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. 07-057-13

RATE OF RETURN REBUTTAL TESTIMONY OF ROBERT B. HEVERT

FOR QUESTAR GAS COMPANY

April 28, 2008

QGC Exhibit 3.0R

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I. WITNESS IDENTIFICATION

Q. Are you the same Robert B. Hevert who previously filed Direct Testimony in this proceeding?

A. Yes, I am. I provided Direct Testimony on behalf of Questar Gas Company ("Questar Gas" or the "Company").

Q. Please state the purpose of your Rebuttal Testimony.

A. The purpose of my Rebuttal Testimony is to respond to the Direct Testimonies of Mr. Charles Peterson and Dr. William Powell, of the Utah Division of Public Utilities ("Division"); Dr. J. Randall Woolridge on behalf of the Utah Committee of Consumer Services ("CCS"); and Mr. Robert McKenna and Mr. Kevin Higgins on behalf of the Utah Association of Energy Users Intervention Group ("UAE"). My Rebuttal Testimony also provides an updated set of calculations and a revised range of analytical results regarding the Company's cost of equity in this proceeding.

Q. Have you revised your recommended range of results for Questar Gas?

A. Yes, I have. Based on current market data, my updated and revised range of results is 10.25 percent to 11.25 percent. My recommendation of 11.25 percent remains a reasonable estimate of the Company's cost of equity and will allow the Company an acceptable opportunity to attract the capital necessary to make critical infrastructure investments.

Q. Please provide an overview of your Rebuttal Testimony.

A. For reasons developed more fully in the balance of my Rebuttal Testimony, my general observations and principal conclusions are as follows:

- While neither Mr. Peterson's nor Dr. Woolridge's recommendations reflect the effect of their recommendations on the Company's financial profile or its ability to raise capital, my recommendation appropriately supports a reasonable credit profile and the Company's ability to continue to invest in the infrastructure that is required to serve its customers.

- My updated range of results and revised recommendation are supported by several analyses, including updated Constant Growth DCF, Capital Asset Pricing Model (CAPM), and Risk Premium analyses. Importantly, my updated results and recommendation are based on analyses performed using a variety of proxy company groups. As demonstrated on Tables 2-a through 2-c, the analytical results are not sensitive to the composition of the proxy group.
- Unlike Mr. Peterson's and Dr. Woolridge's recommendations, my range of results and my revised recommendation are consistent with the majority of recently authorized ROEs for natural gas utilities. Over the past three years the premium of authorized gas utility ROEs over the yield on A-rated utility debt has averaged approximately 440 basis points. Mr. Peterson's and Dr. Woolridge's recommendations represent equity premiums that are approximately 200 basis points *below* that average.[1] In contrast, my recommended ROE represents only a 13 basis point difference from the average equity premium.
- Mr. Peterson's and Dr. Woolridge's recommendations are inconsistent with the prevailing level of risk and uncertainty in the current capital market. In that regard, it is extremely difficult to rationalize ROE recommendations that are at or below 79 of the 80 recently authorized ROEs for natural gas utilities when very visible measures of risk, such as credit spreads, have increased substantially over the past twelve months.
- Changes in dividends have no statistical relationship to changes in stock prices for the comparison companies used by the ROE witnesses in this proceeding. In fact, it is empirically evident that earnings per share is the only measure that has a statistically significant and meaningful relationship to the comparison companies' stock prices. Consequently, earnings growth is the

[1] Relative to the Company's embedded cost of debt.

only growth estimate that should be included in the Constant Growth DCF model.

- Despite Mr. Peterson's suggestion that the Retention Growth estimate produces a higher DCF result,[2] the updated mean DCF results for all three comparison groups (*i.e.*, those used by Mr. Peterson, Dr. Woolridge, and me) actually increase when that growth estimate is eliminated. As shown on Tables 2-a and 2-b (below), excluding the Retention Growth increases the mean DCF result by approximately 18 basis points.
- While our approaches differ to some extent, Dr. Powell and I agree that there is no evidence to support a reduction in the Company's ROE due to the adoption of the Conservation Enabling Tariff (CET).[3] The fact that Dr. Powell and I came to the same conclusion using different methodologies is evidence of the robust nature of our analyses and conclusions.
- Mr. McKenna's "Real Options" analysis offers no insight as to the effect of the CET on the Company's cost of equity. As discussed in Section VI, Mr. McKenna's analysis is not based on market data, has not been corroborated by other analytical approaches, and is incompatible with the comparable risk standards established by *Hope* and *Bluefield*. Moreover, Mr. McKenna's analysis does not consider the fact that the Company has an obligation to serve its customers regardless of the level of average use per customer and as such, there is no "real option" to be valued. As a consequence, Mr. McKenna's analysis theoretically and mathematically reduces to the expected value of the reduction in operating income based on the average annual decline in use per customer over the past 25 years. In essence, Mr. McKenna's analysis only tells us what we already know, *i.e.*, that declining use per customer will erode the Company's financial profile.

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[2] *See* Direct Testimony of Charles E. Peterson, at 33.
[3] *See* Direct Testimony of William Powell, PhD, at 4.

- The notion that declining use per customer will negatively affect the Company's returns and internally generated cash flows has never been in dispute. Consequently, Mr. McKenna's analysis reveals no new information regarding the effect of the CET on the Company's cost of equity; rather it implies that the Company alone should bear, at least for the short term, the costs of declining usage regardless of whether usage per customer allowed by the Commission in setting the test-period revenue requirement is accurate. That conclusion is inconsistent with my empirical findings and those of Dr. Powell.

Q. How is the balance of your Rebuttal Testimony organized?

A. My remaining testimony is organized as follows: in Section II, I provide an overview of my Rebuttal Testimony, including a summary of my updated and revised calculations. Sections III, IV, V, VI, and VII contain my responses to the testimonies of witnesses Peterson, Woolridge, Powell, McKenna, and Higgins, respectively. Section VIII provides a summary of my conclusions and revised recommendations.

II. SUMMARY AND OVERVIEW

Q. Please provide an overview of the other witnesses' ROE recommendations in this proceeding.

A. As noted earlier, Mr. Peterson recommends an ROE of 9.25 percent. Mr. Peterson's recommendation is based on his application of the Constant Growth DCF model, a Two-Stage DCF model, and the Capital Asset Pricing Model. Mr. Peterson assesses the reasonableness of his DCF and CAPM results by reference to an additional risk premium model that he develops from the "Value Line financial strength ratings."[4] In developing his DCF model, Mr. Peterson relies on a variety of growth estimates including historical and projected growth for both earnings and dividends per share.

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[4] *See* Direct Testimony of Charles E. Peterson, at 49.

Importantly, Mr. Peterson acknowledges that his recommended ROE of 9.25 percent may negatively affect the Company's credit rating and its ability to attract capital. In that regard, Mr. Peterson acknowledges that he is not aware of any evidence that financial markets would expect cost of equity awards in the low 9.00 percent range. Notwithstanding those valid concerns, Mr. Peterson does not adjust his ROE recommendation to reflect either current market conditions or the likely detrimental effect of his recommendation on the Company's financial profile.

Dr. Woolridge recommends an ROE of 9.00 percent based on his Constant Growth DCF and CAPM results. Unlike Messrs. Peterson and Powell, Dr. Woolridge recommends a reduction in the authorized ROE for Questar Gas should the Commission make permanent the Conservation Enabling Tariff (CET), although he does not attempt to quantify that adjustment.

Dr. Woolridge advocates use of the Constant Growth DCF and CAPM approaches, but primarily relies on the results of his Constant Growth DCF method in arriving at his recommendation. Dr. Woolridge relies on a variety of growth estimates in developing his DCF model, including projected earnings per share, historical earnings per share, earnings retention rates and historical returns on equity, dividend per share growth rates, and book value per share growth rates. While Dr. Woolridge supports his use of historical data by asserting that analysts' earnings growth estimates are "overly optimistic and biased upward,"[5] recent data indicates that in fact, analysts have been somewhat more likely to under-estimate, rather than over-estimate recent quarterly earnings for the comparison companies used in this proceeding. In addition, Dr. Woolridge's CAPM estimate is biased substantially downward by his use of an *ex-ante* market risk premium estimate of 4.51 percent.[6] As discussed in more detail in Section IV, Dr. Woolridge's market

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5 *See* Direct Testimony of Dr. J. Randall Woolridge, at 61.
6 Exhibit JRW-7.

risk premium estimate relies heavily on surveys and analyses that are very sensitive to certain assumptions.[7]

Dr. Powell's testimony addresses the issue of whether the adoption of the CET warrants a reduction in the Company's cost of equity. In order to address that issue, Dr. Powell reviews the statistical analyses contained in my Direct Testimony and develops additional empirical analyses of the relationship between the estimated cost of equity and two explanatory variables that reflect the existence and nature of Revenue Stabilization Mechanisms (RSM), and the proxy companies' financial strength, respectively.[8] Based on the results of those analyses, Dr. Powell concludes that there is "no evidence to support a reduction in the Company's cost of capital due to the implementation of the CET."[9] Those empirical results notwithstanding, based on information from three rate proceedings in other jurisdictions, Dr. Powell suggests that an adjustment "in the range of 10 to 25 basis points may be partially supportable"[10], although he does not specifically recommend an adjustment.

Mr. McKenna presents testimony suggesting that the cost of developing a portfolio of derivative contracts designed to hedge the Company's "risk" associated with declining use per customer is approximately 37 basis points.[11] While Mr. McKenna does not recommend a specific adjustment to the Company's ROE if the CET is extended, he does suggest that the Commission consider his analyses in arriving at its decision. As discussed in more detail in Section VI, however, while Mr. McKenna suggests that his analysis is based on a "Real Options" approach, there is no optionality associated with the Company's

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7 It is important to note that while Mr. Peterson and I disagree as to certain implementation issues regarding the CAPM, we both use historical arithmetic average data from Morningstar to estimate the market risk premium component of the model.

8 *See* Direct Testimony of William Powell, PhD.

9 Ibid., at 4.

10 Ibid., at 19.

11 *See* Direct Testimony of Robert H. McKenna, at 10.

obligation to serve, regardless of the prevailing or expected level of use per customer.

In essence, Mr. McKenna's analysis reduces both theoretically and mathematically to a calculation of the expected erosion in the Company's net operating income resulting from the annual average decline in the use per customer. Consequently, Mr. McKenna's analysis simply confirms what has never been at issue in this proceeding, *i.e.*, that declining use per customer will reduce the Company's operating income and internally generated cash flows. Mr. McKenna's suggestion that it is appropriate to adjust the Company's ROE by an amount equal to the reduction in net operating income resulting from declining use per customer, requires the Company alone, at least on short-term basis, to bear the costs of that declining use.

Finally, putting aside the theoretical and mathematical issues associated with Mr. McKenna's analysis, his company-specific analysis does not consider the comparable risk standard established in the *Hope* and *Bluefield* decisions, is not based on observable market data, and has not been corroborated with an alternative empirical approach.

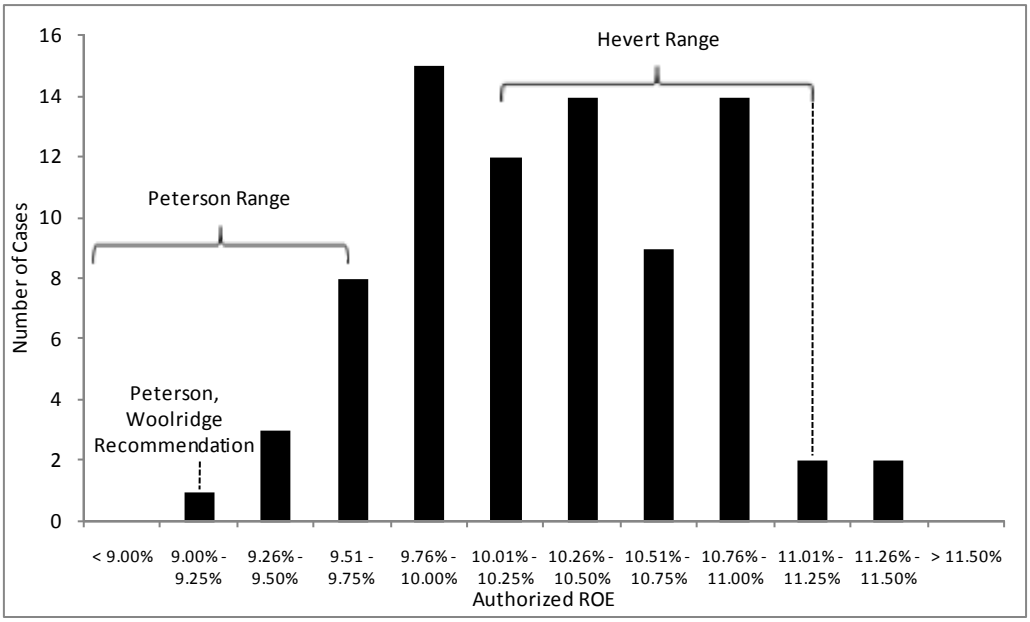
Q. Are there any practical benchmarks that provide a reasonable perspective on Mr. Peterson's and Dr. Woolridge's recommendations?

A. Yes. It is my experience that returns authorized in other jurisdictions are important to investors and therefore provide a relevant benchmark for the purposes of assessing the reasonableness of analytical results and recommendations. As I discuss in Section III, it is quite clear that the financial community continues to observe and react to authorized returns that deviate substantially from industry norms.[12] In that regard, Mr. Peterson's and Dr.

[12] As discussed in Section III, while the authorized return in any given case is a function of the specific issues addressed in that docket, the use of multiple observations mitigates that concern. Moreover, from an investor's perspective, it is very difficult to rationalize recommendations that deviate substantially from industry norms.

Woolridge's recommendations are lower than *79 of the 80* authorized rate awards for natural gas distribution utilities from January 2005 through March 2008 (*see* Chart 1, below).[13]

Chart 1: Recently Authorized ROEs for Natural Gas Utilities



Q. How did Mr. Peterson arrive at a recommendation that is so far below the prevailing level of authorized returns?

A. As discussed in Section III, there are several explanations for Mr. Peterson's unreasonably low analytical results and recommendation:

- Mr. Peterson's Constant Growth DCF analysis is based on growth rates that are unreasonably low, and which (in certain cases) have no statistically significant relationship to the comparison companies' stock prices;
- Mr. Peterson establishes the low end of his range of results by reference to a two-stage DCF analysis that is biased as a result of unreasonably low near-term and terminal period growth rates and which Mr. Peterson believes does not "add a lot of new information to the estimate of the cost of equity for gas

[13] Source: SNL Interactive. *See* Exhibit 3.1R.

utilities."[14] As a result, his range of results is inappropriately skewed to the low end;

- Mr. Peterson's CAPM analysis is biased downward due to his use of unadjusted Beta coefficients and a Market Risk Premium estimate that is based on an arbitrary averaging period;

- Mr. Peterson gives no consideration to the effect of his admittedly low recommendation on the Company's credit profile and its consequent ability to raise the funds needed to finance its capital expenditure program.

Q. Are there similar reasons why Dr. Woolridge's analysis produced such low results?

A. Yes, in my view there are specific explanations for Dr. Woolridge's extremely low analytical results and recommendation:

- Dr. Woolridge's Constant Growth DCF results are biased downward due to his significant use of historical earnings and dividend growth rates. While Dr. Woolridge's heavy reliance on historical growth rates appears to be premised on his assertion that analysts consistently bias their earnings projections, recent evidence suggests that if anything, the analysts covering the comparison companies used in this proceeding tend to under-estimate, rather than over-estimate, earnings;

- Dr. Woolridge's CAPM results are heavily influenced by his calculation of an extremely low *ex-ante* Market Risk Premium. In the context of historical risk premia, there is virtually no probability that Dr. Woolridge's Market Risk Premium estimate would be observed over the long-run;

- Dr. Woolridge gives no consideration to the effect of his recommendation on the Company's credit profile or its ability to raise capital at reasonable rates.

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[14] *See* Direct Testimony of Charles E. Peterson, at 15.

In addition to the methodological issues noted above, neither Mr. Peterson nor Dr. Woolridge appear to have given adequate consideration to the current capital market environment. As I discuss in my response to Mr. Peterson, it is clear that the current financial market is characterized by increasing volatility, decreasing liquidity, and expanding credit spreads. Under such conditions, it is extremely difficult to justify cost of equity estimates even approaching the levels recommended by Mr. Peterson and Dr. Woolridge.

Even if the current market were characterized by less worrisome conditions, both Mr. Peterson and Dr. Woolridge recommend ROEs for which the premium over the cost of debt (referred to below as the "equity risk premium") is extremely low. From 2005 through 2008 (the period depicted in Chart 1) the difference between the average authorized gas utility ROE and the average yield on the Moody's A-rated utility bond index (*i.e.*, the equity risk premium) was approximately 440 basis points. The equity risk premium implied by my 11.25 percent recommended ROE is 453 basis points (11.25 percent less 6.72 percent), only 13 basis points different than the national average. In distinct contrast, Mr. Peterson's ROE recommendation implies an equity risk premium of 253 basis points (9.25 percent less 6.72 percent), and Dr. Woolridge's 9.00 percent ROE recommendation implies an equity risk premium of 228 basis points (9.00 percent less 6.72 percent). In my view, it is extremely difficult to justify such low equity risk premia in any market environment, much less under the current capital market conditions. In fact, based on the average equity risk premium and the Company's embedded cost of debt (which Mr. Peterson accepts), the implied ROE for Questar Gas is approximately 11.12 percent.[15] That implied ROE is very consistent with my recommendation of 11.25 percent.

[15] 11.12 percent equals 6.72 percent (cost of debt) plus 4.40 percent (equity risk premium). Using the rate on the Company's recently issued 30-year debt, the implied ROE would be approximately 11.60 percent.

The fact that Mr. Peterson's and Dr. Woolridge's recommended returns are far from industry norms also is demonstrated in a recent report by Citigroup Capital Markets (Citi). In an April 2008 report, Citi compared authorized returns around the country and found that "(s)ince 2003, average allowed ROEs for electric and gas utilities have been in the 10%-11% range."[16] In fact, data from that report indicate that from 2003 through 2007, the difference between authorized ROEs and the A-rated utility bond index was 444 basis points, which is nearly identical to the 440 basis point estimate discussed above.[17] It is clear, therefore that the financial community's perspective regarding utility return expectations is far different than the recommendations provided by Mr. Peterson and Dr. Woolridge.

Q. Please describe the comparison groups used in the analyses contained in your Rebuttal Testimony.

A. I began with the proxy group used in my Direct Testimony, then considered the companies contained in the other witnesses' comparison groups. As discussed in the following sections of my Rebuttal Testimony, while I disagree with certain of the companies that Mr. Peterson and Dr. Woolridge included in their proxy groups, I have performed my analyses on the comparison groups used by each of Mr. Peterson, Dr. Woolridge and me. Finally, I have included a Revised Proxy Group that reflects the effect of current market data on my original proxy group.

Table 1 (below) provides a summary of the various companies included by the ROE witnesses in their respective proxy groups, including comparison to screening criteria. As Table 1 indicates, notwithstanding certain disagreements as to the selection and application of certain screening criteria, there is a high degree of consistency among the comparison groups used by the various ROE witnesses in this proceeding. As shown on Tables 2a-2c (below), the analytical results are not sensitive to the composition of the proxy groups relied upon by any of the witnesses in this proceeding.

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[16] Citigroup Capital Markets, Inc., *Utility ROEs: An Overview*, April 2008 at 1.
[17] Ibid at 8.

Table 1: Cost of Equity Witnesses' Proxy Groups

	HEVERT ORIGINAL PROXY GROUP	HEVERT REVISED PROXY GROUP	PETERSON PROXY GROUP	WOOLRIDGE PROXY GROUP
AGL Resources	√	√	√	√
Atmos Energy	√		√	√
Laclede Group		√	√	
New Jersey Resources	√	√	√	√
Nicor, Inc.	√	√	√	√
Northwest Natural Gas	√	√	√	√
Piedmont Natural Gas	√	√	√	√
South Jersey Industries	√	√	√	√
Southwest Gas Corp.	√	√	√	√
WGL Holdings		√	√	√

Q. Please summarize the modifications you have made to the analyses contained in your Direct Testimony.

A. I have made the following adjustments to my analyses:

- I have updated the data used in my DCF and CAPM analyses through April 18, 2008 (for all of the proxy groups);
- Based on current market data, I have included a Revised Proxy Group;
- In response to Mr. Peterson's concern regarding the Sustainable Growth estimate on my analytical results, I have calculated the updated DCF results both with and without that growth estimate for each of the proxy groups noted in Table 1; and
- I have updated my Risk Premium analysis through April 18, 2008.

Q. Please summarize your conclusions regarding the appropriate ROE in this proceeding.

A. There is little doubt that both the mean and mean high DCF estimate of the Company's cost of equity have increased since the filing of my Direct Testimony in January 2008. In my view, however, it is appropriate to consider the results of other methods, such as the CAPM, and the Risk Premium approach, and to apply informed and reasoned judgment in the interpretation of those results. It also is

important to consider the implications of certain risks and trends as they affect the Company's ROE. Based on those additional analyses and judgments, I have revised my recommended range of ROEs to 10.25 percent to 11.25 percent. Importantly, my revised recommended range is supported by, although not dependent on, acceptance of the size premium.

As Tables 2-a through 2-c (below) demonstrate:

- My estimated range of 10.25 percent to 11.25 percent is well within the range of my analytical results (my DCF and CAPM results are also presented in QGC Exhibit 3.2R, and QGC Exhibit 3.4R, respectively).
- My Revised Proxy Group produces a range of mean DCF results from 8.98 percent to 11.39 percent, and the Peterson Proxy Group produces a range of mean DCF results from 9.02 percent to 11.35 percent.[18]
- The average DCF result across all four proxy groups, excluding Retention Growth, ranges from 9.52 percent (mean low) to 10.99 percent (mean high).
- Mr recommended range of 10.25 percent to 11.25 percent is consistent with the vast majority of recently authorized returns for natural gas utilities.

Table 2-a: Summary of Results – Constant Growth DCF

30-DAY AVERAGE PRICES	**MEAN LOW**	**MEAN**	**MEAN HIGH**
Hevert Original Proxy Group	9.31%	10.10%	11.03%
Hevert Revised Proxy Group	8.98%	10.08%	11.39%
Peterson Proxy Group	9.02%	10.07%	11.35%
Woolridge Proxy Group	9.16%	10.00%	11.01%
Average	*9.12%*	*10.07%*	*11.19%*
180-DAY AVERAGE PRICES	**MEAN LOW**	**MEAN**	**MEAN HIGH**
Hevert Original Proxy Group	9.07%	9.86%	10.79%
Hevert Revised Proxy Group	8.82%	9.92%	11.23%
Peterson Proxy Group	8.85%	9.90%	11.17%
Woolridge Proxy Group	8.94%	9.78%	10.79%
Average	*8.92%*	*9.87%*	*10.99%*

[18] Based on 30-day averaging period.

312 **Table 2-b: Summary of Results – Constant Growth DCF Excluding**
313 **Retention Growth**

30-DAY AVERAGE PRICES	**MEAN LOW**	**MEAN**	**MEAN HIGH**
Hevert Original Proxy Group	9.77%	10.28%	10.80%
Hevert Revised Proxy Group	9.36%	10.27%	11.19%
Peterson Proxy Group	9.39%	10.28%	11.16%
Woolridge Proxy Group	9.57%	10.19%	10.80%
Average	*9.52%*	*10.25%*	*10.99%*
180-DAY AVERAGE PRICES	**MEAN LOW**	**MEAN**	**MEAN HIGH**
Hevert Original Proxy Group	9.53%	10.04%	10.56%
Hevert Revised Proxy Group	9.20%	10.11%	11.02%
Peterson Proxy Group	9.21%	10.10%	10.99%
Woolridge Proxy Group	9.35%	9.97%	10.58%
Average	*9.32%*	*10.06%*	*10.79%*

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315 **Table 2-c: Summary of Results – CAPM and Risk Premium Analysis**

30-DAY AVERAGE OF 30-YEAR TREASURY (4.37%)	**MEAN LOW**	**MEAN**	**MEAN HIGH**
Hevert Proxy Group	10.46%	10.64%	10.82%
Hevert Revised Proxy Group	10.50%	10.71%	10.92%
Peterson Proxy Group	10.49%	10.68%	10.87%
Woolridge Proxy Group	10.46%	10.64%	10.82%
Average	*10.48%*	*10.67%*	*10.86%*
PROJECTED 30-YEAR TREASURY (4.50%)	**MEAN LOW**	**MEAN**	**MEAN HIGH**
Hevert Proxy Group	10.59%	10.77%	10.95%
Hevert Revised Proxy Group	10.63%	10.84%	11.05%
Peterson Proxy Group	10.61%	10.80%	11.00%
Woolridge Proxy Group	10.58%	10.76%	10.94%
Average	*10.60%*	*10.79%*	*10.98%*
SUPPORTING ANALYSIS			
Risk Premium – Ten-Year Treasury Yield	10.57%	10.74%	10.97%

III. RESPONSE TO DIRECT TESTIMONY OF MR. PETERSON

Q. Please summarize Mr. Peterson's testimony and recommendation regarding Questar Gas' cost of equity in this proceeding.

A. Mr. Peterson estimates that the Company's cost of equity falls within a range of 8.65 percent to 9.75 percent, and he selects the approximate midpoint of that range, 9.25 percent, as his recommended ROE. Mr. Peterson's analysis is based on a variety of methods, including the Constant Growth DCF approach, a multi-stage DCF model, the CAPM, and an alternative Risk Premium approach. In developing his DCF model, Mr. Peterson refers to Questar Gas' last general rate case, in which the Commission assigned 75.00 percent weight to earnings growth forecasts and 25.00 percent weight to dividend growth projections in establishing the growth component of the Constant Growth DCF model.

In assessing the reasonableness of his recommendation, Mr. Peterson correctly points out that his recommended return may not satisfy the capital attraction standard established by the *Hope* and *Bluefield* decisions.[19] In that regard, Mr. Peterson observes that the financial markets may be expected to react negatively should the Commission award an ROE in the low 9.00 percent range, because such a decision would not be consistent with companies similar to Questar Gas, could lead to a credit rating downgrade for the Company's debt, and could impair the Company's ability to attract capital.[20] Those valid concerns notwithstanding, Mr. Peterson does not adjust his ROE results upward to take into consideration the very real issues he has raised. Putting aside the fact that his recommendation is well below the level of recently authorized gas utility ROEs, Mr. Peterson's failure to revise his recommendation is particularly noteworthy in light of current capital market conditions.

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[19] *See* Direct Testimony of Charles E. Peterson, at 46.
[20] Ibid., at 49.

Finally, Mr. Peterson misinterprets several important aspects of my Direct Testimony. Regarding my assessment of Mr. Reed's testimony, for example, Mr. Peterson suggests that my sole conclusion was that the Company "deserves a premium authorized cost of equity from the Commission as a reward."[21] Unfortunately, Mr. Peterson fails to note that my conclusions also stated that in light of the Company's past pursuit of operating improvements, and given the substantial capital expenditure plan (also acknowledged by Mr. Peterson; *see* page 9 of his Direct Testimony) "it will be important to set a return that will enhance internally generated funds and enable access to capital markets at reasonable terms."[22] Moreover, while Mr. Peterson asserts that my exclusion of WGL Holdings (WGL) from the analyses contained in my Direct Testimony omits "one bit of data that adds to the overall picture"[23] he neglects to point out that certain of his analyses likewise excluded WGL, and in fact did so for the same reason that I excluded that company from my results.[24]

Areas of Agreement

Q. Please summarize the key areas in which you and Mr. Peterson are in agreement.

A. There are several important aspects of our respective analyses on which Mr. Peterson and I generally agree. Those areas include the following:

Reliance on the DCF Approach: Mr. Peterson and I both rely on the DCF approach to estimate the required equity return.

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[21] *See* Direct Testimony of Charles E. Peterson, at 40.

[22] Direct Testimony of Robert B. Hevert, at 45.

[23] *See* Direct Testimony of Charles E. Peterson, at 23. I realize that Mr. Peterson's exclusion of WGL tends to increase his mean DCF results. As discussed below, however, Mr. Peterson's DCF analysis is substantially biased by his use of certain growth rates.

[24] As discussed later in my Rebuttal Testimony, WGL's DCF results, while continuing to be relatively low, are no longer so low as merit exclusion from the DCF analysis. For that reason, the updated and revised results discussed herein include WGL.

Proxy Group Screening Criteria and Selection Process: Mr. Peterson and I use similar screening criteria to select our proxy group, as described in more detail below.

Application of the DCF Approach: There are certain aspects of the application of the DCF approach on which Mr. Peterson and I agree, including:

- *Overlap in proxy group companies:* Our respective proxy groups include many of the same companies, although Mr. Peterson includes WGL Holdings and Laclede Group.[25]
- *Calculation of the current dividend yield:* Even though Mr. Peterson and I use different averaging periods, we agree that it is appropriate to use an averaging convention that encompasses sufficient data such that anomalous events do not bias the analytical results in either direction. While I disagree in principle with Mr. Peterson's use of spot prices, as a practical matter that convention has no material effect on the estimated dividend yield.[26]
- *Calculation of the expected dividend yield:* Mr. Peterson and I agree that the current dividend yield should be increased to reflect anticipated growth in future dividend payments. I have used the one-half year convention as described in my Direct Testimony, while Mr. Peterson has increased dividend payments by a full year of expected earnings growth.
- *Use of analyst earnings estimates to determine the growth rate:* Mr. Peterson and I both use earnings forecasts from Zacks and Value Line to determine the appropriate growth rate. However, Mr. Peterson also places significant reliance on projected and historical growth rates for both dividends and earnings per share.

Utilization of the CAPM approach: Both Mr. Peterson and I employ the CAPM as a corroborating approach for determining the Company's cost of equity.

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[25] As noted below, based on updated market data, I have included both companies in my Revised Proxy Group.

[26] Based on Mr. Peterson's data, the difference is only 4 basis points. *See* DPU Exhibits 2.7a and 2.7b.

Application of the CAPM approach: There are two aspects of our application of the CAPM approach where Mr. Peterson and I appear to agree:

- Both Mr. Peterson and I utilize current long-term U.S. Government Treasury bond yields as our risk free rate. For an historical estimate, I utilize a 30-day average and a 180-day average of daily long-term Treasury yields, while Mr. Peterson uses the current (*i.e.*, spot) interest rate on the 90-day Treasury bill and the 20-year Treasury bond. While I strongly disagree with Mr. Peterson's use of the 90-day Treasury bill in the CAPM analysis, Mr. Peterson apparently does not consider the results of that analysis in arriving at his ROE recommendation.
- Both Mr. Peterson and I utilize adjusted Beta calculations provided by Value Line in our application of the CAPM. I utilize an additional Beta measure provided by the Bloomberg Professional Service in my CAPM application, while Mr. Peterson uses additional Beta estimates from Zacks, Reuters, and Yahoo Finance, none of which are adjusted to reflect the long-term tendency of Beta coefficients to revert toward the market mean (of 1.0). For the reasons discussed in more detail below, I disagree with Mr. Peterson's use of unadjusted Beta coefficients.

Impact of Revenue Decoupling on ROE: Mr. Peterson and I agree that revenue decoupling mechanisms, such as the CET, do not have a measurable influence on investor's return requirements for Questar Gas. As such, neither of us recommends an adjustment to the authorized ROE in this proceeding.

Areas of Disagreement

Q. Please summarize the key areas in which you disagree with Mr. Peterson.

A. There are several important issues on which we disagree, including:

1. The methods and approaches by which we selected our respective proxy groups;

2. Some aspects of the application of the DCF model, including the application of the constant growth form of the DCF model, the selection of appropriate growth rates and the relevance of the two-stage DCF model;
3. Some aspects of the application of the CAPM;
4. Application of alternative Risk Premium analyses;
5. The need for a small size premium;
6. The nature of current market conditions and their implication for the Company's authorized ROE; and
7. The implications of Mr. Reed's benchmarking analysis for the Company's cost of equity.

(1) Proxy Group Screening Criteria and Selection Process

Q. Please summarize the criteria by which Mr. Peterson selected his proxy group.

A. Mr. Peterson appears to have established criteria to screen companies into his proxy group, whereas my criteria were applied to screen out companies. However, in spite of the contrasting approaches, many of our screening criteria were similar in intent. Mr. Peterson arrived at the ten companies in his comparison group by applying screens that:[27]

1. Included companies with bond ratings similar to those of Questar Gas (*i.e.*, bond ratings ranged from BBB- to AA with at least one rating agency rating the bonds at least BBB (Standard and Poor's) or Baa (Moody's);
2. Included companies that were similar in size to Questar Gas in terms of utility plant in service and revenues (Mr. Peterson defines that range of reasonableness to be within five times, plus or minus of Questar Gas);
3. Included companies that derived at least 60.00 percent of revenue and/or income from regulated gas operations; and

[27] *See* Direct Testimony of Charles E. Peterson, at 22, 23.

4. Included (or excluded) companies based on certain "judgment calls."[28]

Q. Are the scope and definition of screens applied by Mr. Peterson generally consistent with those applied in your Direct Testimony?

A. Yes. While Mr. Peterson has applied fewer screening criteria to derive his proxy group, they are generally consistent with those described in my Direct Testimony.

Q. How does Mr. Peterson's comparison group compare to the proxy group contained in your Direct Testimony?

A. Table 3 (below) provides a comparison of the companies used in our respective proxy groups. After reviewing updated market data and the number of analyst estimates for the Laclede Group, that company now meets my screening criteria and as such, is included in my Revised Proxy Group. In addition, the DCF results for WGL Holdings are now within a reasonable range of the other analytical results. Since WGL meets my screening criteria, I also have included that company in my Revised Proxy Group. Based on my review of updated financial reports, however, Atmos Energy no longer derives at least 60.00 percent of its consolidated revenue from regulated operations and therefore no longer meets my screening criteria. Consequently, my Revised Proxy Group excludes Atmos.

[28] Mr. Peterson does not define the conditions under which or standards by which he makes such "judgment calls."

Table 3: Comparison Group Composition[29]

	HEVERT ORIGINAL PROXY GROUP	HEVERT REVISED PROXY GROUP	PETERSON PROXY GROUP
AGL Resources	√	√	√
Atmos Energy	√		√
Laclede Group		√	√
New Jersey Resources	√	√	√
Nicor, Inc.	√	√	√
Northwest Natural Gas	√	√	√
Piedmont Natural Gas	√	√	√
South Jersey Industries	√	√	√
Southwest Gas Corp.	√	√	√
WGL Holdings		√	√

(2) Application of the DCF Model

Q. Please discuss the differences between your and Mr. Peterson's application of the DCF model.

A. Mr. Peterson and I differ in our application of the DCF model in two important ways. Both differences concern the constant growth DCF model, of the form:[30]

$$k = \frac{D(1+g)}{P_0} + g$$

The first difference pertains to the application of this model. The second difference concerns the growth rate estimates used in our respective DCF analyses.

[29] Atmos Energy, which was included in my original proxy group, was eliminated in my revised proxy group based on more current financial information. Based on 2007 data, Atmos no longer meets the 60.00 percent regulated net income criterion.

[30] Mr. Peterson and I agree as to the form of this equation. *See* Direct Testimony of Robert B. Hevert, at 19 and Direct Testimony of Charles E Peterson, at 12.

Q. Please describe Mr. Peterson's application of the DCF model.

A. Mr. Peterson appears to employ two different growth rate estimates for the term '*g*' in one of his cases. As shown in DPU Exhibits 2.7 and 2.8, and as summarized in DPU Exhibit 2.5, Mr. Peterson adjusts the expected dividend yield using only the forecasted Value Line dividend growth rate (*i.e.*, for the term "(1+*g*)" above). He then adds the 75/25 split between projected earnings and dividends (*i.e.*, the term "*g*" above). As discussed in my Direct Testimony, this form of the DCF model assumes *one* constant growth rate, because the analyst makes the assumption:

> …that earnings and dividends grow at the same, constant rate in perpetuity; that the dividend payout ratio remains constant; that valuation multiples such as the Price/Earnings ratio remain constant; and that investors will require the same return (*i.e.*, the calculated ROE) every year in perpetuity.[31]

By applying two different growth rates in his constant growth DCF analysis, Mr. Peterson has produced results that are biased downward. Correcting this error increases his mean DCF results by 5 basis points. As discussed below, a far more significant issue is Mr. Peterson's use of certain growth estimates.

Projected vs. Historical Growth Rates

Q. Please summarize the differences between Mr. Peterson and you in the selection of growth rates in your DCF models.

A. Mr. Peterson and I disagree in two general areas, including: (1) the use of projected dividend growth rates in estimating Questar Gas' cost of equity; and (2) the use of historical growth rates in the formulation of the Constant Growth DCF model.

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[31] Direct Testimony of Robert B. Hevert, at 19.

Q. Please explain your concern with using projected dividend growth rates in the DCF model.

A. For several reasons, I disagree that it is appropriate to use projected dividend growth rates as the basis for the DCF growth rate. First, as noted in my Direct Testimony, earnings are the fundamental determinant of a company's ability to pay dividends. Management decisions to conserve cash for capital investments, to manage the dividend payout for the purpose of minimizing future dividend reductions, or to finance future earnings prospects can influence dividend growth rates in near-term periods. Since dividends are discretionary, in the short run dividend growth may deviate significantly from earnings growth. Over the long run, however, dividends are dependent on and will increase as a function of earnings.

Moreover, (as discussed below) there is no indication that changes in dividends have a statistically significant relationship to changes in stock prices for the comparison groups used by Mr. Peterson, Dr. Woolridge, or me. Conversely, changes in earnings have a strong relationship to changes in stock prices, even when controlling for changes in interest rates. Those results suggest that earnings, not dividends, are the relevant measure of growth in the context of the DCF model for the comparison companies being used by the various ROE witnesses in this proceeding.

In addition, it is important to note that Value Line is the only service noted in Mr. Peterson's testimony that provides dividend growth projections. To the extent that the earnings projections services that both Mr. Peterson and I use represent consensus estimate data, the results are less likely to be biased in one direction or another.

Q. Are you aware that, in the 2002 Questar Gas general rate case, the Utah Public Service Commission endorsed the DCF approach which assigned 75.00 percent weight to earnings growth and 25.00 percent weight to dividend growth?

A. Yes, I am aware that the Commission endorsed this approach to weighting the DCF results in the 2002 general rate case involving Questar Gas. While I respect the Commission's decision on this issue, it is my view that investors make their investment decisions based on expected earnings growth as opposed to expected dividend growth. As noted nearly 40 years ago by Charles Phillips in The Economics of Regulation:

> For many years, it was thought that investors bought utility stocks on the basis of dividends. More recently, however, studies indicate that the market is valuing utility stocks with reference to total per share earnings, so that the price-earnings ratio has assumed increased emphasis in rate cases.[32]
>
> ***
>
> Investors' decisions are largely based on a company's expected earnings and upon their stability, as well as upon alternative uses of investment funds. But, since the allowable amount of earnings is the object of a rate case, a commission's decision will, in turn, affect investors' decisions.[33]

Q. Did the same author comment on the use of historical earnings growth in setting the cost of equity for a public utility?

A. Yes. In the same section, Phillips commented on the use of historical data as the basis of determining the cost of equity for a utility company. There, Phillips referred to a 1954 order regarding Pacific Telephone and Telegraph:

> Obviously, the price at which a security is bought on the market reflects anticipated earnings rather than past results of operations and it by no means follows that rates at which present market sales

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[32] Charles F. Phillips, Jr., The Economics of Regulation, Revised Edition, 1969, Richard D. Irwin, Inc., at 284.

[33] Ibid., at 285.

> prices are related to the past earnings represents the returns the purchasers at those prices are willing to accept in the future.[34]

Thus, the notion that historical measures of either dividend or earnings growth is relevant to the determination of the forward-looking cost of equity, was called into question over 40 years ago.

Q. Did you perform any quantitative analyses to assess whether growth in earnings or dividends have a statistically significant relationship to changes in the comparison companies' stock prices?

A. Yes, I did. My analyses were generally based on an approach used by Professors Carleton and Vander Weide in 1988, and subsequently updated under the direction of Dr. Vander Weide in 2004.[35] The original (1988) study found that consensus analysts' forecasts (such as those produced by Zacks) are superior to historical measures of growth in explaining stock valuations. The updated (2004) study reached the same conclusions, and specifically addressed utility companies. In order to ensure that those findings apply to this proxy group (and, therefore, that projected earnings growth is the appropriate measure of growth for the purposes of the DCF model), I used the general methodology contained in the Carleton and Vander Weide studies. As explained below, however, the sample group of 10 comparison companies is too small to perform a cross-sectional analysis of the statistical relationship valuation ratios and expected growth rates. Consequently, my analysis focused on the relationship between changes in stock prices and changes in earnings and dividends for the comparison companies. That approach substantially expanded the number of observations and, therefore, the reliability of the inferences drawn from the analysis.

Q. Please explain how you conducted your analysis.

A. As shown in QGC Exhibit 3.5R, my analysis examines the relationship between changes in stock prices (essentially one-year holding period returns) and changes

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[34] Ibid.
[35] Advanced Research Center, *Investor Growth Expectations*, Summer, 2004.

in reported earnings and dividends. I began with the 10 companies covered by Value Line that were included in the proxy group of any of the witnesses in this proceeding. Using Value Line's reported earnings per share (EPS) and dividends per share (DPS), average annual interest rates, and the average annual stock price for each of the proxy group companies, I calculated the annual rate of change in each data series. Next, I performed a series of regression analyses in which the annual change in interest rates,[36] DPS and EPS were alternatively included as explanatory variables, with the annual change in the stock price as the dependent variable.

Q. What did your analyses reveal?

A. In the first set of analyses, I considered each independent variable separately (*i.e.*, performed four separate regressions) and found that while EPS and interest rates were statistically significant, DPS was not. To ensure that the separate analyses did not somehow bias my results, I then performed a single regression that included the rate of change of ten-year and 30-year Treasury yields, EPS and DPS as explanatory variables. In this analysis, the only statistically significant explanatory variables were interest rates and EPS.

Q. What conclusions did you draw from those analyses?

A. The analyses confirm that changes in stock prices are explained by earnings and interest rates, but not dividends. Those findings are consistent with the Carleton and Vander Weide conclusions that projected earnings growth is the superior predictor of utility stock valuations.

[36] In this analysis I considered the yields on both 10-year and the 30-year Treasury bonds. The purpose of including long-term interest rates is to control for broader macroeconomic effects on the comparison companies' stock prices.

Q. What are your conclusions regarding the use of historical or projected dividend growth in the formulation of the Constant Growth DCF model for Questar Gas?

A. The analyses described above indicate that since actual dividends are not a determinative factor in the valuation of utility stock prices for the proxy group companies used by the three ROE witnesses in this proceeding, dividend growth rates should not be relied upon in the Constant Growth DCF analysis. Since earnings growth is the only variable that has any explanatory value with respect to the comparison companies' stock valuations, earnings growth should be the only variable used in the DCF analyses. Furthermore, as discussed in Section IV, Dr. Woolridge agrees that historical growth is already considered by analysts in developing their earnings growth estimates. Given that historical growth rates are embodied in projected earnings growth, projected earnings growth is the appropriate growth rate to be relied upon in the Constant Growth DCF analysis. As such, my updated DCF analyses continue to be based on projected earnings growth estimates.

As discussed in my reconciliation of Mr. Peterson's analysis, the use of historical growth and projected dividend estimates create a significant downward bias in Mr. Peterson's results.

Adjustments to Constant Growth DCF Results

Q. Please describe the adjustments Mr. Peterson made to the results of his Constant Growth DCF analyses.

A. Mr. Peterson explains that "the adjusted rates were derived by eliminating any cost of equity estimates that were less than 8.00 percent or equal to or greater than 11.00 percent."[37] Mr. Peterson further explains that "the upper bound is more than two standard deviations above the mean cost of equity estimate based upon the 75.00-25.00 percent weighting."

[37] *See* Direct Testimony of Charles E. Peterson, at 24-25.

Q. Do you have any concerns with Mr. Peterson's adjustments?

A. Yes. As a preliminary matter, Mr. Peterson's adjustments are inconsistent with his criticism of the exclusion of WGL from the proxy group used in my Direct Testimony. As discussed in my Direct Testimony, at that time, the mean DCF result for WGL was 7.50 percent, which approached the cost of debt and therefore was an unreasonably low ROE estimate.[38] (In any event, that result was well below Mr. Peterson's 8.00 percent lower bound.) Mr. Peterson takes issue with the decision to eliminate WGL from the proxy group on that basis, suggesting that the DCF result for WGL is a piece of market data that should not be rejected. Despite this position, *i.e.*, that all market data is relevant and should be considered, in his single stage DCF scenarios, Mr. Peterson has established upper and lower bounds based only on his judgment and without reference to any observable market benchmark. As a consequence, Mr. Peterson removed eight observations (from only one of his DCF scenarios), including the results for WGL.

More importantly, while Mr. Peterson considers his range of results from 8.00 percent to 11.00 percent as having removed "outliers that distort the results"[39] those thresholds unreasonably skew the range of results to the low end.[40] Over the past three years, there have been exactly *zero* returns authorized at or below 8.00 percent while there have been thirteen that were 11.00 percent or higher (*see* Chart 1). The practical effect of Mr. Peterson's bounds, therefore, is to exclude low-end results that *have never been observed* in the market, and exclude high-end results that in fact *have been observed*. Therefore, while Mr. Peterson suggests symmetry in his application bounds on his range of results, he biases his results downward by removing observations above 11.00 percent when there is

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[38] Based on current market data, and a DCF result that albeit low, is no longer approaching the cost of debt, I have included WGL in my revised proxy group.

[39] *See* Direct Testimony of Charles E. Peterson, at 26.

[40] As a measure of the effect of this bias, if the bounds were adjusted to the minimum and maximum of the authorized returns for the period from 2005 through 2008, Mr. Peterson's mean results would increase by approximately 27 basis points.

market data to support those observations, and by removing observations below 8.00 percent when there is no market evidence to support those observations in the first place. In effect, Mr. Peterson has subjectively eliminated observations on the high-end with no basis for his threshold other than symmetry. As explained above, however, in this case a symmetrical threshold is inherently biased.

Multi-period DCF Models

Q. Please summarize Mr. Peterson's position regarding the use of multi-period DCF models.

A. Introducing the single and two stage DCF models, Mr. Peterson draws the following conclusions about the use of multi-stage DCF models:

> …[h]owever, in the case of cost of equity estimates for a company in a mature industry, the time periods used and the growth rate differentials tend to be subjective and even arbitrary. The analyst has to make more judgments and assumptions including (1) the length of the periods of different growth rates, (2) the growth rates for the different periods, (3) the calculation of the terminal value (if any), and (4) whether, or not to assume the discount rate should remain constant and if not, how is it going to be estimated. Given these complexities with two-stage or higher multi-stage DCF models, it is difficult to imagine that they will generally be better estimators of cost of capital.[41]

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> …I do not believe two-stage DCF models currently add a lot of new information to the estimate of cost of equity for gas utilities.[42]

Those concerns notwithstanding, Mr. Peterson develops a series of two-stage DCF analyses, which he uses to establish the low end of his range of results.[43] Aside from his application of the two-stage DCF, which I will address below, it appears that Mr. Peterson relies on a methodology for which he expresses significant concern as the basis for establishing the low end of his range of results.

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41 *See* Direct Testimony of Charles E. Peterson, at 14.
42 Ibid., at 15.
43 *See* DPU Exhibit 2.5.

Q. Please describe how Mr. Peterson conducts his two-stage DCF analysis.

A. Mr. Peterson calculates the two-stage DCF using two different growth combinations for two different cases. The two cases are comprised of the spot stock price as of March 14, 2008, and the one-month average stock price, presumably also as of that date. Both cases utilize the current annualized dividend.

The first growth rate scenario Mr. Peterson designs consists of six annual dividends, which grow at the five-year projected dividend growth rate, as published by Value Line. A terminal value is calculated based on the final dividend and a split between projected five-year EPS and dividend growth rates of 75.00 percent and 25.00 percent, respectively.[44]

The second scenario also incorporates six annual dividends and a terminal value calculation. The dividends grow at the simple average of the projected five-year EPS and dividend growth rates as published by Value Line. The terminal value is determined using the final dividend and the five-year projected EPS growth rate.

Q. Do you agree with Mr. Peterson's application of his two-stage DCF Model?

A. No, I do not. Mr. Peterson does not establish the rationale for the combination of growth rates he uses in his models. Instead, he simply provides the calculation and utilizes the results from one of those calculations to set the low end of his recommended range of returns, without demonstrating the reasonableness of his analytical results. Importantly, in both of the scenarios he incorporates growth rates in the first stage that are lower than the weighted growth rates that he appears to rely upon in his single stage DCF model.[45]

Finally, both of Mr. Peterson's scenarios utilize first stage growth estimates that are materially lower than the terminal period growth rate. The implicit

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[44] *See* DPU Exhibit 2.10. Please note that contrary to Mr. Peterson's description of his methodology at page 26 of his Direct Testimony, the terminal dividend occurs in the middle of the sixth year of his analysis, in tandem with the terminal value.

[45] Please note that I have previously discussed Mr. Peterson's improper application of the growth rate in his single-stage DCF calculation.

assumption is that the proxy group companies will grow substantially faster beginning in year six (through the long run) than they will over the next five years; Mr. Peterson, however, has provided no explanation as to why that logically would be the case. In my view (as discussed in my Direct Testimony), given the near-term capital expenditures facing the Company in particular and the proxy group in general, this is unlikely to be a valid assumption.[46]

Long-Term Growth Rates

Q. Please summarize Mr. Peterson's view as to the appropriate growth rates to be used in the Constant Growth DCF analysis.

A. Mr. Peterson reviews several GDP forecasts and suggests, based on forecasts of GDP in the range of 4.00 percent to 5.00 percent, that "growth rates in the 4.00 or 5.00 percent range combined with current dividends are not unreasonable in the current market environment."[47]

Q. Do you agree with Mr. Peterson that nominal GDP is an appropriate benchmark for growth rates in this case?

A. Not necessarily. As discussed below, academic studies have consistently found analysts' earnings growth projections to be the appropriate measure of growth to be used in the DCF model. In that regard, my updated DCF results rely on the average projected earnings growth rate of 6.08 percent. In contrast, Mr. Peterson assumes that all companies are bound by macroeconomic growth, which he estimates to be in the 4.00 percent to 5.00 percent range, *even in the short run*. In that regard, he gives no effect to the prospect of growth via accelerated customer additions, marginal productivity improvements, or (as discussed below) the effect of comparatively higher rates of inflation for gas utility infrastructure investments relative to the broad measure of inflation embodied in the Consumer Price Index (CPI).

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[46] *See* Direct Testimony of Robert B. Hevert, at 8-9.
[47] *See* Direct Testimony of Charles E. Peterson, at 35.

Moreover, it is interesting to note that Mr. Peterson qualifies his long-term growth expectations in the context of "the current market environment." As Mr. Peterson acknowledges, the current economic environment is characterized by significant instability. Consequently, it does not appear reasonable that Mr. Peterson would advocate the use of a comparatively low long-term growth estimate developed in the context of an admittedly unstable market and assume that the resulting low DCF estimate is an appropriate measure of the Company's cost of equity.

Q. Please explain the relevance of the difference in the rate of inflation for gas utility infrastructure investments relative to the CPI for the purposes of assessing long-term growth rate estimates.

A. Measures of long-term nominal GDP growth (as used by Mr. Peterson) typically consist of two components: (1) long-term real economic growth; and (2) the rate of inflation. Assuming (for the sake of discussion) that in the long run, companies' real growth will approximate the real growth of the general economy, the issue becomes whether or not the general rate of inflation (as measured by the CPI) is an appropriate measure for gas utilities such as Questar Gas. As shown in QGC Exhibit 3.6R (and as discussed below) assuming real GDP growth and a measure of inflation that has been experienced by the natural gas distribution sector over the long term, Mr. Peterson's 5.00 percent limit is unreasonably low.

The analysis presented in QGC Exhibit 3.6R begins with the Energy Information Administration (EIA) Annual Energy Outlook forecast of nominal GDP growth of 4.45 percent, as presented in Mr. Peterson's Direct Testimony.[48] Since the nominal GDP growth rate includes a measure of overall inflation, I have decomposed the nominal GDP forecast into real GDP growth of 2.45 percent and general inflation for the economy of 2.00 percent.[49] Based on the natural gas distribution company total plant index from the Handy Whitman Index of Public

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[48] *See* Direct Testimony of Charles E. Peterson, at 35.

[49] Energy Information Administration / Annual Energy Outlook 2008, Table A.19. The implied rate of nominal GDP growth, then is 4.45 percent (.0445 = 1-(1.024 x 1.020)).

Utility Construction Costs for the time period 1912 through July 2007[50] the long-term inflation in utility costs has been 4.44 percent.[51] Therefore, considering real GDP growth and the long-term historical inflation experienced by the natural gas distribution industry, it is reasonable to assume that the long-term growth for this segment would be approximately 7.00 percent.[52] While I am not suggesting that the proxy group average growth rate should be 7.00 percent, this analysis indicates that Mr. Peterson's 5.00 percent rate of growth is far too low.

(3) Application of Capital Asset Pricing Model

Q. Please summarize Mr. Peterson's CAPM analysis.

A. Mr. Peterson performs his CAPM analysis using both the 90-day Treasury bill and the 20-year Treasury bond yields as the risk free rate. Mr. Peterson does not include the 90-day Treasury bill approach results in his final reconciliation because he concludes that the results are too low. However, Mr. Peterson argues that the 20-year Treasury bond approach supports an ROE recommendation between 9.00 and 9.75 percent.

Q. Are there specific aspects of Mr. Peterson's CAPM analysis with which you disagree?

A. Yes, Mr. Peterson and I disagree on two important points concerning the application of the CAPM: (1) the use of "raw" versus adjusted Beta coefficients; and (2) the estimation of the market risk premium component of the CAPM.

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50 The most recently available index publication.

51 Handy Whitman Index of Public Utility Construction Costs, Table G-6, July 1, 2007. Note that this is only coincidentally the same number as the EIA nominal GDP growth rate (also 4.45 percent).

52 .0700 = 1-(1.0245 x 1.0441)

Use of Unadjusted Beta Coefficients

Q. Please summarize Mr. Peterson's concerns about using Value Line's adjusted values for Beta.

A. Mr. Peterson disagrees that the Beta for public utilities tends to revert to 1.0 over time. He presents testimony and cites academic articles that suggest that Beta coefficients for public utilities tend to cluster at approximately 0.49 to 0.52, and concludes that Value Line's adjusted Betas are overstated for public utilities.

Q. What is your response to Mr. Peterson in that regard?

A. First, I would note that Mr. Peterson utilized the Value Line adjusted Beta in four of his five CAPM scenarios, in spite of his apparent reservations about the tendency of Beta to regress to 1.0. Mr. Peterson therefore appears to assume that on balance, it is appropriate to use adjusted Beta coefficients. More importantly, the use of adjusted Betas is well established in regulatory settings. Dr. Roger Morin dedicates a significant amount of time on the reliability of unadjusted versus adjusted Betas in his textbook, New Regulatory Finance.[53] According to Dr. Morin,

> There is a statistical justification for the use of adjusted Betas as well. Statistically, Betas are estimated with error. High-estimated Betas will tend to have positive error (overestimated) and low-estimated Betas will tend to have negative error (underestimated). Therefore, it is necessary to squash the estimated Betas in toward 1.00. One way to accomplish this is by measuring the extent to which estimated Betas tend to regress toward the mean over time.[54]

Further, as Dr. Morin points out, the Gombola and Kahl study cited by Mr. Peterson was conducted prior to widespread industry deregulation and restructuring. As Dr. Morin notes, after the utility industry underwent

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[53] *See*, New Regulatory Finance, Roger A. Morin PhD, Public Utility Reports, 2006, at 69-78.
[54] Ibid., at 74.

deregulation and restructuring, risk went up, and utility Beta did trend toward 1.0.[55]

In practice, analysts rely upon adjusted Betas when analyzing market information. Value Line, for example, the service that Mr. Peterson uses as his sole source of projected dividend growth estimates, presents only adjusted Beta estimates. In that regard, Dr. Woolridge also uses adjusted Value Line Betas.

Q. Did you perform any independent analyses to determine whether the Beta coefficients for your proxy companies have tended to increase over time?

A. Yes, I did. In order to determine whether the proxy group average Beta has trended upward over time, I calculated (based on data provided by Bloomberg) the "raw" or unadjusted Beta for the Revised Proxy Group companies on a daily basis since 1990. As shown in QGC Exhibit 3.7R, there is a clear upward trend in the average Beta. As also shown in QGC Exhibit 3.7R, utilizing the default Beta calculation provided by Bloomberg, which I incorporate as part of my CAPM model, and overlaying a trendline, it is clear that the average raw Beta for my revised proxy group has drifted upward (*i.e.*, has drifted toward the market mean of 1.0). Given the financial community's tendency to rely on adjusted Betas from firms such as Value Line and Bloomberg, and in light of the upward drift in the Proxy Group average Beta (as demonstrated in QGC Exhibit 3.7R), I have continued to use adjusted Beta coefficients in my CAPM analysis.

Market Risk Premium

Q. Please summarize Mr. Peterson's discussion of the appropriate market risk premium for the CAPM method.

A. Mr. Peterson asserts that the market risk premium should be calculated based on data for the past 30 to 50 years, because he believes that the commonly cited Morningstar, Inc. (formerly, Ibbotson Associates) data period, which extends to

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[55] Ibid., at 75.

1926, overstates the risk premium. Specifically, Mr. Peterson expresses his concern with changes that have occurred in the financial markets, such as the availability of more timely information, and "survivor bias" (the tendency to exclude the results of those companies that have failed), as the basis for his use of the 30 to 50 year period.

Q. What is your response to Mr. Peterson's concerns regarding the market risk premium?

A. As noted in my Direct Testimony, "the risk premium should be based on the longest period possible to avoid giving undue consideration to unusual market conditions."[56] Mr. Peterson, however, suggests that conditions have changed such that only more recent data should be considered. In order to test Mr. Peterson's hypothesis that the market risk premium has changed in more recent years, I examined the annual risk premium data since 1926 based on data provided by Morningstar (*i.e.*, the "Ibbotson data" referred to by Mr. Peterson at page 28 of his Direct Testimony). Specifically, I examined the average risk premium for the 30-year period from 1978 through 2007 and the 50-year period from 1958 through 2007.

Q. Before you present the results of your analysis, please explain how Morningstar calculates the annual market risk premium.

A. According to Morningstar, the annual risk premium represents the difference between the total return of the S&P 500 index and the average yield on the 20-year Treasury bond.[57] For example, if the S&P 500 index had a total return of 10.00 percent in 2007, and if the average yield on the 20-year bond was 4.50 percent, the annual market risk premium would be 5.50 percent.

Q. Now, please present the results of your analysis.

A. Table 4 below presents the results of my analysis.

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[56] Direct Testimony of Robert B. Hevert, at 33.
[57] 2008 Risk Premia Over Time Report, at 5.

Table 4: Market Risk Premia

Period	Market Risk Premium
1926 – 2007	7.10
1958 - 2007	5.60
1978 - 2007	6.50

As Table 5 demonstrates, the average market risk premium is somewhat lower for the most recent 50-year and 30-year periods. However, this does not necessarily prove that investors *currently* require a lower risk premium. The next step in my analysis was to calculate rolling 50-year averages beginning in 1975, and rolling 30-year averages beginning in 1955. The purpose of this exercise was to determine whether the average market risk premium has been trending downward in recent years, as Mr. Peterson has asserted.

Q. What were the results of that analysis?

A. The results of that analysis are presented in Table 6 below.

Table 5: Rolling 50-Year and 30-Year Averages
Market Risk Premia

Period	Highest Risk Premium	Lowest Risk Premium
Rolling 50-Year Avg.	8.60 (1982)	5.20 (2005)
Rolling 30-Year Avg.	12.60 (1961)	3.10 (1994)

The results demonstrate that the market risk premium for the rolling 50-year period has consistently fallen within a fairly narrow range of 5.20 to 8.60 percent. However, the market risk premium for the rolling 30-year period has shown much more significant variability, ranging from 3.10 to 12.60 percent. This suggests that stock market fluctuations are not sufficiently smoothed out over a 30-year period.

Consider, for example, the three-year period from 2000 through 2002 when the annual risk premium ranged from negative 15.60 percent to negative 20.20 percent. It is not reasonable to believe that investors suddenly decided that a

substantial negative risk premium was sufficient to compensate them for the risk of owning equities.

Consider also the most recent five and six year averages. If, as Mr. Peterson suggests, advances in information technology are significant in the formation of the market risk premium, perhaps the most recent five-year period should be given significant weight in calculating average the risk premium.[58] As shown on QGC Exhibit 3.8R, the average risk premium for the most recent five years was 8.30 percent. If we were to include the sixth year, however, the premium would fall to 3.60 percent, and would be negative if we were to extend the averaging period to eight years. Since it is extremely unlikely that investors would so dramatically change their return requirements in so short a period, it becomes clear that longer averaging periods are the better estimate of the long-term risk premium.

At issue, then, is the appropriate period to be used for the purpose of calculating the market risk premium. In Mr. Peterson's view, an averaging convention in the 30 to 50 year range is reasonable in that "it is long enough to smooth out enough to focus on the more recent data of the modern financial markets."[59]

Q. Do you agree with Mr. Peterson that an averaging period of 30 to 50 years is reasonable?

A. No, I do not. In order for Mr. Peterson to arrive at that conclusion, he necessarily must assume that periods beyond 50 years have no additional information that is relevant to the determination of the market risk premium. For example, Mr. Peterson's averaging periods exclude the years immediately following the Second World War and the Great Depression. While I am not suggesting that we will experience another World War or economic depression in the near future, neither

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[58] According to "Moore's Law," computing capability advances at exponential rate, essentially doubling every two years. It would follow, then, that shorter periods reflect the more recent advancements in information and computing technology.

[59] *See* Direct Testimony of Charles E. Peterson, at 29.

Mr. Peterson nor I can say with any confidence that the economic conditions created by those events will not occur at some point in the future. The relevant question, therefore, is not whether 30 to 50 years is the appropriate averaging period; rather, it is whether periods longer than 30 or 50 years are relevant.

Q. Did you perform any analyses to determine whether your 7.10 percent market risk premium is consistent with averaging periods of at least 30 or 50 years?

A. Yes, I did. As shown on Charts 2 and 3 (below) I calculated the average risk premium beginning with a minimum averaging period of 30 years. I then developed a histogram of those results for averaging periods of 30 years or more and 50 years or more. As Charts 2 and 3 indicate, my 7.10 percent estimate is highly consistent with those averaging conventions.

Chart 2: Market Risk Premium – Minimum 30-Year Averaging Period

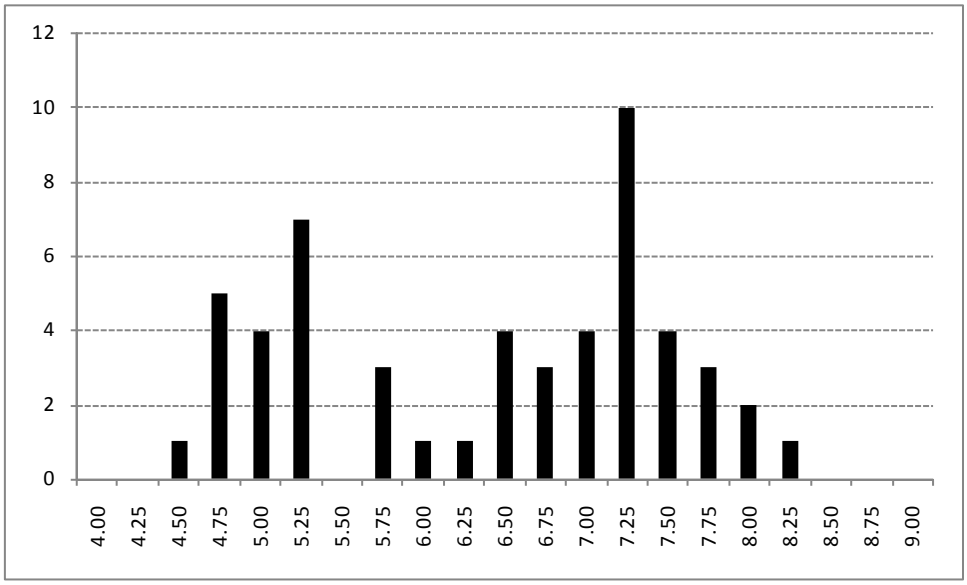
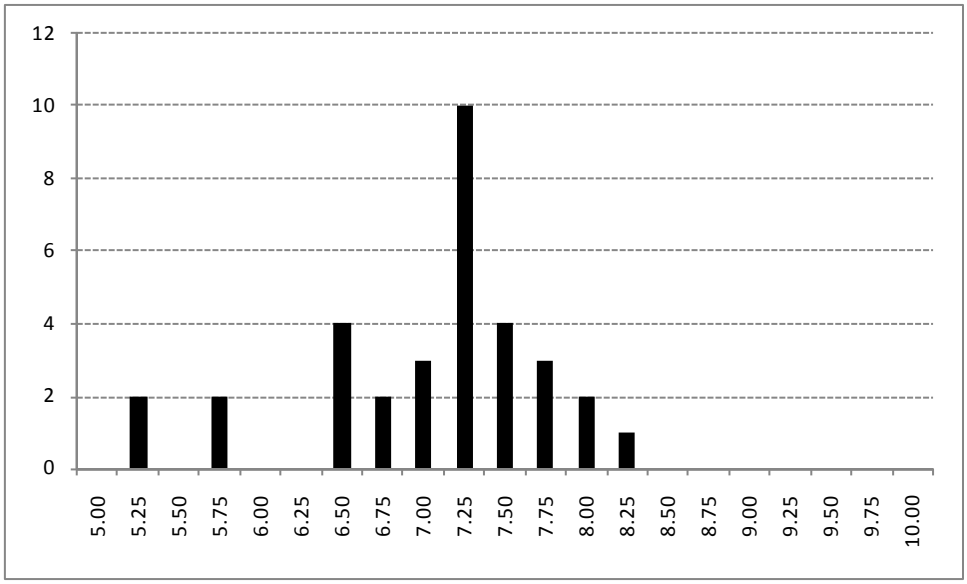


Chart 3: Market Risk Premium – Minimum 50-Year Averaging Period



Q. Did you perform any additional analysis that supports your assertion that longer averaging periods are appropriate for purposes of calculating the market risk premium?

A. Yes, I did. The available Morningstar data indicate that since 1926, there have been 29 years during which the annual market risk premium was negative, and there have been 23 years during which the annual market risk premium has exceeded 20.00 percent. Such extreme variability in the annual risk premium is important because it underscores the danger associated with using a shorter averaging period suggested by Mr. Peterson.

Q. What conclusions do you draw concerning the appropriate averaging period for the market risk premium?

A. Based on my analysis of the Morningstar data, I continue to believe that the use of the entire data set provided by Morningstar is appropriate. To choose a shorter period necessarily requires the analyst to assume that earlier market conditions, regardless of the cause, will not occur again in the future. As discussed later in my Rebuttal Testimony, the Wall Street Journal recently compared the current market environment to conditions that prevailed in 1929 and into the 1930's.

Consequently, there is no reason to exclude risk premium data relating to that period (as both Mr. Peterson and Dr. Woolridge have done).

Finally, it appears that Mr. Peterson's assertion that investors require lower market premia because they have access to more timely information is unfounded. As my research has demonstrated, the market risk premia have not fallen to any significant extent in recent years, and any decline is attributable to negative annual risk premiums from 2000 through 2002.

Q. Please summarize Mr. Peterson's discussion regarding whether it is appropriate to use the arithmetic mean or the geometric mean in calculating the market risk premium.

A. In discussing the relative strengths and weaknesses of the CAPM approach, Mr. Peterson states that "the use of arithmetic averages significantly overstates the actual returns an investor would have actually received over a long historical period of time, a period in which the geometric average accurately reflects the actual experiences of investors."[60]

Q. What is your response to Mr. Peterson's assertion that the arithmetic mean tends to overstate the actual results achieved by investors?

A. As stated in my Direct Testimony,[61] I believe that the arithmetic average is the appropriate input to the CAPM model. While this issue is discussed in more detail in my response to Dr. Woolridge, in essence, the arithmetic mean explicitly reflects uncertainty; the geometric mean, however, assumes that returns are known with certainty. Consequently, the arithmetic mean is the appropriate measure of the historical risk premium.

Q. Do you have any final thoughts on Mr. Peterson's CAPM analysis?

A. I agree with Mr. Peterson that the CAPM is well accepted by financial analysts and academics in determining the cost of equity. I also agree with Mr. Peterson

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[60] *See* Direct Testimony of Charles E. Peterson, at 18-19.
[61] *See* Direct Testimony of Robert B. Hevert, at 33-34.

that it is important to use more than one method to estimate the cost of equity. For these reasons, I would support Mr. Peterson's request that the Commission at least consider the results of the CAPM analysis in arriving at its ROE decision in this proceeding. In addition to the issues described above, however, it also is important to note that currently extreme conditions in the capital markets have resulted in extraordinarily low Treasury yields, thereby biasing downward CAPM results based on observed Treasury rates (as the risk free rate component). For example, the yield on 20-year maturity Treasury bonds was only 4.36 percent[62] during March 2008, while the reported annual inflation rate was 4.00 percent.[63] It is not reasonable to expect that bond investors will continue to purchase 20-year Treasury bonds when the yield barely exceeds the inflation rate. As a result, it is important to consider projected Treasury yields as a component of the CAPM analysis.

(4) Application of Alternative Risk Premium Analyses

Q. Does Mr. Peterson perform a risk premium analysis?

A. Yes. Mr. Peterson conducts Risk Premium analysis based on financial strength ratings from Value Line. However, he uses the analysis as a reasonableness test for his DCF and CAPM results, and indicates that he does not expect the Commission to adopt this approach.

Q. Do you have any comments on that analysis?

A. According to Value Line, its financial strength ratings are determined as follows:

> Our Financial Strength ratings take into account a lot of the same information used by the major credit rating agencies. Our analysis focuses on net income, cash flow, the amount of debt outstanding, and the outlook for profits. Other factors also enter into the equation. For example, a company that faces the loss of patent protection for a key product might face a downgrade. The ratings

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62 Board of Governors of the Federal Reserve System Table H.15, Series GS20.
63 Bureau of Labor Statistics, CPI, March 2008.

> range from A++ (highest) to C (lowest), in nine steps, based on the judgment of our senior staff members.

Based on that explanation, it appears that Mr. Peterson's Risk Premium analysis is somewhat circular in its logic. The Value Line Financial Strength rating is used to derive the "risk factor," which Mr. Peterson uses to adjust the expected market return. Once Value Line becomes aware of information that would affect its outlook for a given company, presumably that information becomes known to investors and is reflected in the company's stock price and associated risk premium. To the extent that is the case, Mr. Peterson's Risk Premium analysis appears to effectively confirm what is already known by the capital market, *i.e.*, that changes in measures of financial integrity lead to changes in the required risk premium. In any event, Mr. Peterson does not appear to rely much, if at all, on his Risk Premium analysis.

Q. Does Mr. Peterson comment on your Risk Premium analysis?

A. Yes. Mr. Peterson criticizes my Risk Premium analysis because, in his opinion, many of the ROE awards contained in the data underlying that analysis are based on settlements or are significantly influenced by local laws and customs that are not applicable in Utah. Mr. Peterson also observes the recent downward trend in ROE awards for regulated gas utilities, and he performs a trend analysis which, he asserts, shows that an ROE award of 10.20 percent would be appropriate.

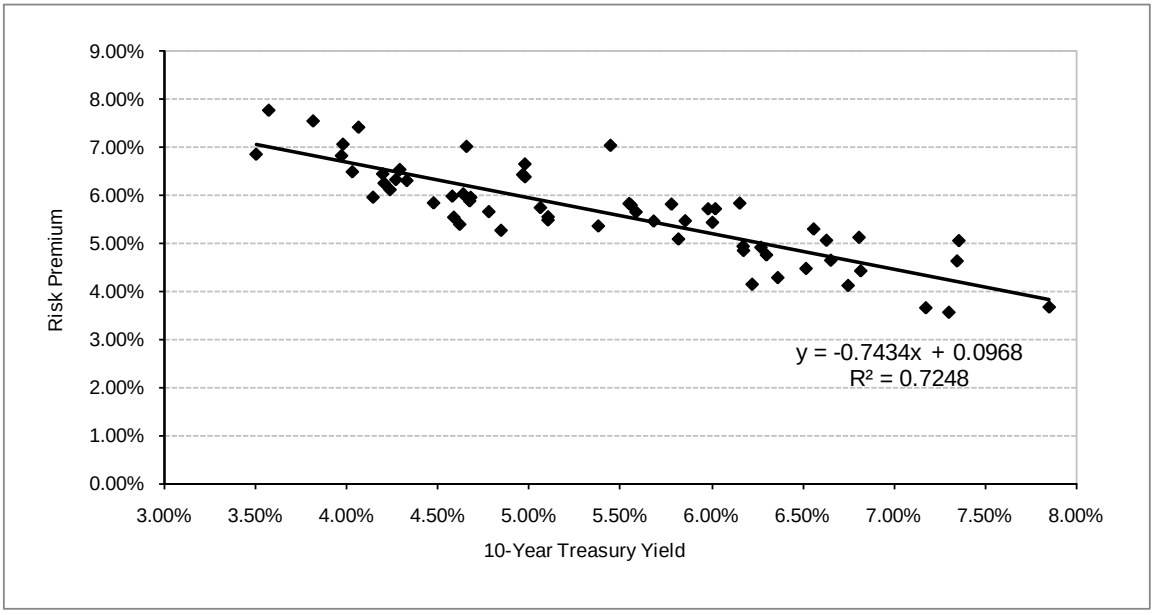
Q. Do you agree with Mr. Peterson's critique of your Risk Premium analysis?

A. No, I do not. As explained below, authorized returns from other jurisdictions provide relevant information to the financial community, especially when those returns are viewed in the context of concurrent interest rates. Conversely, Mr. Peterson's extrapolation of authorized returns provides no insights regarding the relationship between market conditions and the cost of equity and, taken to its logical conclusion, provides meaningless results. Even if one were to accept the results of Mr. Peterson's trend analysis that result (10.20 percent) would be nearly 100 basis points above his recommended ROE of 9.25 percent.

Q. Did you update your Risk Premium analysis?

A. Yes I did. I updated both Treasury yields and authorized return data up to and including the calendar quarter ended March 31, 2008. Using these data, I recalculated the risk premia (*i.e.*, the difference between authorized returns and long-term Treasury yields) and performed an updated regression analysis in which Treasury yields were the explanatory variable, and the risk premia were the dependent variable. As shown in Chart 4 (below), the relationship continues to be significant and negative. Given the current ten-year Treasury yield of 3.51 percent, this relationship produces a risk premium estimate of 7.07 percent, and a corresponding ROE of 10.57 percent. Inasmuch as current Treasury yields are influenced by unusual market conditions, it is reasonable also to consider projected Treasury yields. According to Blue Chip, the ten-year Treasury yield is expected to be approximately 3.80 percent in 2008 and 2009. That estimate produces a risk premium estimate of 6.85 percent, and an ROE estimate of 10.65 percent. (*See* also QGC Exhibit 3.9R.) While somewhat low, both of those estimates are within my revised range, but well above Mr. Peterson's recommended 9.25 percent ROE.

Chart 4: Updated Risk Premium Analysis



Q. Why do you believe that ROE awards in other jurisdictions are relevant for Questar Gas in this proceeding?

A. My practical experience working with clients contemplating investments in utility companies consistently has been that investors frame their return expectations and requirements, at least in part, by reference to ROEs authorized in other jurisdictions. While I agree that authorized ROEs are related to the particular circumstances of a given case, the use of survey data from many cases[64] resolves that problem and provides a very useful benchmark. The fact remains, however, that the large gap between Mr. Peterson's recommendation and prevailing level of ROEs authorized in other jurisdictions cannot be explained by reference to possible unusual features of a particular case, or the fact that certain of the cases were settled rather than fully litigated.

Finally, as Mr. Allred notes, returns in other jurisdictions are relevant in that for a given level of risk, rational investors will deploy their capital in investments with higher expected returns.[65] Since Mr. Peterson has provided no evidence demonstrating that Questar Gas is materially less risky than the average gas utility, there is no reason to believe that a rational investor would prefer Mr. Peterson's 9.25 percent return to the overwhelming majority (79 out of 80) of authorized returns presented in Chart 1. [66]

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64 Direct Testimony and Schedules of Robert B. Hevert, at 38.

65 *See* Rebuttal Testimony of Alan K. Allred, at 1-3.

66 This point recently was made quite clearly by the Public Service Commission of Missouri:
The Commission does not believe it would be appropriate for its return on equity finding to unthinkingly mirror the national average. Obviously, if all commissions took that approach, returns on equity would never change, despite changing economic facts, leading to unjust results. *However, the national average is a good indicator of the capital market in which AmerenUE will have to compete for the equity needed to finance its operations. The Commission has an obligation under the law and well as a matter of practical necessity, to allow AmerenUE an opportunity to earn a return that will allow it to compete in the capital market. No one, including ratepayers, benefits if AmerenUE is starved for capital.* (Public Service Commission of Missouri, Case No. ER-2007-0002, Report and Order Dated May 22, 2007, at 32. Emphasis added.)

Q. Do you have any comments regarding Mr. Peterson's ROE trend analysis?

A. Yes, I do. As a preliminary matter, it is important to point out that in analyzing authorized returns, Mr. Peterson simply fits a line through observed data and assumes that the level of authorized ROEs is a function *only of the passage of time*.[67] As a result, Mr. Peterson's model leads to conclusions that cannot be explained in the context of fundamental market relationships. As shown on DPU Exhibit 2.14, for example, Mr. Peterson's model implies that the risk premium would fall from 6.58 percent in the first calendar quarter of 2008 to 3.42 percent[68] by 2019 (the last year of the Blue Chip long-term forecast). Notwithstanding his implied assumption that the market risk premium will fall by nearly 50.00 percent, Mr. Peterson has provided no evidence or explanation as to why such an assumption would be reasonable.

Moreover, the implied 3.42 percent risk premium equates to a Market Risk Premium of 3.93 percent.[69] That, of course, is well below the level of Market Risk Premium estimates discussed above. Given the inability of Mr. Peterson's trend analysis to explain fundamental market relationships, and in light of the inconsistent implied Market Risk Premium resulting from that analysis, I would not give his approach any weight in the determination of the Company's ROE.

(5) Business Risk and Small Size Premium

Q. Did you recommend an explicit small size adjustment to the ROE for Questar Gas in your Direct Testimony?

A. No, I did not. As noted in my Direct Testimony, my conclusion is that the small size of Questar Gas is one factor in determining where, within the range of reasonableness, the appropriate return on equity falls.[70] As noted earlier, my

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[67] As discussed earlier, my risk premium analysis is consistent with other research in this area, which demonstrates that risk premia are related to the prevailing level of interest rates.

[68] Based on Ten-Year Treasury yield.

[69] .0393 = .0342/.87, where .87 equals the average Beta provided in DPU Exhibit 12.

[70] Direct Testimony of Robert B. Hevert, at 43.

revised range of returns is supported by, but not dependent on, the small size adjustment.

Q. How do you respond to Mr. Peterson's assertion that a small size premium is not appropriate for Questar Gas due to the negative risk premium associated with the natural gas distribution industry?

A. Mr. Peterson relies on the Morningstar industry specific small size adjustment analysis and concludes that the natural gas distribution industry has a negative size adjustment of 3.83 percent.[71] However, in the 2008 Yearbook, Morningstar notes that while they have attempted to quantify the size premium for specific industries, "supporting a size premia for a specific industry has been made difficult by a lack of data for companies in individual industries."[72] Despite this limitation, Morningstar estimates the size premia for several industries and publishes these premia in the table referenced by Mr. Peterson. However, Morningstar notes:

> Due to limited data, we have defined size in rather general terms. In addition the population of companies in most industries is very small. Table 7-14 provides evidence that smaller companies have generally outperformed larger companies across industries. The size premium study presented earlier in this chapter provides more reliable statistics as they relate to the size premium.[73]

The results that are referred to by Morningstar as providing more reliable results relate to the premia calculated based on all companies across all industries. The size premia upon which I have relied are derived from the broader industry study.[74]

Furthermore, as discussed in my Direct Testimony, size leads to two categories of increased risk for investors: liquidity risk and fundamental business risk. These risks are recognized by both the financial and academic communities and have

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71 Direct Testimony of Charles E. Peterson, at 38.
72 Morningstar Ibbotson SBBI 2008 Valuation Yearbook, at 153.
73 Ibid.
74 Ibid., at 131.

been noted by utility analysts. In QGC Exhibit 3.11 of my Direct Testimony, I compare Questar Gas to the proxy group companies and conclude that based on the relatively small size of Questar Gas, it would be reasonable to include an explicit adjustment to the ROE to account for the incremental risk associated with size. However, while I conclude that Questar Gas does have increased risk associated with its relative size, when compared with the proxy group companies, I have not included a specific adjustment to the ROE to reflect this risk.[75]

(6) Current Market Conditions and Investor Risk Perceptions

Q. Do you agree with Mr. Peterson's conclusions regarding current capital market conditions and their implications for the company's ROE?

A. I agree with Mr. Peterson that it is important to consider the effect of current market conditions when determining the cost of equity for a utility company. However, given Mr. Peterson's assessment of investor expectations and current market conditions, I strongly disagree with his cost of equity recommendation for several reasons.

Q. Please discuss those areas of disagreement.

A. As Mr. Peterson correctly observes, one of the practical implications of the *Hope* and *Bluefield* decisions is the ability to attract capital at reasonable cost. In discussing the impact of his recommended ROE of 9.25 percent, Mr. Peterson acknowledges that "[he knows]of no evidence that Wall Street (*i.e.*, the financial markets) would be expecting cost of equity awards in the low 9.00 percent range. An award of 9.25 percent by the Commission might have ramifications for the Company's bond rating and otherwise its ability to attract capital."[76] Notwithstanding his assessment, Mr. Peterson does not make any upward adjustment in his recommended ROE to reflect his view that Questar Gas' credit

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[75] I discuss size premium further in my response to Dr. Woolridge, below.
[76] *See* Direct Testimony of Charles E. Peterson, at 46. Clarification included.

rating and ability to attract capital might be imperiled by his extremely low recommended ROE of 9.25 percent.

Q. Does Mr. Peterson draw any conclusions regarding the cost of equity from investors' general perceptions of business risk?

A. Yes. Mr. Peterson acknowledges that "the current difficulties in the credit market are well publicized, so it seems likely that the Company would have difficulties in issuing debt at more favorable rates."[77] However, he fails to make the connection between his recommended ROE and an even more difficult situation for the Company, should his recommended ROE be adopted by the Commission. As I discussed in my Direct Testimony, credit rating agencies look not only at the financial metrics of the utility under consideration, but also the *regulatory environment* in which the utility operates. The following passage by Standard and Poor's bears repeating:

> Indeed, Standard & Poor's views the regulatory and political environment in which a utility operates as one of the most significant factors in assessing the creditworthiness of regulated utilities. Frequently, rate decisions pending before state commissions, or the evolving dynamics of a specific political situation, are of such consequence to a particular utility that the financial markets expect regular updates from us to clarify how these developments ultimately will affect the utility's creditworthiness.[78]

Therefore, while the implementation of Mr. Peterson's recommended ROE would have direct implications for the Company's financial well-being, the acceptance by the Commission of such an ROE would add additional risk in the eyes of the credit rating agencies specifically, and the financial community in general.

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[77] *See* Direct Testimony of Charles E. Peterson, at 10.

[78] Standard & Poor's, *Criteria: Influence of Regulatory and Policy Decisions on Utility Credit Quality Deepens, Demanding Timely Assessments From Standard & Poor's*, May 15, 2007.

Q. Is Mr. Peterson's ROE recommendation supportive of the Company's capital spending plan?

A. No, it is not. In discussing the Company's capital structure, Mr. Peterson observes that "the Company's efforts to maintain or increase somewhat its equity capital percentage are reasonable in light of this rating agency criterion, especially given the increase in capital expenditures envisioned by the Company."[79] Despite the fact that Mr. Peterson is aware of Questar Gas' capital spending program, his recommendation does not recognize the connection between the Company's need to attract additional investor capital and his recommended ROE, which he acknowledges, "may be perceived by Wall Street as too low relative to Questar Gas' peers."[80] The practical implication of Mr. Peterson's recommendation is that Questar Gas' customers would face higher rates in the long term, if the authorized ROE in this proceeding results in the downgrade of the Company's credit rating or impairs its ability to attract capital. As I discussed in my Direct Testimony, because Questar Gas has aggressively managed its operating costs, the Company's ability to increase internally generated funds to fund capital-spending programs is inherently limited. Therefore, the ability to fund capital investments will depend on the Company's ability to access external capital on reasonable terms.

Q. Is Mr. Peterson's recommendation consistent with the principles established by the U.S. Supreme Court in its *Hope* and *Bluefield* decisions?

A. No, it is not. On page 45 of his Direct Testimony, Mr. Peterson enumerates the regulatory principles outlined in the *Hope* and *Bluefield* decisions, which serve as a guidepost for state commissions in establishing authorized returns on equity. One of the most important principles established by these decisions is that it is the result as opposed to the analytical method, that is controlling when determining the cost of equity. This principle grants the Commission great latitude in setting

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79 *See* Direct Testimony of Charles E. Peterson, at 9.
80 Ibid., at 7.

an authorized ROE that it believes will result in just and reasonable rates, while preserving the utility's financial soundness and ability to attract capital. The Court appeared to recognize that different analytical methods would not always produce results that might be considered just and reasonable. Therefore, both analysts and regulators should use informed judgment in setting a rate of return that meets the standard. That is, the practical implications of the authorized ROE should be given more weight than the analytical approaches that were used to arrive at the end result.

Financial Integrity

Q. Does Mr. Peterson offer any evidence that his ROE recommendation of 9.25 percent would be sufficient to maintain the financial integrity and credit rating of Questar Gas?

A. In analyzing the potential impact of his recommended return, Mr. Peterson discusses how his proposal would influence the Company's business risk profile and credit rating. Specifically, Mr. Peterson discusses credit rating agency criteria such as Funds From Operations (FFO) to Interest Payments and FFO to Total Debt. As noted earlier, however, Mr. Peterson fails to consider that credit rating agencies consider such credit metrics not only in absolute terms, but as compared to those of other similarly situated companies. Therefore, if his recommended ROE of 9.25 percent places Questar Gas' credit ratios below those of comparable gas utilities, it is more likely that the Company would face a ratings downgrade. Mr. Peterson ultimately concludes that "at 9.75 percent there appears to be a good chance of keeping the capital structure above 50.00 percent equity, which would mean less chance of a rating downgrade."[81] Once again, Mr. Peterson appears to recognize the risks associated with his ROE recommendation, but he does not revise his recommendation upward to reflect the practical implication of those risks.

[81] *See* Direct Testimony of Charles E. Peterson, at 48.

Q. What are the practical implications of Mr. Peterson's recommendation?

A. I would expect the financial community to take a negative view of any Commission decision that awards the Company an ROE in the low 9.00 percent range. Credit rating agencies such as S&P would most likely consider this an adverse regulatory outcome that would raise the business risk of Questar Gas rather significantly because it would jeopardize the Company's ability to recover fully its cost of service and would impair the Company's ability to attract capital at reasonable terms. Consequently, S&P might reasonably be expected to review the credit rating for Questar Gas (with negative implications) if the Commission were to authorize the Company an ROE of 9.25 percent, as advocated by Mr. Peterson, or 9.00 percent as recommended by Dr. Woolridge.

Q. Why should the Commission be concerned about a potentially negative credit rating action?

A. A negative credit action would most likely raise the cost of debt for Questar Gas because lower credit ratings indicate higher levels of financial, operating, and regulatory risk. Similarly, such an action would most likely raise the cost of common equity for Questar Gas because equity investors consider the cost of debt when determining the required return associated with purchasing the common equity of a company. Therefore, a credit downgrade would have negative long-term consequences for Utah ratepayers as a result of higher debt and equity costs that would be recovered ultimately through higher base rates.

Q. Putting aside your disagreement with Mr. Peterson regarding the effect of his proposed ROE on the Company's credit profile, do you agree that the capital markets currently reflect increased levels of perceived risk?

A. Yes, I do. It is clear that investors are quite aware of, and concerned with, the lack of liquidity and elevated volatility in the current capital markets. For example, The Wall Street Journal recently reported:

> These losses occurred against the backdrop of volatility in the stock market not seen since the worldwide economic slump that began with the stock-market collapse of October 28-29, 1929, and continued through most of the 1930s. The S&P 500 moved more

> than 1% on 51% of the trading days in the first quarter, the biggest percentage since 1934 and the fifth largest percentage in the index's history.[82]

This period of extreme volatility has affected all sectors of the capital market.

Measures of Risk

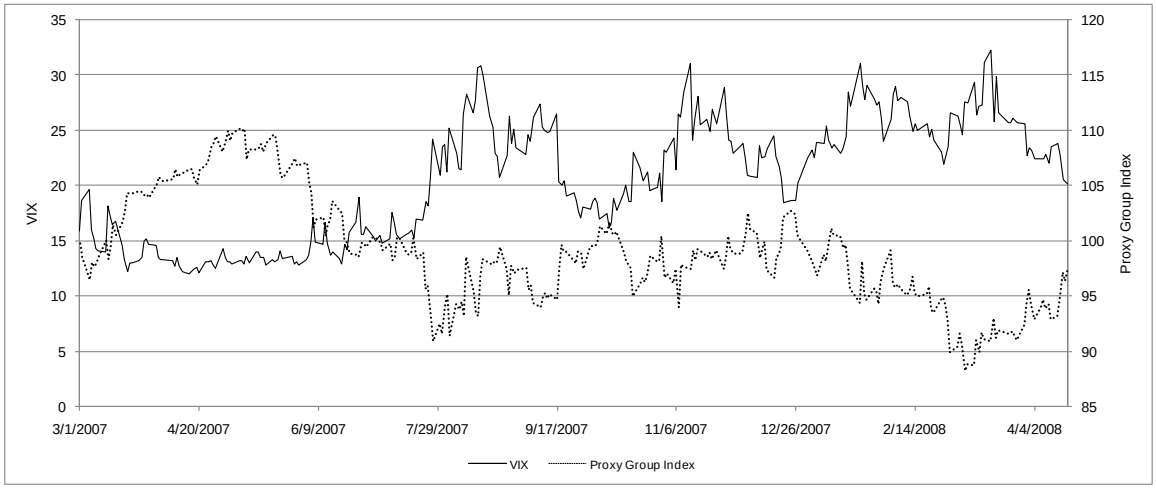
Q. Have you conducted any analysis of the market's perception of risk associated with utility stocks?

A. Yes. One measure of perceived risk is the Chicago Board of Exchange Volatility Index (generally referred to as the "VIX"). The VIX represents the implied volatility of S&P 500 options over a 30-day period. While the VIX admittedly is a short-term index, it does provide a visible measure of investors' sentiments regarding market risk and volatility.

Chart 5 (below) provides the VIX from March 1, 2007 through April 18, 2008. As Chart 5 demonstrates, the VIX has increased significantly over the past year, indicating that, in fact, investors' risk perceptions have been increasing since March 2007. It also is interesting to note that the revised proxy group stock prices are negatively correlated to changes in the VIX. In other words, as the VIX increases, proxy group stock prices decline. Chart 5 clearly demonstrates that relationship over the past year. As QGC Exhibit 3.10R demonstrates, that negative relationship is statistically significant, even after taking into account long-term interest rates and a trend variable.

[82] The Wall Street Journal, *Trying to Get Up off the Mat*, April 1, 2008, at C1.

Chart 5: Volatility Index and Revised Proxy Group Stock Prices
March 2007 to April 2008

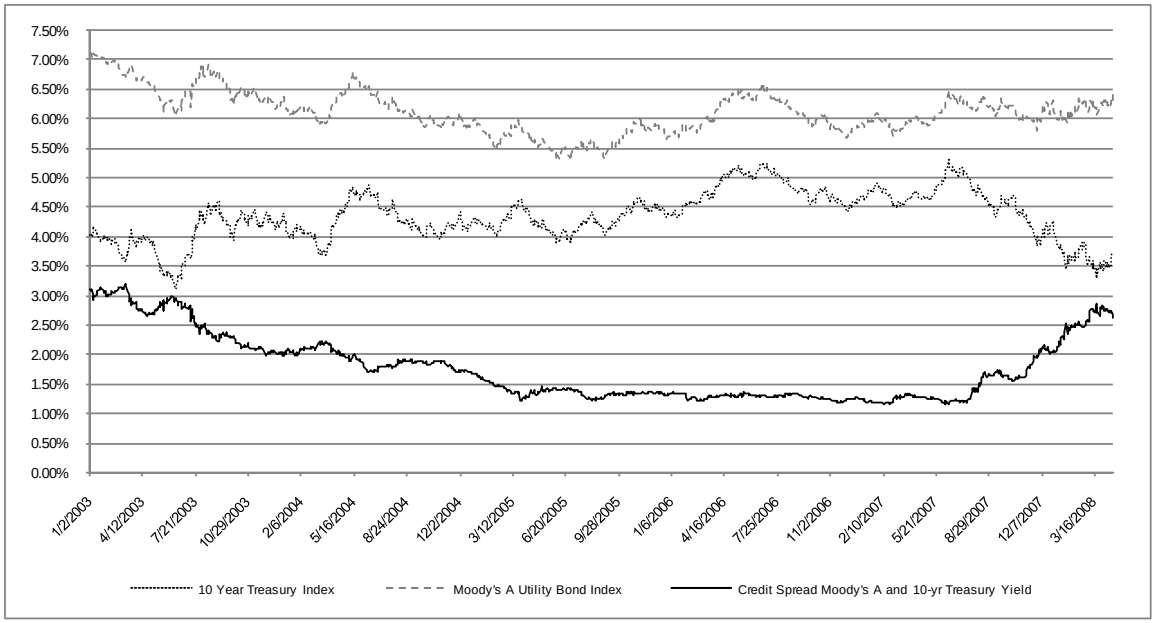


Based on the data noted above, it is apparent that over the past twelve months, investors' perceptions of risk have increased (suggesting increased required returns), and those increased risks have manifested themselves in lower utility stock prices.

Q. Do credit markets display the same increased perception of risk?

A. Yes. As shown in Chart 6, below, the spread between the Moody's A utility bond index and the ten-year Treasury yield declined during the period from January 2003 through July 2007. Since July 2007, however, the spread has more than doubled, increasing from 122 basis points to 261 basis points, demonstrating that investors' perceptions of risk have shifted dramatically, making it more difficult and expensive for utilities to attract capital.

Chart 6: Credit Spread Moody's A and Ten-year Treasury-yield



(7) Implications of Mr. Reed's Benchmarking Analysis

Q. Please summarize Mr. Peterson's conclusions regarding the implications of Mr. Reed's analysis for the Company's ROE.

A. Mr. Peterson asserts that my Direct Testimony proposes "to reward particularly the sole stockholder of the Company for what [I] consider to be good results."[83] Mr. Peterson goes further and claims that my testimony is a request for incentive regulation, and it seeks to reward the Company "for doing what it is expected to do anyway."[84]

Q. Do you agree with Mr. Peterson's characterization of your Direct Testimony?

A. No, I do not. Mr. Peterson neglected to point out that my Direct Testimony spoke to the implications of the Company's comparatively low-cost operating profile on

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83 *See* Direct Testimony of Charles E. Peterson, at 43. Clarification added.
84 Ibid.

its ability to extract additional operating cash flows from incremental operating improvements. As noted in my Direct Testimony:

> ...while the Company's past pursuit of operating efficiency has put the Company in the enviable position of a low cost provider, it will be increasingly difficult to extract future cash flow savings from operating improvements. Given the Company's substantial capital investment program, it will be important to set a return that will enhance internally generated funds and enable access to capital markets at reasonable terms.[85]

Thus, while my Direct Testimony pointed out the latitude that regulators may exercise in making ROE determinations, that latitude includes the recognition that the authorized return is a crucial determinant in the Company's ability to maintain a reasonable level of internally generated funds (that is, Fund From Operations) especially in light of its prior (successful) initiatives designed to manage operating costs.

Reconciliation of Mr. Peterson's Analyses

Single Stage DCF Reconciliation

Q. Have you performed any analyses that attempt to reconcile Mr. Peterson's results and recommendations with your own?

A. Yes, I have. Tables 6 and 7 below demonstrate a series of reasonable corrections to Mr. Peterson's single-stage and two-stage DCF analyses that bring his results well in line with my analytical results.

Q. Please describe your reconciliation of Mr. Peterson's single-stage DCF analysis.

A. As summarized in Table 7 (below, *see* also QGC Exhibit 3.11R), I began with Mr. Peterson's single-stage DCF model, with an estimated cost of equity of 8.87 percent.[86] My first step was to correct for his methodological error. In Mr. Peterson's primary estimated cost of equity model he claims to apply a weighted

[85] Direct Testimony of Robert B. Hevert, at 45.
[86] *See* DPU Exhibit 2.7b.

average of the earnings growth rate and the dividend growth rate for the constant growth rate. As previously noted, however, he inconsistently applies both the weighted average growth rate and the dividend growth rate only in his estimate of the cost of equity. I adjusted his model so that the "Estimated Cost of Equity Weighted Growth" relies only upon the weighted growth rate as he describes it.[87] This increases the calculated cost of equity by five basis points to 8.92 percent.

My next step was to update the projected growth estimates and market data. I updated earnings growth rates as of April 23, 2008. I updated dividend growth rates based on the most recent estimates available from Value Line as of April 23, 2008. Finally, I updated the 30-day average stock prices as of April 18, 2008. This increased the estimated cost of equity forty-two basis points to 9.34 percent.

In my next step, consistent with the methodology that I rely on in my analysis, I substituted the average of Value Line and Zacks projected growth estimates for the growth component of the model. This increased the estimated cost of equity forty-four basis points to 9.78 percent.[88] In order to correct for Mr. Peterson's inappropriate reliance on dividend growth rates, in my next step I relied exclusively upon projected earnings growth rates for the estimated cost of equity. As demonstrated in Table 6, this increased the estimated cost of equity sixty-two basis points to 10.40 percent.

Finally, I excluded Atmos Energy from the proxy group because it no longer derives at least 60.00 percent of its consolidated revenue from regulated operations. This reduces the estimated cost of equity by 1 basis point to 10.39 percent, and broadens the range of acceptable estimates. As shown in Table 6 below, updating Mr. Peterson's analysis to the current market conditions and updating his growth rates to rely solely on EPS increases Mr. Peterson's mean result from 8.86 percent to 10.39 percent.

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[87] *See* Direct Testimony of Charles E. Peterson, at 24.

[88] Since Yahoo and Reuters both rely on Thompson data, it is likely that these consensus estimates rely upon many of the same analyst estimates. Therefore, the inclusion of both of these sources may bias Mr. Peterson's average growth rate.

Table 6: Reconciliation of Mr. Peterson's Single-Stage DCF Analysis

	LOW	MEAN	HIGH
Step 1:As Filed	7.49%	8.87%	10.26%
Step 2: Correct Methodological Errors	7.57%	8.92%	10.26%
Step 3: Update Market Data and Growth Estimates	8.44%	9.34%	10.24%
Step 4: Substitute Average Zacks & Value Line EPS Growth Rates	8.67%	9.78%	10.88%
Step 5: Substitute 100% EPS Growth Rates	8.97%	10.40%	11.82%
Step 6: Substitute Hevert Proxy Group	8.88%	10.39%	11.91%

Two-stage DCF Reconciliation

Q. Have you modified Mr. Peterson's two-stage DCF analysis based on the observations noted earlier?

A. Yes I have. As demonstrated in Table 7 (below) and QGC Exhibit 3.12R, starting with Mr. Peterson's DPU Exhibit 2.10, and the case presenting the low end of his recommended range of results, my first step was to modify his two-stage DCF model such that the terminal dividend and terminal value fall at the end of the fifth year, rather than the middle of the sixth year. This step changes the operation of the model to reflect the calculation as he specifies in his Direct Testimony.[89] This change increased his mean result by 15 basis points from 8.65 percent to 8.80 percent.

I then updated all market data, including prices, dividends, and earnings estimates to April 18, 2008. For prices, I utilized the average of the previous 30 trading days. For dividends, I used the annualized value of the most recently announced dividend. For earnings estimates, I utilized the figures contained in my single stage DCF model, (*i.e.*, an average of the most recent Value Line projections and

[89] *See* Direct Testimony of Charles E. Peterson, at 26.

Zacks consensus estimates as of April 18). Simply updating this data increased the mean result by 68 basis points to 9.48 percent.

Next, based on my prior discussion of the appropriate long-term growth projection, I revised the long-term growth estimate to equal 6.00 percent. This represents the approximate midpoint of the two estimates for long-term growth presented in this case by Mr. Peterson and me. This modification raised the mean result by 44 basis points to 9.92 percent. At this step, the calculation which previously produced the low end of Mr. Peterson's recommended range of ROEs actually produces a result exceeding the high end of his recommended range.

Finally, by utilizing earnings growth projections as the short-term growth measure, the two-stage DCF mean result increases an additional 50 basis points to 10.42 percent, which is consistent with the figures produced by my single stage DCF model.

Table 7: Reconciliation of Mr. Peterson's Two-Stage DCF Analysis

	Mean DCF Result
As Filed:	8.65%
Step 1: Correct calculation to reflect description in testimony	8.80%
Step 2: Update market data	9.48%
Step 3: Incorporate long-term growth rate of 6.00 percent	9.92%
Step 4: Incorporate short-term growth of only earnings growth estimates	10.42%

Q. Please summarize your conclusions with respect to Mr. Peterson's analysis and recommended return on equity for Questar Gas.

A. Mr. Peterson's range of results is from 8.65 percent to 9.75 percent. From this range, Mr. Peterson recommends a return on equity of 9.25 percent for Questar Gas, somewhat above the midpoint of that range. As shown in Tables 6 and 7 above, regardless of the models that are relied upon and the differences between proxy groups, once Mr. Peterson's analysis is adjusted for current market conditions and appropriate growth rates, the low end of his range increases by

approximately 150 basis points, (from 8.65 percent to approximately 10.40 percent). Finally, as shown in Table 6, Mr. Peterson's adjusted range of results of 8.88 percent to 11.91 percent overlaps my recommended range of 10.25 percent to 11.25 percent.

IV. RESPONSE TO DIRECT TESTIMONY OF DR. WOOLRIDGE

Q. Please provide a summary of Dr. Woolridge's testimony and recommendations.

A. Dr. Woolridge recommends an ROE of 9.00 percent, assuming that the Commission does not make permanent the Conservation Enabling Tariff. Dr. Woolridge arrives at his recommendations relying primarily on a DCF analysis of the proxy group companies used in my Direct Testimony, and suggests that his DCF results are supported by his CAPM analysis using the same group of companies. In that regard, Dr. Woolridge devotes a considerable amount of his testimony to discussing his views with respect to the equity risk premium which, he asserts, supports his low recommendation.

Q. Does Dr. Woolridge offer any other support for his recommendation?

A. Yes. In addition to his views on the equity risk premium and the relationship between the appropriate ROE and interest rates, Dr. Woolridge also suggests that his DCF results appropriately account for a "bias" that he asserts is contained in analysts' growth rates,[90] and that his recommendation is reasonable in light of the the "2003 tax law."[91] In addition, Dr. Woolridge suggests that since utilities' market-to-book ratios have consistently been greater than 1.0, utilities in general have earned returns in excess of required returns.[92] Finally, Dr. Woolridge asserts

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[90] *See* Direct Testimony of Dr. J. Randall Woolridge, at 61-67. As discussed later herein, notwithstanding his assertion that analysts bias their growth rates upward, Dr. Woolridge has provided no evidence that the proxy group companies suffer from such bias, nor is he aware of any enforcement action against analysts covering the proxy group companies. *See* also Committee Response to QGC Data Request 1.03.

[91] Ibid., at 8-9.

[92] Ibid., at 12-14.

that the cost of capital for utilities has declined over the last six months and that the ROE granted in this proceeding should reflect this change.

Areas of Agreement

Q. Please summarize the key areas in which you and Dr. Woolridge are in agreement.

A. There are several important aspects of our respective analyses in which Dr. Woolridge and I appear to be in agreement. Those areas, which otherwise would significantly expand the scope of contestable issues in this proceeding, include the following:

Proxy Group Composition: Dr. Woolridge has adopted a proxy group of nine gas utility companies for the purposes of establishing the Company's ROE very similar to my original proxy group, albeit that he includes WGL. As noted earlier, while still at the very low end of the range of results, my updated DCF results for WGL are within a reasonable range of the other (CAPM and Risk Premium) results. Consequently, I have included WGL in my Revised Proxy Group.

Primary Reliance on the DCF Approach: Dr. Woolridge and I both rely primarily on the DCF approach to estimate the required equity return. In addition, Dr. Woolridge and I further agree that risk premium approaches are appropriate methodologies to consider in support of our respective DCF results.

Application of the DCF Approach: There are several important aspects of the application of the DCF approach in which Dr. Woolridge and I are in agreement, including:

- *Calculation of the current dividend yield:* Even though Dr. Woolridge and I use different averaging periods, we agree that it is appropriate to use an averaging convention that encompasses sufficient data such that anomalous events do not bias the analytical results in either direction. While our averaging conventions are based on somewhat different time periods, our analytical results are not materially affected by that difference.

- *Calculation of the expected dividend yield:* Both Dr. Woolridge and I increase our current dividend yields by one-half of our expected growth rates in order to calculate the expected dividend yield component of the DCF model.
- *Use of earnings projections as a measure of long-term growth:* Notwithstanding that Dr. Woolridge and I disagree as to the relevance of other growth measures, we do agree that analysts' earnings growth projections are appropriate measures of expected long-term growth for the purposes of the DCF model.

Application of the CAPM approach: As with the DCF approach, there are certain important aspects of our respective applications of the CAPM approach on which Dr. Woolridge and I agree, including the use of Value Line Beta coefficients as a measure of systematic risk, and the use of long-term Treasury yields as the relevant measure of the "risk-free rate component." In general, Dr. Woolridge and I agree that risk premium approaches such as the CAPM provide a relevant check on the reasonableness of DCF results, although we disagree as to the level of the equity risk premium to be used in the CAPM.

Capital Market Conditions: In general, Dr. Woolridge and I agree that interest rates on U.S. Government Treasury securities continue to be at relatively low levels when viewed in the context of a longer-term historical period. Moreover, Dr. Woolridge and I agree that it is useful to consider the relationship between equity cost rates and long-term interest rates when assessing the reasonableness of ROE recommendations. In my view, however, the currently low Treasury yield environment is not likely to be sustained, and as such, it is reasonable to reflect consensus projections of Treasury yields in determining the Company's ROE.

Remaining Areas of Disagreement

Q. What are the remaining areas of disagreement between you and Dr. Woolridge?

A. As noted below, there remain several areas in which Dr. Woolridge and I disagree. In general, those areas include:

1. The growth rate projections used in our DCF models;
2. The level and calculation of the equity risk premium, both as a component of the CAPM and as a general benchmark of equity cost rates;
3. The implications, if any, of the historical level of the proxy group market-to-book ratio for the purposes of establishing the Company's ROE;
4. The implications of the 2003 dividend tax cut for determining the appropriate ROE in this proceeding;
5. The relevance and applicability of the size premium in determining the Company's ROE;
6. The business risks faced by the Company, and the implication of those risks for the Company's ROE;
7. The continued implementation of the CET and its effect on the Company's ROE; and
8. The relative level of capital costs experienced by utilities over the last six months.

(1) Discounted Cash Flow Model Growth Rate Projections

Q. Please summarize the differences between you and Dr. Woolridge in the choice of growth rates in your DCF models.

A. Dr. Woolridge and I disagree in three general areas, including: (1) the use of historical growth rates in establishing the projected growth component of the DCF model; (2) the use of dividend growth rates; and (3) the application of the "sustainable growth" model.

Q. What measures of historical growth did Dr. Woolridge use in his DCF model?

A. As noted in Exhibit_(JRW-6), Dr. Woolridge considered ten and five-year average historical growth rates for earnings, dividends, and book value in arriving at his growth rate estimate. It should be noted that Dr. Woolridge also used projected growth rates for all three of those metrics.

Q. Did Dr. Woolridge comment on the use of historical growth rates in his testimony?

A. Yes. Dr. Woolridge noted that while historical growth data is available to investors, such data should be used with discretion, since "[i]n some cases, past growth may not reflect future growth potential."[93] Moreover, Dr. Woolridge agrees that analysts take historical growth into consideration when developing their growth rate projections.[94] In addition, as noted earlier, Carleton and Vander Weide found that analysts' earnings growth projections were superior historical growth measures in explaining changes in valuation ratios.[95] Since it is likely that analysts' expectations already take into consideration relevant historical data, and in light of the Carleton and Vander Weide findings, it is my view that historical growth rates should not be given weight in the selection of growth rates for the purposes of the DCF model. As such, I have continued to exclude historical growth rates in arriving at my growth rate projections.

Q. Please explain your concern with using projected dividend growth rates in the DCF model.

A. For several reasons, I disagree with the use of projected dividend growth rates as the basis for the DCF growth rate. First, as noted in my response to Mr. Peterson, earnings are the fundamental driver of a company's ability to pay dividends.

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93 It also should be noted that Dr. Woolridge's website, Valuepro.net, likewise focuses on expected, as opposed to historical growth in valuing common stock. As noted therein, "The Growth Rate is the most important influence on valuation for most stocks. In our DCF approach in our general screen, the growth rate impacts revenues and earnings in the same magnitude. As a proxy for growth, we use analyst estimates for EPS growth over the intermediate term—5 to 10 years, if it's available." *See* www.valuepro.net.

94 *See* Committee Response to QGC Data Request 1.02.

95 In an article focused on utility cost of capital, Brigham, Shome and Vinson noted that "…evidence in the current literature indicates that (i) analysts' forecasts are superior to forecasts based solely on time series data, and (ii) investors do rely on analysts' forecasts." Similarly, in a review of literature regarding the extent to which analyst forecasts are reflected in stock prices, Harris noted: "…Vander Weide and Carleton recently compare consensus financial analyst forecasts of earnings growth to 41 different historical growth measures. They conclude that: "there is overwhelming evidence that the consensus analysts' forecast of future growth is superior to historically-oriented growth measures in predicting the firm's stock price…consistent with the hypothesis that investors use analysts' forecasts, rather than historically-oriented growth calculations, in making stock buy and sell decisions." *See*, T*he Risk Premium Approach to Estimating a Utility's Cost of Equity*, Financial Management, Spring, 1985.

Since the DCF model assumes cash flows in perpetuity, and it also assumes that the dividend payout ratio will remain constant, earnings, rather than dividends, are the appropriate measure of growth.[96] Moreover, as noted in my response to Mr. Peterson, Value Line is the only service noted in Dr. Woolridge's testimony that provides dividend growth projections. The fact that services such as Zacks, First Call, and Reuters provide earnings projections but not dividend projections is evidence that investors are more concerned with earnings growth than growth in dividends. As discussed in my response to Mr. Peterson, that was precisely the finding from my analysis of the relationship between changes in the comparison companies' stock prices, and changes in earnings, interest rates and dividends; changes in dividends had no statistically significant relationship to change in stock prices. Further, a company's dividend policy may not necessarily reflect its expected earnings growth.

Q. Do you agree with Dr. Woolridge's assessment of the sustainable growth rate that is included in your DCF analysis?

A. No, I do not. The difference between my sustainable growth rate and the Book Value Per Share growth rate reported by Value Line is easily reconciled. As I discuss in my Direct Testimony, the "br + sv" form of the Retention Growth estimate used in my DCF analysis reflects growth from both internally generated funds (*i.e.*, the "br" term) and from issuances of equity (*i.e.*, the "sv" term). The first term is the product of the retention ratio (*i.e.*, "b"), or the portion of net income not paid in dividends) and the expected return on equity (*i.e.*, "r") represents the portion of net income that is "plowed back" into the Company as a means of funding growth. The "sv" term reflects an element of growth as the product of (a) the growth in shares outstanding and (b) that portion of the market-

[96] Again, the notion that the intrinsic value of common stock is a function of sales, cash flows and operating margin growth (as opposed to dividend growth) is consistent with the methodology explained in Dr. Woolridge's website, www.valuepro.net.

to-book ratio that exceeds unity. This methodology is recognized as a common approach to calculating the sustainable growth rate.[97]

In order to understand the differences between my calculation and the Value Line growth rate, it is important to understand how Value Line calculates book value per share and growth rates. Value Line describes its calculation of book value per share as follows:

> Book Value Per Share—net worth (including intangible assets), less preferred stock at liquidating or redemption value, divided by common shares outstanding.[98]

Value Line then calculates growth rates based on a three-year average:[99]

> In an attempt to eliminate short-term fluctuations that may distort results, Value Line uses a three-year base period and a three-year ending period when calculating growth rates.

Value Line provides the following example to illustrate this calculation.

> To calculate the compound annual sales growth from 2001-2003 (the latest years for which reported actual financial results were available when our Johnson & Johnson report on page 21 went to press) to 2007-2009, we take sales per share for each of the years 2001, 2002, and 2003 and average them. Then we take the sales per share for the years 2007-2009, as shown in the far right column of the large statistical section of our report.[100]

Consequently, there are two main differences between my calculation of the retention growth rate and the Value Line book value projected growth rate. First, Value Line does not consider the "sv" portion of the retention growth rate (*i.e.*, the effect of the growth in shares and the portion of the market-to book ratio that exceeds unity). Second, Value Line's growth rate is taken based on a three-year average of the base period and the projected period.

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97 *See* Roger Morin, New Regulatory Finance, at 306.

98 How to Invest In Common Stocks, Value Line, at 31.

99 Value Line notes the following: "Investors often try to calculate a growth rate from one starting year to one ending year, and then can't understand why the number they get is not the same as the one published by Value Line. If they used a three-year base period and three-year ending period, they would get the same results we do."

100 Ibid., at 14.

Q. Does Dr. Woolridge have any concerns with Value Line projected earnings growth rates?

A. Yes. First, Dr. Woolridge claims Value Line earnings growth rate estimates are in his view, "inflated and unrealistic."[101] It is important to note, however, that academic research has shown a strong relationship between Value Line forecasts and stock price performance.[102] Moreover, in my experience, Value Line earnings projections are frequently used in regulatory proceedings for the purpose of establishing the growth component of the DCF model.

As a practical matter, the analysis upon which Dr. Woolridge bases his position relies upon a universe of companies that are not representative of the Company or even his own proxy group. Using the data provided by Dr. Woolridge in the Committee's Response to Questar Gas Company's Data Request 1.04, when only the Value Line Natural Gas Utility group is considered, Value Line has under-estimated the three to five-year average growth in earnings by over 60.00 percent. Although in two out of twelve cases, Value Line did not predict negative earnings growth over the three to five-year projection period, Value Line also under-estimated the growth in four of the cases by over 200.00 percent. Consequently, I do not think it is reasonable to characterize the Value Line earnings growth estimates for the comparison companies as "inflated and unrealistic."

Q. Please summarize Dr. Woolridge's concerns regarding the use of consensus earnings growth rate projections.

A. Dr. Woolridge claims that EPS forecasts are "overly optimistic and biased upwards."[103] To support this position, Dr. Woolridge compares the actual three-to-five-year EPS growth rates and forecasted EPS growth rates for all the

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101 *See* Direct Testimony of Dr. J. Randall Woolridge, at 67.

102 *See*, for example, Christofi, Christofi, Lori and Moliver, *Evaluating Common Stocks Using Value Line's Projected Cash Flows and Implied Growth Rate*, Journal of Investing (Spring 1999); and Harris and Marston, *Estimating Shareholder Risk Premia Using Analysts Growth Forecasts*, Financial Management (Summer 1992).

103 *See* Direct Testimony of Dr. J. Randall Woolridge, at 62.

companies covered by I/B/E/S.[104] His results indicate that on average, for all industries covered by I/B/E/S, there is an upward bias in projected growth estimates. Dr. Woolridge then concludes that the forecast error experienced across all industries covered by I/B/E/S is similar to the forecast error experienced for the natural gas distribution business and in particular, the proxy group relied upon in this proceeding.

Q. Do you agree with Dr. Woolridge's assertion in that regard?

A. No I do not. First, since historical growth rates are considered by analysts in developing projected growth rates, projected growth rates include some consideration of historical growth. Second, while Dr. Woolridge suggests that "EPS forecasts of securities analysts are overly optimistic and biased upwards,"[105] he has analyzed a sample group of companies that may not be at all similar to the natural gas distribution companies that are included in his proxy group. In fact, as discussed above, the results of an analysis of the natural gas distribution companies covered by Value Line suggests just the opposite, *i.e.*, that Value Line's projected growth rates under-estimated the actual growth experienced by those companies.

In order to assess whether there is in fact a systematic bias in consensus analysts' earnings forecasts for the comparison companies used by the various ROE witnesses in this proceeding, I examined the extent to which the consensus forecast earnings either under- or over-estimated quarterly earnings in 2007. Using data provided by Zacks Investment Research (the source of consensus earnings forecasts used in my DCF model), I found that for the natural gas distribution companies for which Zacks reports "Earnings Surprises,"[106] the median quarterly difference between actual and projected earnings was 2.19

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[104] Institutional Brokerage Estimate Service (I/B/E/S).
[105] Ibid., at 61.
[106] Since the universe of natural gas distribution companies covered by Value Line is a small sample, I included all 12 of the Value Line companies in this analysis. *See* QGC Exhibit 3.13R.

percent.[107] That is, actual earnings were 2.19 percent higher than projected earnings. Over the course of the year (*i.e.*, the sum of the quarterly earnings), actual earnings were 8.31 percent higher than projected earnings. Interestingly, analysts were slightly more likely to under-estimate than over-estimate earnings (7 of the 12 analysts under-estimated earnings).

Consequently, Dr. Woolridge's assertion that consensus analysts' forecasts are biased does not extend to the companies used by the ROE witnesses in this proceeding. In fact, rather than being "overly optimistic," the most recent data suggests that if anything, analysts covering the comparison companies are somewhat conservative.

Q. Do you have any further observations regarding the growth rates used in Dr. Woolridge's DCF analysis?

A. Yes. First, it is interesting to note that in his "Building Blocks" approach to developing the equity risk premium, Dr. Woolridge has established an expected long-run nominal growth rate of 6.00 percent.[108] In the context of the Three-Stage DCF Model also discussed by Dr. Woolridge, it is not uncommon for analysts to use an estimate of long-term economic growth as a proxy for the long-term growth of the firm.[109] Given Dr. Woolridge's estimated dividend yield of 3.90 percent, the expected DCF result would be approximately 10.02 percent.[110] While that result is still very low, it is over 100 basis points above Dr. Woolridge's recommended 9.00 percent ROE.

Moreover, as discussed in my response to Mr. Peterson, it is not unreasonable to assume that the rate of nominal growth for natural gas utilities will be greater than

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[107] I relied on the median results since the average results, which are considerably higher, are largely driven by the earnings surprise for WGL.

[108] *See* Direct Testimony of Dr. J. Randall Woolridge, at 42-47. 6.00 percent equals the sum of the Expected Inflation amount of 3.10 percent and the Real Earnings Growth Rate of 2.90 percent. The "building blocks" approach and its implications for a reasonable CAPM result is discussed in more detail in the following section.

[109] *See* Direct Testimony of Dr. J. Randall Woolridge, at 21-23.

[110] *See* Exhibit JRW-6, at 1 of 5. 10.02 percent includes the one-half year convention for calculating the expected dividend yield.

the rate of growth in nominal GDP. Thus Dr. Woolridge's single stage DCF long-term growth estimate of 5.00 percent is well below his "Building Blocks" long-term growth rate of 6.00 percent, let alone the implied long-term growth rate based on utility infrastructure costs (which, as discussed in my response to Mr. Peterson, is approximately 7.00 percent).

Q. How do these growth rate projections compare to the Company's growth projections?

A. As discussed in my Direct Testimony, according to the Company's capital expenditure plan, net utility plant will grow by approximately 14.00 percent over the next year and is likely to persist at a high rate into the future due to the feeder lines replacement program currently being initiated. (*See* QGC Exhibit 3.10) All else remaining equal, the Company's earnings and cash flows could be expected to grow at the same rate, reflecting a long-term growth rate well in excess of the proxy group average. While I recognize that it is unlikely that such a growth rate would persist in perpetuity, it is my view that the proxy group average growth rate of approximately 6.08 percent to 6.13 percent[111] is more representative of the Company's long-term prospects than is Dr. Woolridge's 5.00 percent growth rate.

(2) Capital Asset Pricing Model and the Equity Risk Premium

Q. What is the key difference between your application of the CAPM and that of Dr. Woolridge?

A. The difference between our CAPM results is largely the result of our respective estimates of the market risk premium (*i.e.*, the 7.10 percent estimate used in my model as opposed to Dr. Wooldridge's estimate of 4.51 percent). As discussed below, Dr. Woolridge's estimate reflects his 3.84 percent estimate together with

[111] The range is based on the Hevert Original Proxy and Revised Proxy Groups. As noted earlier, Value Line is the only service used in Dr. Woolridge's or my analysis that provides forecasts of book value and dividend growth rates. Since Value Line is not a consensus service, the updated DCF results presented later herein have been reported both including and excluding book value growth.

the results of various academic studies and surveys.[112] My estimate, which is derived from Morningstar data, is based upon the surplus of historical average returns on equity over the historical average income return on long-term Treasury securities. That approach, which is common among academics and practitioners, stems from the idea that historical experience proves a useful reference point for estimating the unobservable *ex ante* market risk premium. Because we cannot observe the consensus expected return on equities, it is not unreasonable to assume that the historical average premium will prevail over the long run. As discussed in my response to Mr. Peterson, the long-term arithmetic average is the appropriate measure of the market risk premium.

Moreover, it is not clear that academics and market practitioners universally agree that the equity risk premium has declined to the level assumed by Dr. Woodridge. For example, Dr. Woolridge refers to the Welch Survey of Academic and Investment Professionals ("Welch Survey") which found, in part, that the long-term arithmetic mean risk premium in 2008 was 5.37 percent (arithmetic mean). The Welch Survey also noted that in 1998 the mean equity risk premium (arithmetic) was 7.10 percent (which is equal to the Morningstar risk premium used in my CAPM analysis).[113] Further, inasmuch as the Welch article was based on a survey and knowing that surveys may well place undue bias on recent events, it is not surprising that the 2008 result reported by Dr. Woolridge was lower than the 1998 result of 7.10 percent; beginning in mid 2007 the economy entered into a severe credit crisis with implications for equity valuations in all economic sectors.

Dr. Woolridge also refers to a study by Dimson, Marsh and Staunton ("DM&S"). Interestingly, in a separate article DM&S reported a 5.60 percent geometric return

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[112] *See* Exhibit JRW-7.

[113] In one sense, this result is not surprising. Speaking to the results of the 1998 survey by Welch, Dimson, Marsh and Staunton ("DM&S", *see* below) noted that "Most respondents to the Welch survey would have regarded the Ibbotson Associates yearbook as the definitive study of the historical U.S. equity risk premium." DM&S further went on to note that many of the users of those estimates included "investors, finance professionals, corporate executives, regulators, lawyers and consultants." *See* DM&S, at 11.

for the U.S., and a 7.50 percent arithmetic average.[114] In either case, those results are materially different than Dr. Woolridge's 4.51 percent estimate. In that regard, there are other well-articulated arguments that the market risk premium is substantially higher than Dr. Wooldridge's estimate. For example, George Constantinides, 2001 president of the American Finance Association, states:

> The average premium of the arithmetic rate of return of the S&P Composite Index over the risk-free rate, measured over the last 130 years, is almost 7 percent. If the equity premium is a stationary process, then the average premium is an unbiased estimate of the unconditional mean equity premium.[115]

Q. Please describe Dr. Woolridge's "building blocks" approach to calculating the equity risk premium.

A. As part of his estimation of the equity risk premium, Dr. Woolridge calculates an expected market return of 8.20 percent based on an approach that defines expected returns as the sum of expected inflation, the market dividend yield, and the expected real earnings growth rate.[116] Based on Dr. Woolridge's risk-free rate estimate, that approach produces an equity risk premium of 3.84 percent. Using Dr. Woolridge's expected risk-free rate of 4.36 percent and his average Beta of 0.86, his "Building Blocks" approach produces the extraordinarily and unreasonably low CAPM result of approximately 7.66 percent (4.36 percent +(0.86 x 3.84 percent)), a mere 94 basis points above the Company's long-term debt cost rate of 6.72 percent.[117] As noted earlier, over the past three years the average difference between authorized returns and the yield on A-rated utility debt has been approximately 440 basis points.

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[114] E.Dimson, P.R.Marsh, M.Stanton, *Global Evidence of the Equity Risk Premium*, Journal of Applied Corporate Finance, Vol.15, No.4 (2003).
[115] Constantinides, George M., *Rational Asset Prices*, Journal of Finance, Vol. 57, No. 4, August 2002.
[116] *See* Direct Testimony of Dr. J. Randall Woolridge, at 42-43.
[117] QGC Exhibit 5.21U/Actual Debt, at 3.

Q. Please comment on Dr. Woolridge's reliance on the Ibbotson and Chen study.

A. The Ibboston and Chen study appears to be the basis of Dr. Woolridge's "Building Blocks" approach. As discussed below, there are several concerns with that approach. First, as Ibbotson and Chen noted, their approach is one of several that often are used to estimate the market risk premium. As noted earlier, the market risk premium, generally defined, represents the difference between the annual return on the broad stock market and the return on a riskless asset. In this case, the authors used historical data (in fact, Ibbotson and Chen relied upon the same source I used) to develop the long-term average market return, "decomposed" that return into several components, and forecasted the risk premium "through supply-side models using historical data."[118]

The authors developed several supply-side models, including one model that arrives at a 3.97 percent geometric average risk premium, referred to as the "Forward-Looking Earnings" model.[119] That model estimates long-run market returns as a function of income (dividend) returns, reinvestment returns, and the growth in Price/Earnings multiples.[120] Ibbotson and Chen then calculate the geometric average risk premium using their supply-side model of equity returns and their expected nominal risk free rate. I have replicated the Ibbotson and Chen calculations in QGC Exhibit 3.14R.

Q. Are the Ibbotson and Chen study results dependent on specific assumptions made by the authors?

A. Yes. As shown in QGC Exhibit 3.14R, incremental changes to the assumptions underlying the risk premium have a significant effect on the model's results. In calculating their long-run market returns, for example, the authors assumed that there would be no future growth in Price/Earnings ratios. That is, the authors

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[118] Roger G. Ibbotson and Peng Chen, *Long-Run Stock Returns: Participating in the Real Economy*, Financial Analysts Journal, January/February 2003, at 89.
[119] Ibid., at 94.
[120] Ibid., at 90.

assumed that the then-current P/E ratio was the best measure of the future P/E ratio, even though the market P/E grew at an average annual rate (compounded) of approximately 1.25 percent over the period used in their study. Simply including the historical growth in the P/E ratio increases the Market Risk Premium estimate from a 3.96 percent geometric estimate (5.90 percent arithmetic average) to 7.15 percent (arithmetic average). That result is quite consistent with the 7.10 percent risk premium used in my CAPM analysis.[121]

Even excluding growth in P/E ratios, substituting the Blue Chip Economic Indicators projections for long-term interest rates, inflation, and earnings growth produces an arithmetic average risk premium of 6.87 percent (see QGC Exhibit 3.14R). Again, that result is consistent with my CAPM analyses.

Q. Did you consider the impacts of updates to the Ibbotson and Chen study?

A. Yes. Knowing that the Ibbotson and Chen study was published in 2003, I found that Morningstar updated Ibbotson and Chen's "Forward Looking Earnings" model in its 2008 Valuation Yearbook.[122] Many of the parameters of the model changed slightly, including the P/E growth estimate, which Morningstar now estimates to be 0.67 percent. Updating all of the data in the Ibbotson and Chen model produces an arithmetic average return of 6.96 percent. The 2008 Valuation Yearbook confirms this, noting "…Ibbotson and Chen have found the long-term supply of equity risk premium to be only slightly lower than the straight historical estimate." Importantly the 2008 Yearbook specifically converts the geometric equity risk premium into an arithmetic average for use in forecasting.[123]

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[121] As noted in Ibbotson and Chen, given the geometric mean, the arithmetic average can be estimated as: $R_A = R_B + \frac{\sigma^2}{2}$. *See* Roger G. Ibbotson and Peng Chen, *Long-Run Stock Returns: Participating in the Real Economy*, Financial Analysts Journal, January/February 2003, at 96.

[122] Morningstar acquired Ibbotson & Associates in 2006. Ibbotson and Associates was founded by Professor Roger Ibbotson, the co-author of the Ibbotson and Chen article.

[123] *See*, Stocks, Bonds, Bills, and Inflation, 2008 Yearbook, Valuation Edition, at 97.

Q. Please comment on Dr. Woolridge's 4.51 percent market risk premium in the context of observed, historical data.

A. As discussed in my response to Mr. Peterson, it is instructive to review a histogram of market risk premium averages for periods of at least 30 to 50 years. As shown on Charts 2 and 3, based on an averaging period of at least 30 years, there was only one observation of approximately 4.50 percent. For averaging periods of 50 years or more, there were none.

Q. Is that historical context important?

A. Yes, I believe it is. In effect, Dr. Woolridge's *ex-ante* risk premium assumes that there is virtually no probability that future economic conditions will be similar to those that have occurred in the past. To that point, as noted earlier The Wall Street Journal recently compared current market conditions to those experienced during the 1930's.[124] In my view, it is extraordinarily difficult to predict with any degree of confidence that future economic conditions will bear virtually no resemblance to those that have occurred in the past. Consequently, I have maintained my use of the long-term arithmetic average market risk premium.

Q. Please comment on Dr. Woolridge's use of geometric means in calculating the equity risk premium.

A. As I noted in my Direct Testimony, the important distinction between the two methods (*i.e.,* arithmetic and geometric averaging) is that the arithmetic mean assumes that each periodic return is an independent observation and, therefore, incorporates uncertainty into the calculation of the long-term average. The geometric mean, by contrast, is a backward-looking calculation that essentially equates a beginning value to an ending value over a specific period of time. As such, it is not uncommon for researchers to use the arithmetic mean when

[124] Similarly, in an interview with Peter Bernstein, author of several books regarding investments, the Wall Street Journal noted Mr. Bernstein's observation that current market conditions are "worse than he has seen since the Depression…" The Wall Street Journal, *One Guy Who Has Seen It All Doesn't Like What He Sees Now,* April 26, 2008.

estimating the risk premium over historical periods. For example, Fama and French, in a work cited by Dr. Woolridge, use the arithmetic average to depict average market return over various historical time periods. Further, the 2007 Yearbook describes the use of arithmetic averaging as follows:

> For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.[125]

Thus Dr. Woolridge's position regarding the use of geometric means is not held universally by either academics or practitioners.[126]

In essence, the geometric mean is useful when comparing performance over a historical time period. In those cases, the analysis is backward-looking and the results are known with certainty. In my view, the geometric mean is not relevant for forward-looking analyses in which it is important to reflect uncertainty. Since the arithmetic mean reflects uncertainty, the arithmetic mean is the appropriate measure of the long-term market risk premium.

Q. What conclusions do you draw about Dr. Woolridge's discussion of the equity risk premium?

A. Dr. Woolridge asserts that the prospective equity risk premium is 62.00 percent of the long-term observed historical equity risk premium, despite the fact that Ibbotson and Chen have found near parity in historical and prospective equity risk premia. He bases this on a selection of literature regarding the calculation of the

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[125] Ibid., at 77.

[126] Moreover, Dr. Woolridge's aversion to the use of the stock indices to depict historical stock returns (at 72) is not universally held. Fama and French (2002) state that "The average return on a broad portfolio of stocks is typically used to estimate the expected market return." (at 637) The authors then proceed to use the S&P 500 to represent the market, and refer to this index as "a common proxy for the market portfolio." (at 637).

market risk premium, and his building blocks approach, which, by itself, produces such a low result as to be unreasonable.

It is also interesting to note, that in a 2007 study, Zhiyi Song, CFA, published an annoted bibliography of equity risk premium studies, which far surpasses in number the studies cited by Dr. Woolridge.[127] While Dr. Woolridge does not claim to conduct an exhaustive survey of studies related to market risk premium, he does omit a large number when compared to Zhiyi Song's review of the literature. In my view, the mere breadth of the articles written on this topic is telling. Given the lack of consensus as to the means of measuring or estimating the market risk premium, it is my view that the use of observed, frequently used historical data is the appropriate methodology.

(3) Implications of the Market-To-Book Ratio

Q. Please summarize Dr. Woolridge's observations regarding the relationship between the market-to-book ratio and authorized equity returns.

A. Dr. Woolridge suggests that a market-to-book ratio in excess of unity indicates that the subject company is earning a return "above its cost of equity."[128] Dr. Woolridge further claims that when actual returns equal required returns, the market and book value of the company's securities must be equal.[129]

Q. Do you agree with Dr. Woolridge on that point?

A. No, I do not. I have several concerns with Dr. Woolridge's position. Chart 7 (below), for example, shows the market-to-book ratio for companies in my Revised Proxy Group for the period January 1, 2000 through April 18, 2008. Over that time period, the group average (represented by the dotted line), never falls below 1.0, and averages 1.81. During this period, the proxy group companies received several rate awards, yet the average market-to-book ratio has

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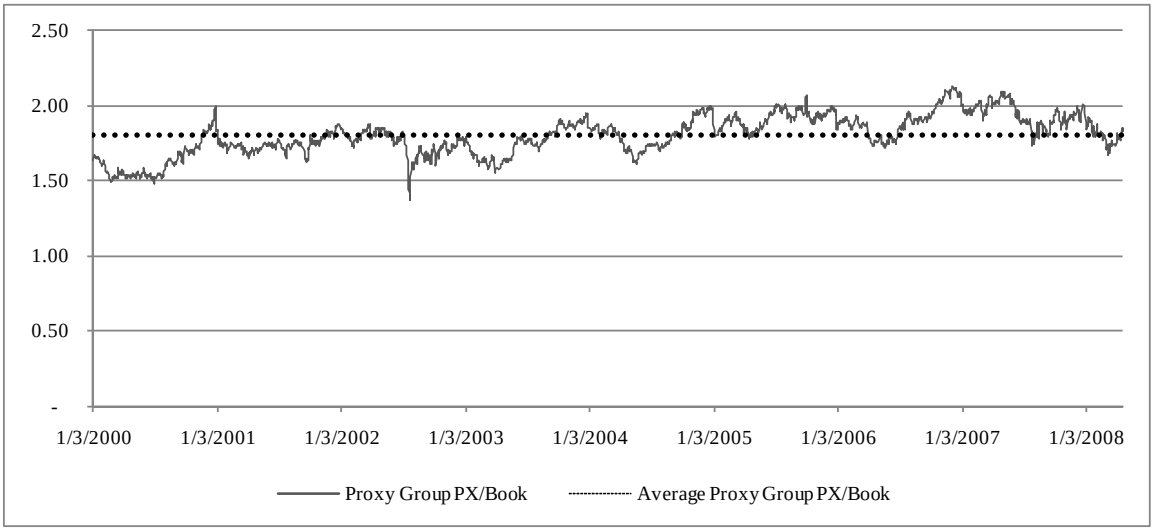
[127] *The Equity Risk Premium: An Annotated Bibliography*, Zhiyi Song, CFA, The Research Foundation of the CFA Institute, 2007

[128] *See* Direct Testimony of Dr. J. Randall Woolridge, at 14.

[129] Ibid.

not approached unity. Consequently, it appears that state regulatory commissions have not subscribed to Dr. Woolridge's view that such companies are, in fact, earning returns in excess of their required returns and that authorized returns should force the market-to-book ratio to unity.

Chart 7: Proxy Group Average Market-to-Book Ratio



In that regard, the notion that book values should be set at unity by regulatory commissions has been refuted for many years. As noted by Stewart Meyers in 1972:

> In short, a straightforward application of the cost of capital to a book value rate base does not automatically imply that the market and book values will be equal. This is an obvious but important point. If straightforward approaches did imply equality of market and book values, then there would be no need to estimate the cost of capital. It would suffice to lower (raise) allowed earnings whenever markets were above (below) book.[130]

As a practical matter, no rational investor would invest in utility stocks if they believed that utility commissions would set rates in an effort to move the market-to-book ratio to unity. If, for example, an investor purchased a utility stock at long-term average market-to-book ratio of 1.81 (*i.e.*, the proxy group average),

[130] Stewart C. Meyers, *The Application of Finance Theory to Public Utility Rate Cases*, The Bell Journal of Economics and Management Science, Vol. 2, No. 1 (Spring, 1972) at 76.

that investor would incur a loss of nearly 45.00 percent once the ratio reached unity. Such a result would certainly impede a utility's ability to attract the capital required to support its operations in direct contravention of the *Hope* and *Bluefield* standards.

Morin provides an extensive review of the issue of market-to-book reversion to unity and makes the following summation:

> In short, economic principles do not support the notion that the market value of utility shares should necessarily equal book value. A basic economic principle holds that, in the long run, market value should equal asset replacement cost in a given industry. In the presence of inflation and absent significant technological advances, replacement cost exceeds the original cost book value of assets. Consequently it is quite reasonable for the market value of utility shares to exceed their book value and there is no reason to conclude that market value should equal book value when one recognizes that regulation is intended to emulate competition.[131]

Finally, if one were to accept Dr. Woolridge's position that the market-to-book ratio should be set at unity, we would have to consider analysts' projections of earned returns on book equity. In that regard, the Value Line projected ROE estimates used by Dr. Woolridge in developing his "internal growth rate" estimate indicate an average ROE of 11.80[132] percent, a full 280 basis points above Dr. Woolridge's recommended 9.00 percent ROE.

(4) Implications of the 2003 Dividend Tax Cut

Q. Please summarize Dr. Woolridge's assessment regarding the effect of the 2003 "dividend tax cut" on the cost of equity.

A. Dr. Woolridge believes that the dividend tax cut provides further support for his low ROE recommendation. In support of that position, Dr. Woolridge asserts that

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[131] *See*, New Regulatory Finance, Roger A. Morin PhD, Public Utility Reports, 2006, at 376 - 378.
[132] *See* Exhibit JRW-6.

the dividend tax cut could reduce the corporate cost of equity by as much as 100 basis points.[133]

Q. Do you agree with Dr. Woolridge on that point?

A. No, I do not. As a preliminary matter, it is not clear that the market has responded as Dr. Woolridge suggests. The Division of Research & Statistics and Monetary Affairs of the Federal Reserve Board conducted a study in 2005 to examine, among other things, whether the Jobs and Growth Tax Reconciliation Act of 2003 (the "2003 Act") increased stock prices and lowered the cost of capital for businesses.[134] The analysis tested the hypothesis that the tax cut contained in the 2003 Act "boosted U.S. equity prices."[135] In summarizing their conclusions, the authors reported that they "fail[ed] to find much, if any imprint of the dividend tax cut news on the value of the aggregate stock market."[136] Similarly, in an article in the Financial Analysts Journal, Peter Bernstein described the response by both companies and investors to the tax law change to have been "minimal." Mr. Bernstein further noted that "the extraordinary revision in the tax structure has been a non-event in the markets."[137]

Further, because this act was signed into law five years ago, the effect of the 2003 Act, if any, would already be reflected in current stock prices. Importantly, any such effect presumably already would be reflected in the last five years of authorized ROEs, which I have shown to be significantly higher than Dr. Woolridge's recommendation.

Moreover, Dr. Woolridge has implicitly assumed that all of the proxy group companies' equity investors are subject to income tax; he has ignored the fact that non-taxable institutional investors, such as pension funds, are also significant

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133 *See* Direct Testimony of Dr. J. Randall Woolridge, at 9.
134 Division of Research & Statistics and Monetary Affairs, Federal Reserve Board, *How Did the 2003 Tax Cut Affect Stock Prices and Corporate Payout Policy*, December 12, 2005.
135 Id., at 1.
136 Id., at 2.
137 Peter L. Bernstein, *Dividends and the Frozen Orange Juice Syndrome*, Financial Analysts Journal, 2005, CFA Institute.

investors in utility stocks. Even if one were to consider only stocks held by individuals, studies have indicated that approximately 40.00 percent of common stock held by households is held in retirement accounts (*i.e.*, 401-(k) plans and IRAs). That distinction is important to this analysis because capital gains and dividends on stocks held in such accounts are not subject to current taxation.[138] As researchers at the Federal Reserve Board noted:

> …given the preponderance of tax-free investors, and the institutional investors that book dividends as ordinary income, the "marginal investor" might have benefited very little from the tax cut.[139]

Looking at the stock ownership of my revised proxy group reveals that as of the end of 2007, on average 63.00[140] percent was owned or controlled by institutional investors, including pension funds, endowments, mutual funds, and investment advisors. These shareholder characteristics and the circumstances surrounding the tax cut expiration may, in fact, explain the finding (noted above) that the dividend tax cut has been a "non-event."

Finally, while the DCF model assumes long-term cash flows, the 2003 Act is due to expire in 2010, and there is no certainty that the tax cut will be extended after that time. Assuming that any effect of the tax cut already is reflected in stock prices, the only incremental event would be the expiration or repeal of the 2003 Act, which would have the inverse effect of increasing the cost of capital.

(5) Size Premium

Q. Please comment on Dr. Woolridge's critique of your size premium analysis.

A. Dr. Woolridge disputes that the size premium applies to utilities for two reasons. First, he claims that the use of historical market risk premia biases the size premium calculation. Second, Dr. Woolridge discounts the applicability of the

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[138] *See* Center on Budget Policy and Priorities, *Capital Gains and Dividend Tax Cuts: Data Make Clear that High-Income Households Benefit the Most*, January 30, 2006.

[139] Division of Research & Statistics and Monetary Affairs, Federal Reserve Board, *How Did the 2003 Tax Cut Affect Stock Prices and Corporate Payout Policy*, December 12, 2005, at 3.

[140] www.nasdaq.com.

Morningstar size premia utilized in my Direct Testimony, by noting that the Betas for each of the size deciles is greater than those of the proxy group. Dr. Woolridge concludes that since the Betas of the companies relied upon in the study are larger than the Betas experienced by utility companies, the size premia presented in the study are not associated with the utility industry. Dr. Woolridge attempts to bolster his view by citing a 1993 article which purports to show that the size premium concept does not apply to utilities.[141]

Q. Do you agree with Dr. Woolridge's observations?

A. No I do not. In response to his first point regarding the use of historical market risk, as I have discussed previously, the use of historical measures of market risk premia is widely accepted in the financial and academic communities. In response to his second point, Dr. Woolridge has provided no support for his assertion that size premia should be based on Beta.

Finally, while Dr. Woolridge cites an article written in 1993 by Professor Annie Wong as support for his assertion that utilities are not subject to the size premium effect, other studies have come to the opposite conclusion. A 2002 study by T. M. Zepp specifically rebuts the arguments made by Professor Wong.[142] Rather than the issue being settled, as Dr. Woolridge seems to indicate, Zepp explains that size premia do exist in direct contravention of both the informational reasons cited in the Wong study, as well as empirical evidence. As I noted in my Direct Testimony, a second study published in 1995 by Ibbotson (now Morningstar) comes to the same conclusion.[143]

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[141] *See* Direct Testimony of Dr. J. Randall Woolridge at 83.

[142] *Utility stocks and the size effect-revisited*, T.M. Zepp, The Quarterly Review of Economics and Finance, August 29, 2002.

[143] *Equity and the Small Stock Effect*, Michael Annin, Public Utilities Fortnightly, October 15, 1995, at 42-43.

Q. What is your conclusion regarding the application of a small size premium in this case?

A. There appears to be no dispute that small size presents an additional element of risk for which investors should be compensated. The applicability of the risk premium to utilities and the measurement of that risk, however, are in dispute. Since Questar Gas is not a publicly traded entity, such analyses necessarily must be based on proxy companies and other market estimates. Contrary to Dr. Woolridge's characterization of the measurement and applicability of size premium calculations to the utility industry on the whole and the Company in particular, as discussed above and in my Direct Testimony, there is clear market evidence in support of a size premium for Questar Gas. Nonetheless, as noted earlier, my revised recommendation is not dependent on acceptance of the size premium.

(6) Business Risks

Q. In your opinion has Dr. Woolridge addressed the issue of business risk, exclusive of Questar Gas' small size, in his ROE estimate?

A. No, Dr. Woolridge does not appear to have given any consideration to the incremental risk associated with Questar Gas' operations relative to the proxy group in his determination of a reasonable ROE. While rejecting the company's small size risk, he has not considered such risks as Questar Gas' aggressive capital expenditure program, or the risks to the Company's reliability and performance, as described by Mr. Reed, should efficiency gains become incrementally more difficult to achieve.

Q. Has Dr. Woolridge acknowledged the risks associated with the Company's capital expenditure ("CAPEX") plan and the associated effects on the Company's ROE?

A. Dr. Woolridge has not acknowledged the presence of any sort of business risk in the Company's operations. As I mentioned in my Direct Testimony, Questar Gas plans to invest $200 million over the next five years as part of a feeder line replacement program. As clearly demonstrated in my Direct Testimony and

Exhibits, the relative level of capital expenditures is both a statistically significant determinant of market to book value, *and* a higher percentage for Questar Gas than the proxy group. This analysis continues to support a ROE at the high end of my range.[144]

(7) Effect of the CET on the Company's ROE

Q. Does Dr. Woolridge make any modifications to his recommended ROE to account for the Company's CET?

A. No he does not. Dr. Woolridge does state, however, that "[i]f the CET is adopted as a permanent decoupling mechanism by the Commission, I recommend that QGC's equity cost rate be reduced to recognize the reduction in business risk of the company." Dr. Woolridge does not offer suggestions as to the amount of such a reduction, but suggests the Commission utilize "… guidance provided by the actions of other regulatory commissions."[145] To this end, he cites cases in Vermont and Maryland.

Q. Do you agree with Dr. Woolridge's assertion that the Company's required ROE would decline if the CET were to be made permanent?

A. No I do not. Dr. Woolridge has failed to demonstrate how the Company's business risks relative to the proxy group would decline should the CET be made permanent. On the contrary, as I demonstrated in my Direct Testimony, (1) the majority of the companies in the proxy group already have some form of revenue decoupling, and therefore any relative risk is already reflected in the ROE results produced in the analyses; (2) in any case, investors do not perceive less business risk in companies that implement decoupling mechanisms;[146] and (3) decoupling

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144 Direct Testimony of Robert B. Hevert, at 41-42 and QGC Exhibits 3.9-3.10.

145 *See* Direct Testimony of Dr. J. Randall Woolridge, at 56.

146 Division witness, Dr. William Powell comes to the same conclusion when he states "…in general I believe Mr. Hevert's analysis of how investors react to the implementation of RSMs is sound. The conclusion to be drawn from his analysis is that there is no eveidence to support the assumption that investors lower their required expeted returns when a utility is allowed to use a RSM." (*See* Direct Testimony of William Powell, PhD, at 8).

mechanisms have become an expected part of natural gas utility tariff structures in the eyes of the credit rating agencies.[147] Dr. Powell's empirical studies confirmed my conclusions in that regard.

Further, Dr. Woolridge asks the Commission to rely on the determinations of the regulatory authorities in Vermont and Maryland in three specific electric utility cases, without demonstrating why these three cases are comparable to the instant case.[148] For example, in the Vermont case cited by Dr. Woolridge, Green Mountain Power proposed an alternative regulatory plan that would allow the utility to recover power costs through a quarterly adjustment clause. One intervening party opposed the alternative regulation plan because they were concerned that it did not include a decoupling mechanism that would give Green Mountain Power the incentive necessary to encourage the least-cost provision of energy. The Commission approved the alternative regulation proposal, noting that it shifted risk from the utility to the ratepayer, and agreed that a reduction in the authorized ROE was appropriate. However, the reduced ROE was driven by the power cost adjustment clause, not by revenue decoupling as indicated by Dr. Woolridge.

(8) Capital Market Conditions

Q. Does Dr. Woolridge rationalize recommended ROE at the low end of the range of recent ROE awards by reference to the currently low level of long-term interest rates?

A. Yes he does. Dr. Woolridge claims that "…capital costs have declined significantly over the past six months due to the decline in interest rates and that

[147] Direct Testimony of Robert B. Hevert, at 45-53, and QGC Exhibits 3.12 – 3.13.

[148] In direct contradiction, Dr. Woolridge claims that I improperly rely on outcomes from other jurisdictions in the formation of my recommended ROE. *See* Direct Testimony of Dr. J. Randall Woolridge, at 86.

such lower "capital costs are not reflected in decisions made by...regulatory commissions, but they rightly should be addressed now."[149]

Q. Do you agree with Dr. Woolridge's characterization of utility capital costs?

A. No, I do not. Dr. Woolridge's claim is based on his assertion that since Treasury yields have declined, so have the capital costs of regulated utilities. However, as I demonstrated in my response to Mr. Peterson, while U.S. Government Treasury rates have indeed declined, the spread between Treasuries and long-term utility bonds, as well as the absolute yield on long-term utility bonds, have dramatically increased. This is evident in the recent long-term debt issuance by Questar Gas, which priced at 7.20 percent,[150] despite the Company's original projection that it would price at 6.50 percent. As discussed in my response to Mr. Peterson, it is important for the Company's internally generated cash flow (*i.e.*, the "FFO") to adequately cover interest expenses. To the degree that credit spreads have increased more than long-term rates have decreased, the corporate interest rate will increase putting incremental pressure on FFO coverage ratios.

Moreover, as demonstrated previously, there is significant uncertainty in the equity markets regarding volatility and liquidity. Implied market volatility (as measured by the VIX) and corporate credit spreads have increased since the beginning of 2008, indicating *increasing*, not decreasing, capital costs for regulated utilities. Finally, as noted in my Risk Premium analysis, changes in the equity risk premium are inversely related to changes in interest rates. Even if credit spreads were stable (which they are not), declines in long-term Treasury yields do not translate into equivalent decreases in the cost of equity.

Q. Please summarize your position with respect to Dr. Woolridge's recommended return on equity.

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[149] *See* Direct Testimony of Dr. J. Randall Woolridge, at 86.
[150] QGC Exhibit 5.21U2, at 3.

A. First, Dr. Woolridge's ROE recommendation is below any authorized return seen in the market at least since 2005. While he justifies his low return based on the currently low level of long-term interest rates, Dr. Woolridge does not give any consideration to either the current state of capital markets or the implications of his recommendation for the Company's financial integrity. As to the first point, Dr. Woolridge fails to acknowledge, for example, that while long-term Treasury rates have decreased, the actual cost of borrowing for utilities such as Questar Gas has increased due to widening credit spreads. The reason, of course is that lenders have become more risk-averse and capital has become less available even to credit-worthy borrowers such as Questar Gas. Consequently, Dr. Woolridge's failure to consider the credit implications of his recommendation is especially significant in the current capital market environment.

From a methodological perspective, Dr. Woolridge's reliance on historical growth rates and his use of projected dividend growth rates creates a substantial downward bias in his DCF results. As discussed earlier, there is no basis for Dr. Woolridge to assume that the analysts' earnings growth estimates used in my DCF analysis suffer from a systematic bias. With respect to his CAPM analysis, Dr. Woolridge's *ex-ante* market risk premium cannot be justified based on historical experience. As a consequence, his CAPM results are unreasonably low.

V. RESPONSE TO DIRECT TESTIMONY OF DR. POWELL

Q. Please summarize Dr. Powell's recommendation regarding Questar Gas' cost of equity in this proceeding.

A. While Dr. Powell does not offer a specific recommendation regarding the appropriate cost of equity for Questar Gas in this proceeding, he suggests that Mr. Peterson's recommendation of a 9.25 percent return on equity is "fair and reasonable."[151] Dr. Powell's testimony largely focuses on the implementation of the Conservation Enabling Tariff and any effect that the implementation of such a

[151] *See* Direct Testimony of William Powell, PhD, at 4.

mechanism may have on the proposed return on equity. In his Direct Testimony, Dr. Powell finds no empirical basis[152] to substantiate a reduction in the Company's cost of capital due to the implementation of the CET.

Dr. Powell also conducts a review and critique of my analysis of the effect of decoupling on the perceived value of the proxy group companies and concludes that my analysis is sound.[153] Dr. Powell correctly points out that since the proxy group companies have RSMs similar to the CET, any adjustment to the return on equity would be captured in the range of return results established using the market data for the proxy group companies. In that regard, Dr. Powell acknowledges that Mr. Peterson's proxy group includes such companies and therefore captures any appropriate adjustments in his range of results. Dr. Powell concludes that "there does not appear to be an empirical justification for reducing Questar Gas' cost of capital due to the implementation of the CET pilot."[154] Despite this very definitive conclusion, Dr. Powell then suggests, based in part on testimony that I filed in another proceeding over one year ago, that a reduction "in the range of 10 to 25 basis points may be partially supportable."[155]

Areas of Agreement

Q. Please summarize the key issues on which you and Dr. Powell agree.

A. While our final recommendations for the appropriate return on equity and the effect of decoupling on that return differ substantially, there are several key issues on which Dr. Powell and I agree, including:

Hope and *Bluefield* Standard: Dr. Powell and I agree that the *Hope* and *Bluefield* decisions have established the standard by which the Commission ought to

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[152] Dr. Powell also presents a quantitative analysis of the effect of decoupling on the proxy group companies' financial risk measure, as calculated by Value Line, but determines that the results of this analysis are not significant.

[153] As discussed in my Direct Testimony at 51 and later in this Rebuttal Testimony, the event study referenced concluded that there was no change in the proxy group companies' price to earnings ratios resulting from the implementation of a decoupling mechanism.

[154] *See* Direct Testimony of William Powell, PhD, at 16.

[155] Ibid., at 19.

establish the return on equity for Questar Gas. Specifically, as noted by Dr. Powell, the Bluefield decision states:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties.[156]

Furthermore, Dr. Powell notes that the Hope decision states:

> …By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.

Finally, Dr. Powell notes that the Supreme Court expressed the need for the utility to "(1) maintain its financial integrity, and (2) attract the capital necessary to serve the public."

Use of an event study to test for the effect of decoupling on stock valuation: In my Direct Testimony I present an event study that examines the performance of the proxy group companies' price to book ratios pre- and post-decoupling. This study was conducted to determine if there was any effect on stock valuation that could be attributed to the implementation of decoupling. While Dr. Powell and I may disagree as to the time period for the event study,[157] Dr. Powell generally agrees that my "analysis of how investors react to the implementation of RSMs is sound."[158]

Implementation of the Conservation Enabling Tariff should not result in a reduction in the Cost of Equity. As discussed previously, Dr. Powell reviewed and generally agrees with the event study upon which I rely to determine the effect of decoupling on the risk perceived by investors. In addition, Dr. Powell

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[156] Ibid., at 5.

[157] The event study discussed in my Direct Testimony examines a period of 90 days before and after the announcement of the decoupling mechanism. Dr. Powell suggests that the window around such an event study could be 5 to 30 days, however he ultimately accepts my methodology as being "sound."

[158] *See* Direct Testimony of William Powell, PhD, at 8.

also agrees with the conclusions that I draw from that analysis in my Direct Testimony. Dr. Powell states that "[t]he conclusion to be drawn from his analysis is that there is no evidence to support the assumption that investors lower their required expected returns when a utility is allowed to use a RSM."[159]

The effect of decoupling should be captured in the range of results established using a proxy group. While neither Dr. Powell nor I found any evidence that there should be an adjustment to the return on equity to account for the effect of decoupling on Questar Gas, Dr. Powell and I agree that to the extent that the companies that have been included in the proxy group have some form of RSM, the range of return on equity results generated using this group will reflect the effect, if any, of decoupling mechanisms on the cost of equity.

Q. Has Dr. Powell performed any analyses to quantify the effect of decoupling on a company's return on equity?

A. Yes. Dr. Powell states that in order to justify an adjustment to the Company's cost of equity because of decoupling it is necessary to (1) demonstrate that the cost of equity for the utility is less with a decoupling mechanism than without that mechanism and (2) quantify the magnitude of this difference. While he suggests that my analysis should have been conducted over a longer period of time, Dr. Powell acknowledges that my event study addresses his first point, which concludes that there is no difference between the valuation, and therefore return requirements of investors prior to and post decoupling.

In order to estimate any difference in return requirements, Dr. Powell develops four regression equations that are specified to explain the cost of capital using Value Line's Financial Risk Measure as well as dummy variables for the existence of a RSM and the level of revenue stabilization.

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[159] Ibid.

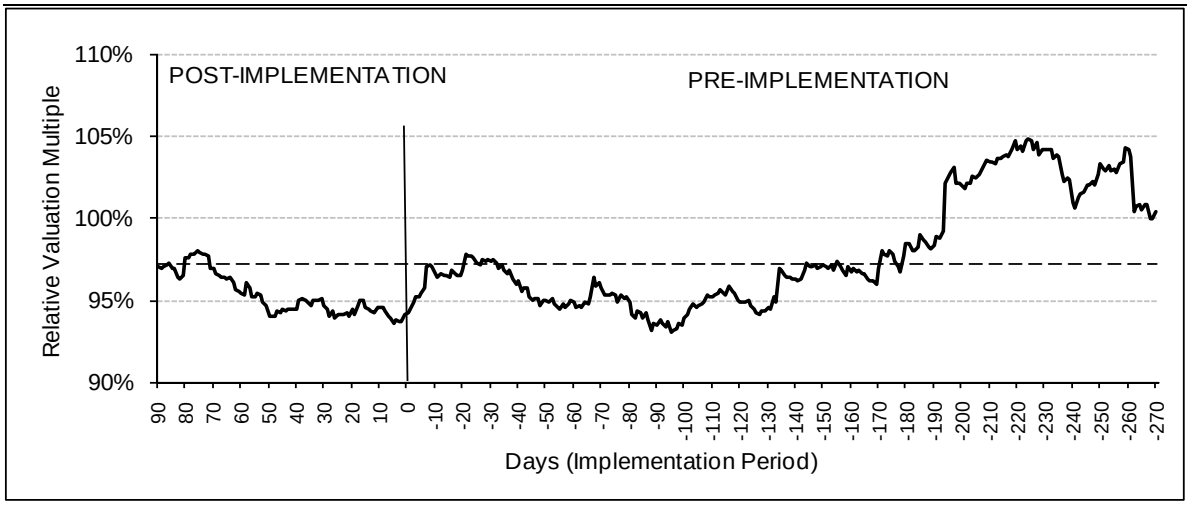
Q. What were the results of that analysis?

A. As Dr. Powell acknowledges, in two of the four regression equations the coefficients on all explanatory variables were insignificant. The results generated using the other two equations, suggesting that an adjustment of -220 basis points to 117 basis points were all equally valid, is without meaning. Therefore, Dr. Powell correctly concluded that this analysis did not produce any empirical justification for reducing Questar Gas' cost of capital due to the implementation of the CET.

Q. Have you considered a longer time period for your analysis of the effect of decoupling on a company's valuation?

A. Yes. Dr. Powell correctly notes that the regulatory process between the time that a decoupling mechanism is proposed and the time that it is implemented is longer than the 90-day period that I considered in my pre-event study period. In light of that valid point, I updated my analysis of the effect of a decoupling analysis on the Company's valuation. In that updated analysis I considered a total study period of 360 days which was comprised of 270 days (approximately nine months) prior to the implementation date and 90 days following the implementation date. The change in the study time period reflects Dr. Powell's concern that the concept of a decoupling mechanism was known for an extended period prior to implementation. I believe that 90 days continues to be a reasonable post-implementation period. The results of this analysis, presented in QGC Exhibit 3.15R and in Chart 8 (below) are consistent with the analysis presented in my Direct Testimony. There is essentially no change in the market value of the company following the implementation of a decoupling mechanism.

Chart 8: Market Valuation Pre and Post Implementation of Decoupling Mechanism



Areas of Disagreement

Q. What are the remaining areas of disagreement between you and Dr. Powell?

A. The key area of disagreement between Dr. Powell and me is the relevance of my recommendation in a prior proceeding to Questar Gas' cost of equity.

Q. If there is no empirical justification, as Dr. Powell concludes, please explain how he arrives at his recommended range of 10 to 25 basis points by which Questar Gas' return could potentially be adjusted.

A. Dr. Powell sets the low end of his range based on *one* Illinois Commerce Commission decision, wherein the Commission reduces the authorized return for both People's Gas and North Shore Gas by 10 basis points due to the implementation of a Volumetric Balancing Account (VBA) Rider.[160]

[160] While Dr. Powell considers the 10 basis point adjustment in this proceeding a directly applicable adjustment, he has arbitrarily chosen to ignore the returns authorized by the Illinois Commerce Commission for Peoples Gas and North Shore Gas, which are 104 and 84 basis points above the 9.25 percent return recommended by Mr Peterson that Dr. Powell has characterized as "fair and reasonable".

Q. Do you agree with Dr. Powell that the 10 basis point adjustment imposed by the Illinois Commerce Commission for the Peoples and North Shore Gas VBA should represent the lower end of the range for Questar Gas?

A. No. I do not believe that there should be any adjustment to the Company's authorized return on equity if the Company's proposed CET pilot program is made permanent. As I have demonstrated in my Direct Testimony, and as Dr. Powell has stated in his Direct Testimony, there is no empirical data to suggest that the proxy group companies have experienced any change in valuation resulting from the implementation of such structures.

Q. Do you agree with Dr. Powell that 25 basis points should be the high end of the range for such an adjustment?

A. No. Dr. Powell bases this recommendation at least in part on my testimony in a 2007 proceeding in Arkansas. First, it is important to note that my testimony in the CenterPoint case that was referenced by Dr. Powell is consistent with long-standing regulatory precedent in that my analysis of the relative risk focuses on the company's risk as compared to the proxy group. Furthermore, while there was an adjustment mechanism discussed at that time, my Rebuttal Testimony in that case noted that each of the proxy group companies in that case had implemented some form of RSM. As such, the RSM requested by CenterPoint in that proceeding did not make CenterPoint less risky than the proxy group companies, but rather made CenterPoint more comparable to the group. Finally, my conclusions with respect to the empirical data were consistent with my position, and for that matter Dr. Powell's position in this proceeding; there is no empirical evidence that suggests that an adjustment to the return on equity is necessary due to the implementation of a decoupling mechanism.

Importantly, since my Direct Testimony was filed in January 2007 in that proceeding, there has been significant momentum towards the implementation of RSMs. At least eleven states have implemented revenue decoupling mechanisms

and several other jurisdictions have proposals pending review since that time.[161] Furthermore, analysts have come to expect that regulatory agencies will approve revenue stabilizing rate treatment for natural gas utilities. In fact, nearly *two years ago*, Moody's noted that revenue decoupling was a key rate treatment to maintain utility credit ratings:

> LDCs that have, or soon expect to have, RD stand a better chance than others in being able to maintain their credit ratings or stabilize their credit outlook in the face of adversity. This difference between those companies that have RD and those that do not will tend to be further accentuated as the credit demarcation reflected through rating actions becomes more evident.[162]

Furthermore, of the 35 companies reviewed by Moody's in its more recent review of weather normalization mechanisms, 40.00 percent of these companies had some form of revenue decoupling while many more had fixed components in rate design, which also serves to mitigate volatility in revenue.[163]

Therefore, my position with respect to the effect of decoupling on the return on equity remains unchanged. There is no evidence to support any reduction in the return on equity for the implementation of a decoupling mechanism.

Q. Are there differences in the decoupling mechanism proposed by Questar Gas and the mechanism that was proposed by CenterPoint in Arkansas?

A. Yes. Unlike the CET that has been implemented on a trial basis by Questar Gas, the decoupling mechanism proposed by CenterPoint in its Arkansas proceeding provided asymmetrical risk protection for the Company. Questar Gas' CET mechanism, which applies only to the GS1 and GSS customer classes, provides the Company with the ability to recover an allowed level of distribution non-gas revenue. Questar Gas' CET includes a balancing provision whereby over and under-collections are reconciled in subsequent years up to a cap of 0.50 percent of

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[161] FitchRatings, *U.S. Utilities Power and Gas 2008 Outlook*, at 13.
[162] Moody's Investor Services, Special comment, *Local Gas Distribution Companies: Update on Revenue Decoupling and Implications on Credit Ratings*, June 2006, at 7.
[163] Moody's Investor Services, Special comment, *Local Gas Distribution Companies: Update on Weather Normalization Adjustments and their Impact on Credit Ratings*, June 2007, at 7.

the total Utah jurisdictional GS-1 and GSS revenues based on the most recent 12-month period. Therefore, the Company retains the risk of under-recoveries that exceed the 0.50 percent threshold as well as the risk of under-recovery for the remaining rate classes.

The decoupling mechanism proposed by CenterPoint uses fixed charges to recover the revenue requirement. In addition, the annual balancing and adjustment of projected to actual revenue collection is considerably different. Under the decoupling proposal submitted by CenterPoint, rather than establishing a balancing account and reconciling projected to actual revenue collection by rate class, the CenterPoint adjustment mechanism allows the Company to meet its total revenue requirement by netting out over- and under-collections across the rate classes. Therefore, under CenterPoint's proposed reconciliation process, any revenue surplus collected from any rate classification was proposed to be netted out against any revenue shortfall that may have existed in any other rate classification. Therefore, CenterPoint would be assured full recovery of its allowed revenue requirement before customers in any rate class would receive a refund of over-collected revenue. Such a mechanism, if implemented, would provide considerably different revenue stabilization than has been proposed by Questar Gas.

Q. Do you agree with Dr. Powell's conclusions regarding effect of decoupling on the Company's return on equity?

A. I agree with Dr. Powell that there is no empirical analysis that supports any reduction to the Company's return on equity and therefore I do not propose any adjustment to my recommended return on equity. Furthermore, I disagree with Dr. Powell that the three examples he presents as adjustments provide any evidence to suggest that a 10 to 25 basis point adjustment to the Company's return on equity may be "partially supportable."

VI. RESPONSE TO DIRECT TESTIMONY OF MR. MCKENNA

Q. Please summarize Mr. McKenna's recommendation regarding Questar Gas' cost of equity in this proceeding.

A. Mr. McKenna does not offer a specific recommendation regarding the appropriate cost of equity for Questar Gas in this proceeding. Rather, Mr. McKenna compares the cost of creating revenue stability for Questar Gas through the use of a revenue decoupling mechanism and derivative financial instruments. Mr. McKenna relies on the Company's projected net operating income with and without the CET as the cost of the revenue stabilization plan. Mr. McKenna then develops the cost of a financial instrument using a theoretical "real options" approach to estimating the cost of derivatives that would provide a financial hedge that eliminates the volume risk. Mr. McKenna concludes that the cost of financial instruments and the cost of implementing the CET should theoretically be equal, and asserts that the cost of doing so is approximately 37 basis points.[164] As discussed below, however, Mr. McKenna's analysis provides no insight as to the effect of the CET on the Company's cost of equity.

Q. Please summarize your concerns with Mr. McKenna's analysis.

A. I have several concerns with Mr. McKenna's analysis: (1) his methodology gives no consideration to the "comparable risk" standards embodied in *Hope* and *Bluefield*; (2) his analytical results and conclusions cannot be corroborated using market-based data; (3) given the Company's obligation to serve, there is no "real option" associated with declining use per customer; (4) despite using a measure of the risk-free rate in his analysis, Mr. McKenna does not calculate risk-neutral outcomes; and (5) in essence, Mr. McKenna's analysis represents the present value of the net operating income loss due to the average decline in use per customer over the past 25 years. Each of these issues is addressed below.

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[164] *See* Direct Testimony of Robert H. McKenna, at 10.

Mr. McKenna fails to consider the "Comparable Risk" standard. As Mr. McKenna points out, his analysis is focused solely on the declining use per customer for Questar Gas, which he calculates to be 1.61 percent (annually) over the past 25 years.[165] Mr. McKenna provides no analysis to determine whether any of the other proxy group companies likewise have experienced declining use per customer, nor does he examine whether any of those companies have implemented rate design structures to mitigate the effect of that decline. As Mr. Peterson, Dr. Woolridge, Dr. Powell and I agree, the comparable risk standard of *Hope* and *Bluefield* is a central consideration in developing cost of equity estimates for utility companies. Mr. McKenna's analysis, however, is done in isolation, without respect to whether or not comparable companies have experienced similar conditions or whether those companies have implemented rate structures to address declining use. To the extent that the comparable companies have implemented mechanisms to address such revenue stabilization issues, the cost of equity inferred from market data concerning those companies will reflect the market's consideration of the costs and benefits associated with such structures.

As noted earlier, Dr. Powell and I both performed analyses based on market data that includes comparable companies. The results of those analyses clearly demonstrated that there is no empirical basis to conclude that the cost of equity has decreased as a result of implementation of such structures. Mr. McKenna's analysis, therefore, fails to consider whether revenue stabilization structures are reflected in current market data.

Mr. McKenna's results cannot be corroborated using market-based data. As Mr. McKenna correctly points out, "[v]aluing options can be very complex, especially when, as in this case, the options are based on underlying assets that are not publicly traded assets that have a long recorded history of pricing behavior

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[165] Ibid., at 3.

(volatility) and a known current price."[166] Nonetheless, Mr. McKenna develops an analysis for which he provides no corroborating methodology or supporting market-based data. In contrast, while we may disagree as to the application of the various approaches, Mr. Peterson, Dr. Woolridge, and I all use multiple methodologies with the intent of corroborating our primary (*i.e.*, DCF) results. The simple fact that Mr. McKenna cannot provide such supporting analyses indicates the tenuous nature of his approach and recommendation.

Given the Company's obligation to serve, there is no "real option" associated with declining use per customer. As discussed in the text provided by Mr. McKenna in response to a discovery request, real options arise from contingent decisions, *i.e.*, decisions that depend on uncertain outcomes.[167] Under the real options approach, companies can make investment decisions contingent upon information received during the analytical period. One consequence of such an approach is the ability to truncate the potential downside outcome at zero, since managers presumably have the option not to pursue initiatives that, based on new information, are likely to be unprofitable.[168] In the case of Questar Gas, however, the Company cannot change its decision to serve customers based on new information regarding further declines in the use per customer. That is, there is no contingent decision to be made and, therefore, no real option to be valued. Instead, the valuation simply defaults to an estimate of the value of a held put option and a written call option, the combination of which is equivalent to holding the asset (*i.e.*, the status quo). As a consequence (as discussed below), Mr. McKenna's analysis mathematically reduces to an estimate of the present value of the reduction in net operating earnings due to the expected (*i.e.*, average) reduction in use per customer.

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166 Ibid., at 6.

167 *See* Responses to Division of Public Utilities' First Set of Discovery Requests to UAE Intervention Group, Response 1.2, at 18.

168 For a discussion of the implementation of real options in practice, s*ee*, Kathleen T. Hevert, *Real Options Primer: A Practical Synthesis of Concepts and Valuation Approaches*, Journal of Applied Corporate Finance, Summer, 2001.

Mr. McKenna fails to calculate risk-neutral outcomes. An underlying assumption of the real options approach is that contingent decisions (options) are less risky because decisions will be made in the future only if favorable outcomes occur and potential losses can be contained. The question becomes, then, what discount rate should be applied? Rather than putting the adjustment in the discount rate, the risk neutrality approach puts the adjustments in the cash flows themselves and discounts those cash flows at the risk-free rate. Since an asset can have only one value at a given point in time, it is relatively easy to solve for the cash flows that, discounted at the risk-free rate equal the same value as if they were discounted at the risk-adjusted rate. Mr. McKenna, however, failed to make such an adjustment. In essence, Mr. McKenna has assumed that the counter-party to the hypothetical option agreements would discount risky cash flows (assuming an 11.25 percent cost of equity) at the risk-free rate of 5.00 percent. As shown on QGC Exhibit 3.16R, however, while that oversight is theoretically significant, the effect on Mr. McKenna's analysis is modest (due to the fact that cash flows are discounted over only one year).

Mr. McKenna's analysis reduces to an estimate of the expected loss based on the average annual use per customer. As Mr. McKenna correctly points out (*see* Exhibit UAE ROE 2.8) the combination of a held put option and a written call option produces an expected payout that is equal to holding the underlying asset itself. In other words, there is no difference in the expected outcome if one were to hold the asset alone or to construct a position consisting of a held put and a written call. That is precisely the outcome of Mr. McKenna's analysis. As shown on QGC Exhibit 3.16R, I have replicated Mr. McKenna's analysis and found that the present value of the net operating income loss based on the 25-year average decline in use per customer (approximately 1.60 percent) is exactly equal to the theoretical costs associated with Mr. McKenna's hypothetical options position.[169]

[169] While I have not been able to precisely replicate Mr. McKenna's analysis, the differences are not material.

The practical import of this finding is very straight-forward. In the final analysis, Mr. McKenna's analysis simply demonstrates that absent the CET, the Company's earned return will be reduced as a result of declining use per customer. The notion that declining use per customer will negatively affect the Company's returns and internally generated cash flows has never been in dispute. Consequently, Mr. McKenna's analysis reveals no new information regarding the effect of the CET on the Company's cost of equity; rather it implies that the Company alone should bear the costs of declining use. That conclusion, of course, is inconsistent with the empirical findings of both Dr. Powell and me.

In essence, Mr. McKenna's approach is premised on the notion of a "real option" that does not exist. As a consequence, his analysis mathematically reduces to a point that has not been contested: the effect of declining use per customer is to erode the Company's Net Operating Income. Therefore, since Mr. McKenna's analysis is simply a proof of the cost of declining use per customer, adjusting the return on equity by an amount equal to the portion of the revenue requirement that the CET is intended to stabilize, eliminates the entire benefit from the CET.

Rather than considering Mr. McKenna's analysis in the context of decoupling, Mr. McKenna's analysis is more appropriately considered in the context of establishing the appropriate usage during the test period. As discussed previously, Mr. McKenna has demonstrated that due to declining use per customer, using a historical test period results in an under-collection of the Company's allowed revenue requirement; a cost that is bourne by shareholders. Therefore, the Commission should consider Mr. McKenna's analysis when considering the effect of the test period on the Company's ability to achieve the return that is authorized in this proceeding.

VII. RESPONSE TO DIRECT TESTIMONY OF MR. HIGGINS

Q. Please summarize Mr. Higgins' recommendation regarding Questar Gas' cost of equity in this proceeding.

A. Mr. Higgins does not present a recommendation of the cost of equity, rather, Mr. Higgins suggests that the Commission should consider Mr. McKenna's analysis

in establishing the appropriate return on equity. Mr. Higgins suggests that based on Mr. McKenna's analysis, the "CET should cause QGC's allowed return to be reduced within the reasonable range."[170]

Q. What is your response to Mr. Higgins?

A. Mr. Higgins does not present additional analysis beyond what is discussed by Mr. McKenna. Therefore, my rebuttal of the analysis that Mr. Higgins has relied upon to support his conclusion has been included in my response to Mr. McKenna.

VIII. SUMMARY OF UPDATED ANALYSES AND CONCLUSIONS

Q. Please summarize the proxy groups that you have considered in your Rebuttal Testimony.

A. Based on the analyses presented in my Rebuttal Testimony, I have considered four separate proxy groups: (1) my Original Proxy; (2) my Original Proxy Group less Atmos and including Laclede and WGL (which I have referred to herein as the "Revised Proxy Group"); (3) Mr. Peterson's proxy group; and (4) Dr. Woolridge's proxy group.

Q. What growth rates have you used in your updated and revised analyses?

A. Consistent with the approach taken in my Direct Testimony, and for the reasons discussed earlier, I have maintained my use of earnings growth estimates from Value Line and Zacks as the relevant measure of growth. In addition, I have presented Constant Growth DCF results both including and excluding the Retention Growth estimate.

Q. What averaging periods have you used in your updated and revised analyses for the purpose of calculating the dividend yield component of the DCF model?

A. Consistent with my Direct Testimony, I have continued to present results for the most recent 30 and 180-trading day periods as of April 18, 2008.

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[170] *See* Direct Testimony of Kevin C. Higgins, at 3.

Q. Please summarize your updated Risk Premium analysis.

A. My Risk Premium analysis includes authorized ROEs as reported by Regulatory Research Associates through March 31, 2008. For the purpose of calculating the expected risk premium and ROE, I have used a variety of average daily yields and projections of the ten-year Treasury note.

Q. Please summarize your analytical results and conclusions.

A. There is little question that the mean Constant Growth DCF results have increased over the recent past. As shown on Table 8, however, looking to the results of the Constant Growth DCF model (based on the 30-day averaging convention and my Original and Revised Proxy Groups), as well as the results of other analytical approaches, including the CAPM and Risk Premium, I believe that a reasonable range of results in this proceeding is from 10.25 percent to 11.25 percent.

Table 8: Summary of Results

CONSTANT GROWTH DCF 30-DAY AVERAGE PRICES (EXCLUDING RETENTION GROWTH)	**MEAN LOW**	**MEAN**	**MEAN HIGH**
Hevert Original Proxy Group	9.77%	10.28%	10.80%
Hevert Revised Proxy Group	9.36%	10.27%	11.19%
Peterson Proxy Group	9.39%	10.28%	11.16%
Woolridge Proxy Group	9.57%	10.19%	10.80%
Average	*9.52%*	*10.25%*	*10.99%*
CONSTANT GROWTH DCF- 180-DAY AVERAGE PRICES (EXCLUDING RETENTION GROWTH)	**MEAN LOW**	**MEAN**	**MEAN HIGH**
Hevert Original Proxy Group	9.53%	10.04%	10.56%
Hevert Revised Proxy Group	9.20%	10.11%	11.02%
Peterson Proxy Group	9.21%	10.10%	10.99%
Woolridge Proxy Group	9.35%	9.97%	10.58%
Average	*9.32%*	*10.06%*	*10.79%*
CAPM			
30-Day Average of 30-Year Treasury (4.49%)			
Hevert Proxy Group	10.46%	10.64%	10.82%
Hevert Revised Proxy Group	10.50%	10.71%	10.92%
Peterson Proxy Group	10.49%	10.68%	10.87%
Woolridge Proxy Group	10.46%	10.64%	10.82%
Average	*10.48%*	*10.67%*	*10.86%*
Projected 30-Year Treasury (4.60%)			
Hevert Proxy Group	10.59%	10.77%	10.95%
Hevert Revised Proxy Group	10.63%	10.84%	11.05%
Peterson Proxy Group	10.61%	10.80%	11.00%
Woolridge Proxy Group	10.58%	10.76%	10.94%
Average	10.60%	10.79%	10.98%
SUPPORTING ANALYSIS			
Risk Premium – Ten-Year Treasury Yield	10.57%	10.74%	10.97%

Q. Were QGC Exhibits 3.1R through 3.16R prepared by you or under your direct supervision?

A. Yes, they were.

Q. Does this conclude your Rebuttal Testimony?

A. Yes, it does.

State of Massachusetts)

) ss.

County of Middlesex County)

I, Robert B. Hevert, 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.

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Robert B. Hevert

SUBSCRIBED AND SWORN TO this ___ day of April, 2008.

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Notary Public