	14,554	5,987	6,433	139	1,838	32	155,545	50,736
21 Total Income Taxes			1,765,554	697,155	181,768	147,475	19,771	8,133	8,739	189	2,497	43	211,295	68,921
23 Adjustments to After-Tax Income:														
25 Amortization			10,390,605	4,102,885	1,069,738	867,919	116,356	47,864	51,430	1,111	14,696	253	1,243,511	405,610
26 Other			(128,796)	(50,857)	(13,260)	(10,758)	(1,442)	(593)	(637)	(14)	(182)	(3)	(15,414)	(5,028)
27														
28 Total Adjustments to After-Tax Income			10,261,809	4,052,028	1,056,478	857,161	114,914	47,270	50,793	1,097	14,514	250	1,228,098	400,582

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION OF TAXES, OTHER THAN INCOME & NET DEDUCTIONS FOR INCOME														
	Allocation Factor	Allocation Basis	CNG Transport CNGK	CNG Transport CNGI	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTi-T1	Large Vol Transport LVTi-T2	Large Vol Transport LVTi-T3	Large Vol Transport LVTi-T4	Wholesale Transport WTi
Total Taxes Other														
1 Taxes Other Than Income:														
2														
3 Payroll			1,226	193	3,659	17,786	17,421	11,706	55,866	6,760	7,006	3,213	46,122	5,305
4 Real Estate and Personal Property			5,552	1,182	17,510	83,551	79,439	52,855	247,022	38,574	41,660	18,011	257,423	49,552
5 Other			396	80	1,236	5,915	5,654	3,768	17,680	2,646	2,841	1,239	17,718	3,202
6														
7 Total Taxes, Other			7,174	1,455	22,404	107,251	102,514	68,330	320,567	47,980	51,506	22,463	321,263	58,059
8														
9 Adjustments to Pre-Tax Income:														
10														
11 Interest on Long-Term Debt			3,775	764	11,568	64,634	61,238	40,568	189,191	30,260	32,706	13,982	200,864	39,610
12 Other			0	0	0	0	0	0	0	0	0	0	0	0
13														
14 Total Adjustments to Pre-Tax Income			3,775	764	11,568	64,634	61,238	40,568	189,191	30,260	32,706	13,982	200,864	39,610
15														
16 Income Taxes:														
17														
18 State Income Taxes			988	397	12,769	5,911	6,784	7,343	34,261	1,681	2,941	3,680	26,584	7,367
19 Federal Income Taxes			2,755	1,107	35,025	16,491	18,926	20,487	95,589	4,690	8,206	10,266	74,168	20,553
20														
21 Total Income Taxes			3,743	1,504	48,393	22,402	25,710	27,831	129,850	6,371	11,148	13,945	100,751	27,920
22														
23 Adjustments to After-Tax Income:														
24														
25 Amortization			22,027	8,852	284,804	131,839	151,309	163,788	764,191	37,493	65,605	82,071	592,941	164,312
26 Other			(273)	(110)	(3,530)	(1,634)	(1,876)	(2,030)	(9,472)	(465)	(813)	(1,017)	(7,350)	(2,037)
27														
28 Total Adjustments to After-Tax Income			21,754	8,742	281,273	130,205	149,434	161,758	754,718	37,028	64,792	81,053	585,591	162,275

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION OF REVENUES														
	Allocation	Allocation	Total	Residential	Small	General Service	Trans. Eligible	Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small
	Factor	Basis	Company	RS	GSS	Large	GSTE	Generator	Sales	Supply	Resale	Resale	Transport	Transport
						GSL		SGS	GIS	KGSSD	SSRk	SSR-BHk	STk	STt
1	Rate Schedule Revenue:													
2														
3	Sales Service Revenues	Input	234,428,881	197,557,643	19,987,779	14,168,253	1,874,864	426,618	321,359	19,774	68,326	4,266	-	-
4	Gas Purchased	20.0	-	-	-	-	-	-	-	-	-	-	-	-
5	Transport Service Revenues	Input	35,216,610	-	-	-	-	-	-	-	-	-	10,530,183	4,020,647
6	EFM Revenues	Input	-	-	-	-	-	-	-	-	-	-	-	-
7	Adjustments:													
8	GSRS	Input	(286,082)	(169,573)	(16,855)	(12,931)	(1,938)	(354)	(236)	(147)	(49)	(197)	(22,821)	(9,530)
9	NTB	Input	(1,956)	(1,074)	(476)	(343)	(45)	(10)	(7)	(1)	0	0	(0)	(0)
10	Test Year Revenue Adjustment IS 37	Input	937,081	779,960	84,043	59,691	5,862	-	52	-	-	-	4,643	107
11	Weather Normalization	Input	12,664,050	9,010,948	907,233	949,899	145,720	655	5,506	2,620	7,193	-	658,404	279,682
12	Customer Annualization	Input	307,009	298,485	4,717	(75,059)	(53,035)	4,241	(3,157)	-	679	-	117,384	84,614
13	Miscellaneous Rate Schedule Revenues	22.0	-	-	-	-	-	-	-	-	-	-	-	-
14														
15	Total Rate Schedule Revenue		283,265,593	207,476,387	20,966,439.75	15,089,509.35	1,971,426.86	431,150.17	323,516.38	22,245.96	76,149	4,068	11,287,794	4,375,519
16														
17	Other Revenue:													
18														
19	Other Utility Revenue	30.0	4,970,894	4,518,150	286,916	94,472	4,808	5,324	1,513	8	57	77	35,638	12,678
20	Competitive Transport Revenue	22.0	11,377,530	6,009,632	522,135	836,635	155,943	1,800	20,334	3,079	8,131	283	885,245	269,757
21	Sales Adjustments (R-3, 4, 9, 12, 15)	99.0	-	-	-	-	-	-	-	-	-	-	-	-
22	Other Operating Revenue	99.0	-	-	-	-	-	-	-	-	-	-	-	-
23														
24	Total Non-Rate Revenue		16,348,424	10,527,782	809,051	931,107	160,751	7,124	21,848	3,087	8,189	360	920,883	282,435
25														
26	TOTAL REVENUE		299,614,018	218,004,170	21,775,491	16,020,616	2,132,178	438,275	345,364	25,333	84,338	4,428	12,208,676	4,657,954

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION OF REVENUES														
			CNG	CNG	Irrigation	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Large Vol	Wholesale
			Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport	Transport
			CNGk	CNGt	GIT	LVTK-T1	LVTK-T2	LVTK-T3	LVTK-T4	LVTK-T1	LVTK-T2	LVTK-T3	LVTK-T4	WTt
	Allocation	Allocation												
	Factor	Basis												
1	Rate Schedule Revenue:													
2														
3	Sales Service Revenues	Input	-	-	-	-	-	-	-	-	-	-	-	-
4	Gas Purchased	20.0 MCF - Sales Customers	-	-	-	-	-	-	-	-	-	-	-	-
5	Transport Service Revenues	Input	155,393	43,307	1,620,700	1,473,543	1,570,634	1,423,267	6,160,123	517,526	715,394	649,706	5,275,291	1,060,895
6	EFM Revenues	Input	-	-	-	-	-	-	-	-	-	-	-	-
7	Adjustments:													
8	GSRS	Input	(202)	(25)	(4,876)	(2,773)	(3,905)	(4,127)	(11,065)	(1,148)	(2,268)	(3,120)	(14,078)	(3,863)
9	NTB	Input	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
10	Test Year Revenue Adjustment IS 37	Input	-	-	(73)	(1,284)	-	-	3,923	158	-	-	-	-
11	Weather Normalization	Input	-	-	32,060	81,476	79,344	45,523	133,132	31,762	32,151	11,951	140,136	108,667
12	Customer Annualization	Input	7,195	8,417	(385)	23,815	(44,590)	(103,384)	23,900	26,844	(14,126)	(69,717)	70,172	(0)
13	Miscellaneous Rate Schedule Revenues	22.0 MCF - Total	-	-	-	-	-	-	-	-	-	-	-	-
14														
15	Total Rate Schedule Revenue		162,387	51,699	1,647,416	1,574,777	1,601,483	1,361,280	6,310,013	575,142	731,151	588,820	5,471,522	1,165,699
16														
17	Other Revenue:													
18														
19	Other Utility Revenue	30.0 Services Cost	80	27	3,577	2,822	1,332	717	754	502	474	175	452	339
20	Competitive Transport Revenue	22.0 MCF - Total	27,849	8,949	125,455	170,809	218,881	199,393	1,019,659	46,772	66,408	56,897	589,661	133,821
21	Sales Adjustments (R-3, 4, 9, 12, 15)	99.0 -	-	-	-	-	-	-	-	-	-	-	-	-
22	Other Operating Revenue	99.0 -	-	-	-	-	-	-	-	-	-	-	-	-
23														
24	Total Non-Rate Revenue		27,929	8,976	129,032	173,631	220,213	200,111	1,020,413	47,274	66,883	57,072	590,113	134,161
25														
26	TOTAL REVENUE		190,316	60,675	1,776,448	1,748,409	1,821,696	1,561,390	7,330,426	622,416	798,034	645,892	6,061,634	1,299,860

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION FACTORS														
				General Service										
				Total	Residential	Small	Large	Trans. Eligible	Small	Irrigation	Kansas Gas	Sales for	Sales for	Small
				Company	RS	GSS	GSL	GSTE	Generator	Sales	Supply	Resale	Resale	Transport
									SGS	GIS	KGSSD	SSRk	SSR-BHK	STk
1.0	Input	Value	632,966	583,050	36,896	11,621	500	676	214	1	7	1	0	0
	Sales Customers	%	100.0000%	92.1140%	5.8291%	1.8360%	0.0790%	0.1068%	0.0338%	0.0002%	0.0012%	0.0002%	0.0000%	0.0000%
2.0	Input	Value	5,770	0	0	0	0	0	0	0	0	0	3,483	1,203
	Transport Customers	%	100.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	60.3614%	20.8518%
3.0	Internally Generated	Value	638,736	583,050	36,896	11,621	500	676	214	1	7	1	3,483	1,203
	Total Customers	%	100.0000%	91.2819%	5.7764%	1.8194%	0.0782%	0.1058%	0.0335%	0.0002%	0.0011%	0.0002%	0.5452%	0.1884%
4.0	Internally Generated	Value	638,699	583,050	36,896	11,621	500	676	214	0	0	0	3,483	1,203
	Retail Customers	%	100.0000%	91.2871%	5.7767%	1.8195%	0.0783%	0.1058%	0.0335%	0.0000%	0.0000%	0.0000%	0.5453%	0.1884%
5.0	Internally Generated	Value	634,146	583,050	36,896	11,621	500	0	214	1	0	0	0	1,203
	Customers for Transmission Allocation	%	100.0000%	91.9425%	5.8182%	1.8325%	0.0788%	0.0000%	0.0337%	0.0002%	0.0000%	0.0000%	0.0000%	0.1897%
6.0	Internally Generated	Value	49,017	0	36,896	11,621	500	0	0	0	0	0	0	0
	Direct to GS Customers	%	100.0000%	0.0000%	75.2722%	23.7082%	1.0196%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
7.0	Input	Value	11,524,480	9,105,834	931,586	1,251,188	210,674	2,773	1,077	3,351	17,687	310	0	0
	Monthly CP Demand - Sales Customers	%	100.0000%	79.0130%	8.0835%	10.8568%	1.8281%	0.0241%	0.0093%	0.0291%	0.1535%	0.0027%	0.0000%	0.0000%
8.0	Input	Value	3,687,798	0	0	0	0	0	0	0	0	0	1,078,151	331,179
	Monthly CP Demand - Transport Customers	%	100.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	29.2356%	8.9804%
9.0	Internally Generated	Value	15,212,278	9,105,834	931,586	1,251,188	210,674	2,773	1,077	3,351	17,687	310	1,078,151	331,179
	Monthly CP Demand - Total Customers	%	100.0000%	59.8585%	6.1239%	8.2249%	1.3849%	0.0182%	0.0071%	0.0220%	0.1163%	0.0020%	7.0874%	2.1770%
10.0	Internally Generated	Value	14,997,120	9,105,834	931,586	1,251,188	210,674	2,773	1,077	0	0	0	1,078,151	331,179
	Monthly CP Demand - Retail Customers	%	100.0000%	60.7172%	6.2118%	8.3429%	1.4048%	0.0185%	0.0072%	0.0000%	0.0000%	0.0000%	7.1891%	2.2083%
11.0	Internally Generated	Value	12,695,276	9,105,834	931,586	1,251,188	210,674	0	1,077	3,351	0	0	0	331,179
	Monthly CP Demand for Transmission Allocation	%	100.0000%	71.7262%	7.3381%	9.8555%	1.6595%	0.0000%	0.0085%	0.0264%	0.0000%	0.0000%	0.0000%	2.6087%
11.2	Input	Value	710,638	516,820	50,225	69,600	11,913	36	488	0	0	0	0	19,527
	Peak Day Demand for Transmission Allocation	%	100.0000%	72.7262%	7.0676%	9.7940%	1.6764%	0.0000%	0.0050%	0.0687%	0.0000%	0.0000%	0.0000%	2.7479%
12.0	Input	Value	11,572,361	9,105,834	931,586	1,251,188	210,674	2,773	46,359	5,410	17,687	849	0	0
	NCP Demand - Sales Customers	%	100.0000%	78.6861%	8.0501%	10.8119%	1.8205%	0.0240%	0.4006%	0.0467%	0.1528%	0.0073%	0.0000%	0.0000%
13.0	Input	Value	4,532,591	0	0	0	0	0	0	0	0	0	1,280,952	390,797
	NCP Demand - Transport Customers	%	100.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	28.2609%	8.6219%
14.0	Internally Generated	Value	16,104,952	9,105,834	931,586	1,251,188	210,674	2,773	46,359	5,410	17,687	849	1,280,952	390,797
	NCP Demand - Total Customers	%	100.0000%	56.5406%	5.7845%	7.7690%	1.3081%	0.0172%	0.2879%	0.0336%	0.1098%	0.0053%	7.9538%	2.4266%
15.0	Internally Generated	Value	15,865,192	9,105,834	931,586	1,251,188	210,674	2,773	46,359	0	0	0	1,280,952	390,797
	NCP Demand - Retail Customers	%	100.0000%	57.3950%	5.8719%	7.8864%	1.3279%	0.0175%	0.2922%	0.0000%	0.0000%	0.0000%	8.0740%	2.4632%
16.0	Internally Generated	Value	13,248,189	9,105,834	931,586	1,251,188	210,674	0	46,359	5,410	0	0	0	390,797
	NCP Demand for Transmission Allocation	%	100.0000%	68.7327%	7.0318%	9.4442%	1.5902%	0.0000%	0.3499%	0.0408%	0.0000%	0.0000%	0.0000%	2.9498%
20.0	Input	Value	51,075,379	40,611,980	3,528,494	5,653,823	1,053,833	12,164	137,416	20,808	54,950	1,911	0	0
	MCF - Sales Customers	%	100.0000%	79.5138%	6.9084%	11.0696%	2.0633%	0.0238%	0.2690%	0.0407%	0.1076%	0.0037%	0.0000%	0.0000%
21.0	Input	Value	25,811,859	0	0	0	0	0	0	0	0	0	5,982,320	1,822,971
	MCF - Transport Customers	%	100.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	23.1766%	7.0625%
22.0	Internally Generated	Value	76,887,238	40,611,980	3,528,494	5,653,823	1,053,833	12,164	137,416	20,808	54,950	1,911	5,982,320	1,822,971
	MCF - Total	%	100.0000%	52.8202%	4.5892%	7.3534%	1.3706%	0.0158%	0.1787%	0.0271%	0.0715%	0.0025%	7.7806%	2.3710%
23.0	Internally Generated	Value	75,905,229	40,611,980	3,528,494	5,653,823	1,053,833	12,164	137,416	0	0	0	5,982,320	1,822,971
	MCF - Retail Customers	%	100.0000%	53.5035%	4.6486%	7.4485%	1.3884%	0.0160%	0.1810%	0.0000%	0.0000%	0.0000%	7.8813%	2.4016%
24.0	Internally Generated	Value	59,964,312	40,611,980	3,528,494	5,653,823	1,053,833	0	137,416	20,808	0	0	0	1,822,971
	MCF for Transmission Allocation	%	100.0000%	67.7269%	5.8843%	9.4286%	1.7574%	0.0000%	0.2292%	0.0347%	0.0000%	0.0000%	0.0000%	3.0401%
25.0	Internally Generated	Value	51,006,354	40,611,980	3,528,494	5,653,823	1,053,833	0	137,416	20,808	0	0	0	0
	MCF Sales for Transmission Allocation	%	100.0000%	79.6214%	6.9178%	11.0845%	2.0661%	0.0000%	0.2694%	0.0408%	0.0000%	0.0000%	0.0000%	0.0000%
26.0	Internally Generated	Value	76,887,238	40,611,980	3,528,494	5,653,823	1,053,833	12,164	137,416	20,808	54,950	1,911	5,982,320	1,822,971
	MCF Less Flex	%	100.0000%	52.8202%	4.5892%	7.3534%	1.3706%	0.0158%	0.1787%	0.0271%	0.0715%	0.0025%	7.7806%	2.3710%

KANSAS GAS SERVICE COMPANY CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY TEST YEAR ENDING 12/31/2017														
ALLOCATION FACTORS														
			CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTt-T1	Large Vol Transport LVTt-T2	Large Vol Transport LVTt-T3	Large Vol Transport LVTt-T4	Wholesale Transport WtT
	Input	Value	0		0	0	0	0	0	0	0	0	0	0
1.0	Sales Customers	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Input	Value	9	2	513	214	94	44	61	44	30	14	32	27
2.0	Transport Customers	%	0.1572%	0.0412%	8.8866%	3.7118%	1.6262%	0.7703%	1.0548%	0.7540%	0.5248%	0.2349%	0.5570%	0.4680%
	Internally Generated	Value	9	2	513	214	94	44	61	44	30	14	32	27
3.0	Total Customers	%	0.0014%	0.0004%	0.0803%	0.0335%	0.0147%	0.0070%	0.0095%	0.0068%	0.0047%	0.0021%	0.0050%	0.0042%
	Internally Generated	Value	9	2	513	214	94	44	61	44	30	14	32	0
4.0	Retail Customers	%	0.0014%	0.0004%	0.0803%	0.0335%	0.0147%	0.0070%	0.0095%	0.0068%	0.0047%	0.0021%	0.0050%	0.0000%
	Internally Generated	Value	0	2	513	0	0	0	0	44	30	14	32	27
5.0	Customers for Transmission Allocation	%	0.0000%	0.0004%	0.0809%	0.0000%	0.0000%	0.0000%	0.0000%	0.0069%	0.0048%	0.0021%	0.0051%	0.0043%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
6.0	Direct to GS Customers	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Input	Value	0	0	0	0	0	0	0	0	0	0	0	0
7.0	Monthly CP Demand - Sales Customers	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Input	Value	16,284	1,081	10,947	236,387	237,247	159,156	769,006	70,838	67,858	33,030	482,824	193,810
8.0	Monthly CP Demand - Transport Customers	%	0.4416%	0.0293%	0.2968%	6.4100%	6.4333%	4.3158%	20.8527%	1.9209%	1.8401%	0.8957%	13.0925%	5.2554%
	Internally Generated	Value	16,284	1,081	10,947	236,387	237,247	159,156	769,006	70,838	67,858	33,030	482,824	193,810
9.0	Monthly CP Demand - Total Customers	%	0.1070%	0.0071%	0.0720%	1.5539%	1.5596%	1.0462%	5.0552%	0.4657%	0.4461%	0.2171%	3.1739%	1.2740%
	Internally Generated	Value	16,284	1,081	10,947	236,387	237,247	159,156	769,006	70,838	67,858	33,030	482,824	0
10.0	Monthly CP Demand - Retail Customers	%	0.1086%	0.0072%	0.0730%	1.5762%	1.5820%	1.0612%	5.1277%	0.4723%	0.4525%	0.2202%	3.2194%	0.0000%
	Internally Generated	Value	0	1,081	10,947	0	0	0	0	70,838	67,858	33,030	482,824	193,810
11.0	Monthly CP Demand for Transmission Allocation	%	0.0000%	0.0085%	0.0862%	0.0000%	0.0000%	0.0000%	0.0000%	0.5580%	0.5345%	0.2602%	3.8032%	1.5266%
	Input	Value		155	353					3,155	4,042	1,488	22,323	10,513
11.2	Peak Day Demand for Transmission Allocation	%	0.0000%	0.0217%	0.0497%	0.0000%	0.0000%	0.0000%	0.0000%	0.4440%	0.5688%	0.2094%	3.1413%	1.4794%
	Input	Value	0	0	0	0	0	0	0	0	0	0	0	0
12.0	NCP Demand - Sales Customers	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Input	Value	17,310	7,512	306,836	271,186	268,948	171,704	825,353	75,177	74,722	36,976	589,304	215,814
13.0	NCP Demand - Transport Customers	%	0.3819%	0.1657%	6.7696%	5.9830%	5.9337%	3.7882%	18.2093%	1.6586%	1.6485%	0.8158%	13.0015%	4.7614%
	Internally Generated	Value	17,310	7,512	306,836	271,186	268,948	171,704	825,353	75,177	74,722	36,976	589,304	215,814
14.0	NCP Demand - Total Customers	%	0.1075%	0.0466%	1.9052%	1.6839%	1.6700%	1.0662%	5.1248%	0.4668%	0.4640%	0.2296%	3.6591%	1.3400%
	Internally Generated	Value	17,310	7,512	306,836	271,186	268,948	171,704	825,353	75,177	74,722	36,976	589,304	0
15.0	NCP Demand - Retail Customers	%	0.1091%	0.0473%	1.9340%	1.7093%	1.6952%	1.0823%	5.2023%	0.4738%	0.4710%	0.2331%	3.7144%	0.0000%
	Internally Generated	Value	0	7,512	306,836	0	0	0	0	75,177	74,722	36,976	589,304	215,814
16.0	NCP Demand for Transmission Allocation	%	0.0000%	0.0567%	2.3161%	0.0000%	0.0000%	0.0000%	0.0000%	0.5675%	0.5640%	0.2791%	4.4482%	1.6290%
	Input	Value	0	0	0	0	0	0	0	0	0	0	0	0
20.0	MCF - Sales Customers	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Input	Value	188,197	60,476	847,802	1,154,296	1,479,155	1,347,463	6,890,667	316,079	448,775	384,502	3,984,817	904,340
21.0	MCF - Transport Customers	%	0.2343%	0.2343%	3.2845%	4.4720%	5.7305%	5.2203%	26.8957%	1.2245%	1.7386%	1.4896%	15.4379%	3.5036%
	Internally Generated	Value	188,197	60,476	847,802	1,154,296	1,479,155	1,347,463	6,890,667	316,079	448,775	384,502	3,984,817	904,340
22.0	MCF - Total	%	0.2448%	0.0787%	1.1027%	1.5013%	1.9238%	1.7525%	8.9620%	0.4111%	0.5837%	0.5001%	5.1827%	1.1762%
	Internally Generated	Value	188,197	60,476	847,802	1,154,296	1,479,155	1,347,463	6,890,667	316,079	448,775	384,502	3,984,817	0
23.0	MCF - Retail Customers	%	0.2479%	0.0797%	1.1169%	1.5207%	1.9487%	1.7752%	9.0780%	0.4164%	0.5912%	0.5066%	5.2497%	0.0000%
	Internally Generated	Value	188,197	60,476	847,802	0	0	0	0	316,079	448,775	384,502	3,984,817	904,340
24.0	MCF for Transmission Allocation	%	0.3138%	0.1009%	1.4138%	0.0000%	0.0000%	0.0000%	0.0000%	0.5271%	0.7484%	0.6412%	6.6453%	1.5081%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
25.0	MCF Sales for Transmission Allocation	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	188,197	60,476	847,802	1,154,296	1,479,155	1,347,463	6,890,667	316,079	448,775	384,502	3,984,817	904,340
26.0	MCF Less Flex	%	0.2448%	0.0787%	1.1027%	1.5013%	1.9238%	1.7525%	8.9620%	0.4111%	0.5837%	0.5001%	5.1827%	1.1762%

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION FACTORS														
				General Service				Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small
			Total	Residential	Small	Large	Trans. Eligible	Generator	Sales	Supply	Resale	Resale	Transport	Transport
			Company	RS	GSS	GSL	GSTE	SGS	GIS	KGSSD	SSRK	SSR-BHK	STK	STt
	Internally Generated	Value	221,137	201,858	12,774	4,023	173	234	74	0	3	0	1,206	417
39.0	Customer Assistance	%	100.0000%	91.2819%	5.7764%	1.8194%	0.0782%	0.1058%	0.0335%	0.0002%	0.0011%	0.0002%	0.5452%	0.1884%
	Internally Generated	Value	152,826	139,503	8,828	2,780	120	162	51	0	2	0	833	288
40.0	Customer Service Labor	%	100.0000%	91.2819%	5.7764%	1.8194%	0.0782%	0.1058%	0.0335%	0.0002%	0.0011%	0.0002%	0.5452%	0.1884%
	Internally Generated	Value	43,491,007	33,490,327	3,150,070	2,117,540	275,858	29,900	11,385	34	220	342	1,425,389	444,281
41.0	Distribution O&M	%	100.0000%	77.0052%	7.2430%	4.8689%	0.6343%	0.0687%	0.0262%	0.0001%	0.0005%	0.0008%	3.2774%	1.0215%
	Internally Generated	Value	17,231,084	10,441,586	1,068,242	1,434,727	241,578	3,180	3,009	0	0	0	1,244,252	382,095
41.1	Distribution O&M - Demand	%	100.0000%	60.5974%	6.1995%	8.3264%	1.4020%	0.0185%	0.0175%	0.0000%	0.0000%	0.0000%	7.2210%	2.2175%
	Internally Generated	Value	25,869,953	22,840,092	2,063,700	653,767	28,866	26,657	7,671	34	220	342	150,402	52,820
41.2	Distribution O&M - Customer	%	100.0000%	88.2881%	7.9772%	2.5271%	0.1116%	0.1030%	0.0297%	0.0001%	0.0009%	0.0013%	0.5814%	0.2042%
	Internally Generated	Value	389,971	208,648	18,128	29,047	5,414	62	706	0	0	0	30,735	9,366
41.3	Distribution O&M - Commodity	%	100.0000%	53.5035%	4.6486%	7.4485%	1.3884%	0.0160%	0.1810%	0.0000%	0.0000%	0.0000%	7.8813%	2.4016%
	Internally Generated	Value	7,876,283	5,728,120	556,667	771,403	132,036	0	395	5,407	0	0	0	216,429
41.4	Transmission O&M	%	100.0000%	72.7262%	7.0676%	9.7940%	1.6764%	0.0000%	0.0050%	0.0687%	0.0000%	0.0000%	0.0000%	2.7479%
	Internally Generated	Value	7,876,283	5,728,120	556,667	771,403	132,036	0	395	5,407	0	0	0	216,429
41.5	Transmission O&M - Demand	%	100.0000%	72.7262%	7.0676%	9.7940%	1.6764%	0.0000%	0.0050%	0.0687%	0.0000%	0.0000%	0.0000%	2.7479%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
41.6	Transmission O&M - Customer	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
41.7	Transmission O&M - Commodity	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	444,196,243	399,894,414	25,322,768	9,891,957	773,561	508,213	113,519	2,762	12,391	27,620	4,790,115	1,534,509
42.0	House Regulators	%	100.0000%	90.0265%	5.7008%	2.2269%	0.1741%	0.1144%	0.0256%	0.0006%	0.0028%	0.0062%	1.0784%	0.3455%
	Internally Generated	Value	16,115,598	10,306,668	1,039,620	1,408,278	238,209	2,258	2,214	2,821	483	8	853,658	371,407
43.1	Labor - A&G - Demand	%	100.0000%	63.9546%	6.4510%	8.7386%	1.4781%	0.0140%	0.0137%	0.0175%	0.0030%	0.0001%	5.2971%	2.3046%
	Internally Generated	Value	27,336,273	24,432,513	1,946,619	623,341	27,910	28,571	8,553	43	277	304	161,696	56,415
43.2	Labor - A&G - Customer	%	100.0000%	89.3776%	7.1210%	2.2803%	0.1021%	0.1045%	0.0313%	0.0002%	0.0010%	0.0011%	0.5915%	0.2064%
	Internally Generated	Value	487,378	320,331	27,831	44,595	8,312	96	1,084	93	246	9	20,362	6,205
43.3	Labor - A&G - Commodity	%	100.0000%	65.7255%	5.7104%	9.1500%	1.7055%	0.0197%	0.0224%	0.0191%	0.0506%	0.0018%	4.1780%	1.2731%
	Internally Generated	Value	19,087,622	12,207,414	1,231,345	1,667,991	282,139	2,675	2,622	3,341	572	10	1,011,088	439,902
43.4	Labor - Demand	%	100.0000%	63.9546%	6.4510%	8.7386%	1.4781%	0.0140%	0.0137%	0.0175%	0.0030%	0.0001%	5.2971%	2.3046%
	Internally Generated	Value	32,377,605	28,938,336	2,305,613	738,297	33,058	33,841	10,131	50	328	360	191,515	66,819
43.5	Labor - Customer	%	100.0000%	89.3776%	7.1210%	2.2803%	0.1021%	0.1045%	0.0313%	0.0002%	0.0010%	0.0011%	0.5915%	0.2064%
	Internally Generated	Value	577,259	379,406	32,964	52,819	9,845	114	1,284	111	292	10	24,118	7,349
43.6	Labor - Commodity	%	100.0000%	65.7255%	5.7104%	9.1500%	1.7055%	0.0197%	0.0224%	0.0191%	0.0506%	0.0018%	4.1780%	1.2731%
	Internally Generated	Value	11,259,903	6,824,453	698,186	937,714	157,891	2,078	1,859	-	-	-	812,743	249,590
44.1	Distribution Labor - Demand	%	100.0000%	60.6085%	6.2006%	8.3279%	1.4022%	0.0185%	0.0165%	0.0000%	0.0000%	0.0000%	7.2180%	2.2166%
	Internally Generated	Value	17,392,125	15,387,456	1,349,704	434,609	19,719	18,069	5,262	27	165	271	106,597	37,345
44.2	Distribution Labor - Customer	%	100.0000%	88.4737%	7.7604%	2.4989%	0.1134%	0.1039%	0.0303%	0.0002%	0.0009%	0.0016%	0.6129%	0.2147%
	Internally Generated	Value	247,180	132,250	11,490	18,411	3,432	40	447	0	0	0	19,481	5,936
44.3	Distribution Labor - Commodity	%	100.0000%	53.5035%	4.6486%	7.4485%	1.3884%	0.0160%	0.1810%	0.0000%	0.0000%	0.0000%	7.8813%	2.4016%
	Internally Generated	Value	56,865,393	22,454,147	5,854,431	4,749,920	636,789	261,947	281,465	6,080	80,429	1,386	6,805,452	2,219,809
45.0	Income Before Taxes	%	100.0000%	39.4865%	10.2952%	8.3529%	1.1198%	0.4606%	0.4950%	0.0107%	0.1414%	0.0024%	11.9677%	3.9036%
	Internally Generated	Value	3,709,187	2,697,550	262,152	363,278	62,180	-	186	2,546	-	-	-	101,923
46.1	Transmission Labor - Demand	%	100.0000%	72.7262%	7.0676%	9.7940%	1.6764%	0.0000%	0.0050%	0.0687%	0.0000%	0.0000%	0.0000%	2.7479%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
46.2	Transmission Labor - Customer	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
46.3	Transmission Labor - Commodity	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	348,411,738	211,545,920	21,642,525	29,067,476	4,894,353	64,426	25,014	-	-	-	25,047,515	7,693,910
47.1	Mains - Demand	%	100.0000%	60.7172%	6.2118%	8.3429%	1.4048%	0.0185%	0.0072%	0.0000%	0.0000%	0.0000%	7.1891%	2.2083%

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION FACTORS														
			CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Wholesale Transport WtT
	Internally Generated	Value	3	1	178	74	32	15	21	15	10	5	11	9
39.0	Customer Assistance	%	0.0014%	0.0004%	0.0803%	0.0335%	0.0147%	0.0070%	0.0095%	0.0068%	0.0047%	0.0021%	0.0050%	0.0042%
	Internally Generated	Value	2	1	123	51	22	11	15	10	7	3	8	6
40.0	Customer Service Labor	%	0.0014%	0.0004%	0.0803%	0.0335%	0.0147%	0.0070%	0.0095%	0.0068%	0.0047%	0.0021%	0.0050%	0.0042%
	Internally Generated	Value	20,046	1,897	46,793	288,315	285,439	192,322	922,307	84,842	81,988	40,641	579,872	1,199
41.0	Distribution O&M	%	0.0461%	0.0044%	0.1076%	0.6629%	0.6563%	0.4422%	2.1207%	0.1951%	0.1885%	0.0934%	1.3333%	0.0028%
	Internally Generated	Value	18,713	1,492	24,144	272,426	273,292	182,995	884,020	81,400	78,082	38,030	557,822	0
41.1	Distribution O&M - Demand	%	0.1086%	0.0087%	0.1401%	1.5810%	1.5860%	1.0620%	5.1304%	0.4724%	0.4531%	0.2207%	3.2373%	0.0000%
	Internally Generated	Value	366	95	18,293	9,958	4,548	2,404	2,885	1,818	1,600	636	1,578	1,199
41.2	Distribution O&M - Customer	%	0.0014%	0.0004%	0.0707%	0.0385%	0.0176%	0.0093%	0.0112%	0.0070%	0.0062%	0.0025%	0.0061%	0.0046%
	Internally Generated	Value	967	311	4,356	5,930	7,599	6,923	35,401	1,624	2,306	1,975	20,472	0
41.3	Distribution O&M - Commodity	%	0.2479%	0.0797%	1.1169%	1.5207%	1.9487%	1.7752%	9.0780%	0.4164%	0.5912%	0.5066%	5.2497%	0.0000%
	Internally Generated	Value	0	1,713	3,916	0	0	0	0	34,971	44,797	16,491	247,415	116,523
41.4	Transmission O&M	%	0.0000%	0.0217%	0.0497%	0.0000%	0.0000%	0.0000%	0.0000%	0.4440%	0.5688%	0.2094%	3.1413%	1.4794%
	Internally Generated	Value	0	1,713	3,916	0	0	0	0	34,971	44,797	16,491	247,415	116,523
41.5	Transmission O&M - Demand	%	0.0000%	0.0217%	0.0497%	0.0000%	0.0000%	0.0000%	0.0000%	0.4440%	0.5688%	0.2094%	3.1413%	1.4794%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
41.6	Transmission O&M - Customer	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
41.7	Transmission O&M - Commodity	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	18,866	3,616	280,241	349,827	167,105	90,129	139,774	67,319	59,102	26,323	66,922	55,189
42.0	House Regulators	%	0.0042%	0.0008%	0.0631%	0.0788%	0.0376%	0.0203%	0.0315%	0.0152%	0.0133%	0.0059%	0.0151%	0.0124%
	Internally Generated	Value	12,842	1,877	18,025	186,923	187,523	125,580	606,665	73,516	76,194	34,420	507,579	58,829
43.1	Labor - A&G - Demand	%	0.0797%	0.0116%	0.1118%	1.1599%	1.1636%	0.7792%	3.7645%	0.4562%	0.4728%	0.2136%	3.1496%	0.3650%
	Internally Generated	Value	417	108	20,565	10,780	4,942	2,543	3,214	2,043	1,699	693	1,720	1,309
43.2	Labor - A&G - Customer	%	0.0015%	0.0004%	0.0752%	0.0394%	0.0181%	0.0093%	0.0118%	0.0075%	0.0062%	0.0025%	0.0063%	0.0048%
	Internally Generated	Value	641	206	2,886	3,929	5,035	4,586	23,454	1,076	1,528	1,309	13,563	-
43.3	Labor - A&G - Commodity	%	0.1314%	0.0422%	0.5921%	0.8061%	1.0330%	0.9410%	4.8123%	0.2207%	0.3134%	0.2685%	2.7829%	0.0000%
	Internally Generated	Value	15,211	2,223	21,349	221,396	222,106	148,739	718,545	87,074	90,246	40,768	601,187	69,678
43.4	Labor - Demand	%	0.0797%	0.0116%	0.1118%	1.1599%	1.1636%	0.7792%	3.7645%	0.4562%	0.4728%	0.2136%	3.1496%	0.3650%
	Internally Generated	Value	493	128	24,358	12,768	5,853	3,012	3,806	2,420	2,012	820	2,037	1,550
43.5	Labor - Customer	%	0.0015%	0.0004%	0.0752%	0.0394%	0.0181%	0.0093%	0.0118%	0.0075%	0.0062%	0.0025%	0.0063%	0.0048%
	Internally Generated	Value	759	244	3,418	4,654	5,963	5,432	27,780	1,274	1,809	1,550	16,065	-
43.6	Labor - Commodity	%	0.1314%	0.0422%	0.5921%	0.8061%	1.0330%	0.9410%	4.8123%	0.2207%	0.3134%	0.2685%	2.7829%	0.0000%
	Internally Generated	Value	12,228	960	15,079	177,971	178,544	119,573	577,648	53,191	51,017	24,846	364,331	-
44.1	Distribution Labor - Demand	%	0.1086%	0.0085%	0.1339%	1.5806%	1.5857%	1.0619%	5.1301%	0.4724%	0.4531%	0.2207%	3.2356%	0.0000%
	Internally Generated	Value	273	71	12,671	7,336	3,418	1,808	2,224	1,353	1,200	474	1,196	879
44.2	Distribution Labor - Customer	%	0.0016%	0.0004%	0.0729%	0.0422%	0.0197%	0.0104%	0.0128%	0.0078%	0.0069%	0.0027%	0.0069%	0.0051%
	Internally Generated	Value	613	197	2,761	3,759	4,817	4,388	22,439	1,029	1,461	1,252	12,976	0
44.3	Distribution Labor - Commodity	%	0.2479%	0.0797%	1.1169%	1.5207%	1.9487%	1.7752%	9.0780%	0.4164%	0.5912%	0.5066%	5.2497%	0.0000%
	Internally Generated	Value	120,551	48,445	1,558,665	721,525	828,080	896,376	4,182,239	205,191	359,042	449,154	3,245,028	899,240
45.0	Income Before Taxes	%	0.2120%	0.0852%	2.7410%	1.2688%	1.4562%	1.5763%	7.3546%	0.3608%	0.6314%	0.7899%	5.7065%	1.5813%
	Internally Generated	Value	-	807	1,844	-	-	-	-	16,469	21,096	7,766	116,515	54,874
46.1	Transmission Labor - Demand	%	0.0000%	0.0217%	0.0497%	0.0000%	0.0000%	0.0000%	0.0000%	0.4440%	0.5688%	0.2094%	3.1413%	1.4794%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
46.2	Transmission Labor - Customer	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	0	0	0	0	0	0	0	0	0	0	0	0
46.3	Transmission Labor - Commodity	%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
	Internally Generated	Value	378,316	25,114	254,310	5,491,719	5,511,710	3,697,506	17,865,471	1,645,705	1,576,482	767,349	11,216,918	-
47.1	Mains - Demand	%	0.1086%	0.0072%	0.0730%	1.5762%	1.5820%	1.0612%	5.1277%	0.4723%	0.4525%	0.2202%	3.2194%	0.0000%

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION FACTORS														
				General Service			Small	Irrigation	Kansas Gas	Sales for	Sales for	Small	Small	
			Total	Residential	Small	Large	Trans. Eligible	Generator	Supply	Resale	Resale	Transport	Transport	
			Company	RS	GSS	GSL	GSTE	SGS	KGSSD	SSRk	SSR-BHK	STk	STt	
47.2	Internally Generated Mains - Customer	Value %	313,362,277 100.0000%	286,059,374 91.2871%	18,102,111 5.7767%	5,701,542 1.8195%	245,207 0.0783%	331,581 0.1058%	104,944 0.0335%	0 0.0000%	0 0.0000%	1,708,689 0.5453%	590,266 0.1884%	
47.3	Internally Generated Mains - Commodity	Value %	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	
48.1	Internally Generated Mains & Services - Demand	Value %	348,411,738 100.0000%	211,545,920 60.7172%	21,642,525 6.2118%	29,067,476 8.3429%	4,894,353 1.4048%	64,426 0.0072%	25,014 0.0000%	- 0.0000%	- 0.0000%	25,047,515 7.1891%	7,693,910 2.2083%	
48.2	Internally Generated Mains & Services - Customer	Value %	807,067,466 100.0000%	734,798,348 91.0455%	46,598,380 5.7738%	15,084,445 1.8690%	722,774 0.0896%	860,392 0.1066%	255,261 0.0316%	763 0.0001%	5,694 0.0007%	5,248,223 0.6503%	1,849,424 0.2292%	
48.3	Internally Generated Mains & Services - Commodity	Value %	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	
49.0	Internally Generated Distribution Plant	Value %	1,460,928,082 100.0000%	1,204,213,997 82.4280%	86,914,240 5.9492%	55,897,266 3.8261%	6,736,331 0.4611%	1,266,854 0.0867%	413,796 0.0283%	3,720 0.0003%	18,519 0.0013%	36,912,735 2.5267%	11,696,636 0.8006%	
49.1	Internally Generated Distribution Plant - Demand	Value %	379,507,899 100.0000%	230,426,644 60.7172%	23,574,146 6.2118%	31,661,783 8.3429%	5,331,180 1.4048%	70,176 0.0072%	27,246 0.0000%	- 0.0000%	- 0.0000%	27,283,035 7.1891%	8,380,600 2.2083%	
49.2	Internally Generated Distribution Plant - Customer	Value %	1,077,724,402 100.0000%	971,809,979 90.1724%	63,168,293 5.8613%	23,960,202 2.2232%	1,353,840 0.1256%	1,196,086 0.1110%	379,859 0.0352%	3,720 0.0003%	18,519 0.0017%	9,338,425 0.8665%	3,227,276 0.2995%	
49.3	Internally Generated Distribution Plant - Commodity	Value %	3,695,782 100.0000%	1,977,374 53.5035%	171,800 4.6486%	275,281 7.4485%	51,311 1.3884%	592 0.0160%	6,691 0.1810%	0 0.0000%	0 0.0000%	291,276 7.8813%	88,759 2.4016%	
50.1	Internally Generated Distribution Plant Less - Demand	Value %	378,892,337 100.0000%	230,052,892 60.7172%	23,535,909 6.2118%	31,610,427 8.3429%	5,322,533 1.4048%	70,062 0.0185%	27,202 0.0072%	- 0.0000%	- 0.0000%	27,238,782 7.1891%	8,367,007 2.2083%	
50.2	Internally Generated Distribution Plant Less - Customer	Value %	1,075,976,331 100.0000%	970,233,702 90.1724%	63,065,834 5.8613%	23,921,338 2.2232%	1,351,644 0.1256%	1,194,145 0.1110%	379,243 0.0352%	3,714 0.0003%	18,489 0.0017%	9,323,278 0.8665%	3,222,042 0.2995%	
50.3	Internally Generated Distribution Plant Less - Commodity	Value %	3,689,787 100.0000%	1,974,166 53.5035%	171,522 4.6486%	274,835 7.4485%	51,227 1.3884%	591 0.0160%	6,680 0.1810%	0 0.0000%	0 0.0000%	290,803 7.8813%	88,615 2.4016%	
51.0	Internally Generated General Plant	Value %	113,550,468 100.0000%	91,322,322 80.4244%	7,312,234 6.4396%	5,394,909 4.7511%	727,954 0.6411%	81,632 0.0719%	29,145 0.0257%	10,454 0.0092%	1,848 0.0016%	2,526,941 2.2254%	1,199,306 1.0562%	
51.1	Internally Generated General Plant - Demand	Value %	42,287,614 100.0000%	27,486,541 64.9990%	2,757,474 6.5208%	3,747,658 8.8623%	635,021 1.5017%	5,128 0.0121%	3,981 0.0094%	10,159 0.0240%	562 0.0013%	1,965,028 4.6468%	1,005,889 2.3787%	
51.2	Internally Generated General Plant - Customer	Value %	70,572,779 100.0000%	63,397,299 89.8325%	4,516,663 6.4000%	1,586,207 2.2476%	81,555 0.1156%	76,372 0.1082%	23,680 0.0336%	186 0.0003%	999 0.0014%	528,515 0.7489%	183,240 0.2596%	
51.3	Internally Generated General Plant - Commodity	Value %	690,075 100.0000%	438,482 63.5413%	38,097 5.5207%	61,044 8.8459%	11,378 1.6488%	131 0.0190%	1,484 0.2150%	108 0.0157%	287 0.0415%	33,398 4.8398%	10,177 1.4748%	
54.0	Internally Generated Transmission Plant	Value %	273,567,498 100.0000%	198,955,205 72.7262%	19,334,747 7.0676%	26,793,196 9.7940%	4,586,026 1.6764%	0 0.0000%	13,718 0.0050%	187,805 0.0687%	0 0.0000%	0 0.0000%	7,517,244 2.7479%	
54.1	Internally Generated Transmission Plant - Demand	Value %	273,567,498 100.0000%	198,955,205 72.7262%	19,334,747 7.0676%	26,793,196 9.7940%	4,586,026 1.6764%	- 0.0000%	13,718 0.0050%	187,805 0.0687%	- 0.0000%	- 0.0000%	7,517,244 2.7479%	
54.2	Internally Generated Transmission Plant - Customer	Value %	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	
54.3	Internally Generated Transmission Plant - Commodity	Value %	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	
57.0	Internally Generated T&D Plant	Value %	1,734,495,580 100.0000%	1,403,169,202 80.8978%	106,248,987 6.1256%	82,690,461 4.7674%	11,322,357 0.6528%	1,266,854 0.0730%	427,514 0.0246%	191,525 0.0111%	18,519 0.0011%	36,912,735 2.1282%	19,213,880 1.1078%	
57.1	Internally Generated T&D Plant - Demand	Value %	653,075,397 100.0000%	429,381,849 65.7477%	42,908,893 6.5703%	58,454,978 8.9507%	9,917,206 1.5185%	70,176 0.0107%	40,964 0.0063%	187,805 0.0288%	- 0.0000%	27,283,035 4.1776%	15,897,844 2.4343%	
57.2	Internally Generated T&D Plant - Customer	Value %	1,077,724,402 100.0000%	971,809,979 90.1724%	63,168,293 5.8613%	23,960,202 2.2232%	1,353,840 0.1256%	1,196,086 0.1110%	379,859 0.0352%	3,720 0.0003%	18,519 0.0017%	9,338,425 0.8665%	3,227,276 0.2995%	
57.3	Internally Generated T&D Plant - Commodity	Value %	3,695,782 100.0000%	1,977,374 53.5035%	171,800 4.6486%	275,281 7.4485%	51,311 1.3884%	592 0.0160%	6,691 0.1810%	0 0.0000%	0 0.0000%	291,276 7.8813%	88,759 2.4016%	

KANSAS GAS SERVICE COMPANY														
CUSTOMER/DEMAND CLASS COST OF SERVICE STUDY														
TEST YEAR ENDING 12/31/2017														
ALLOCATION FACTORS														
			CNG Transport CNGk	CNG Transport CNGt	Irrigation Transport GIT	Large Vol Transport LVTk-T1	Large Vol Transport LVTk-T2	Large Vol Transport LVTk-T3	Large Vol Transport LVTk-T4	Large Vol Transport LVTi-T1	Large Vol Transport LVTi-T2	Large Vol Transport LVTi-T3	Large Vol Transport LVTi-T4	Wholesale Transport WtT
47.2	Internally Generated Mains - Customer	Value %	4,450 0.0014%	1,165 0.0004%	251,558 0.0803%	105,073 0.0335%	46,033 0.0147%	21,806 0.0070%	29,858 0.0095%	21,344 0.0068%	14,857 0.0047%	6,650 0.0021%	15,768 0.0050%	0 0.0000%
47.3	Internally Generated Mains - Commodity	Value %	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%
48.1	Internally Generated Mains & Services - Demand	Value %	378,316 0.1086%	25,114 0.0072%	254,310 0.0730%	5,491,719 1.5762%	5,511,710 1.5820%	3,697,506 1.0612%	17,865,471 5.1277%	1,645,705 0.4723%	1,576,482 0.4525%	767,349 0.2202%	11,216,918 3.2194%	- 0.0000%
48.2	Internally Generated Mains & Services - Customer	Value %	12,434 0.0015%	3,806 0.0005%	606,863 0.0752%	385,387 0.0478%	178,350 0.0221%	93,040 0.0115%	104,744 0.0130%	71,165 0.0088%	61,974 0.0077%	24,020 0.0030%	60,658 0.0075%	33,689 0.0042%
48.3	Internally Generated Mains & Services - Commodity	Value %	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%
49.0	Internally Generated Distribution Plant	Value %	451,793 0.0309%	37,961 0.0026%	1,292,647 0.0885%	6,810,788 0.4662%	6,466,060 0.4426%	4,300,078 0.2943%	20,075,047 1.3741%	1,956,916 0.1340%	1,874,907 0.1283%	907,064 0.0621%	12,553,275 0.8593%	90,259 0.0062%
49.1	Internally Generated Distribution Plant - Demand	Value %	412,081 0.1086%	27,355 0.0072%	277,007 0.0730%	5,981,861 1.5762%	6,003,637 1.5820%	4,027,513 1.0612%	19,459,985 5.1277%	1,792,587 0.4723%	1,717,184 0.4525%	835,836 0.2202%	12,218,041 3.2194%	- 0.0000%
49.2	Internally Generated Distribution Plant - Customer	Value %	30,549 0.0028%	7,661 0.0007%	974,360 0.0904%	772,724 0.0717%	390,404 0.0362%	206,958 0.0192%	279,559 0.0259%	148,940 0.0138%	135,872 0.0126%	52,507 0.0049%	141,215 0.0131%	90,259 0.0084%
49.3	Internally Generated Distribution Plant - Commodity	Value %	9,163 0.2479%	2,945 0.0797%	41,279 1.1169%	56,202 1.5207%	72,019 1.9487%	65,607 1.7752%	335,503 9.0780%	15,390 0.4164%	21,851 0.5912%	18,721 0.5066%	194,018 5.2497%	0 0.0000%
50.1	Internally Generated Distribution Plant Less - Demand	Value %	411,413 0.1086%	27,311 0.0072%	276,558 0.0730%	5,972,159 1.5762%	5,993,899 1.5820%	4,020,981 1.0612%	19,428,421 5.1277%	1,789,679 0.4723%	1,714,399 0.4525%	834,480 0.2202%	12,198,224 3.2194%	- 0.0000%
50.2	Internally Generated Distribution Plant Less - Customer	Value %	30,500 0.0028%	7,649 0.0007%	972,780 0.0904%	771,471 0.0717%	389,771 0.0362%	206,622 0.0192%	279,105 0.0259%	148,698 0.0138%	135,651 0.0126%	52,422 0.0049%	140,986 0.0131%	90,112 0.0084%
50.3	Internally Generated Distribution Plant Less - Commodity	Value %	9,148 0.2479%	2,940 0.0797%	41,212 1.1169%	56,111 1.5207%	71,902 1.9487%	65,501 1.7752%	334,958 9.0780%	15,365 0.4164%	21,815 0.5912%	18,691 0.5066%	193,704 5.2497%	0 0.0000%
51.0	Internally Generated General Plant	Value %	32,279 0.0284%	6,071 0.0053%	99,336 0.0875%	477,875 0.4208%	460,392 0.4055%	307,681 0.2710%	1,451,628 1.2784%	203,477 0.1792%	216,270 0.1905%	95,675 0.0843%	1,369,828 1.2064%	221,463 0.1950%
51.1	Internally Generated General Plant - Demand	Value %	29,623 0.0701%	5,327 0.0126%	35,380 0.0837%	430,568 1.0182%	432,046 1.0217%	289,595 0.6848%	1,399,133 3.3086%	193,875 0.4585%	206,796 0.4890%	90,795 0.2147%	1,340,390 3.1697%	216,635 0.5123%
51.2	Internally Generated General Plant - Customer	Value %	1,605 0.0023%	406 0.0006%	59,223 0.0839%	40,863 0.0579%	20,088 0.0285%	10,564 0.0150%	14,026 0.0199%	7,838 0.0111%	6,968 0.0099%	2,733 0.0039%	7,192 0.0102%	4,828 0.0068%
51.3	Internally Generated General Plant - Commodity	Value %	1,051 0.1523%	338 0.0489%	4,733 0.6859%	6,444 0.9338%	8,258 1.1967%	7,523 1.0901%	38,469 5.5747%	1,765 0.2557%	2,505 0.3631%	2,147 0.3111%	22,247 3.2238%	0 0.0000%
54.0	Internally Generated Transmission Plant	Value %	0 0.0000%	59,483 0.0217%	136,024 0.0497%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	1,214,665 0.4440%	1,555,939 0.5688%	572,783 0.2094%	8,593,471 3.1413%	4,047,192 1.4794%
54.1	Internally Generated Transmission Plant - Demand	Value %	- 0.0000%	59,483 0.0217%	136,024 0.0497%	- 0.0000%	- 0.0000%	- 0.0000%	- 0.0000%	1,214,665 0.4440%	1,555,939 0.5688%	572,783 0.2094%	8,593,471 3.1413%	4,047,192 1.4794%
54.2	Internally Generated Transmission Plant - Customer	Value %	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%
54.3	Internally Generated Transmission Plant - Commodity	Value %	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%	0 0.0000%
57.0	Internally Generated T&D Plant	Value %	451,793 0.0260%	97,444 0.0056%	1,428,670 0.3927%	6,810,788 0.3728%	6,466,060 0.2479%	4,300,078 1.1574%	20,075,047 1.1574%	3,171,581 0.1978%	3,430,846 0.1978%	1,479,847 0.0853%	21,146,746 1.2192%	4,137,451 0.2385%
57.1	Internally Generated T&D Plant - Demand	Value %	412,081 0.0631%	86,838 0.0133%	413,031 0.0632%	5,981,861 0.9160%	6,003,637 0.9193%	4,027,513 0.6167%	19,459,985 2.9797%	3,007,252 0.4605%	3,273,124 0.5012%	1,408,619 0.2157%	20,811,512 3.1867%	4,047,192 0.6197%
57.2	Internally Generated T&D Plant - Customer	Value %	30,549 0.0028%	7,661 0.0007%	974,360 0.0904%	772,724 0.0717%	390,404 0.0362%	206,958 0.0192%	279,559 0.0259%	148,940 0.0138%	135,872 0.0126%	52,507 0.0049%	141,215 0.0131%	90,259 0.0084%
57.3	Internally Generated T&D Plant - Commodity	Value %	9,163 0.2479%	2,945 0.0797%	41,279 1.1169%	56,202 1.5207%	72,019 1.9487%	65,607 1.7752%	335,503 9.0780%	15,390 0.4164%	21,851 0.5912%	18,721 0.5066%	194,018 5.2497%	0 0.0000%

Kansas Farm Bureau/Kansas Corn Growers Association

Docket Number 18-KGSG-560-RTS

Information Request

Data Request: 18-560 KFB-003: Irrigation Service

Company Name: Kansas Gas Service, a Division of ONE Gas, Inc.

Request Date: 10/17/2018

Date Information Requested: 10/25/2018

Requested By: Michael Brosch

Page 1 of 1

Please provide the following:

- a. What approximate percentage of the Company's irrigation sales (GIS) and irrigation transportation (GIT) customers are directly served from transmission facilities and therefore do not utilize the Company's distribution mains, city gates, regulation facilities and other distribution network assets to receive service?
- b. Please provide the best available information quantifying the number of customers and test year MCF volumes for such directly served transmission-connected customers, and
- c. Explain whether and how the Company's proposed class cost of service allocation of demand related costs recognizes and accounts for this distinction.

KGS Response:

- a. The Company does not have the data that would allow it to determine whether any of the Company's irrigation sales (GIS) and irrigation transportation (GIT) customers are directly served from transmission facilities. Using the Company's mapping system, KGS has been able to identify premises located within 40 feet of the transmission pipeline.

b.

	Premise Count	Usage
GIS	41	132,598
GITt	201	1,872,699
Total	242	2,005,297

- c. As the Company cannot identify any GIS or GIT customers served directly from the transmission system, there is no need for the Company's proposed class cost of service allocation of demand related costs to account for such a distinction.

Prepared by: Lorna Eaton and Paul Raab

Verification of Response

I have read the foregoing Information Request and answer(s) thereto and find answer(s) to be true, accurate, full and complete and contain no material misrepresentations or omissions to the best of my knowledge and belief; and I will disclose to the Commission Staff any matter subsequently discovered which affects the accuracy or completeness of the answer(s) to this Information Request.

Signed: Lorna Eaton

Date: 10/31/2018

In the Matter of the Application of)
Kansas Gas Service, A Division)
of ONE Gas, Inc. for Adjustment) DOCKET NO. 16-KGSG-____-RTS
of its Natural Gas Rates in the)
State of Kansas)

DIRECT TESTIMONY

OF

PAUL H. RAAB

ON BEHALF OF

KANSAS GAS SERVICE

A DIVISION OF ONE GAS, INC

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PAGE 37	VII. Rate Design
Exhibit PHR-1	Qualifications
Exhibit PHR-2	Weather Normalization Adjustment 12 Month Regression Statistics
Exhibit PHR-3	Seven Month Regression Statistics
Exhibit PHR-4	Customer Annualization Statistics
Exhibit PHR-5	Class Cost of Service Study
Exhibit PHR-6	Rate Design Analysis

Kansas Gas Service

A Division of ONE Gas, Inc.

DIRECT TESTIMONY OF PAUL H. RAAB

1 **Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.**

2 A. My name is Paul H. Raab and my business address is 5313 Portsmouth Road,
3 Bethesda, MD 20816. I am an independent economic consultant.

4 **Q. ON WHOSE BEHALF ARE YOU APPEARING TODAY?**

5 A. I am appearing on behalf of Kansas Gas Service, a Division of ONE Gas Inc.
6 ("Kansas Gas Service" or "Company").

7

8 **I. QUALIFICATIONS**

9 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?**

10 A. I have a B.A. in Economics from Rutgers University and an M.A. from the State
11 University of New York at Binghamton with a concentration in Econometrics.
12 While attending Rutgers, I studied as a Henry Rutgers Scholar.

13 **Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE.**

14 A. I have been providing consulting services to the utility industry for thirty five
15 years, having assisted electric, gas, telephone, and water utilities; Commissions;
16 and intervenor clients in a variety of areas. I am trained as a quantitative
17 economist so that most of this assistance has been in the form of mathematical
18 and economic analysis and information systems development. My particular
19 areas of focus are planning issues, costing and rate design analysis, and

1 depreciation and life analysis. I began my career with the professional services
2 firm that is now known as Ernst & Young, where I was employed for ten years.

3 **Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE COMMISSIONS IN**
4 **REGULATORY PROCEEDINGS?**

5 A. Yes. I have provided expert testimony before this Commission in Docket Nos.
6 174,155-U, 176,716-U, 98-KGSG-822-TAR, 99-KGSG-705-GIG, 01-KGSG-229-
7 TAR, 02-KGSG-018-TAR, 02-WSRE-301-RTS, 03-KGSG-602-RTS, 03-AQLG-
8 1076-TAR, 05-AQLG-367-RTS, 06-KGSG-1209-RTS, 07-AQLG-431-RTS, 08-
9 WSEE-1041-RTS, 10-KCPE-415-RTS, 10-KGSG-421-TAR, 10-KCPE-795-TAR,
10 12-WSEE-112-RTS, 12-KGSG-835-RTS ("835 Docket"), 12-GIMX-337-GIV, 12-
11 KG&E-718-CON, 13-KG&E-451-CON, 13-WSEE-629-RTS, 14-ATMG-320-RTS,
12 15-WSEE-181-TAR, 15-KCPE-116-RTS and 15-ATMG-079-RTS. In addition, I
13 have provided expert testimony before the state regulatory authorities of Alaska,
14 the District of Columbia, Georgia, Indiana, Iowa, Kentucky, Louisiana, Maryland,
15 Michigan, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New
16 York, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, Virginia, West Virginia,
17 and Wisconsin, as well as the Federal Energy Regulatory Commission ("FERC"),
18 the Michigan House Economic Development and Energy Committee, the
19 Pennsylvania House Consumer Affairs Committee, the Province of
20 Saskatchewan, and the United States Tax Court.

21 Exhibit PHR-1 provides more detail on the subject matter of the testimony
22 provided.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. There are four main purposes for my testimony. First, I have prepared and will sponsor Adjustments IS 7 and IS 8 from Section 9, Schedule 9-B of the Company's Application. Adjustment IS 7 represents the amount by which revenues would have increased had weather been normal during the test year. Adjustment IS 8 is the "Customer Annualization" adjustment, which is necessary to synchronize revenues and expenses related to the test year-end number of customers with the test year-end rate base. In addition, I sponsor the class cost of service study that is used to allocate the Company's requested revenue increase to customer classes. Finally, I sponsor the Company's proposed rate design.

III. IDENTIFICATION OF EXHIBITS

Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR TESTIMONY?

A. Yes, I sponsor six exhibits. Exhibit PHR-1 is a summary of my qualifications and experience. Exhibit PHR-2 contains regression statistics that support the weather normalization adjustment I am proposing in this case. Exhibit PHR-3 contains regression statistics that support the weather normalization adjustment clause during the rate effective period. The Heat Sensitivity Factors (HSFs) shown on Exhibit PHR-3 differ from those on Exhibit PHR-2 in that they are estimated using heating season (October - April) data.

Exhibit PHR-4 contains statistics that support the customer annualization

1 adjustment I am proposing in this case. Exhibit PHR-5 contains a complete class
2 cost of service analysis of Kansas Gas Service at existing rates, equalized
3 customer class rates of return and at proposed rate levels. Finally, Exhibit PHR-
4 6 summarizes the Company's proposed rate designs and the bill impacts of
5 these rate designs.

6 The above-designated exhibits were prepared by me or under my
7 direction and supervision.

8 9 **IV. ORGANIZATION OF TESTIMONY**

10 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

11 A. My testimony is organized into three additional sections. Section V describes the
12 adjustments I sponsor. The class cost of service study is described in Section VI
13 and the resulting rates are presented in Section VII.

14 15 **V. ADJUSTMENTS**

16 **Q. WHAT ADJUSTMENTS DO YOU SPONSOR?**

17 A. I sponsor two adjustments. The first is a weather normalization adjustment,
18 which adjusts test year volumes and revenues for normal weather. The second
19 is a customer annualization adjustment, which adjusts the number of customers
20 so that they are synchronized with year-end rate base.

21 **a. Weather Normalization Adjustment**

22 **Q. WHY IS IT NECESSARY TO ADJUST TEST YEAR SALES LEVELS FOR THE** 23 **EFFECTS OF WEATHER?**

1 A. Temperature greatly impacts the amount of natural gas used. Because of this,
2 the Company's earned return in any year can vary significantly, solely as a
3 function of the weather, and test year revenues based on a period of abnormal
4 weather require a weather adjustment for ratemaking purposes. It is unlikely that
5 such abnormalities repeat themselves regularly during the period that the new
6 rates are expected to produce the revenue levels for which they were designed.
7 It is necessary, therefore, to adjust test year revenues from the sale of gas
8 expenses to reflect normal weather.

9 **Q. HOW DID THE WEATHER ACTUALLY EXPERIENCED DURING THE TEST**
10 **PERIOD COMPARE TO NORMAL WEATHER?**

11 A. The test period was almost 14% warmer than normal; consequently, it was
12 necessary to increase test year volumes by a total of 5,561,118 Mcf and
13 revenues by \$10,146,344 to reflect the effects of normal weather.

14 **Q. WOULD YOUR PLEASE EXPLAIN THE PROCEDURE USED TO MAKE THE**
15 **WEATHER ADJUSTMENT?**

16 A. There are a variety of methods that can be used to make this adjustment.
17 However, having performed similar calculations for Kansas Gas Service in past
18 cases, having worked with the Commission Staff on this issue a number of times
19 and based on a review of prior Commission decisions, I believe that I have
20 applied a method that has broad support in the state of Kansas. This method
21 adheres to the following five guidelines:

- 22 1. The method employs a level of rate class disaggregation that is as fine as
23 can be reasonably supported by the data.
- 24 2. The method employs as many weather recording stations as can be
25 reasonably supported by the data.

- 1 3. "Normal" weather is defined to be the normal weather established by the
2 National Oceanic and Atmospheric Administration ("NOAA").
- 3 4. Regression techniques are used to relate usage to an appropriate weather
4 variable. These regression equations should be as free as possible from
5 any identifiable statistical impairment.
- 6 5. The weather variable employed in the regression specifications should be
7 reasonably anticipated to influence usage. In other words, Heating Degree
8 Days (HDDs) should be used to normalize those classes that use natural
9 gas for space heating purposes and rainfall should be used to normalize
10 those classes whose usage of natural gas is driven by irrigation needs.

11 **Q. WHAT IS A HEATING DEGREE DAY?**

- 12 A. A heating degree-day, or HDD, is a measure of the number of degrees by which
13 the average daily temperature falls below 65 degrees Fahrenheit on any given
14 day. The sum of these daily degree-days over any given period of time is a
15 measure of the amount of heating needed over that period.

16 **Q. HOW DID YOU IMPLEMENT THESE GUIDELINES?**

- 17 A. First, the average use per customer was established for each of Kansas Gas
18 Service's rate classes for January 2011 through December 2015. Next, actual
19 and normal weather data (defined as either monthly heating degree days or
20 monthly rainfall) were compiled for thirteen weather stations in Kansas Gas
21 Service's service territory. This disaggregation results in 135 rate class/weather
22 station combinations. Usage per customer for these 135 groups was then
23 related to the appropriate weather variable using an Auto-Regressive Moving
24 Average ("ARMA") type model structure that Staff has advocated in past
25 proceedings.

26 To calculate the weather adjustment from these equations, the NOAA-
27 normal number of HDDs and amount of rainfall were then applied to the

1 regression equation to obtain the amount of sales that would have occurred had
2 customers experienced normal weather. These volumes are priced at existing
3 rates and the resulting adjustment represents the difference between the weather
4 normalized revenues and the actual test year revenues.

5 **Q. WHAT IS THE SOURCE OF YOUR USAGE DATA?**

6 A. The source of the usage and customer data is the Company. KGS personnel
7 have provided me with disaggregated usage data that are consistent with that
8 level of usage recorded on the Company's books for the test year. Test year
9 volumes are 110,898,686 Mcf.

10 **Q. DO THESE DATA ADHERE TO THE COMMISSION'S PRIOR**
11 **DISAGGREGATION GUIDELINES?**

12 A. Yes, these data are compiled at the rate class level, which is the finest
13 reasonable level of disaggregation that is possible.

14 **Q. FROM WHICH STATIONS DID YOU COMPILE THE WEATHER DATA?**

15 A. I compiled weather data from the following thirteen weather stations in Kansas
16 Gas Service's service territory:

- 17 1. Concordia - National Climatic Data Center (NCDC) ID No. USW00013984
- 18 2. Emporia - NCDC ID No. USW00013989
- 19 3. Great Bend - NCDC ID No. USC00143218
- 20 4. Hutchinson - NCDC ID No. USW00013986
- 21 5. Kansas City International Airport - NCDC ID No. USW00003947
- 22 6. Manhattan - NCDC ID No. USW00003936
- 23 7. Newton - NCDC ID No. USC00145744
- 24 8. Olathe - NCDC ID No. USW00003967

9. Parsons - NCDC ID No. USW00003998

10. Russell - NCDC ID No. USC00147042

11. Salina - NCDC ID No. USW00003919

12. Topeka - NCDC ID No. USW00013996

13. Wichita - NCDC ID No. USW00003928.

Q. WHY DID YOU USE THESE STATIONS?

A. I used these stations because I believe that they represent the finest level of disaggregation supported by the data.

Q. ARE THESE THE SAME WEATHER STATIONS THAT HAVE BEEN PREVIOUSLY REVIEWED BY STAFF AND APPROVED BY THE COMMISSION FOR THE PURPOSE OF WEATHER NORMALIZING SALES IN THE COMPANY'S WEATHER NORMALIZATION ADJUSTMENT CLAUSE?

A. Yes.

Q. PLEASE DESCRIBE THE REGRESSION EQUATIONS THAT YOU USED TO DEVELOP THE RELATIONSHIP BETWEEN USAGE AND THE APPROPRIATE WEATHER MEASURE.

A. Regression analysis develops the relationship between a (dependent) variable and one or more independent variables. In this case, the dependent variable is the monthly gas usage of Kansas Gas Service's customers. The independent variables are the weather effects (HDDs and Precipitation). Thus, the regression equations estimated for this purpose quantify the sensitivity of gas usage to changes in the weather.

The regression equation for the heat-sensitive classes is specified as:

$$\text{Usage}_{i,j,t} = \alpha_{i,j} + \beta_{1,i,j}(\text{HDD}_{j,t}) + \beta_{2,i,j}(\text{HDD}_{j,t-1}) + \epsilon_{i,j,t}$$

where:

$Usage_{i,j,t}$ = Mcf gas usage per customer per month for tariff class i and weather station j;

$HDD_{j,t}$ = the actual monthly HDDs at weather station j;

$\epsilon_{i,j,t}$ = an error term; and

$\alpha_{i,j}, \beta_{i,j}$ = estimated coefficients for tariff class i and weather station j.

In this case, the coefficients $\beta_{1,i,j}$ and $\beta_{2,i,j}$ (sometimes referred to as the heat sensitivity factors, or HSFs) are of greatest interest since they measure the way that natural gas usage can be expected to change as temperature changes. By extension, the β coefficients can be used to estimate what consumption would have been had weather been “normal.”

Q. WHY DO YOU INCLUDE BOTH CURRENT PERIOD HEATING DEGREE DAYS AND PRIOR MONTH (LAGGED) HEATING DEGREE DAYS IN YOUR REGRESSION EQUATION?

A. This is done because, due to different meter read cycles, the time period over which monthly usage data are aggregated is not the same time period as the one over which monthly weather data are aggregated. Usage recorded in any month has actually occurred in both that month and the preceding month while weather data for any month actually do represent observations of weather in that month. In order to match the period in which the usage occurs with the period in which the weather that influenced those sales occurs, I include each current month's weather with the weather from the preceding month for use in the regression equations.

Q. WAS THERE A CORRESPONDING WEATHER ADJUSTMENT TO THE

CONSUMPTION IN EACH OF THESE WEATHER STATION/RATE CODE GROUPINGS?

A. No. Certain natural gas loads are simply not temperature-sensitive, although this general statement does not apply to natural gas usage for residential and general service customers, whose primary usage of natural gas is for heating and whose usage demonstrates strong correlations with temperature.

Q. WHAT WERE YOUR CRITERIA FOR DETERMINING THE VALIDITY OF THE ESTIMATED RELATIONSHIP?

A. I relied on a battery of commonly applied statistical tests. These tests are:

1. t-test. The t-test is used to determine whether a particular independent variable (in this case, weather) has an influence on the dependent variable (in this case, usage per customer). In other words, it determines whether the selected variable belongs in the regression.
2. R-squared. This is a measure of the success of the regression in predicting the values of the dependent variable within the sample.
3. Log likelihood test. This is the value of the log likelihood function (assuming normally distributed errors) evaluated at the values of the coefficients. It is often used to select between alternative regression specifications.
4. Durbin-Watson statistic. The Durbin-Watson statistic tests for first-order autocorrelation in the errors, which is the situation where the regression error in one period moves together with the regression error of another. When errors exhibit autocorrelation, the estimated coefficients are biased.
5. F-statistic. This statistic tests whether all of the coefficients in a regression are zero. In other words, it tests for the statistical significance of the regression itself.
6. Q-statistics. Q-statistics provide a measure of the autocorrelations and partial autocorrelations of the regression residuals. These statistics provide evidence of autocorrelated disturbance terms and also provide guidance for correcting the autocorrelation.
7. Breusch-Godfrey Serial Correlation Lagrangian Multiplier (LM) Test. This test is a test for general (higher order) serial correlation that uses the

1 Breusch-Godfrey large sample test for autocorrelated disturbances.

2 8. AutoRegressive Conditional Heteroskedasticity (ARCH) Lagrangian
3 Multiplier (LM) Test. The ARCH LM procedure tests for autoregressive
4 conditional heteroskedasticity, or the tendency for regression errors to
5 move together through time and be related to the size of the residuals.

6 **Q. HOW DID YOU APPLY THESE TESTS TO YOUR REGRESSION**
7 **EQUATIONS?**

8 A. I initially used a basic statistical technique called the Ordinary Least Squares
9 ("OLS") method to estimate the coefficients of the specified regressions in those
10 cases where sufficient data exist to derive meaningful statistics. I then examined
11 the Q-statistics to determine whether a correction for autocorrelation was
12 needed. If the need for a correction was indicated, I applied an ARMA estimation
13 technique to estimate the coefficients. After introduction of the ARMA terms, I
14 tested the models using the Durbin-Watson statistic, the Breusch-Godfrey serial
15 correlation LM test, and the ARCH LM test. After successfully passing these
16 tests, I knew that the weather coefficients that I had estimated were unbiased
17 and of minimum variance, and I proceeded to test whether a valid statistical
18 relationship exists between the dependent and independent variables. For this
19 purpose, I relied primarily on the t-test, the R-squared, the log likelihood test, and
20 the F-test.

21 **Q. UNDER WHAT CIRCUMSTANCES WAS A REGRESSION EQUATION**
22 **REJECTED USING YOUR TESTING CRITERIA?**

23 A. As an overview, I performed all statistical tests at the commonly applied 95%
24 level of confidence. I did not reject any regression equation if it did not pass the
25 initial tests for serial correlation, but rather used the information from those tests

1 to reduce the serial correlation as much as possible before moving on to tests of
2 the coefficients themselves.

3 **Q. WHAT RESULTS WERE OBTAINED FROM THE REGRESSION ANALYSIS?**

4 A. Estimated values for the HDD coefficients obtained from the regression analysis
5 for each rate class are listed in Exhibit PHR-2. This exhibit also contains the
6 results of the major statistical tests to which I subjected my specifications. All
7 reported coefficients are significant at the 95% level of confidence.

8 **Q. HOW ARE THESE NUMBERS INTERPRETED?**

9 A. As an example, consider the results obtained for Residential customers in
10 Concordia (Town Code 3). Exhibit PHR-2 shows that the estimate for the HDD_t
11 coefficient is 0.00590579 and the estimate for the HDD_{t-1} coefficient is
12 0.00735111. This means that if the average daily temperature were lower by one
13 degree, one would expect consumers in this group to respond to that lower
14 temperature by using approximately 0.01325690 more Mcfs of natural gas per
15 customer. Conversely, if the average temperature were one degree higher, then
16 consumers would use 0.01325690 less Mcfs of natural gas per customer.

17 **Q. YOU STATED EARLIER THAT THE ESTIMATED COEFFICIENTS β_1 AND β_2**
18 **CAN BE USED TO ESTIMATE WHAT CONSUMPTION WOULD HAVE BEEN**
19 **HAD WEATHER BEEN NORMAL. EXACTLY HOW IS THIS DONE?**

20 A. This is done by using the monthly departure from normal and the regression
21 coefficients. The adjustment formula for the regression equation is:

$$WNA = (HDD \text{ departure}) * (HDD \text{ Coeff}) * \text{Customers}$$

23 **Q. HOW ARE THE DEPARTURES CALCULATED?**

1 A. Departures, which measure how the test year weather differs from "normal"
2 weather, are calculated by subtracting the actual monthly weather variables for
3 the test year from the normal monthly weather variables for those months. The
4 normal monthly HDDs are calculated by the National Climatological Data Center
5 ("NCDC") as the 30-year average over the period January 1981 to December
6 2010.

7 **Q. HOW DID YOU COMPUTE THE LEVEL OF REVENUES ASSOCIATED WITH**
8 **THESE VOLUMETRIC ADJUSTMENTS?**

9 A. I multiplied the volumetric adjustment from above by the appropriate delivery fee.

10 **Q. HAS THIS ADJUSTMENT MECHANISM BEEN USED IN PAST RATE CASES?**

11 A. Yes. This general formula has been used in all of the prior cases in which I have
12 participated plus other cases that I have reviewed, including Docket Nos.
13 193,305-U, 00-UTCG-336-RTS, 01-KGSG-229-TAR, 01-WSRE-436-RTS, and
14 02-MDWG-922-RTS.

15 **Q. AFTER APPLYING THE ABOVE FORMULAS, WHAT ARE THE**
16 **RECOMMENDED WEATHER NORMALIZATION ADJUSTMENTS TO THE**
17 **COMPANY'S TEST YEAR ACTUAL NATURAL GAS SALES?**

18 A. The adjustment results in an increase in the Company's actual test year natural
19 gas volumes of 5,561,118 Mcfs. This corresponds to an increase in the
20 Company's actual test year revenues of \$10,146,344.

21 **Q. PLEASE DESCRIBE THE HEAT SENSITIVITY FACTORS PROVIDED IN**
22 **EXHIBIT PHR-3.**

23 A. The Heat Sensitivity Factors provided in Exhibit PHR-3 are intended to be used

1 in the Company's Weather Normalization Adjustment (WNA) clause. They are
2 estimated using the same basic methodology that the Company relies on to
3 develop the HSFs that are used to weather normalize test year sales, except that
4 they are estimated using consumption data for only the winter heating season
5 months (October-April).

6 **Q. WHY DO YOU DEVELOP SEPARATE HEAT SENSITIVITY FACTORS FOR**
7 **THE COMPANY'S WNA CLAUSE?**

8 A. I do so because I believe that it results in a more accurate reflection of the impact
9 of weather on the Company's revenue levels, as described more fully in the
10 rebuttal testimony that I filed in the 835 Docket, the Company's last base rate
11 proceeding.

12 **Q. HAS THIS METHODOLOGY BEEN PREVIOUSLY REVIEWED BY STAFF AND**
13 **APPROVED BY THE COMMISSION FOR THE PURPOSE OF WEATHER**
14 **NORMALIZING SALES IN THE COMPANY'S WEATHER NORMALIZATION**
15 **ADJUSTMENT RIDER (WNAR)?**

16 A. Yes. In the 835 Docket, the Company developed 5-month WNA factors. Staff
17 reviewed and the Commission approved the methodology in that case. In the
18 instant case, the Company is proposing to expand the number of months to
19 which the WNAR applies to the seven months of October-April. The new
20 coefficients provided in Exhibit PHR-3 are consistent with that change.

21 **Q. WHY IS THE COMPANY PROPOSING TO EXPAND THE APPLICATION OF**
22 **ITS WNAR TO SEVEN MONTHS?**

1 A. Expansion of the WNAR to the seven month October-April period will allow the
2 Company to incorporate an additional 12% of the total HDDs that influence
3 natural gas consumption that were previously excluded from the five month
4 WNAR. The revised tariff containing this revision is provided with the testimony
5 of Company Witness Justin W. Clements.

6 **b. Customer Annualization Adjustment**

7 **Q. WHY IS IT NECESSARY TO ADJUST TEST YEAR SALES LEVELS FOR THE**
8 **NUMBER OF CUSTOMERS THAT KANSAS GAS SERVICE SERVED AT THE**
9 **END OF THE TEST YEAR?**

10 A. Customer Annualization is necessary to normalize the impact of changes in the
11 number of customers served during the test year. During the test year, Kansas
12 Gas Service experienced a small amount of net customer growth. The net result
13 is an increase in test year revenues of \$501,372.

14 **Q. PLEASE EXPLAIN HOW YOU CALCULATED THE CHANGE IN THE**
15 **NUMBER OF CUSTOMERS.**

16 A. During the test year, Kansas Gas Service experienced changes in the number of
17 customers in its various rate classes. For many of these rates, the changes are
18 seasonal and the monthly seasonal variations are often greater than the real
19 growth in customers. To obtain the real customer growth, a three-year trend
20 analysis was utilized to calculate the long-term growth of customers at the rate
21 code level. The results of the trend analyses gave the average monthly increase
22 or decrease in customers. Then, starting at the end of the test year and working
23 backward, customers were added or removed each month levelizing the number

1 of customers for the tariff. The change in the number of customers each month
2 was the same as the implied monthly growth rate. This method assumes
3 constant customer growth throughout the test year. For example, if a customer
4 class was growing at an average rate of 10 customers per month, 10 customers
5 were added to November, 20 customers to October, 30 customers to September
6 and so on until January when a total of 110 customers were added. No additional
7 customers are added to December 2015 since the test year-end customers are
8 already included in that month's totals.

9 **Q. HOW DID YOU DEVELOP THE TRENDS?**

10 A. I relied on the average customer growth by class over the last three year period,
11 developed as follows: I first calculated the growth in customers from calendar
12 year 2013 to calendar year 2014. I then calculated the growth in customers from
13 calendar year 2014 to calendar year 2015. Next, I developed a simple average of
14 these two annual growth amounts, which serves as my estimate of the average
15 annual growth experienced by the Company by rate class to be applied to test
16 year customers.

17 **Q. PLEASE EXPLAIN HOW YOU CALCULATED THE SALES VOLUMES**
18 **ASSOCIATED WITH THE CUSTOMER ADJUSTMENT.**

19 A. To calculate the sales impact, the monthly change in customers was multiplied
20 by the weather normalized monthly energy sales for the rate class under study
21 plus the full weather normalized monthly energy times the number of customers
22 added in earlier months. The final adjustment was the summation of all the
23 resultant increases and decreases to obtain the total gas sales associated with

the new customers.

Q. HOW DID YOU CALCULATE THE IMPACT ON OPERATING INCOME?

A. The appropriate tariff rate was multiplied times the amount of change in sales to determine the volume revenue. Customer Service charge revenues were determined by taking the customer charge times the number of customers added each month by tariff. The sum of the volume and customer charge revenues equals the amount of the customer annualization adjustment. I have applied this adjustment to sales rate code groups for which a change in customers was observed.

Q. HAVE YOU DEVELOPED A SUMMARY OF THE CUSTOMER ANNUALIZATION COEFFICIENTS THAT THAT YOU HAVE DEVELOPED TO MAKE THIS ADJUSTMENT?

A. Yes. A summary of these coefficients is included in Exhibit PHR-4.

VI. CLASS COST OF SERVICE

a. Background

Q. WHAT IS A CLASS COST OF SERVICE ANALYSIS?

A. A class cost of service analysis is the process by which the costs that a utility incurs to serve particular classes of customers are linked to the classes of customers that caused those costs to be incurred.

Q. WHY IS IT NECESSARY TO ALLOCATE COSTS TO THE DIFFERENT CUSTOMER CLASSES?

A. It is a generally accepted utility ratemaking principle that rates should be based

on costs. This statement applies not only to the overall level of costs incurred by the utility, but also to the costs that the utility incurs to serve individual services, classes of customers, and segments of the utility's business. Adherence to this principle is complicated by the fact that many of the costs incurred to provide different types of service are "joint" costs and many are "common" costs, neither of which has a theoretically precise method by which they can be assigned to the different products produced as a result of the incurrence of these costs.

Joint costs occur when the provision of one service is an automatic by-product of another (e.g., the delivery of natural gas at different times of the year). Common costs are incurred when several outputs are produced using the same facilities or inputs (e.g., administrative and general expenses).

Thus, cost of service studies are the primary method used to allocate the common and joint costs incurred by the utility in serving different customer classes. They are used for five purposes:

1. To attribute costs to different categories of customers based on how those customers cause costs to be incurred;
2. To determine how costs will be recovered from customers within each customer class;
3. To calculate the costs of individual types of service based on the costs each service requires the utility to expend;
4. To determine the revenue requirement for the monopoly services offered by a utility operating in both monopoly and competitive markets; and
5. To separate costs between different regulatory jurisdictions.

Q. HOW ARE THE COSTS INCURRED BY THE UTILITY ALLOCATED TO THE DIFFERENT CUSTOMER CLASSES?

A. These costs are allocated to the different customer classes in three steps:

functionalization, classification, and allocation.

Q. PLEASE DESCRIBE THE FUNCTIONALIZATION PROCESS.

A. Functionalization is the process whereby the capital and operating costs incurred by the utility to provide service are categorized by function. The typical functions of a natural gas utility are transmission, distribution, customer service and facilities, and administrative and general. The transmission function includes those assets and expenses associated with the delivery of natural gas from the field to the distribution system. The assets and expenses involved in the delivery of natural gas to ultimate customers, except those that can be directly assigned to a particular customer, are included in the distribution function. Those distribution costs that can be directly assigned to a particular customer (e.g., service drops and meters) plus the meter reading and other customer service functions such as billing and collections are included in the customer service and facilities function. The administrative and general function includes management costs that cannot be directly assigned to the other major cost functions.

Q. WHY DOES ONE FUNCTIONALIZE COSTS?

A. Costs are functionalized so that they can be more easily classified, which is the next step in the cost of service analysis.

Q. HOW WAS THE FUNCTIONALIZATION PROCESS PERFORMED FOR KANSAS GAS SERVICE?

A. The Company's accounting processes follow the FERC Uniform System of Accounts. In large measure, this system of accounts records costs by the function for which they were incurred. Thus, the costs that I work with in the cost

of service analysis are already grouped by function.

Q. PLEASE DESCRIBE THE CLASSIFICATION PROCESS.

A. The classification process recognizes that the utility's costs are incurred for a number of purposes: to meet customers' peak demands (demand-related costs), to provide energy (energy- or commodity-related costs), and because there are customers on the system (customer-related costs). The classification process groups the utility's costs by the purpose for which they were incurred. The cost of odorant is the best example of a cost that is incurred in direct proportion to the amount of natural gas that flows through the system and is therefore classified as an energy-related cost. On the other hand, metering costs are primarily driven by the number of customers on the system and would be classified as customer-related costs.

Q. HOW WERE THE COMPANY'S COSTS CLASSIFIED IN THIS STUDY?

A. In general, I followed the classifications that are generally accepted by utilities and state commissions, and relied upon the suggested classification of the National Association of Regulatory Utility Commissioners ("NARUC"). My testimony below explains the specific classification factors employed.

Q. PLEASE DESCRIBE THE ALLOCATION PROCESS.

A. The allocation process is one in which the functionalized and classified costs from above are assigned to specific customer classes. It is assumed that the load characteristics of the customers within each of the major customer classes are relatively homogeneous with respect to their usage characteristics. Thus, costs can be allocated to customer classes based on these characteristics.

1 Those costs that have been classified as demand-related costs in the
2 classification process above are allocated among the customer classes on the
3 basis of demands imposed on the system during the peak day. Commodity- or
4 energy-related costs are allocated on the basis of the energy that the system
5 must supply to meet the needs of these customers. Customer-related costs are
6 allocated to the different customer classes based on the number of customers.

7 **Q. HOW ARE THESE COSTS ALLOCATED TO THE COMPANY'S DIFFERENT**
8 **CUSTOMER CLASSES?**

9 A. First, customers are divided into groups or classes. These classes are populated
10 with customers having similar natural gas demand characteristics. The
11 customers within each class can therefore be billed pursuant to a single rate
12 schedule containing a customer charge and an energy charge since their load
13 profiles are sufficiently similar. Next, costs are examined to determine why the
14 utility incurred them and how customers' usage characteristics impact the utility's
15 cost incurrence decisions. Finally, a demand characteristic is associated with
16 each cost incurred; each customer class' contribution to that cost provides the
17 basis for the allocation of the associated cost.

18 **Q. WHAT ARE THESE "USAGE CHARACTERISTICS" THAT CUSTOMERS**
19 **PLACE ON THE SYSTEM?**

20 A. The customer's request for service is a cost causative demand characteristic that
21 necessarily results in an immediate investment in a regulator, a service line and
22 metering facilities and establishes a commitment on the part of the company to
23 provide, among other things, answers to questions and a monthly billing. Hence,

1 the very existence of this customer-utility relationship causes the incurrence of
2 cost. The amount of natural gas taken from the utility system, usually expressed
3 volumetrically (Mcf) or in terms of the energy content of the natural gas itself
4 (therms or Dth) and referred to as the customer's energy use or usage, is an
5 important cost causative characteristic as well. Additionally, as my testimony will
6 describe in more detail, the magnitude of costs incurred to serve a customer is
7 also driven by the customer's potential rate of energy use, usually expressed in
8 peak period usage and referred to as the customer's demand.

9 **Q. HOW DO SUCH DEMANDS AFFECT COST INCURRENCE?**

10 A. Cost incurrence is strongly driven by two primary factors, the physical connection
11 to the system and the rate at which energy is used. As described above, the
12 physical connection to the system involves investments (a regulator, a service
13 line and metering facilities) and establishes a commitment on the part of the
14 company to provide monthly billing, even if no customer usage occurs. Likewise,
15 the rate at which energy is used serves as the link to the incurrence and
16 magnitude of demand related utility costs.

17 **Q. WHY HAVE YOU EMPHASIZED THE PHYSICAL CONNECTION TO THE**
18 **SYSTEM AND THE RATE AT WHICH ENERGY IS USED WHEN DESCRIBING**
19 **COST CAUSATIVE CUSTOMER UTILIZATION FACTORS?**

20 A. There are two very important factors that drive a natural gas utility's cost
21 incurrence. First, it is a capital-intensive enterprise. Second, the system must be
22 sized so that it has the capability to deliver natural gas to customers during
23 extremely cold conditions (the "peak period"), even though this intensity of usage

1 only occurs a few days out of the year, if at all. This combination of capital
2 intensity and sizing to meet peak day demands dictates the prominence of the
3 physical connection and the "rate of use" customer demand characteristic when
4 discussing the cause of cost incurrence.

5 **Q. WHAT IS THE SIGNIFICANCE OF THE PEAK PERIOD DEMAND?**

6 A. It is necessary first and foremost to safely and reliably meet the simultaneous
7 loads of all customers. Furthermore, transmission plant is built to meet the
8 highest simultaneous peak established by customers. Therefore, the class
9 contribution to the coincident peak period demand is the appropriate cost
10 causative factor to be used in the allocation of capital cost carrying charges of
11 facilities to customer classes.

12 **Q. WHAT ARE THE GENERAL PRINCIPLES THAT SHOULD GUIDE AN**
13 **ANALYST IN PREPARING A CLASS COST OF SERVICE STUDY?**

14 A. Allocation of costs among customer classes establishes the basis to measure
15 existing revenue levels from such classes against the costs incurred by the
16 Company to serve them. It also provides a basis for establishing actual tariff
17 prices that will equitably recover the costs associated with providing service while
18 minimizing inter-class subsidies that may otherwise occur. In brief, using the
19 class cost of service analysis, the analyst allocates costs to cost causers. The
20 costs that a utility incurs to serve customers are the transmission facilities to
21 transmit the natural gas to town border stations, distribution facilities to distribute
22 the natural gas to homes and businesses, general facilities that provide support
23 to the first two functional groups and the related costs of operation.

1 Some analysts utilize energy use in a class cost of service to distribute
2 capital costs to classes. These analysts rationalize this allocation methodology
3 by pointing out that these facilities serve year-round load. This methodology
4 gives no weight to the critical point that these facilities were sized and built to
5 meet the highest demand that occurs during the winter period for Kansas Gas
6 Service.

7 During the five winter months of November through March (the winter
8 heating season), Kansas Gas Service can be expected to distribute over 78
9 percent of its total residential volumes. This vividly illustrates that the use of a
10 peak period allocation methodology links cost incurrence and the cost causer for
11 demand-related fixed costs.

12 Energy-related costs such as odorant vary with the actual throughput and
13 should be spread to the various classes based on test year throughput. Costs
14 such as services, regulators, meters, operation and maintenance of these
15 facilities, customer accounting and other similar costs can be directly linked to
16 given customer classes and should be allocated to and collected from those
17 classes.

18 **b. The Classification Study**

19 **Q. PLEASE DESCRIBE THE CLASSIFICATION STUDY.**

20 A. The classification study I prepared for the Company follows the general
21 guidelines established above. However, I have deviated somewhat from prior
22 practice in that I began with the classifications generally relied on by Staff in the
23 development in its class cost of service analysis. From that starting point, I

changed only one of Staff's traditional classification factors.

Q. AND WHICH OF STAFF'S CLASSIFICATION FACTORS DID YOU CHANGE?

A. I changed the factor associated with the classification of distribution mains investment. My preferred approach is to rely on a factor that classifies distribution mains investments as both customer-related and demand-related investments. In Staff's studies, distribution mains investments have traditionally been classified as 100 percent demand-related.

Q. WHY DO YOU EMPLOY A CUSTOMER/DEMAND FACTOR TO CLASSIFY DISTRIBUTION MAINS INVESTMENTS?

A. For two reasons. First, I believe that this classification better reflects the causal relationship between customer demand characteristics and utility costs incurred. Second, I believe that the customer/demand classification factor that I employ is more consistent with the approach advocated in the National Association of Regulatory Utility Commissioners ("NARUC") publication entitled *Gas Rate Design*. That publication shows the following typical functional breakdowns of a natural gas local distribution company's major expenses:

TABLE I

TYPICAL FUNCTIONAL BREAKDOWN – GAS SYSTEM

Production plant & purchased gas cost	D,E
Storage plant	D
Transmission plant:	
Mains	D
Compressor stations	D
Distribution Plant:	
Mains	D,C
Measuring & Regulating Stations	D,C
Services	C
Meters & Regulators	C

General Plants	D,C
Customers' accounting & collecting expenses	C
Sales promotion expenses	D,C
Administrative & general expenses	D,C
(C = Customer Costs) (D = Demand Costs) (E = Energy Costs)	

Source: NARUC Manual on Gas Rate Design, August 6, 1981, page 28.

As can be seen in Table I, it is typical to classify distribution mains investment as both demand-related and customer-related costs. The argument for inclusion of the cost relating to a minimum size distribution main is that "these facilities are necessary to connect the customer to the system and thus afford him the opportunity to take service if he so desires." NARUC Manual at 30.

Q. HOW DOES ONE DETERMINE THE AMOUNT OF DISTRIBUTION MAINS INVESTMENT TO CLASSIFY AS CUSTOMER-RELATED AND THE AMOUNT TO CLASSIFY AS DEMAND-RELATED?

A. There are two generally accepted approaches to develop this split. The first is the "minimum system" approach in which all distribution mains are priced out at the historic unit cost of the smallest main installed in the system, normally two-inch, and classified as a customer-related cost. The remaining book cost of distribution mains is classified as a demand-related cost.

The second approach is the "zero-intercept" approach in which the cost of a theoretical main of zero-inch diameter is classified as a customer-related investment and all costs in excess of that amount are classified as demand-related investments. The calculation of a "zero" inch main is generally accomplished by regressing the cost/foot of mains on the size (diameter) of those

1 mains and the cost of the zero inch main is the point at which the regression line
2 intersects the y-axis (the point of zero demand).

3 **Q. AND WHICH OF THESE GENERALLY ACCEPTED APPROACHES DID YOU**
4 **RELY ON?**

5 A. In this case, I relied on the zero-intercept approach.

6 **Q. WHY?**

7 A. In prior cases, I relied on the minimum system approach, to which the Citizens
8 Utility Ratepayer Board ("CURB") consistently objected because it ignores the
9 fact that a hypothetical gas distribution system, built solely to the minimum
10 standard necessary to connect all customers to the system, would still be
11 capable of serving a demand function. By not reflecting the demand-serving
12 capability of the minimum system, CURB alleges that the Company's COSS
13 methodology is biased against its small-user rate classes.

14 In order to minimize the controversy over the class cost of service analysis
15 in this case, I have adopted a zero-intercept approach to classify mains
16 investments.

17 **Q. WHAT ARE THE RESULTS OF YOUR CLASSIFICATION STUDY?**

18 A. It is easiest to present the details associated with this process by introducing the
19 specific study I have conducted. Exhibit PHR-5 contains the complete cost of
20 service study (including the classifications developed) for Kansas Gas Service.
21 The first ten pages of the study contain summaries of the completed cost of
22 service for total and customer-, demand-, and commodity-related costs. Pages
23 11 through 34 of the study contain summaries of the cost classifications

1 employed. Pages 11 through 31 contain classification schedules for Gross Plant
2 in Service, Reserve for Depreciation and Amortization, Other Rate Base, O&M
3 Expense, Payroll, Depreciation Expense, and Taxes Other Than Income and Net
4 Deductions for Income Tax, respectively. Pages 32 and 33 contain the actual
5 classification factors utilized. Page 34 summarizes the classifications developed.

6 **Q. PLEASE DESCRIBE YOUR CLASSIFICATION OF GROSS PLANT IN**
7 **SERVICE.**

8 A. As shown on pages 11-13 of the study, a majority of gross plant in service
9 categories are classified as either 100% customer-related or 100% demand-
10 related, pursuant to the methodology outlined previously in my testimony. The
11 notable exception to this general rule is mains investments, which are classified
12 as 54% customer and 46% demand, in accordance with the results of a zero-
13 intercept study for dividing mains investments between customer- and demand-
14 related components.

15 General Plant, which includes investments in property that cannot
16 otherwise be included in other transmission and distribution accounts, is
17 classified either in the same way as all production, storage, transmission and
18 distribution plant or according to the classification of payroll.

19 **Q. PLEASE DESCRIBE YOUR CLASSIFICATION OF RESERVE FOR**
20 **DEPRECIATION AND AMORTIZATION.**

21 A. As shown on pages 14-16 of the class cost of service study, the classifications of
22 the Reserves for Depreciation and Amortization follow the same classifications
23 as employed for Gross Plant in Service, since the same factors that influence

Gross Plant in Service also affect the Reserves for Depreciation of those plant categories.

Q. PLEASE DESCRIBE YOUR CLASSIFICATION OF OTHER RATE BASE ITEMS.

A. Other Rate Base items include gas storage inventory and line pack, prepayments, and materials and supplies. Gas storage inventories are classified as 100% demand-related. Materials and supplies are classified according to operations and maintenance expenses, because they would appear to be largely driven by these activities. Deferred income taxes and contributions are classified according to plant and prepayments and deposits are assumed to be customer-related rate base items.

Q. PLEASE DESCRIBE YOUR CLASSIFICATION OF OPERATIONS AND MAINTENANCE (O&M) EXPENSES.

A. As can be seen on pages 18-22 of the study, I have generally classified O&M expense in accordance with prior Staff classification models. For example, other gas supply expenses have been classified as 100% commodity-related. Underground storage O&M expenses are entirely demand-related.

Transmission O&M expenses are classified primarily as demand-related, the exception related to compressor station fuel, which is classified as 100% commodity-related. Distribution O&M expense classification is also developed to be consistent with prior Staff classification models. The exception to this rule is the classification of maintenance expenses for mains, which are classified according to the customer/demand classification factor applied to distribution

1 mains investments for consistency. A&G expenses are classified based on
2 O&M, payroll or net plant, depending on their nature. For example, the largest
3 component of A&G expense, miscellaneous expenses, are classified on the
4 basis of other (non-A&G) O&M expenses; pensions and benefits expenses are
5 classified on the basis of total payroll; while general advertising expenses are
6 classified on the basis of net plant.

7 **Q. PLEASE DESCRIBE YOUR CLASSIFICATION OF PAYROLL EXPENSE.**

8 A. Payroll expense, shown on pages 23-27 of the class cost of service study, is
9 classified in the same way as is O&M expense.

10 **Q. PLEASE DESCRIBE YOUR CLASSIFICATION OF DEPRECIATION AND**
11 **AMORTIZATION EXPENSE.**

12 A. Functionalized depreciation and amortization expense is shown on pages 28-30
13 of the class cost of service study. Functionalized depreciation expense is
14 classified the same as gross plant.

15 **Q. PLEASE DESCRIBE YOUR CLASSIFICATION OF TAXES, OTHER THAN**
16 **INCOME TAXES.**

17 A. Taxes other than income taxes fall into two categories, ad valorem and payroll-
18 related. Ad valorem taxes are classified on the basis of plant while the various
19 payroll-related taxes, most notably FICA taxes, are classified on the basis of total
20 payroll. This is shown on Page 31 of the class cost of service study.

21 **c. The Allocation Study**

22 **Q. PLEASE DESCRIBE THE ALLOCATION STUDY.**

23 A. The allocation schedules of the cost of service study begin on page 35 of the

1 class cost of service study. Each allocation section consists of 4 subsections.
2 The first subsection shows the allocation of the functionalized cost item's
3 customer component, the second subsection shows the allocation of the item's
4 demand component, the third the commodity component, and the fourth the total
5 allocated costs. Thus, for example, pages 35-36 contain the allocation of gross
6 plant customer-related costs, pages 37-38 gross plant demand-related costs,
7 pages 39-40 gross plant commodity-related costs and pages 41-42 total
8 allocated gross plant.

9 Each line lists the functionalized cost item, the allocation factor used, the
10 total company classified costs for that item, and the amount allocated of that cost
11 item to each of the rate classes. These pages continue through page 106 of the
12 exhibit. The allocation of revenue follows on pages 107-108. Pages 109-120
13 show the actual allocation factors used.

14 **Q. PLEASE DESCRIBE THE PRIMARY ALLOCATION FACTORS THAT YOU**
15 **HAVE USED IN YOUR STUDY.**

16 A. There are three types of allocation factors used in this study. As is the case with
17 the classification study discussed above, these allocation factors are related to
18 customers on the system, demands placed on the system, and energy
19 demanded from the system.

20 **Q. PLEASE DESCRIBE THE ALLOCATORS OF CUSTOMER-RELATED COSTS**
21 **THAT YOU USE.**

22 A. Seventeen primary allocators are used to assign customer-related costs to
23 customer classes: five measures of the number of customers (5); weighted

services, meters, regulators and meters and regulator investments (10); customer deposits (1), and a direct assignment to GS customers (1). I use these different allocators because different customer-related costs are more appropriately allocated with each.

Q. CAN YOU PROVIDE AN EXAMPLE?

A. Certainly. The total number of customers by class is used to allocate such expense items as sales and customer service and information costs. Services investments are the best allocator for investment in services and O&M expenses associated with services. Similarly, investments in facilities that serve GS customers alone are most appropriately assigned directly to GS customers and meter investments are the best allocator for meter plant.

Q. PLEASE DESCRIBE THE ALLOCATORS OF DEMAND-RELATED COSTS THAT YOU USE.

A. The primary demand allocators used are various measures of a class's January peak (a proxy for peak period demand), because peak usage forms the basis for planning decisions made by the Company.

Q. PLEASE DESCRIBE THE ALLOCATORS OF COMMODITY-RELATED COSTS THAT YOU USE.

A. The primary allocators for commodity-related costs are combinations of sales volumes, transport volumes or total throughput.

Q. HOW DID YOU DECIDE ON THE SPECIFIC ALLOCATORS TO USE IN YOUR STUDIES?

A. As in the case of the classification study discussed above, the starting point for

my allocation study was Staff's traditional allocation factors.

Q. AND WHICH OF STAFF'S ALLOCATION FACTORS DID YOU CHANGE?

A. I changed the following allocation factors in my study:

1. I used coincident peak (CP) demands rather than non-coincident peak (NCP) demands to allocate demand-related distribution investments and expenses.
2. I used winter volumes rather than January volumes alone to allocate gas storage inventory.
3. I used rate schedule revenues rather than volumes to allocate other utility revenues and rate schedule revenues rather than CP demands to allocate competitive transport revenues.

Q. WHY DO YOU DEVIATE FROM THE STAFF APPROACH WITH THE USE OF THESE THREE ALLOCATION FACTORS?

A. I believe that the use of winter volumes and rate schedule revenues as described above better reflect cost causality. However, the use of these factors will likely not have a significant impact on my results. In contrast, the use of coincident peak (CP) demands rather than non-coincident peak (NCP) demands to allocate demand-related distribution investments and expenses could have a significant impact on my results.

Q. WHY DO YOU FAVOR THE USE OF CP DEMANDS RATHER THAN NCP DEMANDS TO ALLOCATE DEMAND-RELATED DISTRIBUTION INVESTMENTS AND EXPENSES?

A. I completely disagree with the use of each class' non-coincident peak to allocate demand-related distribution costs. It is not logical and does not reflect the cost causer relationship, in that it treats interruptible and irrigation customers as if they impose the same costs on the system as firm heating customers. It does not

1 recognize that natural gas facilities are built and sized to meet winter heating
2 loads. As a result, Staff's class cost of service approach distorts the cost
3 responsibility of these customers because it does not recognize that these
4 customers utilize the system when there is significant excess capacity. The
5 logical consequence of such a cost allocation is to force these customers off of
6 the system entirely (requiring the remaining customers to absorb an additional
7 share of common costs). This is in no one's interest.

8 **Q. PLEASE SUMMARIZE YOUR ALLOCATION STUDY.**

9 A. The results are summarized on the first page of the class cost of service study.
10 This exhibit shows that, at existing rate levels, the residential class is the only
11 one providing a return that is less than the system average return. The return
12 from all other classes is above the system average return. This can be seen on
13 line 29 of the summary page, which shows the realized return at existing rates by
14 class, and line 30, which shows the relative rate of return by class at existing rate
15 levels.

16 At the Company's requested rate of return of 7.2798%, residential
17 customers are still the only class providing a return that is less than the system
18 average return. All other classes are already providing revenues that equal or
19 exceed the identified cost to serve them. This is shown on lines 32-39 of pages
20 1 and 2 of Exhibit PHR-5. This section also shows the amount by which each
21 class's revenues must increase in order to achieve rate of return parity.

22 **Q. WHY ARE THESE AMOUNTS OF INTEREST TO THE COMMISSION?**

23 A. One of the primary purposes of a class cost of service analysis is to identify

interclass subsidies that may exist between the different classes of a natural gas distribution system so that steps can be taken to eliminate them. The equal class rates of return increase identifies for the Commission the extent to which rates need to be adjusted so that all identified subsidies can be eliminated.

Q. WOULD YOU RECOMMEND THAT THE COMMISSION ADOPT A CLASS REVENUE DISTRIBUTION THAT RESULTS IN EQUAL CLASS RATES OF RETURN?

A. I do believe that equal class rates of return should be an objective of any rate design study. However, given the potential for disruptions caused by significant movements to cost of service based rates, it is generally recommended that gradual movements to cost based rates are preferred to dramatic movements. As a result, the Company recommends a movement in the direction of cost based rates using the following rules:

1. In the face of an overall rate increase, no class will be provided with a base rate decrease, except in cases where an immaterial decrease may be needed to reconcile projected and target revenues.
2. If a class is not providing sufficient revenues to cover its identified cost of service at proposed rate levels, required revenues will be increased for all deficient classes to a level that equalizes the percentage increase for those classes consistent with the identified cost of service. Thus, the residential class will be considered for a rate increase of sufficient magnitude to provide the Company with returns closer to the system average return on the investment needed to serve these customers.
3. Because an allocation of the full rate increase to the residential class still results in a return less than the return on investment to serve these customers, the full benefit of the over collection of revenues from the other classes is provided to residential customers.

The results of this allocation of the Company's revenue deficiency are shown on lines 41-49 of pages 1 and 2 of Exhibit PHR-5. As can be seen by

1 comparing the relative rates of return by class at proposed rates (line 48) with the
2 relative rates of return at existing rate levels (30), this proposed revenue
3 distribution has moved all classes closer to rate of return parity (i.e., all classes
4 have been moved closer to a relative rate of return of 1.0). It is also important to
5 recognize that the calculated percentage increase (line 49) is overstated for two
6 reasons. First, the percentage is calculated without gas costs included. Second,
7 the base level of revenues on which the percentage increase is calculated
8 excludes both Gas System Reliability Surcharge ("GSRS") revenues and Ad
9 Valorem Tax Surcharge Rider revenues. Thus, the percentage bill increase that
10 will be seen by customers who face an increase will actually be much less than
11 the percentage increases shown on pages 1 and 2 of Exhibit PHR-5. Both of
12 these are factored into my analysis of rate impacts by customer class at different
13 consumption levels, provided in the next section of my testimony.

VII. RATE DESIGN

a. Overall Rate Design Philosophy

17 **Q. WHAT IS KANSAS GAS SERVICE'S OVERALL RATE DESIGN PROPOSAL**
18 **IN THIS CASE?**

19 A. Kansas Gas Service proposes to keep its current rate designs in place, but
20 modify them to reflect changes in rate levels as appropriate and improve fixed
21 cost recovery through increased service charges.

22 **Q. WHY DOES THE COMPANY PROPOSE TO IMPROVE FIXED COST**
23 **RECOVERY BY INCREASING SERVICE CHARGES?**

1 A. As shown in the class cost of service study introduced above, fixed costs
2 represent 98.1% of the total cost of delivering natural gas to Kansas Gas
3 Service's customers. In contrast, the Company collects only 48% of its total cost
4 to serve customers through fixed (Service) charges. This mismatch has a
5 number of consequences, the most significant of which is the creation of intra-
6 class subsidies between higher volume users within a particular customer class
7 and lower volume users. These subsidies can influence a residential consumer
8 to make uneconomic energy consumption decisions relative to alternative fuels
9 or significantly impact a larger user's decision to expand operations or locate its
10 operations within the service territory.

11 **Q. GIVEN THIS RATE DESIGN PHILOSOPHY, WHAT ARE THE PROPOSED**
12 **RATE DESIGNS?**

13 A. The proposed rates are summarized in Exhibit PHR-6. Page 1 of the Exhibit
14 summarizes the billing determinants and proposed rates by class. Pages 2
15 through 22 show the bill impacts by customer class over the range of
16 consumption exhibited by the class. These latter pages also show the bill impact
17 for a consumer at the average consumption level of the class. Thus, for
18 example, page 2 of 18 of Exhibit PHR-6 shows the bill impacts from the
19 Company's proposed rate design for the residential class over an annual
20 consumption range of 5 Mcf/year to 215 Mcf/year. Bill impacts at approximately
21 the average consumption level are boxed in and show that residential consumers
22 who use 75 Mcf/year will see an approximate 7.0% increase in their natural gas
23 bills. The remaining pages of the exhibit show the bill impacts for consumers

1 billed under the Company's other rate schedules. In general, the rate design
2 proposals implement the changes in the overall structure of the Company's rates
3 that I delineate above, but do so in a way that minimizes overall rate impacts to
4 customer classes and to specific customers within those classes.

5 **Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?**

6 **A.** Yes, it does.

VERIFICATION

STATE OF MARYLAND)
) ss.
COUNTY OF MONTGOMERY)

Paul H. Raab, being duly sworn upon his oath, deposes and states that he is an Independent Consultant for Kansas Gas Service, a Division of ONE Gas, Inc.; that he has read and is familiar with the foregoing Testimony filed herewith; and that the statements made therein are true to the best of his knowledge, information, and belief.



Paul H. Raab

SUBSCRIBED AND SWORN to before me this 27th day of April, 2016.



Notary Public

Commission/Appointment Expires: 05/13/2019



Kansas Gas Service

A Division of ONE Gas, Inc.

REBUTTAL TESTIMONY OF PAUL H. RAAB

Q. PLEASE STATE YOUR NAME.

A. My name is Paul H. Raab.

Q. ARE YOU THE SAME PAUL H. RAAB WHO HAS PREVIOUSLY SUBMITTED TESTIMONY IN THIS DOCKET?

A. Yes, I am.

I. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to respond to certain portions of the direct testimonies of Staff Witnesses Tyler J. Page, Darren Prince and Robert H. Glass and CURB Witness Glenn A. Watkins that relate to weather normalization, including the coefficients to be used in the Company's WNA Rider, class cost of service and revenue allocation, and rate design.

II. IDENTIFICATION OF EXHIBITS

Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR TESTIMONY?

A. Yes, I sponsor two exhibits. Exhibit PHR-7 is Staff's response to KGS Data Request No. 3, Question No. 1. Exhibit PHR-8 is a duplication of CURB's class cost of service study, but properly done to incorporate the classification step that has been omitted from CURB's analysis.

1 The above-designated exhibits were prepared by me or under my direction and
2 supervision.

3 III. ORGANIZATION OF TESTIMONY

4 Q. HOW IS YOUR TESTIMONY ORGANIZED?

5 A. My testimony is organized into three additional sections. Section IV contains my
6 response to the direct testimonies of Staff Witnesses Prince and Glass regarding
7 the Company's weather normalization calculation and Staff's proposed
8 alternative. Section V contains my rebuttal to the class cost of service and
9 revenue allocation recommendations contained in the direct testimonies of Staff
10 Witnesses Page and Glass and CURB Witness Watkins. Finally, Section VI
11 contains my rebuttal to the rate design recommendations contained in the direct
12 testimonies of Staff Witness Glass and CURB Witness Watkins.

13 IV. WEATHER NORMALIZATION

14 Q. WHAT ISSUES DOES STAFF WITNESS GLASS RAISE WITH RESPECT TO 15 THE COMPANY'S WEATHER NORMALIZATION ADJUSTMENT?

16 A. Staff Witness Glass raises three issues with respect to the Company's weather
17 normalization adjustment in this case:

- 18 1. The use of a subset of weather stations (what Staff initially termed "Tier 1"
19 weather stations, but now refers to as "First-Order" weather stations) to
20 develop the weather normalization adjustment. Direct Testimony of
21 Robert H. Glass, page 4, line 2 – page 5, line 9.
- 22 2. The use of unadjusted usage data to develop the weather normalization
23 adjustment. Direct Testimony of Robert H. Glass, page 5, line 10 – page

1 6, line 8.

2 3. The use of “adjusted” 2013 customer count data to develop the weather
3 normalization adjustment. Direct Testimony of Robert H. Glass, page 6,
4 line 9 – page 12, line 1.

5 I believe that using unadjusted usage data and “adjusted” 2013 customer count
6 data are reasonable recommendations and the Company has indicated that they
7 are willing to adopt these recommendations to develop the weather normalization
8 adjustment in the case. Similarly, the use of a subset of weather stations to
9 develop the weather normalization adjustment in the case is not unreasonable,
10 with certain conditions.

11 **Q. WITH RESPECT TO THE COMPANY’S CHOICE OF WEATHER STATIONS,**
12 **WHY DOES THE COMPANY USE MORE THAN FOUR STATIONS TO**
13 **ADJUST ITS VOLUMES FOR THE IMPACT OF WEATHER?**

14 **A. Essentially, it was ordered to do so by the Commission in 1996:**

15 47. [Staff Witness Janet] Buchanan analyzed the differences in Staff’s approach
16 from WRI. Staff chooses to use weather data from twenty (20) weather stations
17 while WRI employs data from only four (4). Buchanan believes choosing more
18 weather stations will improve the overall quality of weather normalization
19 adjustment. (Vol. 2, Tr. pp. 360-17 through 360-18). Second, WRI calculates
20 normal HDDs by using twenty (20) years of data while staff obtains normal HDDs
21 from National Oceanic and Atmospheric Administration [NOAA] which are
22 calculated by using thirty (30) years of date from 1961 to 1990. She believes the
23 larger sample will generate a more accurate calculation of normal temperature.
24 This method was agreed to by WRI in its last rate case (Docket No. 176,716-U).
25 Third, WRI uses both CDDs and HDDs in some of its regression analysis while
26 staff and other companies typically use a model in which only HDDs explain the
27 changes in per capita gas use. Staff believes its recommendation is generally
28 more accurate than the adjustment of WRI since its uses weather stations closer
29 to the average customer, employs HDD normals based on thirty (30) years rather
30 than twenty, does not use CDDs as an input in the regression analysis. (Vol. 2,
31 Tr. pp. 360-18 through 360-21). Order in Docket No. 193,305-U, April 15, 1996,
32 page 29-30.

1 In that case, the Commission adopted Staff's recommended weather
2 normalization adjustment, and the use of more than four stations for weather
3 normalization purposes has been the Commission's policy since that time.

4 **Q. WHAT ARE THE CONDITIONS UNDER WHICH THE COMPANY WOULD**
5 **ACCEPT STAFF'S RECOMMENDATION TO REDUCE THE NUMBER OF**
6 **WEATHER STATIONS FOR WEATHER NORMALIZATION PURPOSES?**

7 A. Concordia should be omitted from the weather stations used to develop the
8 weather normalization adjustment for KGS.

9 **Q. WHY SHOULD CONCORDIA BE OMITTED FROM THE WEATHER STATIONS**
10 **USED TO DEVELOP THE WEATHER NORMALIZATION ADJUSTMENT FOR**
11 **KGS IF STAFF'S POSITION ON THIS ISSUE IS ADOPTED?**

12 A. In response to KGS Data Request No. 3, Question No. 1, Staff acknowledges
13 that Concordia is no longer a First-Order station and has not been a First-Order
14 station since the "mid 1990s," well before the time period relevant to the weather
15 normalization calculation in this case. Accordingly, Staff's weather normalization
16 calculation should not have included usage data linked to Concordia and instead
17 of collapsing the data from the 13 weather stations employed by the Company to
18 4 First-Order stations, the data from the 13 weather stations employed by the
19 Company should have been collapsed to only 3 First-Order stations, Kansas City
20 International Airport - NCDC ID No. USW00003947; Topeka - NCDC ID No.
21 USW00013996; and Wichita - NCDC ID No. USW00003928.

22
23 I provide Staff's response to this data request as Exhibit PHR-7.

1 **Q. IF STAFF'S POSITION ON THIS ISSUE IS ADOPTED WHEN WOULD YOU**
2 **RECOMMEND THAT THIS RECOMMENDATION BE IMPLEMENTED?**

3 A. I would recommend that weather normalization using these three First-Order
4 weather stations be implemented with the filing of the Company's next base rate
5 proceeding.

6 **Q. WHY NOT SIMPLY OMIT CONCORDIA FROM THE CALCULATIONS IN THIS**
7 **CASE?**

8 A. Given the schedule for filing Rebuttal Testimony, the Company has not had
9 enough time to fully implement Staff's proposal.

10 **Q. HOW DOES STAFF'S PROPOSAL AFFECT THE COMPANY'S WNAR?**

11 A. Assuming that the Commission adopts Staff's recommendation to use only First-
12 Order Weather Stations and to incorporate all months of data in the weather
13 normalization adjustment calculation, a change to the WNAR tariff will be
14 required to redefine the WNA Calculation Period from the five cycle billing
15 months of November through March to all months.

16 **V. CLASS COST OF SERVICE AND REVENUE ALLOCATION**

17 **Q. PLEASE SUMMARIZE THE DIFFERENCES BETWEEN YOUR STUDY AND**
18 **THE STAFF STUDY, SPONSORED BY STAFF WITNESS TYLER J. PAGE.**

19 A. The primary differences are summarized by Staff Witness Page on page 11 of
20 his prefiled Direct Testimony. Mr. Page first notes that the major difference in
21 results can be traced to the allocation of rate base. Mr. Page explains the reason
22 for this difference as follows:

23 The primary reason for the difference between Staff's allocation and Mr.
24 Raab's allocation of rate base is the classification and allocation of

1 distribution plant, or to be more specific, the classification and allocation of
2 distribution mains. Staff classifies distribution mains as 100% demand
3 related and allocates the costs using an NCP allocator. Mr. Raab
4 classifies distribution mains as 53.5% customer-related and 46.5%
5 demand-related. The demand-related portion is allocated on the basis of
6 monthly CP demand. To determine the portions of distribution mains
7 classified as customer and demand-related, Mr. Raab used the zero-
8 intercept method. Page 11, line 4 – page 12, line 3.

9 I agree with Mr. Page's assessment that the classification and allocation of
10 distribution mains is the major cause of the differences between the two studies.

11 **Q. HOW DO YOU RESPOND TO STAFF'S CLASSIFICATION METHOD FOR**
12 **THESE INVESTMENTS?**

13 A. I do not agree that it is appropriate to classify these investments as only demand-
14 related. Such a classification scheme is not supported by the NARUC Cost
15 Allocation Manual and, in my view, violates Mr. Page's main purpose of a class
16 cost of service analysis, which is "to evaluate the causal link between a utility's
17 cost of providing service to its customers, its total system cost-of-service, and the
18 customers' consumption of those services." Direct Testimony of Tyler J. Page,
19 page 2, lines 21-23. This is clear from Mr. Page's own argument in support of
20 the use of his NCP demand allocator for distribution mains:

21 The purpose of mains is to ensure that natural gas service can be
22 provided at all times, meaning mains must be sized to meet the peak
23 demand for each part of the distribution system. Thus, assigning no
24 customer component to mains is appropriate because it recognizes that
25 the utility puts pipe in the ground to provide sustained service to all
26 customers that utilize the distribution system, not just a specific class of
27 customers on a couple of peak days out of the year. Direct Testimony of
28 Tyler J. Page, page 13, lines 14-20.

29 If, as argued by Mr. Page, the "purpose of mains is to ensure that natural gas

1 service can be provided at all times,” then this suggests that at least some
2 portion of mains investment must be classified according to a cost driver that
3 does not change over time. A customer classification satisfies this requirement.
4 A customer classification is further supported by Mr. Page’s argument that “the
5 utility puts pipe in the ground to provide sustained service to all customers that
6 utilize the distribution system, not just a specific class of customers on a couple
7 of peak days out of the year.” Thus, Mr. Page’s arguments in support of his
8 classification and allocation of mains are fully consistent with and indeed support
9 the Company’s classification of a portion of mains as customer-related.

10 **Q. AND HOW DO YOU RESPOND TO STAFF’S ALLOCATION METHOD FOR**
11 **THESE INVESTMENTS?**

12 A. I do not agree that it is appropriate to allocate these costs on the basis of each
13 class’ non-coincident peak. As I stated in my Direct Testimony, it is not logical
14 and does not reflect the cost causer relationship, in that it treats interruptible
15 customers as if they impose the same cost on the system as firm customers. As
16 a result, Staff’s class cost of service study distorts the cost responsibility of
17 interruptible (and, to a lesser extent, irrigation and SGS) customers because it
18 does not recognize that these customers receive a lower quality service than firm
19 customers. Rather, it assigns them a level of costs that is consistent with a higher
20 quality of service than they receive. The logical consequence of such a cost
21 allocation is to drive these customers to firm service (requiring additional
22 investments to provide the higher quality firm service) or force them off of the
23 system entirely (requiring the remaining customers to absorb an additional share

1 of common costs). This is in no one's interest.

2 **Q. BUT DOESN'T MR. PAGE NOTE THAT HIS CLASSIFICATION AND**
3 **ALLOCATION SCHEME ALLOCATES LESS OF THESE COSTS TO**
4 **IRRIGATION CUSTOMERS THAN THE COMPANY'S?**

5 A. Yes, and while that is true, I believe that this reflects a more appropriate
6 classification where a portion of the costs are classified as customer-related and
7 a portion are classified according to peak demand. It also better reflects Mr.
8 Page's overall cost allocation philosophy that off-peak users should be assigned
9 costs consistent with the fact that they are "connected to the system, require gas
10 delivery service, and are therefore, cost causers." Direct Testimony of Tyler J.
11 Page, page 14, lines 8-10.

12 **Q. FINALLY, HOW DO YOU RESPOND TO MR. PAGE'S CLAIM THAT STAFF'S**
13 **CCOSS METHODOLOGY PROVIDES A BALANCED AND MORE**
14 **REASONABLE BASIS FOR THE ALLOCATION OF REVENUES AND**
15 **COSTS?**

16 A. This statement has no probative value because this conclusion is totally a matter
17 of judgment. It is "balanced" because it brings in more customer classes to share
18 in the increase. It is "reasonable" only because Mr. Page says it is so. However,
19 Mr. Page's study does represent one of many alternatives that the Commission
20 may wish to consider as it decides on a revenue increase allocation approach in
21 this case and what is clear when the results of the Company study and the
22 results of the Staff study are compared is that the Residential class, under either
23 approach, should receive the bulk of the allowed increase in this case. I discuss

1 this later in my testimony.

2 **Q. PLEASE SUMMARIZE THE DIFFERENCES BETWEEN YOUR STUDY AND**
3 **THE CURB STUDY, SPONSORED BY CURB WITNESS GLENN A. WATKINS.**

4 A. As is the case with the Staff study discussed above, the primary difference
5 between the Company study and the CURB study relates to the classification
6 and allocation of distribution mains. As Mr. Watkins explains, “the methods and
7 approaches used to allocate distribution mains to classes are usually by far the
8 most important (in terms of class rate of return ["ROR"] results).” Direct
9 Testimony of Glenn A. Watkins, page 5, lines 16-18. In contrast to the Staff
10 study, however, Mr. Watkins favors a peak and average (“P&A”) approach to
11 classify and allocate these investments. Under the P&A or
12 "Demand/Commodity" approach, both peak day and annual (average day)
13 throughput is reflected within the allocation of mains. Mr. Watkins justifies the
14 use of this approach as follows:

15 In my opinion, the P&A approach is the fairest and most equitable method
16 to assign natural gas distribution mains costs to the various customer
17 classes. This method recognizes each class' utilization of the Company's
18 facilities throughout the year, and also recognizes that some classes rely
19 upon the Company's facilities (mains) more than others during peak
20 periods. Direct Testimony of Glenn A. Watkins, page 9, lines 3-7.

21
22 Of course, this statement, like similar statements made by Staff Witness Page,
23 also has no probative value because the resulting conclusion is totally a matter of
24 judgment. It is “fairest” and “most equitable” only because Mr. Watkins says it is
25 so. Again however, Mr. Watkins’ study does represent one of many alternatives
26 that the Commission may wish to consider as it decides on a revenue increase

1 allocation approach in this case and what is clear when the results of the
2 Company study and the results of the CURB study are compared is that the
3 Residential class, under either approach, should also receive the bulk of the
4 allowed increase in this case.

5 **Q. ARE THERE ANY OTHER SPECIFIC ISSUES IN MR. WATKINS' DIRECT**
6 **TESTIMONY TO WHICH YOU WOULD LIKE TO RESPOND?**

7 A. Yes. On page 17 of his Direct Testimony, Mr. Watkins states that:

8 Even though Mr. Raab's Excel model shows the deductibility of interest in
9 determining income tax responsibility, he ignores this very important
10 deduction in calculating individual class income tax expenses. As such, I
11 have recognized the deductibility of interest expense in determining class
12 income tax responsibility. Direct Testimony of Glenn A. Watkins, page 17,
13 lines 18-22.

14 This allegation is simply incorrect. The income tax expense that I allocate is the
15 amount calculated by the Company, which incorporates the interest deduction.
16 My model allocates this amount on the basis of income before taxes, which
17 implicitly assumes an allocation of interest expenses that is consistent with this
18 factor.

19 **Q. WHAT ARE YOUR OVERALL CONCLUSIONS WITH RESPECT TO THE**
20 **THREE COMPETING CLASS COST OF SERVICE STUDIES IN THE**
21 **RECORD?**

22 A. As Bonbright has written:

23 No writer whose views on public utility rates command respect purports to
24 find a single yardstick by sole reference to which rates may be judged
25 reasonable or socially desirable as distinguished from rates that are
26 unreasonable or adverse to the public interest. Principles of Public Utility
27 Rates at 109.

1 This suggests that there is no “absolute” cost of service analysis that can
2 be relied on by the Commission in this case to guide the allocation of costs, and
3 that whatever cost allocation methodologies are chosen should be used as a
4 “guide” rather than as an absolute prescription for rate design. Mr. Page’s
5 statement on page 6, lines 9-10 of his direct testimony that “cost allocation
6 studies should only be utilized as a general guide or as a starting point for rate
7 design” and Mr. Watkins’ statement on page 3, lines 19-21 of his direct testimony
8 that, “regulators should consider CCOSS only as a guide, with the results being
9 used as one of many tools to assign class revenue responsibility” would indicate
10 that both Staff and CURB would appear to be in agreement with this statement.
11 It further suggests that none of these studies should be relied on in its entirety in
12 deciding the ultimate allocation of the revenue increase in this case.

13 **Q. HOW THEN SHOULD THE COMMISSION DECIDE WHAT WEIGHT TO PLACE**
14 **ON THESE COMPETING RESULTS TO GUIDE THEIR DECISIONS ON**
15 **REVENUE ALLOCATION AND RATE DESIGN?**

16 **A. I believe that the following guidelines are appropriate in this case:**

17 1. If the competing studies provide different indications for cost allocation
18 and rate design, then the Commission must examine the differences in the
19 underlying assumptions that led to those results to determine which set of
20 assumptions appears more reasonable in the Commission’s judgment.
21 The results indicated by the more reasonable set of assumptions should
22 be the results that guide the Commission’s final policy decisions with
23 respect to cost allocation and rate design in this case.

24
25 2. If the competing studies provide the same indications for cost allocation
26 and rate design then the Commission can be confident that the decisions
27 that it makes with respect to these two issues are broadly supported by a

range of assumptions and perspectives.

Q. ARE THERE OTHER ISSUES FOR THE COMMISSION TO CONSIDER AS IT DETERMINES WHICH SET OF RESULTS SHOULD GUIDE ITS COST ALLOCATION AND RATE DESIGN DETERMINATIONS IN THIS DOCKET?

A. If one is an advocate for a particular constituency, then it is fairly simple to choose that set of allocators that favors that constituency and argue that that set of allocators is the one that is the most fair and reasonable. The Commission's decision about the most fair and reasonable set of allocators, however, must take a broader view of these concepts and is more difficult. For example, the following table summarizes the residential class allocation percentage under a customer allocator, a demand allocator and an energy allocator from Mr. Watkins GAW-2:

Allocator	Residential Class Percentage
Total Customers	91.22%
CP Demand - Total Customers	59.51%
MCF - Total	52.98%

This table shows that changing the classification and allocation factor from one that is more customer-related to one that is more volume-related can cut the allocations of costs to residential customers almost in half. A similar, although not quite as extreme, result can be obtained for residential customers by substituting a demand-related allocator for a customer-related one. Because class cost of service studies fully distribute all of the identified costs, "gains" to one class in the form of lower cost allocations are necessarily off-set by "losses" to the remaining classes in the form of higher cost allocations.

1 Thus, the results of Mr. Watkins study should come as no surprise to any outside
2 observer. When faced with a choice of allocators, Mr. Watkins chooses those
3 allocators that will benefit the residential class. I believe that the Company
4 results represent a greater balancing of the interests of all customer classes than
5 Mr. Watkins' results and that his results can only represent an extreme bound of
6 reasonableness for the issues of cost allocation and rate design in this case.

7 **Q. DESPITE THE STUDY DIFFERENCES THAT YOU HAVE IDENTIFIED ABOVE,**
8 **WHAT ARE THE CONSISTENT INDICATIONS FROM ALL THREE STUDIES**
9 **ABOUT CLASS REVENUE ALLOCATIONS AND RATE DESIGN UPON**
10 **WHICH THE COMMISSION CAN RELY IN THIS CASE?**

11 A. There are two primary indications that are consistent across all three studies:

- 12 1. Under any definition of cost, the residential class is being subsidized by
13 other customers on the KGS system.
- 14 2. The level of residential basic service charges is significantly below the
15 identified customer costs from all three studies.

16 **Q. HOW CAN YOU DEMONSTRATE THAT THE RESIDENTIAL CLASS IS BEING**
17 **SUBSIDIZED BY OTHER CUSTOMERS UNDER ALL THREE STUDIES?**

18 A. This can be easily demonstrated by relying on the estimated class returns from
19 the three studies. The following table summarizes the calculated relative rates of
20 return by class under each of the filed cost of service studies:

Class	KGS	Staff	CURB
RS	0.49	0.75	0.92
GSS	1.82	1.38	1.46
GSL	1.72	0.79	0.90
GSTE	1.96	0.76	0.76
SGS	5.50	6.54	4.90
GIS	22.01	7.39	3.66
KGSSD	1.86	1.57	1.42
SSR	20.82	16.47	11.15
STk	4.99	2.42	1.49
STt	3.59	1.83	1.31
CNG	3.46	2.18	0.47
GIT	26.05	7.38	3.20
LVTk-T1	5.19	2.47	1.24
LVTk-T2	4.08	1.51	0.87
LVTk-T3	4.81	2.05	0.92
LVTk-T4	6.26	2.90	0.99
LVTt-T1	4.18	2.43	1.25
LVTt-T2	3.23	1.60	0.99
LVTt-T3	3.95	2.13	1.02
LVTt-T4	5.16	3.23	1.13
WTt	5.26	5.44	2.99

Shaded cells indicate that the class is providing a return that is less than the system average under the indicated study. As can be seen, the Residential class is the only class that is shown to be consistently providing a return that is less than the system average under all three studies. The table also shows the effects of moving away from the Company's customer-related classification of costs to more demand-related (Staff) and more energy-related (CURB) classifications of costs: the residential class return increases and the returns of other classes decrease.

However, the fact that the residential class is demonstrated to be consistently under-earning, regardless of the cost classification and allocation philosophy

adopted, should provide the Commission with some comfort that any decision that it makes to place greater responsibility for the revenue deficiency on the residential class is broadly supported by a range of assumptions and perspectives.

Q. HOW CAN YOU DEMONSTRATE THAT THE RESIDENTIAL BASIC SERVICE CHARGES ARE SIGNIFICANTLY BELOW THE IDENTIFIED CUSTOMER COSTS FROM ALL THREE STUDIES?

A. The following table summarizes the identified customer costs from all three studies.

Class	KGS	Staff	CURB
RS	\$ 25.68	\$ 19.41	\$ 20.10
GSS	\$ 32.54	\$ 22.47	\$ 26.29
GSL	\$ 47.86	\$ 37.29	\$ 35.35
GSTE	\$ 104.51	\$ 75.10	\$ 56.69
SGS	\$ 44.29	\$ 22.70	\$ 34.41
GIS	\$ 77.87	\$ 16.89	\$ 43.02
KGSSD	\$ 370.18	\$ 61.42	\$ 329.53
SSR	\$ 695.94	\$ 57.35	\$ 444.39
STk	\$ 143.91	\$ 67.00	\$ 83.28
STt	\$ 133.23	\$ 61.34	\$ 78.04
CNG	\$ 933.29	\$ 251.06	\$ (115.39)
GIT	\$ 158.54	\$ 24.00	\$ 79.65
LVTk-T1	\$ 271.61	\$ 104.47	\$ 127.97
LVTk-T2	\$ 461.00	\$ 93.56	\$ 103.09
LVTk-T3	\$ 839.94	\$ 90.42	\$ 147.77
LVTk-T4	\$ 3,098.34	\$ 105.92	\$ 429.80
LVTt-T1	\$ 366.90	\$ 93.60	\$ 161.96
LVTt-T2	\$ 562.15	\$ 92.30	\$ 159.83
LVTt-T3	\$ 1,252.30	\$ 86.08	\$ 266.82
LVTt-T4	\$ 4,884.04	\$ 99.51	\$ 1,036.12
WTt	\$ 1,442.66	\$ 85.13	\$ 980.70

Staff's study generates the lowest customer-related costs for the residential class, a value of \$19.41/customer/month, which compares to a current residential

1 basic service charge of \$15.35. Therefore, if the Commission desires to reflect in
2 rates a level of fixed costs that is broadly supported by a range of assumptions
3 and perspectives of all parties, then the minimum level at which residential basic
4 service charges should be set is \$19.41.

5 **Q. YOUR TESTIMONY ABOVE DESCRIBES GENERALLY THE ALLOCATION**
6 **OF THE CALCULATED REVENUE SHORTFALL TO THE CUSTOMER**
7 **CLASSES. DO YOU HAVE ANY RECOMMENDATIONS ON HOW THIS**
8 **SHOULD BE DONE SPECIFICALLY?**

9 A. All three parties with an interest in this issue propose a set of general guidelines
10 that can assist the Commission in making this determination. Dr. Glass
11 enumerates and applies Staff's guidelines on page 19 of his Direct Testimony.
12 These guidelines result in an allocation of over 91% of Staff's recommended
13 increase to the Residential class. CURB Witness Watkins enumerates and
14 applies CURB's guidelines on page 20, lines 16-22 and his associated Table 3 on
15 page 21 of his Direct Testimony. These guidelines result in an allocation of over
16 81% of CURB's recommended increase to the Residential class. Based on an
17 application of the revenue increase guidelines of each class, there appears to be
18 general consistency among the parties on how the proposed revenue increase
19 should be spread. From this, I conclude that any differences in the final class
20 revenue allocation are primarily related to the underlying class cost of service
21 study and not the specific method used to assign the proposed revenue increase
22 to classes.

23 **Q. DO YOU HAVE ANY OTHER COMMENTS ON THE PROPOSED REVENUE**

ALLOCATION OF EITHER STAFF OR CURB?

A. Yes I do. On page 20 of Mr. Watkins' testimony, he questions the Company's allocation of all of the proposed revenue increase to the residential class:

In its application, the Company indicates that in the intervening four-year period since the Company's last rate case, it has made significant additional capital investments of approximately \$230 million. In addition, the Company claims that it has experienced increases in employee wages and benefits and in material and supplier costs. These capital expenditures and increased expense levels have been incurred to serve all customers, not simply the residential class. Page 20, lines 2-7.

That is true, but the reason for the entire amount going to the residential class is that this class started from a point of not providing its fair return when the rate effective period of the last case began. Specifically, even after the \$28M rate increase granted in Docket No. 12-KGSG-835-RTS, 77% of which was assigned to the residential class, the Company calculated that the residential class relative rate of return was only .61. The Company will likely continue to recommend that larger than system average rate increases be assigned to the residential class until this subsidy is erased. This is only fair to the Company's other customers.

VI. RATE DESIGN

Q. WHAT IS KANSAS GAS SERVICE'S OVERALL RATE DESIGN PROPOSAL IN THIS CASE?

A. Kansas Gas Service proposes to keep its current rate designs in place, but modify them to reflect changes in rate levels as appropriate and improve fixed cost recovery through increased service charges. As a direct consequence of its class cost of service analysis, the Company recommends that the residential

1 class be responsible for 100% of the requested rate increase and that all of the
2 requested increase be collected through increased fixed charges.

3 **Q. WHAT ARE THE PRIMARY ISSUES WITH RESPECT TO RATE DESIGN**
4 **RAISED BY THE PARTIES IN THIS PROCEEDING?**

5 A. Robert H. Glass on behalf of Staff and Glenn A. Watkins on behalf of CURB
6 make rate design recommendations that differ from the Company's proposals.
7 The rate design proposals of Staff and CURB differ from the Company's rate
8 design proposal in two ways: (1) allocation of the requested rate increase to
9 specific customer classes, which I have discussed above, and (2) the level of
10 basic service charges and the recovery of fixed costs.

11 **Q. WHAT ARE STAFF'S PROPOSED RATE DESIGNS?**

12 A. Staff's proposed rate designs appear in Table 6 on page 20 of Dr. Glass'
13 testimony. In his rate design, Dr. Glass is proposing to increase the Residential
14 Service Charge by \$1 and collect the remainder of the revenue shortfall by
15 increasing the delivery charge. For other classes getting an increase (General
16 Service-Large and General Service-Transport Eligible), the revenue shortfall is
17 collected by increasing the delivery charge.

18 **Q. DO YOU AGREE WITH THIS RECOMMENDATION?**

19 A. No, I do not. Dr. Glass' recommendation is not consistent with Staff's class cost
20 of service analysis that shows customer costs of \$19.41 for the Residential class,
21 \$37.29 for the General Service-Large class and \$75.10 for the General Service-
22 Transport Eligible class; nor is it consistent with his statement on page 20 that
23 "[n]early everyone agrees that most of the costs recovered by base rates for

1 natural gas companies are fixed costs.” The consequence of ignoring Staff’s
2 class cost of service analysis in the design of rates is that intraclass subsidies
3 remain (indeed, they are exacerbated) in the proposed rates for the Residential
4 class, the General Service-Large class and the General Service-Transport
5 Eligible class under Dr. Glass’ proposal. Therefore, one would have to conclude
6 that it is not a “sound rate structure” as defined by Bonbright.

7 **Q. PLEASE EXPLAIN.**

8 A. In his seminal work, Principles of Public Utility Rates, Professor Bonbright
9 introduces ten attributes of a sound rate structure. Bonbright characterizes these
10 attributes as “desirable characteristics of utility performance that regulators
11 should seek to compel through edict,” and groups the attributes into those related
12 to revenues, those related to cost, and those related to practicality. One of the
13 critical features of a mismatch between cost incurrence and cost recovery of the
14 type exhibited by Staff’s proposed rate structure is that it builds subsidies into the
15 prices faced by consumers for the delivery of natural gas. Specifically, by
16 collecting costs that have been identified as fixed in volumetric rates, it is a
17 mathematical certainty that larger users of the natural gas distribution system will
18 pay more than the identified cost to serve them and subsidize smaller users and
19 all consumers will pay more than the identified cost to serve them in the heating
20 season. Thus, Staff’s proposed rate structure violates the static efficiency
21 standard (attribute 4), the fairness standard (attribute 6) and the avoidance of
22 undue discrimination standard (attribute 7).^a

^a These attributes are:

1 **Q. BUT DOESN'T DR. GLASS ATTEMPT TO JUSTIFY HIS ASSIGNMENT OF**
2 **STAFF'S PROPOSED REVENUE INCREASE TO DELIVERY CHARGES?**

3 A. Yes he does so on page 20 of his testimony with the statement that, "Staff
4 asserts it is time to slow down the increase in fixed charges but not eliminate the
5 increases altogether." But of course, this is not a reason to exacerbate a bad
6 rate structure; it is merely an unsupported statement of Staff's position. In sum,
7 Dr. Glass provides no reason for Staff's position and recommendation other than
8 because it is Staff's position and recommendation. This is not a prescription for
9 sound regulatory decision making.

10 **Q. PLEASE SUMMARIZE THE DIRECT TESTIMONY OF CURB WITNESS**
11 **WATKINS AS IT RELATES TO A PROPOSED RESIDENTIAL RATE DESIGN.**

12 A. Mr. Watkins recommends no increase to the current residential basic service
13 charge.

14 **Q. DO YOU AGREE WITH THIS RECOMMENDATION?**

15 A. No, I do not agree. As with Staff's recommendation, Mr. Watkins'
16 recommendation is not consistent with his own class cost of service analysis that
17 shows customer costs of \$20.10 for the Residential class; nor is it consistent with

-
4. Static efficiency of the rate classes and rate blocks in discouraging wasteful use of service while promoting all justified types and amounts of use:
- (a) in the control of the total amounts of service supplied by the company;
 - (b) in the control of the relative uses of alternative types of service by ratepayers (on-peak versus off-peak service or higher quality versus lower quality service).
6. Fairness of the specific rates in the apportionment of total costs of service among the different ratepayers so as to avoid arbitrariness and capriciousness and to attain equity in three dimensions: (1) horizontal (i.e., equals treated equally); (2) vertical (i.e., unequals treated unequally); and (3) anonymous (i.e., no ratepayer's demands can be diverted away uneconomically from an incumbent by a potential entrant).
7. Avoidance of undue discrimination in rate relationships so as to be, if possible, compensatory (i.e., subsidy free with no intercustomer burdens).

1 the statement on page 27 of his testimony that the cost structure of the natural
2 gas distribution industry is comprised largely of fixed costs in the short-run.
3 Similar to the Staff recommendations on this issue, the consequences of the
4 CURB rate design are that intraclass subsidies remain in the proposed rates for
5 the Residential class and that it is not a "sound rate structure" as defined by
6 Bonbright.

7 **Q. BUT DOESN'T MR. WATKINS STATE THAT HIS ESTIMATED RESIDENTIAL**
8 **CUSTOMER COST IS \$13.24 PER MONTH?**

9 A. He does, but this figure is not consistent with Mr. Watkins' own class cost of
10 service analysis.

11 **Q. PLEASE EXPLAIN.**

12 A. Mr. Watkins does not develop a traditional class cost of service analysis. Rather,
13 he takes a "short-cut" in his analysis and skips entirely the classification step
14 recommended by NARUC and others as the proper way to conduct a class cost
15 of service analysis. As a result, he does not know the level of customer-related
16 costs or even the level of fixed costs that are implied by his study. I remedy this
17 problem by duplicating Mr. Watkins class cost of service study, but adding the
18 classification step. A summary of the resulting study is provided in Exhibit PHR-
19 8. There I summarize the results of my classification of the costs into those that
20 are customer-related, those that are demand-related and those that are
21 commodity-related. I develop these classifications, although the overall cost of
22 service and the cost of service by class developed by Mr. Watkins and myself are
23 exactly the same.

Q. HOW DO YOU DEVELOP THESE CLASSIFICATIONS?

A. The appropriate classification is apparent from Mr. Watkins' allocation factors. For example, Mr. Watkins allocates certain costs on the basis of annual throughput. Therefore, such costs are classified as commodity-related. As another example, certain other costs are allocated using a Peak and Average – Distribution Plant factor. These costs are classified as roughly 59% demand-related and 41% commodity-related, consistent with the 41% system load factor based on all throughput.

Significantly, my classifications have a built-in accuracy check: if my classifications were not consistent with Mr. Watkins' cost study, I would not be able to duplicate his results. As I am able to duplicate his results exactly, I know that my classifications are consistent with his study.

Q. PLEASE DESCRIBE THE VARIOUS TYPES OF COSTS THAT YOU HAVE IDENTIFIED FROM THE CLASS COST OF SERVICE STUDY USING THE ABOVE CLASSIFICATION STRATEGY.

A. At current rate levels, which are calculated to result in an overall return of 4.91% in Mr. Watkins' GAW-2, the embedded class cost of service study develops an overall cost of service (excluding gas costs) of \$ 287,931,412. Of this total, \$150,270,284 (52% of the total cost of service) is classified as customer-related, or is incurred simply to serve customers. The demand-related portion, or the amount that is classified according to the volumes of natural gas that customers require on the peak day, is \$81,927,266 (29% of the total). Finally, the

1 commodity-related portion, or those costs classified according to the amount of
2 natural gas that customers consume annually, is \$55,733,862 (19% of the total).
3 This means that those costs that are considered to be "fixed" in the total cost of
4 service comprise over 81% of the total cost to deliver natural gas.

5
6 With respect to Residential customer costs specifically, this analysis determines
7 the level of Residential customer costs to be \$19.71/customer/month rather than
8 Mr. Watkins estimate of \$13.24/month.

9 **Q. WHY WOULD THESE RESIDENTIAL CUSTOMER-RELATED COST**
10 **ESTIMATES BE DIFFERENT?**

11 A. The numbers are different because Mr. Watkins only includes a subset of the
12 customer-related costs from his class cost of service analysis in the development
13 of the residential customer-related cost estimate in his Exhibit WAG-3.

14 **Q. AND WHY IS \$19.71 A BETTER ESTIMATE OF RESIDENTIAL CUSTOMER-**
15 **RELATED COSTS?**

16 A. Because it is more consistent with what Mr. Watkins believes are KGS'
17 customer- related costs of service.

18 **Q. WHAT RATIONALE DOES MR. WATKINS PROVIDE TO SUPPORT HIS**
19 **VOLUME HEAVY RATE DESIGN?**

20 A. Mr. Watkins argues that the Company's rate designs:

- 21 1. violate the regulatory principle of gradualism;
- 22 2. violate the economic theory of efficient competitive pricing; and
- 23 3. are contrary to effective conservation efforts.

1 I will address each of these criticisms in turn.

2 **Q. ON WHAT BASIS DOES MR. WATKINS ARGUE THAT THE COMPANY'S**
3 **RESIDENTIAL RATE DESIGN VIOLATES THE REGULATORY PRINCIPLE OF**
4 **GRADUALISM?**

5 A. Mr. Watkins provides no support whatsoever for this claim. Of course, this is not
6 surprising because recovering the revenue increase by increasing basic service
7 charges alone does not result in a larger rate increase for the average customer
8 than if the rate increase were spread across the basic service and delivery
9 charges. While this will result in a higher percentage increase for lower usage
10 customers, under the Company's proposal, the rate increase is limited to \$3.69
11 per residential customer per month. It strains credibility to suggest that this
12 amount would violate anyone's perception of gradualism.

13 **Q. ON WHAT BASIS DOES MR. WATKINS ARGUE THAT THE COMPANY'S**
14 **RESIDENTIAL RATE DESIGN VIOLATES THE ECONOMIC THEORY OF**
15 **EFFICIENT COMPETITIVE PRICING?**

16 A. On pages 24-28 of his Direct Testimony, Mr. Watkins argues that long run
17 marginal cost pricing demands that prices be set on the basis of volumes
18 consumed and provides an example of volume-based pricing for an industry
19 whose cost structure is comprised largely of fixed costs in the short-run (refining).
20 From these, he concludes that if natural gas distribution service were efficiently
21 priced, all charges would be based on volumes transported over the network.

22 **Q. AND HOW DO YOU RESPOND?**

1 A. Mr. Watkins discussion of this issue does not warrant serious consideration. Not
2 only did the Commission consider and reject marginal cost pricing as a rate
3 design option in Docket No. 12-KCPE-764-RTS, but the testimony of Staff
4 Witness Robert H. Glass in that docket documents academic literature that
5 supports an economically optimal two-part tariff, commonly referred to as a
6 “Coase Tariff.” Direct Testimony of Robert H. Glass, Docket No. 12-KCPE-764-
7 RTS, Exhibit 1, page 15.

8
9 Furthermore, Mr. Watkins’ argument that the volumetric pricing of refining, an
10 industry characterized by high fixed charges, somehow proves that industries in
11 competitive markets always price their output volumetrically regardless of the
12 fixed costs of production is similarly flawed. One need only look at the pricing of
13 rental real estate to observe an industry in a competitive market that prices its
14 product on the basis of 100% fixed prices. Given this counter-example, it is clear
15 that consumers and the market do not have a clear preference for volumetric
16 pricing in all cases, pricing structures with high fixed monthly charges are not
17 related to the monopoly status of the seller, and competitive markets and
18 consumers in the United States have not demanded volumetric-based prices for
19 all products for generations.

20 **Q. MR. WATKINS ALSO TAKES EXCEPTION TO YOUR STATEMENT THAT**
21 **RATE DESIGNS THAT EMPHASIZE VOLUMES OVER FIXED CHARGES**
22 **CREATE INTRA-CLASS SUBSIDIES. HOW DO YOU RESPOND?**

1 A. As I note in my Direct Testimony, my cost of service analysis indicates that fixed
2 costs represent 98.1% of the total cost of delivering natural gas to Kansas Gas
3 Service's customers but the Company collects only 48% of its total cost to serve
4 customers through fixed (Service) charges. I further note that this mismatch
5 creates intraclass subsidies from higher volume users to lower volume users
6 within a particular customer class. This is not a matter of judgment, but is a
7 mathematical certainty. Furthermore, all of the rate design witnesses in this
8 proceeding recognize the fixed cost structure of natural gas distribution
9 companies like KGS and the fact that the predominant revenue recovery
10 mechanism for these costs is volumetric charges. Any honest assessment of
11 these facts by these witnesses will lead to a similar conclusion: collecting fixed
12 costs in volumetric charges creates intraclass subsidies from higher volume
13 users to lower volume users within a particular customer class.

14 **Q. ON WHAT BASIS DOES MR. WATKINS ARGUE THAT THE COMPANY'S**
15 **RESIDENTIAL RATE DESIGN IS CONTRARY TO EFFECTIVE**
16 **CONSERVATION EFFORTS?**

17 A. Mr. Watkins claims that the Company's Residential rate designs are contrary to
18 effective conservation efforts because, under reduced volumetric charges,
19 customers may see little reduction in their bills in return for their conservation
20 efforts.

21 **Q. AND HOW DO YOU RESPOND?**

22 A. The deficiency in Mr. Watkins' argument is that the conservation incentive by a
23 faulty, high delivery charge rate structure is a false signal, which indicates that

1 the cost of consuming incremental volumes is much higher than it actually is.

2 This follows logically from the cost incurrence/cost recovery mismatch that all of
3 the witnesses in this proceeding acknowledge.

4
5 There are two consequences as a result of this false signal. First, customers will
6 “over-invest” in conservation. Second, as the Company is forced to raise rates to
7 compensate for lost margins, all customers will eventually pay more than
8 necessary for natural gas service to pay for this over-investment. In other words,
9 Mr. Watkins appears to be advocating for a situation in which customers are
10 “duped” into thinking that their conservation efforts are worth more to the system
11 than they actually are. I would oppose this.

12 **Q. MR. WATKINS ALSO OBJECTS TO YOUR STATEMENT THAT**
13 **UNECONOMIC RATE STRUCTURES CAN ENCOURAGE UNECONOMIC**
14 **ENERGY CONSUMPTION DECISIONS. HOW DO YOU RESPOND TO THIS**
15 **CRITICISM?**

16 A. Mr. Watkins states that the subsidies caused by the cost incurrence/cost
17 recovery mismatch will not influence a residential consumer to make uneconomic
18 energy consumption decisions relative to alternative fuels. Direct Testimony of
19 Glenn A. Watkins, page 31, line 16 – page 31, line 5. I think that Mr. Watkins’
20 statement is simply wrong, because of the concept of price elasticity of demand.
21 Economics suggests that, as a general rule, as the price of a commodity like
22 natural gas increases (artificially or otherwise), consumption of natural gas will
23 decline. It further suggests that, as the price of a commodity like natural gas

1 increases (artificially or otherwise), consumption of substitutes for natural gas,
2 like electricity, will increase.

3 **Q. ARE THERE ANY OTHER SPECIFIC ISSUES RELATED TO RATE DESIGN IN**
4 **MR. WATKINS' DIRECT TESTIMONY TO WHICH YOU WOULD LIKE TO**
5 **RESPOND?**

6 A. Yes. On page 23 of his Direct Testimony, Mr. Watkins states that:

7 Because of the exceptionally large increase proposed to the fixed
8 Residential customer charge, Mr. Raab proposes a negligible rate
9 reduction to the volumetric delivery charge from the current level of
10 \$2.1267 to \$2.1262. Direct Testimony of Glenn A. Watkins, page 23, lines
11 1-4.

12 I would simply point out here that there is absolutely no cause and effect
13 between the reduction to the volumetric delivery charge from the current level of
14 \$2.1267 to \$2.1262 and the proposed Residential customer charge. The
15 reduction to the volumetric delivery charge was done to better match the
16 projected realized increase to the target increase.

17 **Q. GIVEN THE ABOVE DISCUSSION, WHAT IS YOUR ULTIMATE**
18 **RECOMMENDATION ON RATE DESIGN?**

19 A. I recommend that the Commission adopt the rate design outlined in my direct
20 testimony. Specifically, I recommend that whatever rate increase is granted, it be
21 assigned 100% to the residential class and that it be collected by increasing the
22 basic service charge component of that rate. To the extent that the Commission
23 assigns a portion of the increase to classes other than residential, I recommend
24 that those increases be collected by increasing the basic service charge

1 components of those rates, consistent with all of the filed class cost of service
2 studies in this case.

3 **Q. DOES THAT COMPLETE YOUR REBUTTAL TESTIMONY?**

4 A. Yes, it does.

VERIFICATION

STATE OF MARYLAND)
) ss.
COUNTY OF MONTGOMERY)

Paul H. Raab, being duly sworn upon his oath, deposes and states that he is an Independent Consultant for Kansas Gas Service, a Division of ONE Gas, Inc.; that he has read and is familiar with the foregoing Rebuttal Testimony filed herewith; and that the statements made therein are true to the best of his knowledge, information, and belief.



Paul H. Raab

Subscribed and sworn to before me this 28th day of September 2016.



NOTARY PUBLIC

My appointment Expires:

05/13/2019



CERTIFICATE OF SERVICE

On this 1st day of November, 2018, I hereby certify that a true and correct copy of the foregoing Direct Testimony of Michael L. Brosch was furnished, by means of electronic service, to the following parties:

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