BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

IN THE MATTER OF THE APPLICATION OF QUESTAR GAS COMPANY TO INCREASE DISTRIBUTION NON-GAS RATES AND CHARGES AND MAKE TARIFF MODIFICATIONS	Docket No. 09-057-16

DIRECT TESTIMONY OF JUDD E. COOK

FOR QUESTAR GAS COMPANY

December 3, 2009

QGC Exhibit 5.0

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Judd E. Cook. My business address is 180 East 100 South, Salt Lake City, Utah.

Q. By whom are you employed and what is your position?

A. I am employed by Questar Gas Company (Questar Gas or Company) as a Regulatory Affairs Specialist.

Q. What are your qualifications to testify in this proceeding?

A. I have listed my qualifications in QGC Exhibit 5.1.

Q. Attached to your written testimony are QGC Exhibits 5.1 through 5.7. Were these prepared by you or under your direction?

A. Yes.

Q. What is the purpose of your testimony in this Docket?

A. I will propose changes to the Company's approach to adjust metered volumes for temperature and elevation when calculating customer usage. I will also propose changes to the qualification requirements for the FT-1 rate schedule. Finally, I describe several proposed changes to clarify and update miscellaneous sections of the Questar Gas Tariff.

II. TEMPERATURE AND ELEVATION ADJUSTMENT METHODOLOGY

A. Background Information

Q. Will you please explain why metered volumes need to be adjusted for varying elevation levels?

A. A cubic foot of natural gas will have varying levels of density at different elevations and temperatures. At lower elevations the atmospheric pressure increases, resulting in a higher density of gas in a cubic foot. For example, at sea level, where the atmospheric pressure is approximately 14.73 psi, a cubic foot of natural gas contains 1,000 Btu. However, in the Salt Lake Valley, where the atmospheric pressure is approximately 12.60 psi, a cubic foot of gas contains 875 Btu. Additionally, in Park City, where the

atmospheric pressure is approximately 11.30 psi, that same cubic foot contains only 803 Btu. QGC Exhibit 5.2 illustrates this point.

Q. Please explain how Btu per cubic foot of gas through a meter can vary with temperature?

A. Temperature has a similar impact as elevation on a cubic foot of natural gas. At lower temperatures, a cubic foot contains a higher Btu level. Conversely, at higher temperatures a cubic foot has a lower Btu level. QGC Exhibit 5.2 illustrates this phenomenon.

Q. How are volumes measured in cubic feet converted to decatherms?

A. The equation for converting a cubic foot of natural gas to decatherms is:

Dth = CCF * Heat Value Multiplier (HVM)

HVM = Btu Factor * Pressure adjustment * Gas Temperature compensation

Definition of Terms:

1. CCF (100 cubic feet) is the measured volume at the meter.
2. Btu factor is based on the average Btu for the billing cycle. Questar Gas has identified 55 different Btu zones within its service territory.
3. Pressure Adjustment compensates for variances in elevation based on the following equation.

$$\text{Pressure Adjustment} = \frac{(\text{Local Pressure}[1] + \text{Regulator Pressure})}{\text{Standard Pressure (14.73 psia)}}$$

4. Gas-Temperature compensates for differing temperatures based on the following formula.

$$\text{Gas-Temperature Compensation} = \frac{(460[2] + \text{Standard } 60^{\circ}\text{ Fahrenheit})}{(460 + \text{Actual degrees Fahrenheit})^{3}}$$

[1] Local pressure is currently calculated based on 1,000 foot elevation bands.
[2] This formula requires conversion to the Kelvin scale. Absolute zero is -460˚ Fahrenheit or 0 Kelvin. Absolute zero is defined as the point at which there is an absence of all thermal energy.
[3] Actual flowing gas temperature is currently assumed to be 60˚ F for the entire system.

B. Current Methodology for Adjusting Metered Volumes

Q. Please describe how the Company currently adjusts volumes for varying elevation levels.

A. Currently, the Company incorporates seven 1,000-foot zones from 2,200 feet to 9,199 feet. Each premises in the Company's Utah service territory has been placed in one of the zones, using U.S. Geological Survey altitude data. A customer's measured volumes are adjusted based on the atmospheric pressure associated with the zone to which that premises has been assigned.

Q. Does the Company currently adjust volumes for temperature?

A. Consistent with past industry practice, the Company currently adjusts metered volumes assuming a flowing gas temperature of 60 degrees Fahrenheit.

Q. Is the use of 60 degrees Fahrenheit for flowing gas temperature still consistent with industry practices?

A. While some local distribution companies (LDCs) still use the standard 60 degrees Fahrenheit for temperature adjustment, Questar Gas has found that many LDCs have begun to more accurately adjust volumes for temperature. Some companies have embarked on the expensive process of changing all customer meters to temperature compensated (TC) meters over a very short period of time. Assuming $14.50 for the meter part required to temperature compensate an existing typical residential meter this approach would cost Questar Gas customers $12,809,648, not including labor (8883,424 current Utah GS customers * $14.50 cost per meter). Other companies have chosen to change meters out gradually and simultaneously adjust volumes based on average system temperatures. Still others have chosen not to use TC meters and use air temperature to adjust volumes.

Q. What did the Company do to further analyze this issue?

A. In April 2005, the Company initiated a project to assess whether meter accuracy could be improved using temperature-correction factors based on ambient temperatures recorded in weather zones within the service area. Questar Gas commissioned Southwest

Research to perform a study to identify any variables that could be used to accurately indicate the temperature of flowing gas.

A temperature zone encompassing the Ogden, Salt Lake City and Provo areas was selected based on the preponderance of customers in that zone. Sixteen sites (15 single family homes and one fast food restaurant) had a remote data-acquisition system installed. The system's instruments measured flowing-gas temperatures, ground temperatures, ambient air temperatures, meter-surface temperatures, solar-radiation flux, flow rate from a standard diaphragm meter and flow rate from a TC diaphragm meter. Data was collected from April 2006 through March 2007. The study concluded that using ambient air temperature, based on the temperature-zone approach, to adjust volumes, improves accuracy. A copy of the study is attached as QGC Exhibit 5.3.

C. Proposed Methodology

Q. Please describe how the Company proposes to adjust volumes for varying elevations.

A. Instead of grouping customers in broad 1,000 foot elevation zones, the Company can now record a latitude and longitude for each individual premises and assign it to a 50-foot elevation band. The latitude and longitude readings will be compared against data in the U.S. Geological Survey to determine an exact elevation, and the premises will then be placed into the appropriate 50-foot band and recorded in the Customer Information System. The average atmospheric pressure for each elevation band from 2,220 feet to 9,199 feet will be recorded in a database and used to adjust the volumes.

Q. How will the Company compensate for temperature?

A. Based on the results of the Southwest Research study, the Company proposes to use the average ambient air temperature to more accurately adjust volumes for temperature. The Company's service territory is currently divided into nine distinct weather zones: eight in Utah and one in Wyoming. Rather than the assumed 60 degrees Fahrenheit that is currently used, the mean temperatures as documented at the representative weather station for each weather zone will be used as the temperature of the flowing gas.

Q. Are there meters within the Questar Gas service territory that are already temperature compensated?

A. Yes, approximately 5,000 TC meters have been installed on the system. An extra weather zone will be created in which the mean flowing gas temperature is always assumed to be 60 degrees Fahrenheit to handle these TC meters.

Q. Will the Company begin to transition to TC meters for all customers?

A. Yes, with the adoption of this methodology, the Company will also begin to phase in temperature compensated meters as meters need to be replaced. This will not materially impact capital expenditures since the incremental cost of a TC meter for a typical premises is only $1.

D. Effects of New Methodology

Q. Have you calculated the effect this change in methodology will have on metered volumes?

A. Yes. Using data for the period from July 2008 through June 2009, I recalculated all measurements using the newly proposed temperature and elevation methodologies. I found that a change to the temperature compensation resulted in an average measured volume increase of a combined 2.058% (QGC Exhibit 5.4, column G, line 3) for all rate classes, while the elevation adjustment methodology resulted in a combined decrease of 0.867% (QGC Exhibit 5.4, column G, line 6) to measured volumes. The result is an average net 1.469% increase to measured volumes (QGC Exhibit 5.4, column G, line 9).

Q. Will every rate class see an improvement in measured volumes?

A. Most large customers have meter sets with flow computers, which already compensate for temperature and elevation, and will not see any change to their measured volumes. The GS class will see the greatest improvement in meter accuracy. The GS class temperature compensation results in an increase of approximately 3.606% in measured volumes (QGC Exhibit 5.4, column B, line 3) and elevation adjustment accounts for a decrease of approximately 1.539% in measured volumes (QGC Exhibit 5.4, column B, line 6) for a net increase of 2.567% (QGC Exhibit 5.4, column B, line 9).

Q. What is the benefit of making these adjustments for elevation and temperature?

A. These adjustments provide more accurate measurement at the individual customer level by accounting for different atmospheric pressures for customers at varying elevations and for customers residing in differing temperature zones. This methodology can be implemented promptly and without the enormous expense of replacing more than 880,000 meters with TC meters all at once. Additionally, this new methodology allows for a gradual phase in of TC meters as old meters are replaced.

Q. What is the overall rate impact to the average residential customer?

A. If all other things were held constant, the average residential customer would see a slight decrease in rates on a per Dth basis, while overall volumes would increase.

Q. Will this change the total amount of revenue collected from a rate class?

A. No, the Company's total revenue requirement will not change. Rates will be designed with different volumes and calculated to collect only what has been assigned to the classes based on the Commission-ordered cost of service.

III. FT-1 QUALIFICATION CRITERIA

Q. Are you proposing changes to the FT-1 rate schedule?

A. Yes. I am proposing to change the qualifying criteria for the rate to ensure that the original intent of the FT-1 rate is met.

A. Background of FT-1 Rate

Q. Will you describe the FT-1 Rate and why it was established?

A. Due to large volume usage and proximity to interstate pipelines, certain Questar Gas customers were considered to be a by-pass risk. These customers could feasibly opt to connect directly to an interstate pipeline rather than obtaining service from Questar Gas. Retaining these customers provides benefits to other customers already on the system; therefore, the Company designed a rate that would provide an incentive for by-pass risk customers to remain on the local distribution system.

The rate was initially established as the FT rate in Docket No. 94-057-02. It was established "in response to the challenges of competition and bypass." Initially the rate was available to industrial customers who acquired their own gas supply and maintained a monthly load factor of at least 50%.

The rate was renamed and refined in 1999, Docket No. 99-057-20. Mr. McKay was the witness in that case and proposed splitting the FT rate into two separate classes[4]. The first, FT-1, was designed for customers who posed a risk of by-passing the Company's system and leaving all other customers to support their "stranded costs."

Q. What are the current qualifying criteria for the FT-1 rate?

A. Customers qualify for this rate if they have annual usage of at least 100,000 Dth and are located within five miles of an interstate natural gas pipeline or if annual usage is over 4,000,000 Dth.

Q. How many customers qualify for this rate?

A. There are currently eleven FT-1 customers.

Q. Under which of the two criteria do the current FT-1 customers qualify?

A. Nine customers qualify due to their proximity to an interstate pipeline and the fact that they use more than 100,000 Dth per year. The other two customers use more than 4,000,000 Dth per year.

B. By-pass Risk Calculation

Q. How is a customer's potential by-pass risk calculated?

A. By-pass risk is a function of usage and proximity to an interstate pipeline. A customer is considered a by-pass risk when the customer's cost of building a private pipeline to connect to the nearest interstate pipeline is less than the cost of the customer's DNG billing on the local distribution system. The point at which the costs to build a private pipeline and remaining on the LDC system are exactly the same is referred to as the break-even point.

[4] The FT-2 was the second class to be created when the FT rate split. FT-2 is now the TS rate schedule.

To determine the break-even point, we developed a matrix, attached as QGC Exhibit 5.5, in which distance from an interstate pipeline is correlated to a usage level. The point at which the distance and usage equal zero is the break-even point. The numbers less than zero represent the amount of yearly benefit customers would receive if they were to by-pass the LDC. Numbers greater than zero are the extra expense the customers would recognize yearly if they were to by-pass the system.

Q. What assumptions go into the calculation?

A. We included assumptions about the per foot cost of building a pipeline in the calculation. We estimated the costs by taking actual project costs for varying pipe sizes over the last five years and applying an inflation factor to make all projects comparable with current cost levels. An interstate pipeline tap fee was also estimated. The analysis is based on 6-inch pipe resulting in a conservative analysis.

Q. Please describe the results of the analysis?

A. The results of the analysis show that the FT-1 qualification criteria are too liberal given the original purpose of this rate class. The current criteria allow customers who are not a by-pass risk to qualify for the special rate.

Q. What are the new proposed criteria?

A. The Company proposes that in order to qualify for the FT-1 rate a customer must use at least 350,000 Dth annually and an additional 225,000 Dth for every mile away from the nearest interstate pipeline. For example, a customer located two miles from an interstate pipeline would be required to use at least 800,000 Dth annually. These criteria are not exactly at the break-even point. They are designed to provide some cushion for fluctuations in costs and will ensure that only true by-pass risk customers are included in the rate schedule.

Q. What affect will this change have on current FT-1 customers?

A. Four of the eleven current FT-1 customers will remain on the FT-1 rate schedule. The other seven customers will be moved to the TS rate schedule. I have attached, as QGC

Exhibit 5.6, a graph that illustrates the analysis. Usage is shown on the X axis, while distance from the interstate pipeline is detailed on the Y axis. The lower line (B) on the graph represents the break-even point, and the upper line (A) represents the proposed FT-1 criteria. Each individual point on the graph represents a customer meter or combination of meters. The two largest customers, based on Dths used, are not included on the graph due to their usage. Both easily qualify for the FT-1 rate under the new criteria. Note that customers who fall to the left of the criteria line will not qualify for the new rate, while those to the right remain on the FT-1 schedule.

IV. TARIFF CHANGES

Q. Are you sponsoring an exhibit for all of the tariff changes that the Company is proposing?

A. Yes, attached as QGC Exhibit 5.7 is a summary in red line strikeout and final format of all tariff changes being proposed by the Company. The first page of this exhibit is a table referencing the section that is being changed and an explanation of the reason for the change. Additionally, I have associated each change in one of four categories: 1) required change to clarify the tariff consistent with current Company practices 2) movement or deletion of sections 3) clean-up changes such as rewording, referencing, punctuation, formatting and grammatical corrections that do not affect the meaning or applicability of the Tariff; and 4) language detailing the Infrastructure Rate-Adjustment Mechanism.

Q. Does this conclude your testimony?

A. Yes.

State of Utah)
) ss.
County of Salt Lake)

I, Judd E. Cook, being first duly sworn on oath, state that the answers in the foregoing written testimony are true and correct to the best of my knowledge, information and belief. Except as stated in the testimony, the exhibits attached to the testimony were prepared by me or under my direction and supervision, and they are true and correct to the best of my knowledge, information and belief. Any exhibits not prepared by me or under my direction and supervision are true and correct copies of the documents they purport to be.

_____
Judd E. Cook

SUBSCRIBED AND SWORN TO this 3rd day of December 2009.

_____
Notary Public