BEFORE THE
PUBLIC SERVICE COMMISSION OF UTAH

Questar Gas Company) Docket No. 02-057-02

PREPARED REBUTTAL TESTIMONY OF J. PETER WILLIAMSON ON BEHALF OF QUESTAR GAS COMPANY

October 3, 2002

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Q. Please state your name and business address.

A. My name is J. Peter Williamson. My business address is 89 Main Street, West Lebanon, New Hampshire 03784, and P.O. Box 5160, Hanover, New Hampshire 03755.

Q. Have you testified previously in this proceeding?

A. Yes. I prepared direct testimony that was filed in May of this year.

Q. What is the purpose of your Rebuttal Testimony in this case?

A. I have been asked to respond to the testimony of Dr. William A Powell, of the Division of Public Utilities of Utah, and to the testimony of Mr. David C. Parcell of the Committee of Consumer Services. I have also updated my direct testimony, since about four months have passed since the filing of that testimony.

SUMMARY

Q. Please summarize your rebuttal testimony.

A. I begin by discussing the capital structure of Questar Gas, reporting that Dr. Powell agrees with me that the appropriate structure for use in this proceeding is 52.61% equity and 47.39% long-term debt. I show that the capital structure proposed by Mr. Parcell, which includes short-term debt, is inappropriate. Mr. Parcell agrees that the capital structure to be used must be the structure that finances the rate base, but then goes on to include short-term debt that does not support rate base. He is quite wrong to do so.

I next discuss the rate of return and begin by describing an update of my direct testimony. Applying the same DCF analysis that I used in my direct testimony,

and using the most recent reports published by IBES and Value Line, I reach an end result of 12.47%, as shown in Exhibit No. QGC-3.8R.

I do not update my CAPM and Risk Premium analyses, except to show that the statistical tests indicate that the beta coefficients required by the CAPM are, if anything, even less significant than they were at the time of my direct testimony. I did not rely on these methodologies in my direct testimony, and do not do so now, including them only in case the Commission wishes to use them despite their lack of reliability.

I then turn to the testimony of Dr. Powell concerning rate of return. I discuss his DCF analyses first. I have no criticism of his reliance on Value Line and Zacks earnings growth forecasts, but his use of Value Line dividend growth forecasts was not appropriate.

I do criticize his method of combining the two earnings growth forecasts in order to reduce his recommendation. Dr. Powell arrived at a final average that is illogical and appears designed to lead to a low-end result. Most of his analyses lead to results that are closer to my end results than to his. I show inconsistencies in his choices between means and medians, where his choice appears to favor low-rates of return. Finally, the method by which he combined the results of his DCF analyses to arrive at a recommended 10.50% for Questar Gas is inconsistent with his own advice.

Next, I discuss Dr. Powell?s CAPM analysis, showing that the lack of statistical significance of the beta coefficients for proxy companies at the present time precludes any reliance on that methodology.

Next, I turn to the testimony of Mr. Parcell. Mr. Parcell made use of three sets of proxy companies, the first of which is simply the complete list of companies classified by the Value Line Investment Survey (Value Line) as the Natural Gas (Distribution) Industry. He applied no other criteria and, consequently, included companies that are simply not comparable to Questar Gas. However, he also made use of my set of companies.

In applying the DCF methodology, Mr. Parcell used retention growth rates as I do, but chose time periods that are inappropriate. In making use of growth rates published by Value Line, rather than showing the results of earnings and dividend growth rates separately, he showed only the results of combining these with book-value growth rates. This made it difficult to identify the meaningless result from the incorporation of dividend growth rates, but I supply in this rebuttal the exhibits that make this showing clear. In the end, the only one of his DCF analyses that merits consideration is that incorporating growth rates published by IBES.

Mr. Parcell?s CAPM analysis, like that of Dr. Powell, suffers from the lack of significance to the beta coefficients. Like Dr. Powell, he had no response to the demonstration of their insignificance in my direct testimony.

Mr. Parcell?s comparable-earnings methodology began with confusion between the rates of return expected by investors on their investments in common stocks, and the rates of return earned on book common equity by the

companies. The capital attraction standard clearly applies to the former, although Mr. Parcell seemed to think it applies to the latter. His comparison of rates of return and market-to-book ratios appeared to confuse the significance of history with that of expectations in leading investors to those ratios. His discussion at this point appeared to imply that regulatory commissions should set rates of return to bring the market-to-book ratios to 100% for regulated utilities. I am not aware of any such regulatory policy.

Capital Structure

Q. You addressed the capital structure for Questar Gas in your direct testimony. What was it?

A. I reported the company?s capital structure as 52.6% equity and 47.4% long-term debt.

Q. What capital structure did Dr. Powell propose?

A. He accepted the company?s calculation: 52.61% equity and 47.39% debt.

Q. What capital structure did Mr. Parcell propose?

A. He proposed on page 3 of his testimony a structure of 47.20% equity, 42.52% long-term debt and 10.28% short-term debt.

Q. Is his recommendation a reasonable one?

A. No, it is not. It is quite incorrect and inconsistent with his own explanation of what is an appropriate capital structure.

Q. Please explain.

A. On page 21 of his direct testimony, Mr. Parcell described the choice of capital structure in these words: ?The rate base - rate of return concept recognizes the assets which are employed in providing utility services and provides for a return on these assets by identifying the liabilities and common equity (and their cost rates) which are used to finance the assets.? He continued on the same page: ?The inherent assumption in this procedure is that the dollar values of the capital structure and the rate base are approximately equal and the former is utilized to finance the latter.?

Q. Do you agree with those principles?

A. Yes.

Q. Do you agree that Mr. Parcell has applied those principles correctly?

A. No. Mr. Parcell made no attempt to show that short-term debt finances any part of the Questar Gas rate base. To begin with, the common equity plus long-term debt alone are approximately equal over time to the rate base and rate-base equivalent. (By ?rate-base equivalent,? I mean the items of current

assets that are not technically rate base but that are accorded equivalent treatment in ratemaking.) The rate-base equivalent varies considerably on a seasonal bases, as does the short-term debt. As is shown in Exhibit QGC 7__ in the testimony of QGC witness David M. Curtis, as of December 31, 2001, the amount of short-term debt supporting rate base or equivalent was $3.93 million, while six months later, on June 30, 2002, it was a negative $19.73 million. (That is, the long-term debt and equity exceeded rate base and equivalent by $19.73 million.). On average, then, the short-term debt support was negative. That is, on average the equity and long-term debt were greater than the rate base and equivalent.

In addition, short-term debt supports construction work in process (CWIP) that is not a part of rate base, and the cost of that short-term debt is incorporated in the CWIP capitalized expense.

Q. Has Mr. Parcell been asked if he had determined the extent to which short-term debt supported the rate base of Questar Gas?

A. Yes. He replied to Questar data request No. CCS1.11 that it is his ?experience that utilities maintain that capital dollars are not traceable in terms of what dollars finance what items of assets and therefore rate base.? His response is clearly inconsistent with his own position on page 21 of his testimony (quoted above) and clearly wrong with respect to Questar Gas.

Q. Mr. Parcell provided comparative statistics for his proxy companies, showing their capital structures including short-term debt. Does your criticism apply to those capital structures as well?

A. Yes. The only relevant capital structures are those that reflect capital that supports rate base, just as Mr. Parcell explained on page 21 of his testimony. He offered no evidence that the short-term debt of his proxy companies does so.

Q. What conclusion do you reach then, with respect to the appropriate capital structure to use for Questar Gas in this proceeding?

A. The appropriate capital structure is the one that and Dr. Powell and I support: 52.6% equity and 47.4% long-term debt.

Cost of Common Equity

Q. Dr. Powell and Mr. Parcell have recommended that the authorized return on equity be established at 10.5% and 10.0%, respectively. Do you agree with those levels?

A. No. they are both substantially below the cost of equity indicated by current application of the discounted cash flow (DCF) analysis for comparable gas distribution companies.

There is no justification to lower the currently authorized 11.0% equity return

when a fair interpretation of a current DCF analysis establishes that the equity cost is at least that high.

Q. Before you address the details of the Powell and Parcel testimony, have you reviewed your original analysis with updated information?

A. Yes. In my direct testimony, I used a DCF methodology, and included a Capital Asset Pricing Model (CAPM) methodology and a risk-premium methodology. I relied on the DCF analysis and provided the other two only in case the Commission might wish to consider them, although I did not have confidence in them at that time. I explained my lack of confidence at pages 18 and 19 of my direct testimony, and my reasoning still stands.

Updated DCF Analysis

Q. Please describe your updated DCF analysis

A. In applying the DCF methodology I made use of a set of nine proxy companies, and I explained the choice of those companies. I am using the same set in my rebuttal. Dr. Powell expressed some reservations about my choice, and I shall discuss those reservations. But he based his analysis on my set, adding a comparison to what the results would have been if I had used the same set used by him in the Docket No. 99-057-20 proceeding.

In determining the dividend yields for the nine companies, in my direct testimony, I averaged the high and low stock prices for the three months January, February and March 2002. I combined these averages with the most recent annual dividend distribution from each company. In this updated analysis I am using the average of the high and low prices for June, July and August 2002, and the current levels of dividend distributions.

In my direct testimony I made use of three different growth rates to represent investor expectations. One was the median growth forecasts reported by IBES, Inc, in its report of 3/14/02. Here I use the forecasts reported on 8/15/02 (the most recent available). I also previously used the earnings growth forecasts reported by Value Line for each of the companies in its report of 3/22/02. Here I make use of the earnings growth forecasts in the report dated 6/21/02 (the most recent available). Finally, in my direct testimony I used the internal growth (retained earnings) method that incorporated the Value Line forecasts of return on equity (ROE), earnings per share and dividends per share, reported on 3/22/02. In my update I take the data from the Value Line Report of 6/21/02.

Q. How do your results from the DCF model in your rebuttal compare to those in your direct testimony?

A. The results in my direct testimony, for the three sources of growth rates, were shown in my Exhibits QGC 3.2, 3.3 and 3.6, and summarized in QGC 3.8. The corresponding exhibits in this testimony are QGC 3.2R, 3.3R, and 3.6R, summarized in QGC 3.8R.

A comparison of Exhibits QGC 3.8 and QGC 3.8R, shows that my end result median equity return for the nine companies for each of the three growth rate sources, averaged over the three, was 12.61% in my direct testimony and is 12.47% using the updated information.

CAPM and Risk Premium Methods

Q. Did you also update your CAPM and Risk Premium analyses?

A. In my direct testimony, Exhibit QGC 3.7, I presented the Value Line and Merrill Lynch beta coefficients, with the significance statistics, R-squared values and t-ratios, for the Merrill Lynch coefficients. It was clear that only the beta coefficient for Questar Corp. had any significance and it was not great. I have updated the table in my Exhibit QGC 3.7R and my conclusion is even stronger. None of the values for R-squared, including that for Questar Corp., show any significance. Two of the beta coefficients (correctly) calculated by Merrill Lynch are actually negative! It is clear that the beta coefficients are little better than random numbers, and a CAPM analysis cannot have any reliability.

Also, I did not rely on the risk-premium methodology in my direct testimony. I noted that it did indicate that my DCF results were conservative.

Response to the Testimony of Dr. Powell

Q. What rate of return on equity did Dr. Powell recommend in this proceeding?

A. He recommended a return of 10.50**%.**

Q. Is his recommendation reasonable?

A. No. It is much too low.

Q. What set of proxy companies did Dr. Powell use?

A. He began by saying, on page 4, line 17 of his prepared testimony: ?I am using the set of utilities proposed by the Company?s witness, Dr. Williamson.? He went on, however, to raise some questions about the choice of those nine companies. He questioned the inclusion of Questar Corp, the parent of Questar Gas, and of National Fuel Gas. I explained in some detail in my direct testimony why I included both. I believe that the inclusion of both companies is supported by the risk statistics that were shown in my Exhibit QGC 3.2 in my direct testimony, and are also shown in Exhibit QGC 3.2R in my rebuttal.

In addition, Dr. Powell questioned my inclusion of Peoples Energy. So far as I can tell this was only because it was not on the list of proxy companies he used in testimony for the Division in Docket No. 99-057-20. He did not appear to question the suitability of Peoples Energy as a proxy company in this case.

Q. What methodologies did Dr. Powell use to determine his rate of return recommendation?

A. He used the DCF and the CAPM methodologies.

Q. Please describe the use made of the DCF model by Dr. Powell.

A. Dr. Powell used essentially the same DCF model as the one I use. His choice of stock prices to average, and dividends to include, led to dividends per share identical to mine, prices generally a little higher than mine in my rebuttal, and to yields (before adjustment for growth) that averaged 18 basis points (0.18%) lower than mine. This difference is not trivial. It reflects different choices of stock prices to average and I do not criticize his choice.

Q. What growth rates did Dr. Powell use in his DCF model, and what values of the rate of return did they lead to?

A. He used Value Line earnings growth forecasts in his Exhibit DPU 6.5, and his growth forecasts were identical to mine. His end result mean was 12.72% compared to my 12.94%, and the difference is essentially attributable to our differences in average stock prices and hence in yields. His end result median was 13.48% compared to my 13.96%, and the difference is attributable to his median company being Peoples Energy while mine is New Jersey Resources. The reason for the shift in the median is, of course, the difference in yields (magnified because the adjusted yields are the raw yields increased to reflect expected growth).

I note, however, that both his mean of 12.72% and his median of 13.48% *exceed* my end results of 12.61% (direct testimony) and 12.47% (rebuttal).

He used Zacks growth rate forecasts as well (an alternative to the IBES-reported forecasts I have used), in his Exhibit DPU 6.6. I find that his average Zacks growth forecast was 7.41% while my average IBES forecast is 6.71%, leading to his mean rate of return of 12.04% versus my11.51% and his median of 12.38% versus mine of 11.82%. He chose the mean rather than the median, but both his mean and median are much closer to my end results than to his own.

He combined the use of Value Line and Zacks earnings growth forecasts in his Exhibit DPU 6.7, and I shall discuss this strategy later to show that it was an inappropriate device that reduced his end result.

He also used Value Line dividend growth forecasts in his Exhibit DPU 6.4. His mean rate of return indicated by these forecasts was only 7.21% and his median was still lower, at 6.09%. I shall discuss his use of dividend growth later in this testimony.

Q. Did Dr. Powell apply any other version of the DCF methodology?

A. Yes. He used a methodology he calls his Terminal Value Model (TVM).

Q. Please describe Dr. Powell?s TVM

A. Dr. Powell introduced the model on page 3 of his testimony and showed his calculations in his Exhibits DPU 6.8 and DPU 6.9. The former exhibit assumes an investor is looking at AGL Resources (to take an example of a proxy company) with a current price of $22.55 per share on July 21, 2002. (Now according to Dr. Powell?s workpapers, this ?current price? appears actually to be the average of the daily closing prices for April 30 through July 19, 2002.) The investor obtains the current ratio of price to earnings (P/E) as of that date from Value Line for Windows, which according to Dr. Powell, was 13.60. This would be consistent with Value Line?s forecast of earnings per share for 2002 for AGL, as of July 21, of $1.65 (22.55/1.65 = 13.67). The investor anticipates selling the stock in 2006 (unfortunately, the methodology will not work for any other time horizon so long as Value Line data are to be relied on).

Value Line predicts that the earnings per share for AGL will be $2.10 in the period 2005-2007, of which the mid-point is the year 2006. So the investor assumes that earnings will be $2.10 in 2006. If the investor assumes that the P/E ratio will remain unchanged at 13.60, it is easy to estimate a stock price for 2006 as 13.60 x $2.10 or $28.56. So the investor assumes that the stock can be sold in 2006 at $28.56 per share.

In the meantime there are dividends to be received. Value Line forecasts dividends of $1.08 for 2002 and $1.16 for 2005-07 which the investor attributes to 2006. The growth rate to turn $1.08 to $1.16 in four years is 1.8% per year. From this rate the investor calculates the dividends in 2003, 2004 and 2005 to be $1.10, $1.12, and $1.14. So the investor considers buying a share for $22.55 in 2002, collecting the four dividend amounts over 2003, 2004, 2005 and 2006, and selling the share in 2006 for $28.56. The rate of return that relates all of these numbers was calculated by Dr. Powell to be 10.68%.

The calculation is fairly simple, using an Excel spreadsheet function. However it is also somewhat problematic, since the dividends are actually paid quarterly, yet Dr. Powell treats them as annual and apparently paid on the anniversaries of July 21, so the investor gets no dividends in 2002 and a full year of dividends in 2006. I believe that these simplifying assumptions bias downward Dr. Powell?s calculated rate of return, because they in effect push dividend receipts further into the future. Everything depends, of course, on the investor trusting Value Line projections of earnings and dividends and the maintenance of the P/E ratio (based on a Value Line forecast of earnings) unchanged for four years.

Q. Did Dr. Powell claim that investors rely exclusively on the data and assumptions you have described, for AGL Resources?

A. No. In his Exhibit DPU 6.9, he replaced the assumption that the P/E ratio will remain unchanged through 2006, by substituting Value Line?s

explicit P/E forecast for 2006, which was 15.00, somewhat above the current 13.60. The result of this change was a forecast price in 2006 of $31.50 rather than $28.56, and not surprisingly a higher expected rate of return on the investment. In this case he calculated 13.16%.

Q. What was the end result of Dr. Powell?s use of the TVM method?

A. In Exhibit DPU 6.8 (P/E held constant for 2002 - 2006) his mean rate of return for the nine companies was 11.87% and his median was 11.07%. In Exhibit DPU 6.9 (P/E expected to rise according to Value Line prediction in 2006), his mean was 12.74% and his median was 13.16%.

The average of the two means is 12.31% and he concluded that 12.31% was indicated by the TVM method. I note that 12.31% is much closer to my end results than to Dr. Powell?s 10.5%.

Q. How did Dr. Powell use his TVM result?

A. He averaged it with the 7.21% rate for his dividend growth model and the 12.11% rate from his combined Value Line and Zacks earnings growth method, to arrive at a 10.5% overall average. This was his recommendation for Questar Gas from the DCF method.

Q. Please discuss the reliability of the growth forecasts Dr. Powell used in his DCF analyses.

A. The use of earnings growth forecasts from Value Line and Zacks is the most reliable basis for applying the DCF model. I discussed at some length in my direct testimony the importance of analysts? forecasts of earnings in applying the model.

However the DCF analysis based on Value Line dividend growth forecasts is meaningless. Dr. Powell made use of Value Line dividend growth forecasts in his Exhibit DPU 6.4. I tabulate the results of this method in my Exhibit QGC 3.4R, to show the method is quite unreasonable. (I did the same in my direct testimony, in Exhibit QGC 3.4.) My mean and median ROEs from the use of dividend growth forecasts are 7.43% and 6.15%, numbers that make no sense whatever as a cost of equity for the proxy companies or for Questar Gas. Dr. Powell, using dividend growth forecasts from Value Line that are identical to mine, arrived at a mean of 7.21% and a median of 6.09%. As measures of investor-expected rates of return, his numbers were as nonsensical as mine. They should not be incorporated at all into a recommendation for Questar Gas, let alone given equal weight with all of the earnings growth forecasts put together.

Q. Why do you say that the results of incorporating Value Line dividend growth forecasts into the DCF model leads to nonsensical results for rate of return recommendations?

A. I turn for a moment to the exhibits of Mr. Parcell. On page 2 of his Exhibit CCS 4.2, he showed that in 2002, yields on Aa utility bonds ranged from 7.14% to 7.43%. When investors can obtain these yields on Aa utility bonds it makes no sense to conclude that they are attracted to the riskier proxy companies by expectations of 6.09% to 7.21% (from Dr. Powell?s analysis) or from 6.15% to 7.43% (from mine).

I explained in my direct testimony why the forecasted growth in dividends, at rates well below the growth forecasted for earnings (by the same analysts), implies that the payout ratio (dividends/earnings) is predicted to fall, essentially to zero in the long run (and the DCF is a *very* long-run model, with an infinite horizon). There is no reason to expect that investors expect such a bizarre result. The dividend growth rates forecasted by Value Line cannot give a sensible rate of return result when incorporated in a DCF model.

Q. Did Dr. Powell respond to your conclusion in your direct testimony that the dividend growth model makes no sense?

A. Yes. While he made no explicit claim that the dividend growth model leads to sensible measures of investor return explanations, he fell back on his theory that the dividend growth rate represents a lower bound of what investors might expect as a sustainable growth rate. This is tantamount to the conclusion that investors *are* likely to invest expecting these nonsensical results.

Q. Does his theory have any merit?

A. No. I believe that it is his own creation. I have never seen it anywhere else, and it defies common sense that investors are buying stocks of the proxy companies expecting to make less than they could by investing in much safer bonds.

Q. You have described four applications of the DCF method by Dr. Powell. Use of Value Line earnings forecasts led to a mean higher than your end results. Use of Zacks earnings growth forecasts led to a mean of 12.04%, much closer to your end results than to his recommendation of 10.50%. Use of the TVM application led to a mean of 12.31%, again much closer to your end results than to Dr. Powell?s 10.50%. And finally, use of the Value Line dividend growth forecasts led to a mean of 7.21%. From all of these numbers how did Dr. Powell reach an end result of only 10.50%?

A. He did it by setting up an adroit series of averaging. He was confronted by three numbers above or very close to my end results, and only one very low number, the result of his dividend growth application.

First, he combined the results of his Value Line earnings growth and Zacks earnings growth models so as to produce an average lower than the result of taking a simple average. I have noted that his results from using Value Line earnings growth forecasts supported my end results. The results from his use of the Zacks forecasts were quite close to my results, and the average of his

mean values from the two methods ? 12.72% and 12.04% ? was 12.38%, clearly very close to my end results.

So he combined for each proxy company the Value Line growth forecast with a weight of one (for a single analyst) with the Zacks forecast multiplied by the number of analysts for which the forecast is the mean. This produced a growth rate that heavily weights the (lower) Zacks forecasts. The results appear in Dr. Powell?s Exhibit DPU 6.7, and produced the mean of 12.11%, somewhat below the 12.38% simple average. Even so, his results still supported a rate of return above 12.0%.

Q. Was there another important consequence of his combining the results of two earnings growth analyses into a single one?

A. Yes. The result of this combination was to reduce the total number of DCF results to be averaged from four to three (combined earnings growth, dividend growth, and TVM), while at the same time reducing the contribution from the earnings growth forecasts.

His next step was to put the three results together, giving the dividend growth forecast an equal weight with the combined earnings growth forecasts and with the TVM result. The effect of this decision was to give the Value Line dividend growth model, *where Dr. Powell relied on the single Value Line forecast of dividend growth*, an equal weight with his earnings growth model, where he combined one Value Line forecast with the average of as many as seven Zacks-reported forecasts. I do not believe that this was a rational way to assess the relative importance of the various forecasts and their results.

Q. What was Dr. Powell?s last step in determining his end result?

A. Dr. Powell could have taken either the mean or the median of the three results from his DCF analysis in his Exhibit DPU 6.3:

DCF with dividend growth	7.21%
DCF with weighted earnings growth	12.11%
TVM	12.31%

The choice was crucial to his end result. The average of the three numbers is 10.54%. He did not cite the median, but it is obviously 12.11%, a number much closer to my end results than to his.

Dr. Powell?s choice was not consistent, however, with the essay he presented in Exhibit DPU 6.10, on the use of the sample mean and the sample median. He explained (there and on page 7 of his direct testimony) the superiority of the median for small samples when there are outliers (extreme values). He seems to have forgotten about this, however, when he combined the results above of his DCF analyses. Rather obviously the 7.21% is an ?outlier,? and by his own testimony he should have used the 12.11% median of the three numbers in his recommendation.

Q. What is your overall conclusion from Dr. Powell?s DCF analysis?

A. His DCF analyses that made use of Zacks growth forecasts and Value Line earnings growth forecasts were sensible and their results were reasonable. The significance of these two independent sets of forecasts was minimized by Dr. Powell?s combining them into one calculation and thereby reducing their significance in his final averaging.

The TVM methodology is I believe not widely used. Nonetheless, in this case, it provides a corroboration of the basic results indicated from Dr. Powell?s earnings growth DCF results. The analysis based on dividend growth forecasts made no sense at all as a method for measuring investor rate-of-return requirements.

A simple comparison of the end results of his applications of the DCF method may be helpful. Here are the mean and median values, from Dr. Powell?s Exhibits DPU 6.4, 6.5, 6.6, 6.8 and 6.9 (I omit 6.7 because it is an amalgam of 6.5 and 6.6.)

Application	Exhibit	mean	median
Dividend Growth	(DPU 6.4)	7.21%	6.09%
Value Line Earnings Growth	(DPU 6.5)	12.72%	13.48%
Zacks Earnings Growth	(DPU 6.6)	12.04%	12.38%
TVM constant P/E	(DPU 6.8)	11.87%	11.07%
TVM rising P/E	(DPU 6.9)	12.74%	13.16%
Medians		12.04%	12.38%

I believe it is rather obvious that one pair of numbers does not belong. The dividend growth numbers are both ?outliers.? And those dividend growth numbers were of course instrumental in producing a recommendation below the current level of 11.0%. Without those numbers, the average of the means is 12.34% and the average of the medians is 12.52%, both of which are close to my end results and well above 11.0%.

And there is something else to be considered. In the table above, the median of all the mean estimates, *even including* that from dividend growth forecasts, is 12.04%. The median of all the median estimates is 12.38%. Once again, these imply a cost above 12.0%.

Even if Dr. Powell had taken his own advice with respect to outliers and applied it to his *own* choice of numbers to be considered (on Exhibit DPU 6.3), he would have arrived at the median 12.11% rather than the mean of 10.5%.

In summary, the results from Dr. Powell?s DCF analyses, when properly analyzed ? in particular, use of his own conclusions about mean v. median ? lead to the conclusion that the cost of equity capital for Questar Gas Company is above 12.0%.

Q. You have testified that Dr. Powell has calculated mean (average) values throughout his analyses. Are you familiar with Dr. Powell?s testimony and recommendations in QGC?s last general rate case in Docket No. 99-057-20?

A. Yes, to the extent that I have read the written testimony he submitted in that proceeding.

Q. In Docket No. 99-057-20, did Dr. Powell recommend use of the mean, rather than the median, returns for his set of proxy companies, as the more representative?

A. No. He based his recommendation in that proceeding on the medians.

Q. Have you analyzed the choices of means and medians in the two proceedings?

A. Yes. In his testimony in this proceeding, where he relied on means, all of the means were below the medians. In his testimony in Docket No. 99-057-20, where he relied on medians, all of the medians were below the means.

Q. What was his explanation for his choice?

A. In his prepared testimony in Docket No. 99-057-20, he discussed the choice on page 7. After expressing concern about the selection of proxy companies offered by QGC witness Charles Moyer, he was asked: ?Is there another way of alleviating your concern in this case? He replied: ?Yes, I believe there is. The median ROE should be used as opposed to the mean or average estimate.? He went on to explain that the median is less sensitive than the mean to extreme values, and he provided an example of six hypothetical rates of return to show how he would identify an extreme value, leading to use of the median rather than the mean.

Q. What was his test for ?extreme values? in Docket No. 99-057-20?

A. It seems to be this, as set out on page 7 of his testimony: If the substitution of the highest value for a set of companies by the average of the remaining values leads to a decrease in the overall average by much more than the decrease in the median, then the highest value is an extreme and the median should be used. (I say ?much more? because in his example, the decrease in the mean was almost twenty times the decrease in the median.) He said that the highest value of his set of six was clearly an outlier and that the median should be used.

Q. Does this test make sense to you?

A. It does if the object is to use the median to reduce the end result. An alternative test might be this: If the substitution of the *lowest* value for a set of companies by the average of the remaining values leads to an *increase* in the overall average by much more than the increase in the median, then the lowest value is an extreme and the median should be used. This test will tend to use the median to increase the end result. Needless to say, Dr. Powell did not mention this alternative test. Both tests, of course, require that the witness

make a judgment about the meaning of ?much more.? Dr. Powell appeared to think that a ratio of twenty to one was sufficient.

Q. Did you apply Dr. Powell?s test to his exhibits in his testimony in Docket No. 99-057-20?

A. Yes, I did. The results are these:

Exhibit	original mean	recalc mean	original median	recalc decr median	decr in mean	in median
Model 1 (Exh. 2.3, page 1)	14.33%	11.44%	11.54%	11.40%	2.90%	0.14%
Model 2 (Exh. 2.3, page 2)	10.44%	9.70%	9.79%	9.54%	0.74%	0.25%
Model NCG 1, (Ex,. 2.4, p 1)	15.02%	13.02%	11.75%	11.75%	2.01%	0.00%
Model NCG 2 (Ex 2.4, p.2)	13.12%	11.31%	11.65%	11.31%	1.81%	0.34%
CAPM (Ex. 2.5)	14.05%	13.68%	13.62%	13.49%	0.37%	0.13%

It is true that all of the decreases in the means are greater than decreases in the medians, but some of the differences are not great.

Q. Did you try the alternative test you suggested?

A. Yes, I did. I replaced the smallest number by the mean of the remaining numbers and then compared the change in the mean with the change in the median. The results are these:

Exhibit	original mean	recalc mean	original median	recalc incr median	incr in mean	in median
Model 1 (Exh. 2.3, page 1)	14.34%	15.39%	11.54%	13.56%	1.06%	2.02%
Model 2 (Exh. 2.3, page 2)	10.44%	10.70%	9.79%	10.45%	0.26%	0.66%
Model NCG 1, (Ex,. 2.4, p 1)	15.03%	16.01%	11.75%	14.27%	0.99%	2.52%
Model NCG 2 (Ex 2.4, p.2)	13.12%	14.52%	11.65%	13.25%	1.40%	1.60%

It was not practical to apply the test to the CAPM model, because three values were lowest at 13.29%. For the remaining models, the increase in the median is greater than the increase in the mean, and the test would indicate the means should have been used, although the differences are not great. Application of this test would have confounded Dr. Powell?s choice of medians in the past proceeding.

Q. What conclusion do you draw from your calculations?

A. For these two cases, it is difficult for me to conclude that Dr. Powell made his choice of mean or median chiefly on any basis other than which one led a lower recommendation.

Q. How did you form a judgment as to which of the mean or median to use in your own testimony?

A. I have for many years been consistent in using medians of proxy company rates of return, regardless of whether the mean or the median was the higher number. The Staff witnesses for the Federal Energy Regulatory Commission, for example, have long preferred and been consistent in using the medians, and the FERC seems to have agreed. Their Staff witnesses and I have also been consistent in using averages of the results of different methodologies in reaching a final conclusion. Consistency avoids manipulation and the highly subjective application of a test such as the one Dr. Powell said he uses.

Q. You have said that you relied in your DCF models on the medians from the rates of return of your proxy companies for each application of the model. What would your result have been if you had done as Dr. Powell did, and relied on the means rather than the medians from the rates of return of the proxy companies?

A. The result is shown in my Exhibit QGC 3.8R. It is 12.05%.

CAPM

Q. Please describe the use made of the CAPM by Dr. Powell.

A. Dr. Powell used the standard formula for the CAPM analysis, as I did in my direct testimony. He relied on beta coefficients published by Value Line. I discussed in my direct testimony the unreliability of beta coefficients at the present time. Dr. Powell appeared to have little interest in the level of statistical significance of his beta coefficients. Value Line, as I explained in my direct testimony, not only provides no measures of the statistical significance of its published beta coefficients, but will not even reveal how it calculates those coefficients. Merrill Lynch, on the other hand, publishes beta coefficients for all of the proxy companies, using a correct methodology that it explains in full. And Merrill Lynch provides for each beta coefficient two important measures of statistical significance: the R-squared for the regression and the t-ratio for the coefficient. I discussed both at some length in my direct testimony, and reported an update of the statistics above in my update.

Q. Did Dr. Powell offer any comments in his testimony in response to your discussion of statistical significance of beta coefficients in your direct testimony?

A. No, he did not, which is surprising, considering that he is clearly well versed in statistical theory, as his testimony shows. However, in his response to Questar?s Data Request No. 1.13 (a), Dr. Powell said that although he had conducted no statistical studies, ?the statistical significance was considered (in some sense) indirectly.? He then went on to say that the Commission ?has given little if any weight to the results from risk premium models,

including the CAPM. Therefore, I use the results from the CAPM model only as a check on the other results.?

Q. What is your judgment with respect to Dr. Powell?s statement in his response to the referenced data request?

A. He seems to be saying that since the Commission does not appear to find the CAPM important, he is entitled to use it for corroboration even if it is statistically insignificant.

Q. What criticism did Dr. Powell offer concerning your direct testimony?

A. I have already discussed his complaints about my selection of proxy companies and noted that he accepted my choice for his own analysis. He also complained that I relied on medians rather than means of the proxy rates of return in my DCF analyses, and I have explained my choice and the fallacies in his. He would also have preferred that I follow his weighting procedure to reduce the significance of the DCF applications that used Value Line and IBES earnings growth forecasts. I have discussed the way in which he used that procedure to shape his results. He objected to my rejection of dividend growth forecasts as part of a DCF analysis, but as I have noted, he made no effort to justify the rate of return results in the context of available bond yields.

Q. Why would witnesses rely on methodologies like that of the DCF model with dividend growth projections, despite their nonsensical results?

A. There is a widespread fallacy that no matter how absurd the result of a particular methodology, so long as that result is averaged in with other results to reach a final recommendation it is not objectionable.

Response to the Testimony of Mr. Parcell

Q. What rate of return on equity did Mr. Parcell recommend in this proceeding?

A. He recommended a return of 10.00**%.**

Q. Is his recommendation reasonable?

A. No. It is much too low.

Q. What set of proxy companies did Mr. Parcell recommend?

A. He used three sets of proxy companies. The first was the complete list of the nineteen companies included in Value Line?s Natural Gas (Distribution) Industry. The second was the list of six of these companies included in Moody?s Gas Distribution Group. And the third was my set of nine proxy companies, which includes six of the Value Line companies.

Q. Did Mr. Parcell set out or apply any criteria in the selection of his

companies?

A. Not apart from identifying the three sources he used. He confirmed this in his response to Questar data request No. CCS 1.13.

He did object to the inclusion of Questar in my set of proxy companies, on page 16 of his testimony, relying on a table of characteristics of Questar on the preceding page. But when asked if he had examined the corresponding characteristics for his own choice of proxy companies he indicated in his response to Questar data request CCS 1.5 that he had not. I shall discuss later more of his risk comparisons.

Q. Do you agree that his selection of proxy companies is appropriate?

A. No. I explained in some detail in my direct testimony the criteria I used for my selection from the Value Line set, and in his testimony Mr. Parcell has not offered any argument with my criteria, only adding two further sets of companies. Only three of the companies in the Moody?s set met my criteria, and obviously most of the companies in the Value Line set did not.

Q. Are there companies in the Value Line list used by Mr. Parcell that are inappropriate?

A. Yes. An example is Southern Union, which pays no dividends. The DCF model is appropriate only for dividend-paying companies, since it is based on the proposition that the value of a share is the present value of the dividends to be received. Another example is UGI Corp. I show in my Exhibit QGC 3.10R that according to the C.A. Turner Utility Reports, UGI derived only 25% of its revenue from gas operations. I also stated in my direct testimony why Laclede was not appropriate.

Further, Mr. Parcell included many companies with much lower quality ratings than that of Questar Gas (I was scrupulous in attempting to match proxy company risk with that of Questar Gas), and then argued that Questar Gas is less risky than the average of his companies and so should be allowed a lower rate of return. This gave him the opportunity to apply a subjective judgment to make a low recommendation.

Q. What methodologies did Mr. Parcell use to determine his rate of return recommendation?

A. He used the DCF, the CAPM and the comparable-earnings methodologies.

Q. Please describe the use made of the DCF model by Mr. Parcell.

A. In most respects Mr. Parcell used the same DCF model that I use. His dividend yields for my set of proxy companies were very similar to mine, and his average yield was nine basis points higher than mine. His choice of growth rates differed significantly from mine, however.

Q. Please discuss the growth rates he used in his DCF analysis and his results.

A. His testimony, like mine and unlike that of Dr. Powell, made use of future expected retention growth rates. He set out his retention growth rates in his Exhibit CCS-4.7, page 2. His numbers based on Value Line projections for my set of companies for 2005 - 2007 differed a little from mine, and I do not know why. However, he did not use these numbers in his DCF analysis. He preferred to average the retention growth calculations for 2003, 2004 and 2005-2007. The averages are considerably lower than the numbers based on the longest forecast made by Value Line because the Value Line forecasts for 2003 are much lower. He was able to reduce his average future retention growth rate for my set of companies from 6.8% to 5.5%.

Q. Was it reasonable for him to average the three forecasts and bring down the number used in the DCF analysis?

A. I do not believe so. All of the retention growth calculations I have seen (and those that I have used) rely on the furthest forecast offered by Value Line. The reason is that the DCF model is a very long-run model. In theory it models dividend receipts to infinity. Hence we should be using, for each source of growth the longest forecast available. For Value Line that is the forecast for 2005-2007.

Q. How did the results of his expected retention growth method enter into his end result?

A. They did not enter in at all, because he relied on only the highest and the lowest of his DCF results for his three sets of proxy companies, and for none of the three was the expected retention rate result either the lowest or the highest.

Q. Did Mr. Parcell make use of other retention growth rates?

A. Yes. He used historic retention growth rates, averaging data from Value Line over the five years 1997 through 2001. For his three sets of proxy companies (Value Line, Moody?s and mine) the rates of return are shown in his Exhibit CCS-4.7, page 4 and are 8.2%, 8.1%, and 9.2%, respectively.

Q. Is it appropriate to use historic retention rates?

A. No. The DCF is a forward-looking market-based method, and expectation data are much to be preferred to historic data. In addition, professional forecasts, such as those of Value Line, can be expected to incorporate what can be learned from historic data.

Q. How did the results of his historic retention growth method enter into his end result?

A. He used only the 8.2% number, it being the lowest number for the Value Line set of companies for all of his growth rate choices.

Q. Please continue with your discussion of Mr. Parcell?s growth rate choices for his DCF methodology.

A. Mr. Parcell made use of historic and prospective growth rates in earnings, dividends and book values from Value Line, averaging the three for each of his proxy companies.

Q. Please discuss the use of the prospective growth rates.

A. He relied on the growth forecasts provided by Value Line for 1999-2001 to 2005-2007. Dr. Powell and I both made use of these earnings growth rates. Dr. Powell also used the dividend growth forecasts, but not the book value forecasts. I explained in some detail both in my direct testimony and my response to the testimony of Dr. Powell why the dividend growth rates are not reliable for determination of the rate of return for Questar Gas. They lead to rates of return that are absurd as a basis for setting rates.

Mr. Parcell made it difficult to point out the absurdity of his use of dividend and book-value forecasts, because he never made a determination of the rate of return results of using either one alone. Instead, he averaged the three growth rates for each company? earnings, dividend and book-value growth ? and derived a DCF rate of return from the averages. However, I have prepared Exhibits QGC 3.11R, 3.12R, and 3.13R showing the consequences of using each of the three growth-rate forecasts for his set of nineteen Value Line companies.

Q. How did Mr. Parcell defend his use of dividend growth rates?

A. Like Dr. Powell, he made no claim that dividend growth forecasts lead to sensible rates of return. Such a claim would be absurd. He argued on page 43 of his prepared testimony that ?to maintain that investors give no consideration to dividends and dividend growth, as Dr. Williamson implicitly does, is not consistent with the reality of investment decisions and is not consistent with the DCF model.? However, I did not say or even imply that investors give no consideration to dividends. I said only that they cannot be deemed to have relied on the Value Line dividend growth forecasts in a DCF model, because these lead to nonsensical results.

Q. How did the results of his average growth method enter into his end result?

A. None of them entered into his end result. None was either the highest or the lowest DCF result for any of the sets of proxy companies.

Q. Did you replicate Mr. Parcell?s DCF analysis with earnings growth

forecasts, dividend growth forecasts and book value growth forecasts separately?

A. Yes. For my set of proxy companies, the analyses for earnings growth and dividend growth forecasts appear in my Exhibits QGC 3.2R, 3.3R, and 3.4R. For Mr. Parcell?s Value Line set of nineteen companies, I have prepared Exhibits QGC 3.10R, 3.11R, 3.12R and 3.13R.

Q. What are your results from the four Exhibits using Mr. Parcell?s nineteen companies?

A. Exhibit QGC 3.10R shows the results of using IBES growth forecasts in the DCF model for the nineteen companies. The mean rate of return indicated is 10.69%, and the median is 11.05%. Exhibit QGC 3.11R shows the results of using Value Line earnings growth forecasts. The mean rate of return is 14.35% and the median is 13.96%. Exhibit QGC 3.12R shows the results of using Value Line dividend growth forecasts. The mean return is 6.28% and the median is 6.14%. Neither, of course, is plausible for use in determining the rate of return for Questar Gas. Exhibit QGC 3.13R shows the results of using Value Line book value forecasts. The mean return is 10.39% and the median is 9.71%. I do not believe there is any evidence that investors rely on growth forecasts of book value in making investment decisions and Mr. Parcell provided none.

Q. Please discuss Mr. Parcell?s use of historic growth rates.

A. He relied on the growth rates provided by Value Line for the past five years for earnings, dividends and book values.

Q. Is it appropriate to use historic growth rates?

A. No. As I have indicated before, the DCF method is forward-looking and market based. Dr. Powell and I relied entirely on forecasts. Those making forecasts have presumably drawn what information is available out of the historic growth. And, in any case, the dividend and book value growth figures are not appropriate for use in establishing rate of return. Again, Mr. Parcell did not show the rate of return that can be derived from each of the earnings, dividend and book value growth rates. He used only the average.

For his three sets of proxy companies (Value Line, Moody?s and mine) the rates shown in his Exhibit CCS-4.7, page 4 were 8.6%, 7.8% and 9.0%, respectively.

Q. How did the results of his historic average growth method enter into his end result?

A. Both the 7.8% and the 9.0% entered into his end result. Both were the lowest rates of return he derived for their respective proxy sets.

Q. Please continue with your discussion of Mr. Parcell?s growth rate choices for his DCF methodology.

A. The remaining growth rate source relied on by Mr. Parcell was IBES (which is owned by the same Thompson Financial as is First Call; hence his reference to First Call rather than to IBES). The IBES growth rates he used for my set of proxy companies differ somewhat from the numbers I have found in the August IBES report. It may be that his are simply old numbers. However, my average of the nine growth numbers is 6.71%. His is 6.70%.

His rates of return for his three sets of proxy companies, using the IBES growth forecasts, were 10.9%, 11.3%, and 11.5%, respectively. All three numbers entered into his final determination, because all three were the highest rates of return that he derived for each of the proxy sets.

Q. What is your overall conclusion from Mr. Parcell?s DCF analysis?

A. Of all the rates of return calculated by Mr. Parcell and summarized on page 4 of his Exhibit NCCS-4.7, only three merit any consideration. The results of using the IBES earnings growth forecasts are useful. So are the results of using the Value Line earnings growth forecasts. Mr. Parcell buried these in an average of earnings, dividend and book value growth forecasts. However, I show them for his nineteen companies in my Exhibit QGC 3.11R. And the retention growth forecasts based on data for 2005-07 are useful. Again, Mr. Parcell buried them in a mix of other retention growth forecasts, but I show them in my Exhibit QGC 3.14R.

One other aspect of his analysis deserves discussion. Instead of determining the mean or median for the results of all his various methodologies, he preferred to consider only the lowest and the highest and to ignore the remainder. As it turned out, the highest rates of return for all three sets of proxy companies were derived from the IBES forecasts. Of the lowest rates of return, two came from the use of historic average growth rates and one from use of historic retention growth and none is worth considering.

His method here suppresses consideration of results that would not support his recommendation.

Q. What is the best use that can be made of his DCF analysis?

A. The answer can be seen in the following table. I have applied Mr. Parcell?s DCF methodologies to the set of nineteen companies in the Value Line distribution set, identifying the three forward-looking growth rates to which I referred above. The numbers are taken from my Exhibits. Nos. QGC-3.14R, 3.11R, and 3.10R.

	mean	median
Future Retention Growth, 2005-07	11.75%	11.62%
Value Line earnings growth	14.35%	13.96%
IBES earnings growth	10.69%	11.05%
Means	12.26%	12.21%

Medians	11.75%	11.62%

These are the most sensible results that can be derived from Mr. Parcell?s DCF applications. They are well above Mr. Parcell?s end result and generally (eight out of ten) well above the company?s currently authorized 11.0%.

CAPM

Q. Please describe the use made of the CAPM by Mr. Parcell.

A. Mr. Parcell used the standard formula for the CAPM analysis, as Dr. Powell did. Like Dr. Powell, he relied on Value Line beta coefficients with no regard for their statistical insignificance. In my Exhibit QGC 3.15R, I tabulate for Mr. Parcell?s nineteen proxy companies from Value Line the most recent beta coefficients and the Ibbotson confidence statistics. It is clear that not one of the nineteen beta coefficients has any significance. Like Dr. Powell, Mr. Parcell had nothing to say in his testimony in response to my demonstration in my direct testimony of their insignificance. His response to Questar data request CCS 1.16 indicated that he had no interest in whether his beta coefficients were statistically significant or not. His CAPM analysis is meaningless.

Comparable Earnings

Q. Please describe the use made of the comparable-earnings method by Mr. Parcell.

A. Mr. Parcell?s comparable-earnings analysis suffers from a major flaw that flows from his confusion as shown in his testimony on page 34. He began by relating the method to the capital attraction standard set by the United States Supreme Court. He said: ?If, in the opinion of those who save and commit capital, the prospective return from a given investment is not equal to that available from other investments of similar risk, the available capital will tend to be shifted to the alternative investments.? He was speaking, of course, of the return expected by investors on their investment ? that is, their return from dividends and price appreciation. This is the return that the DCF model produces and that the CAPM is supposed to produce.

But two paragraphs later, he referred to ?experienced and/or projected returns on book common equity.? And he endorsed the comparable-earnings method because, unlike the demands of the DCF and CAPM methods, it ?makes use of simple readily available accounting data.? Here he completely missed his stated objective: He was trying to apply a capital-attraction standard and hence needed to determine what investors require with respect to their probable rates of return. But no ?readily available accounting data? can meet this requirement.

Mr. Parcell continued his confusion of the two kinds of returns in his responses to Questar data requests Nos. 1.18 and 1.19.

Q. What accounting data did he rely on?

A. He made use of realized annual returns on book equity for several groups of companies, and ratios of market to book values (that is, ratios of stock prices to book values) for the shares of those companies for the period 1992-2001. The data were drawn from Value Line reports, and are shown on page 1 of his Exhibit CCS-4.10. For each company, he averaged the rates of return on book common equity for ten years (1992-2001) and for five years (1997-2001) and he tabulated these for all of his proxy companies (in all three sets). It is important to note that there is in this array of data no indication of investor expectations, the critical element in determining required rates of return.

Q. What results did he reach?

A. For the three sets of proxy companies ? Value Line, Moody?s and mine ? his rate of return ranges (from ten-year average to five-year average) were 11.0% to 11.1%, 11.1% to 10.4%, and 12.3% to 12.4%, respectively.

Q. Did Mr. Parcell also examine prospective rates of return for his proxy companies, despite his statement that the method demands no more than ?simple readily available accounting data??

A. Yes, he also tabulated on page 1 of his Exhibit CCS-4.10 the rates of return on book common equity forecast by Value Line for each company for 2002, 2003 and 2005-2007. These are possibly among the most interesting rates of return examined by Mr. Parcell. For the furthest forecast, (for 2005-2007), the averages for the three proxy sets were 13.4% for the Value Line set, 12.4% for the Moody?s set, and 13.3% for mine. All three expected rates of return are well above my end results.

Q. What use did he make of his historic and forecast rates of return?

A. That is not entirely clear. On page 2 of his Exhibit No. CCS-4.11, he tabulated market to book ratios for all of his proxy companies for 1992 through 2001, with the ten-year and five-year averages. For each set of proxy companies, he reported the two averages. For the three sets ? Value Line, Moody?s and mine ? the averages were 174% and 183%; 167% and 167%; and 182% and 190%.

Finally, in a table on page 36 of his testimony he presented the ranges of historical rates of return and market to book ratios, and the ranges of the forecast rates of return. From this table he concluded that ?historical returns of 10.4 - 12.4 percent have been adequate to produce market-to-book ratios of 167 - 190 percent.? On the next page, he stated: ?Furthermore, projected returns on equity for 2002, 2003 and 2005-2007 are within a range of 10.4 percent to 13.4 percent for the natural gas utility groups. These relate to 2001 market-to-book ratios of 166 percent and higher.?

Q. What do you conclude from his statements?

A. First, in relating market-to-book ratios to past rates of return, he failed to understand that market-to-book ratios reflect investor expectations, chiefly with respect to expected growth, and do not depend on historical data. Investors are buying future earnings, not past earnings. So his use of historic rates of return has no significance.

But the thrust of his comparable-earnings analysis I believe is to present a picture of utilities that have been, and are expected to be, earning too much. His closing statement on the comparable earnings method, on page 38, is ?An earned return of less than 11 percent should result in a market-to-book ratio of at least 100 percent.? I believe his message is that allowed rates should be no more than enough to bring the market-to-book ratios of regulated companies to 100%. He denied that this was his intention, in response to Questar data request No. CCS 1.24, but it is hard to see any reason for his comparable earnings analysis if it was not to lead to this message. I do not believe that the Utah Commission has expressed any such policy and I am unaware of any commission that has.

Q. On page 39 of his testimony, Mr. Parcell discussed risk in Questar Gas. He claimed that QGC has ?below-average risk? as measured by its bond rating and its above-average common equity ratio, and he concluded that ?Questar Gas is in the lower portion of the 9 1/2 percent to 11 percent range?. Do you agree with this line of reasoning?

A. No. I referred earlier to the fact that Mr. Parcell applied no criteria to the selection of his proxy companies, other than to select three defined groups. By including companies with a wide variety of risk characteristics, he was able to reserve exercise of his own subjective judgment in placing the rate of return for Questar Gas within his ranges. On the other hand, I made risk an important criterion in the selection of my proxy companies, and the risk measures can be seen in my Exhibits QGC 3.2 and QGC 3.2R. I do not believe there is any basis for placing Questar Gas in the lower portion of any of my ranges, or any of the ranges Mr. Parcell derived for my set of proxy companies.

Q. You discussed earlier in your rebuttal Mr. Parcell?s references to characteristics of Questar Gas that he concluded indicated relatively low risk. And you said you would have more to say about this topic. What do you wish to add?

A. On page 16 of his direct testimony, Mr. Parcell listed, in lines 25 through 29, five characteristics of Questar that he said indicated its relatively low risk. However, when asked in Questar data request CCS 1.7(b) to which of his proxy companies those same characteristics could be attributed, he did not know.

On page 19 of his testimony, he listed seven characteristics of Questar Gas

(apparently taken from a Standard & Poor?s report) that he said indicated low risk to Questar Gas. When asked in Questar data request No. CCS 1.9 to which of his proxy companies these characteristics might also be attributed, he did not know with respect to five of the seven. (Two were clearly unique to Questar Gas).

On page 20, Mr. Parcell referred to the request of Questar Gas that it be allowed to use a prospective test year, rather than a historic year. Should the request be granted, he said, then the cost of equity for Questar should be within the lower portion of the cost of equity range for the proxy companies. When asked in Questar data request No. CCS 1.10, which of Mr. Parcell?s proxy companies are using some form of prospective test period he replied that he did not know.

Q. On pages 43 through 46 of his testimony, Mr. Parcell criticized your reliance on analysts? earnings growth forecasts in arriving at growth rates for your DCF analysis. What is your response?

A. In my direct testimony, I referred to an article entitled ?Using Analysts? Growth Forecasts to Estimate Shareholder Required Rates of Return? in *Financial Management*, Spring 1986, pages 58-67, by Robert S. Harris, in which he reported tests of IBES-reported forecasts as sources of the growth expectation in the DCF model. He concluded that the use of the IBES data ?offers a straightforward and powerful aid in establishing required rates of return either for corporate investment decisions or in the regulatory arena.? I also reported that more recently, Professor Myron Gordon, David A. Gordon and Lawrence I. Gould, published the article ?Choice Among Methods of Estimating Share Yield?, *Journal of Portfolio Management,* Spring 1989, pages 50-55, in which the authors concluded that IBES-reported forecasts were the most reliable source of investor-expected growth rates.

I believe it is especially significant that Professor Gordon was the author of the second reference. It was Professor Gordon who invented the internal growth (retained earnings growth) model, as I observed on page 5 of my direct testimony. In the article referred to above, Professor Gordon was clearly recommending replacing that method with reliance on analysts? forecasts. He was more explicit in a paper delivered to the Institute for Quantitative Research in Finance, in March, 1990. Professor Gordon said:

> The most serious limitation of the Gordon [retained earnings] model is the assumption that the dividend expectation can be represented with just two parameters, D and br. . . . [br refers to the multiplication of the expected rate of return r by the ratio of earnings retained b] In addition, financial statement data for b and r can result in a value for *g* that cannot be accepted as an average for the indefinite future.

In the same paper, he proposed a new formula to explain the price of a stock, one that makes no mention of *b* x *r*, but relies on a growth estimate to be supplied by a

security analyst. In the paper, Professor Gordon said:

> Finally, there is no doubt that the [new] model will be useful in conjunction with private estimates of earnings, growth and other independent variables. Such private estimates have been and will continue to be developed by security analysts.
>
> Mr. Parcell has referred to various statements accusing analysts of exaggerated earnings growth forecast. Such complaints have been published for many years. But what is significant is that Mr. Parcell has not referred to any study of investor expectations showing that those expectations are not formed from professional forecasts. Investor expectations are the key to required rates of return in a competitive market. Capital for investment is provided by investors, not by witnesses or commissions.

Q. Does this complete your prepared rebuttal testimony?

A. Yes, it does.