Witness CCS 4
CCS Exhibits 4.1 – 4.14

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of Questar Gas Company for a General Increase in Rates and Charges	)	**Docket No. 02-057-02**
	)	**PRE-FILED DIRECT TESTIMONY OF DAVID C. PARCELL**
	)	**FOR THE COMMITTEE OF CONSUMER SERVICES**

August 30, 2002

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I. INTRODUCTION

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

A. My name is David C. Parcell. I am Executive Vice President and Senior Economist of Technical Associates, Inc. My business address is Suite 601, 1051 East Cary Street, Richmond, Virginia 23219.

Q. PLEASE DESCRIBE YOUR BACKGROUND AND EXPERIENCE.

A. I hold B.A. (1969) and M.A. (1970) degrees in economics from Virginia Polytechnic Institute and State University (Virginia Tech) and a M.B.A. (1985) from Virginia Commonwealth University. I have been a consulting economist with Technical Associates since 1970. The large majority of my consulting experience has involved the provision of cost of capital testimony in public utility ratemaking proceedings. I have previously testified in well over 300 utility proceedings before more than 30 regulatory agencies in the United States and Canada. CCS Exhibit 4.1 contains a more complete description of my education and professional experience.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I have been retained by the Committee of Consumer Services to evaluate the cost of capital aspects of the current rate increase filing of Questar Gas Company ("Questar Gas"). Based on my analyses, I am making a recommendation on the current cost of capital for Questar Gas. Since Questar Gas is a subsidiary of Questar Corp. ("Questar")~~,~~ I have also examined this entity in my analyses.

Q. HAVE YOU PREPARED AN EXHIBIT IN SUPPORT OF YOUR TESTIMONY?

A. Yes, I have prepared 14 exhibits, identified as CCS Exhibit 4.1 through CCS Exhibit 4.14. These exhibits were prepared either by me or under my direction. The information contained in these exhibits is correct to the best of my knowledge and belief.

Q. HOW IS YOUR DIRECT TESTIMONY ORGANIZED?

A. My testimony is organized into thirteen parts as follows:

I. Introduction

II. Recommendations and Summary

III. Economic/Legal Principles and Methodologies

IV. General Economic Conditions

V. Questar Gas's Operations and Risks

VI. Capital Structure and Costs of Debt

VII. Selection of Comparison Groups

VIII. Discounted Cash Flow Analysis

IX. Capital Asset Pricing Model Analysis

X. Comparable Earnings Analysis

XI. Return on Equity Recommendation

XII. Total Cost of Capital

XIII. Comments on Company Testimony

II. RECOMMENDATIONS AND SUMMARY

Q. WHAT ARE YOUR RECOMMENDATIONS IN THIS PROCEEDING?

A. My overall cost of capital recommendation for Questar Gas is as follows:

	Percent	Cost	Return
Long-Term Debt	42.52%	7.92%	3.37%
Short-Term Debt	10.28%	2.27%	0.23%
Common Equity	47.20%	10.0%	4.72%
Total	100.00%		8.32%

Q. PLEASE SUMMARIZE YOUR ANALYSES AND CONCLUSIONS.

A. This proceeding is concerned with Questar Gas's regulated gas utility operations in its Utah jurisdiction. My analyses are concerned with Questar Gas's total cost of capital. The first step in performing these analyses is the development of the appropriate capital structure. Questar Gas's proposed capital structure is its adjusted December 31, 2001 consolidated capital structure ratios of 47.39 percent long-term debt and 52.61 percent common equity. I have modified these capital structure ratios to include short-term debt in my cost of capital analyses.

The second step in a cost of capital calculation is a determination of the embedded cost rate of long-term and short-term debt. I have used the 7.92 percent cost of long-term debt proposed by Questar Gas. For the cost of short-term debt, I use the 2.27 percent cost of short-term debt for Questar at the end of 2001.

The third step in the cost of capital calculation is the estimation of the cost of common equity. I have employed three recognized methodologies to estimate the cost of equity for Questar Gas. Each of these methodologies is applied to the Value Line Distribution Group, Moody's Gas Distribution Group, and the group of proxy companies analyzed by Company witness J. Peter Williamson. These three methodologies and my findings are:

Methodology	Range
Discounted Cash Flow	9½-11 %
Capital Asset Pricing Model	10¼-10½%
Comparable Earnings	11%

Based upon these estimates, it is my conclusion that the cost of common equity for the gas distribution industry is a range of 9½ percent to 11 percent. My analyses of Questar Gas' business and financial risks indicate this Company has below-average risk compared to other gas distribution companies. As a result, my recommendation of the fair cost of common equity for Questar Gas is the lower portion of this range, or 9½ percent to 10½ percent. My recommended point estimate is in the mid-point of this range, or 10 percent. I note, further, that Questar Gas is proposing to shift its ratemaking methodology to incorporate a future test year. Should the Commission approve this proposed significant ratemaking modification, Questar Gas's risk should be reduced, along with its cost of common equity.

Combining these three steps into weighted costs of capital results in an overall rate of return of 8.09 percent to 8.56 percent, with a mid-point of 8.32 percent.

III. ECONOMIC/LEGAL PRINCIPLES AND METHODOLOGIES

Q. WHAT IS YOUR UNDERSTANDING OF THE ECONOMIC AND LEGAL PRINCIPLES WHICH UNDERLIE THE CONCEPT OF A FAIR RATE OF RETURN FOR A REGULATED UTILITY?

A. Rates for regulated public utilities have traditionally been primarily established using the "rate base - rate of return" concept. Under this method, utilities are allowed to recover a level of operating expenses, taxes and depreciation deemed reasonable for rate setting purposes, and are granted an opportunity to earn a fair rate of return on the assets utilized (i.e., rate base) in providing service to their customers. The rate base is derived from the asset side of the utility's balance sheet as a dollar amount and the rate of return is developed from the liabilities/owners' equity side of the balance sheet as a percentage. The rate of return is developed from the cost of capital, which is estimated by weighting the capital structure components (i.e., debt, preferred stock, and common equity) by their percentages in the capital structure and multiplying these by their cost rates. This is also known as the weighted cost of capital.

Technically, the fair rate of return is a legal and accounting concept which refers to an ex post (after the fact) earned return on an asset base, while the cost of capital is an economic and financial concept which refers to an ex ante (before the fact) expected or required return on a liability base. However, in regulatory proceedings, the two terms are often used interchangeably and are done so in my testimony.

From an economic standpoint, a fair rate of return is normally interpreted to incorporate the financial concepts of financial integrity, capital attraction, and comparable returns for similar risk investments. These concepts are derived from economic and financial theory and are generally implemented using financial models and economic concepts such as discounted cash flow (DCF), capital asset pricing model (CAPM), and comparable earnings (CE).

From a legal standpoint, two U.S. Supreme Court decisions are universally cited as providing the legal standards for a fair rate of return. The first is Bluefield Water Works and Improvement Company v. Public Service Commission of the State of West Virginia, 262 U.S. 679 (1923). In this decision, the Court stated:

> What annual rate will constitute **just compensation** depends upon many circumstances and must be **determined by** the **exercise of a fair and enlightened judgment**, having regard to all relevant facts. 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**; but it has **no constitutional right to profits** such as are realized or anticipated in **highly profitable enterprises** or **speculative ventures**. The **return** should be reasonably sufficient to assure confidence in the **financial soundness** of the utility, and should be adequate, under efficient and economical management, to maintain and **support its credit** and **enable it to raise the money** necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time, and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally. [Emphasis added]

This decision established the following standards for a fair rate of return: comparable earnings, financial integrity, and capital attraction. It also noted the changing level of required returns over time.

The second decision is Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591 (1942). In that decision, the court stated:

> The rate-making process under the (Natural Gas) Act, i.e., the fixing of 'just and reasonable' rates, involves a **balancing** of the **investor** and **consumer interests** . . . From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the

> debt and dividends on the stock. By that standard the **return** to the **equity owner** should be **commensurate** with **returns** on **investments** in **other enterprises having corresponding risks**. That return, moreover, should be sufficient to assure confidence in the **financial integrity** of the enterprise, so as to **maintain its credit** and to **attract capital**. [Emphasis added]

This case affirmed the primary standards of the Bluefield case, as well as the public interest standard. The Hope case is also credited with the establishment of the "end result" doctrine, which maintains that the methods utilized to develop a fair return are not important as long as the end result is reasonable.

I believe the Bluefield and Hope decisions, as well as subsequent cases that cite these decisions, have identified three economic and financial parameters relevant to the determination of a fair rate of return:

1. Comparable earnings
2. Financial integrity and
3. Capital attraction.

It is apparent that these legal standards reflect the economic criteria encompassed in the "opportunity cost" principle of economics, which holds that a utility and its investors should be afforded an opportunity (not a guarantee) to earn a return commensurate with returns they could expect to achieve on investments of similar risk. The opportunity cost principle is consistent with the fundamental premise on which regulation rests, namely that it is intended to act as a surrogate for competition.

Q. HOW CAN THESE STANDARDS BE EMPLOYED TO ESTIMATE THE COST OF CAPITAL FOR A UTILITY?

A. Neither the courts nor economic/financial theory have developed exact and mechanical procedures for precisely determining the cost of capital. This is the case since the cost of

capital is an opportunity cost and is prospective looking, which indicates it must be estimated.

There are several useful models which can be employed to assist in estimating the cost of equity capital, which is the capital structure item that is the most difficult to determine. These include the discounted cash flow method (DCF), the capital asset pricing model (CAPM), the comparable earnings analysis (CE) and the risk premium (RP) method. Each of these methods (or models) differs from the others and each, if properly employed, can be a useful tool in estimating the cost of common equity for a regulated utility.

The CE method, for example, is oriented toward the "fairness" standard, whereas the CAPM, DCF and RP methods are oriented toward the "capital attraction" standard. The CE method measures returns on book equity or "vintage" capital, while the other methods measure the return required per dollar of current purchasing power.

Among the capital attraction models, the DCF method estimates a company's cost of equity directly (by utilizing expected cash flows and current market prices), while the CAPM and RP methods estimate the cost of equity indirectly (by evaluating the relative risk and expected returns of alternative investments).

In performing analyses of the cost of common equity, it is customary and appropriate to consider the results of several alternative methods. The expert and ultimately the commission must then decide upon the appropriate weight to give the results of each method in determining of the cost of common equity. This follows since each method requires judgment as to the reasonableness of its assumptions and inputs; each model has its own way of examining investor behavior; each model proceeds from different fundamental premises, most of which cannot be validated empirically; and each model may not at all times be representative of current investor behavior. Just as there is no

uniformity as to which method is used by investors, there should not be a single method exclusively used to estimate a utility's cost of common equity. At the very least, alternative methods should be used as a check on a primary or preferred method.

Q. WHICH METHODS HAVE YOU EMPLOYED IN YOUR ANALYSES OF THE COST OF COMMON EQUITY?

A. I have utilized three methodologies in my testimony. These are DCF, CAPM and CE.

IV. GENERAL ECONOMIC CONDITIONS

Q. WHAT IS THE IMPORTANCE OF ECONOMIC AND FINANCIAL CONDITIONS IN DETERMINING THE COST OF CAPITAL?

A. The costs of capital, for both fixed-cost (debt and preferred stock) components and common equity, are determined in part by economic and financial conditions. At any given time, each of the following factors has direct and significant influences on the costs of capital: the level of economic activity, the stage of the business cycle, the level of inflation, and expected economic conditions. I note that this position is consistent with the Supreme Court's Bluefield decision that noted that "[a] rate of return may be reasonable at one time, and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally."

Q. WHAT INDICATORS OF ECONOMIC AND FINANCIAL ACTIVITY HAVE YOU EVALUATED IN YOUR ANALYSES?

A. I have examined several sets of economic statistics for the period 1975 to the present. I chose this period since it permits the evaluation of economic conditions over three full business cycles, and thus makes it possible to assess changes in long-term trends. A business cycle is commonly defined as a complete period of expansion (recovery and growth) and contraction (recession). A full business cycle is a useful and convenient period over which to measure levels and trends in long-term capital costs because it incorporates the cyclical (i.e., stage of the business cycle) influences and thus permits a comparison of structural (or long-term) trends.

Q. PLEASE DESCRIBE THE MOST RECENT BUSINESS CYCLE AND THE PAST TWO HISTORICAL CYCLES.

A. The most recent cycle began in April of 1991 and ended in the fourth quarter of 2001, making it over 10½ years old. On a shorter-term basis, the economy slowed considerably in late 2000 and was in a recession during the first three quarters of 2001,

notwithstanding the Federal Reserve lowering interest rates eleven times in 2001 in an aggressive effort to create a "soft landing" and avoid a recession. The events of September 11, 2001 further damaged the U.S. economy.

The two prior complete cycles covered the following periods:

Business Cycle	Expansion Period	Contraction Period
1975-1982	Mar. 1975-July 1981*	Aug. 1981-Oct. 1982
1983-1991	Nov. 1982-July 1990	Aug. 1990-Mar. 1991
1991-2001	Apr. 1991- March. 2001	April-2001-Dec. 2001

* There was a brief "mini-recession" in 1980

The expansion phase of the past cycle surpassed the average length of expansions in the post-World War II era (i.e., about five years). The 1982-1990 expansion (seven years, eight months) was previously the longest peacetime expansion of this era.

Q. PLEASE DESCRIBE RECENT ECONOMIC AND FINANCIAL CONDITIONS AND THEIR IMPACT ON THE COSTS OF CAPITAL.

A. CCS Exhibit 4.2 shows several sets of economic data. Page 1 contains general macro-economic statistics while pages 2 and 3 contain financial market statistics. Page 1 of CCS Exhibit 4.2 shows that, following the expansion of 1991-2000, the economy endured a relatively mild recession during the first three quarters of 2001. This is indicated by the growth in real (i.e., adjusted for inflation) Gross Domestic Product, industrial production, and the unemployment rate. This decline in economic growth was magnified by the events of and subsequent to September 11, 2001.

During the first two quarters of 2002, economic growth was positive, but slow. Currently (third quarter of 2002), there is concern that the economy will again decline in what is described as a "double dip" recession.

The rate of inflation is also shown on page 1 of CCS Exhibit 4.2. As indicated, the Consumer Price Index (CPI) rose significantly during the 1975-1982 business cycle and reached double-digit levels in 1979-1980. The rate of inflation declined substantially in 1981 and remained at or below 6.1 percent during the 1983-1991 business cycle, as the CPI generally grew by about four percent annually from 1982-1989 (each year except one from 1982-1989 had a CPI rate between 3.8% and 4.6%). Since 1991, the CPI has been 3.4 percent or lower. The 1.6 percent rate of inflation in 2001 was among the lowest levels over the past 26 years.

Q. WHAT HAVE BEEN THE TRENDS IN INTEREST RATES?

A. Page 2 of CCS Exhibit 4.2 shows several series of interest rates. Rates rose sharply in 1975-1981 when the inflation rate was high and rising. Rates then fell substantially throughout the remainder of the 1980's and into the 1990's. During the recent business cycle, long-term rates have remained relatively stable, in comparison to the prior cycles, and currently are lower than at any time during the prior two cycles. Over the past several months, both long-term and short-term interest rates have declined. As noted previously, the Federal Reserve lowered short-term interest rates eleven times last year in an effort to stimulate the economy. Long-term rates have also dropped somewhat since September 11, 2001.

Q. WHAT HAVE BEEN THE TRENDS IN COMMON SHARE PRICES?

A. Page 3 of CCS Exhibit 4.2 shows several series of common stock prices and ratios. These generally indicate that share prices were basically stagnant during the high inflation/interest rate environment of the late 1970's and early 1980's. On the other hand, the 1983-1991 and the 1991-2001 cycles were characterized by a significant upward trend in stock prices. Over the past two years, however, stock prices have been volatile and have declined substantially from their highs reached in 1999 and early 2000. Immediately after September 11, stock prices dropped significantly and then rebounded somewhat. Recent months have seen extremely volatile stock price levels, stemming

largely from concerns about the strength of the economy and about the accuracy of reported corporate profits.

V. QUESTAR GAS'S OPERATIONS AND RISKS

Q. PLEASE SUMMARIZE QUESTAR GAS AND ITS OPERATIONS.

A. Questar Gas is a public utility that distributes natural gas in Utah, southwestern Wyoming, and a small portion of southeastern Idaho. In 2001, over 96 percent of the Company's customers live in Utah. The Company had some 731,900 customers at the end of 2001. Questar Gas also owns gas-producing properties that produced about 44 percent of its system requirements in 2001. According to Questar's 2001 Annual Report (page 14), Questar Gas is one of the fastest-growing retail distribution companies in the United States. In 2001, Questar Gas merged with Utah Gas Service Company and became the only gas distribution public utility in Utah.

Questar Gas, Questar Pipeline, Questar Energy Services (QES), and Questar Regulated Services (QRS), form the Regulated Services Segment of Questar Corporation (Questar). All members of this segment have common officers and share service functions. Questar Pipeline is an interstate pipeline company with 1,840 miles of transmission lines that transports natural gas in Utah, Wyoming and Colorado and stores gas in Utah and Wyoming. Questar Gas is the largest single transportation customer of Questar Pipeline. QES is engaged in retail energy services, such as appliance financing and energy management services. QRS provides administrative services to the other members of the Regulated Services Segment. Questar Gas' common stock is owned by QRS, which in turn is wholly owned by Questar.

Q. PLEASE DESCRIBE QUESTAR.

A. Questar describes itself as a "diversified energy services holding company that is involved in the full spectrum of natural gas activities through two divisions-Market Resources and Regulated Services." As described above, the Regulated Services Segment provides retail gas distribution services and interstate gas transmission and storage services.

The Market Resources Segment is engaged in energy development and production, gas gathering and processing, and wholesale gas and hydrocarbon liquids marketing, risk management, and storage. This segment is primarily made up of Questar Exploration and Production (which explores for and develops gas and oil), Wexpro (which develops and operates gas-producing properties on behalf of Questar Gas), Questar Gas Management (which engages in gas gathering and processing), Questar Gas Management (which engages in gas gathering and processing), and Questar Energy Trading (which markets gas and oil and provides risk-management services). Questar describes the Market Resources Segment as the "primary growth area" within the Company.

Questar is also engaged in information and communication activities through Questar Infocomm (which provides full-service integrated-information and communication services).

Questar was organized in 1984 through a corporate restructuring of Questar Gas, which was then known as Mountain Fuel Supply Company. Questar was created as a holding company with Questar Gas as one of its subsidiaries.

Q. WHAT HAS BEEN THE TREND IN QUESTAR'S BUSINESS SEGMENT RATIOS IN RECENT YEARS?

A. This is shown on CCS Exhibit 4.3. As indicated, the natural gas distribution activities of Questar accounted for the following percentages:

	Operating Revenues	Operating Income	Capital Expenditures	Identifiable Assets

1998	53%	43%	17%	32%
1999	49%	26%	26%	33%
2000	42%	23%	21%	34%
2001	49%	21%	8%	26%

The above table shows that Questar's natural gas distribution operations account for less than half of operating income, capital expenditures and assets. This indicates that Questar's operations are not reflective of a gas distribution utility.

Q. WHAT ARE THE CURRENT BOND RATINGS OF QUESTAR GAS?

A. The present bond ratings of Questar Gas are as follows:

Moody's	A1
Standard & Poor's	A+

These ratings have remained the same since at least 1992, according to the Company's response to Data Request 8.6 of the Committee of Consumer Services.

Q. HOW DO THESE RATINGS COMPARE TO OTHER GAS DISTRIBUTION UTILITIES?

A. CCS Exhibit 4.4 shows that Questar Gas' bond ratings are higher than the average bond rating for the groups of comparison gas distribution utilities utilized in subsequent sections of my testimony. Therefore, Questar Gas is perceived to have lower risk than these groups of gas distribution utilities.

Q. WHAT ARE THE REASONS FOR THE LOWER RISK OF QUESTAR GAS?

A. The analyses of Questar Gas by the rating agencies describe the relatively low risk of the Company. For example, Standard & Poor's (S&P) indicated in a October 16, 2001 report the following distinguishing features for Questar Gas's "strong business position";

Robust service territory
Very high annual customer growth
Competitive rates
Good supply position
Significant integration with affiliated Questar units
Sound regulation

S&P further notes that these "strengths" are "slightly offset by the higher risks associated with the parent company Questar Corp.'s unregulated subsidiaries."

The significance of this is that Questar Gas has higher ratings than the typical gas distribution utility in spite of the fact that its ratings are negatively impacted by the non-regulated activities of Questar. Stated differently, if Questar Gas were rated on a stand-alone basis (i.e., without the negative impact of Questar's non-regulated subsidiaries) its ratings might be even higher.

Q. ARE THERE ANY DIRECT INDICATIONS OF THE LOWER RISKS OF QUESTAR GAS' OPERATIONS, RELATIVE TO THOSE OF QUESTAR'S NON-REGULATED OPERATIONS?

A. Yes. Questar Gas has higher bond ratings than Questar Market Resources, as shown below:

	Moody's	S&P
Questar Gas	A1	A+
Questar Gas Pipeline	A1	A+
Questar Market Resources	Baa2	BBB+

Source: Response To Data Request 8.8 of Committee of Consumer Services.

Q. ARE THE RATINGS OF QUESTAR GAS INDEPENDENT OF THE OTHER ACTIVITIES OF QUESTAR?

A. No, they are not. Standard & Poor's, for example, presented the following analyses of Questar and Questar Gas in its October 16, 2001 report:

> **Rating Methodology**
> **Questar's corporate credit ratings** is **based** on the **consolidated credit profile** of the **entire Questar** family of companies, including the regulated Questar Gas and Questar Pipeline. **Questar's ratings** reflect the **stability** of the **main utility operations** of Questar, **offset** by the **riskier unregulated ventures** of QMR. Standard & Poor's believes that QMR's operations are strategically important to Questar and, therefore, derive significant support from the parent company and its financial resources. The ratings of QMR reflect that support, tempered by its much weaker business and financial profile. **[Emphasis added]**
> K
>
> **Financial Policy: Aggressive**
> **Credit quality may be impinged** by the firm's **aggressive growth strategy** that **encompasses nonregulated investments**, including **activities outside of the natural gas industry**. Management expects to increase net income about 10% per year by targeting increased domestic and Canadian E&P, energy marketing, and energy services. Regulated distribution operations are not expected to expand much beyond normal system growth, although that growth is admittedly well above average. Regulated pipeline operations will continue to expand as the company moves to broaden its infrastructure "footprint" beyond its traditional Rocky Mountain base.
>
> Standard & Poor's is **concerned** about the **effect** the **increased risks of the nonregulated enterprises** will **have** on Questar's **consolidated operations**, as well as on the **regulated utilities**. Moreover, the capital spending and uncertain profitability associated with these endeavors could hurt Questar's financial performance. **[Emphasis added**]

In addition, Standard & Poor's made the following statements about Questar Gas in its October 16, 2001 report:

> **Outlook**
> **Questar Gas' negative outlook** is **based** on the **higher business and financial risks of parent Questar Corp.'s growing nonregulated sector.** External financing pressures will be boosted by high levels of spending for unregulated ventures and expansions projects at the pipeline subsidiary. Unless the increasing business risk is offset by a stronger financial profile, a ratings downgrade is possible. **[Emphasis added**]

Q. HAVE THERE BEEN ANY RECENT DEVELOPMENTS CONCERNING THE RATING AGENCY PERCEPTIONS OF QUESTAR GAS?

A. Yes, there have. On May 1, 2002, Moody's placed the ratings of Questar Gas, as well as Questar and Questar Pipeline, "under review for possible downgrade." The reason, as stated by Moody's, is Questar's acquisition of Shenandoah Energy and the related increase in Questar's leverage.

Q. ARE THERE ANY REGULATORY MECHANISMS OR OTHER CONSIDERATIONS THAT REDUCE THE BUSINESS RISK OF QUESTAR GAS?

A. Yes, several factors, when combined, have the effect of reducing the business risk of Questar Gas. These include:

1. A Gas Balancing Account that reduces the Company's gas supply price risk.
2. Company-owned production (Wexpro Gas) provides a significant hedge against market price volatility. This is somewhat unique among gas distribution utilities.
3. The Company has regulatory support to use risk management tools such as fixed priced contracts and financial instruments to hedge against market price volatility. This mitigates the risk of sharp changes in gas costs and stabilizes revenue levels.
4. The commodity portion of the Company's uncollectible account has been moved from the general rates to the Gas Balancing Account, which reduces the Company's risk from collecting this portion of its bad debts.

5. Many of the Company's customers are on an Equal Payment Plan that equalizes its revenue stream.
6. The Company has a Weather Normalization Clause that reduces the risk of weather-related gas utilization.
7. The Company is the only investor-owned gas distribution utility in Utah, which reduces the impact of potential competition.,

Q. ARE THERE ANY ADDITIONAL POTENTIALLY RISK-REDUCING FACTORS IN QUESTAR GAS' APPLICATION AND REQUESTED REGLATORY MODIFICATIONS?

A. Yes. Questar Gas is requesting that its ratemaking procedure be changed from use of an historical test period to a prospective test period. Should the Commission approve this change in ratemaking methodology for Questar Gas, it would have the impact of reducing the Company's risk. I note, in this regard, that Questar Gas' cost of capital witness Williamson acknowledges this in his response to Data Request 12.2 of Committee of Consumer Services.

If the Commission does approve the ratemaking methodological change requested by Questar Gas, this would have the effect of shifting a portion of the Company's risks to its ratepayers. Under these circumstances, the ratepayers should be rewarded for their involuntary acceptance of these risks by the implementation of a lower return on common equity. At the very least, this risk transfer should be recognized by the use of a cost of equity within the lower portion of the cost of equity range for proxy gas distribution utilities.

VI. CAPITAL STRUCTURE AND COST OF LONG-TERM DEBT

Q. WHAT IS THE IMPORTANCE OF DETERMINING A PROPER CAPITAL STRUCTURE IN A REGULATORY FRAMEWORK?

A. A utility's capital structure is important since the concept of rate base - rate of return regulation requires that a utility's capital structure be determined and utilized in estimating the total cost of capital. Within this framework, it is proper to ascertain whether the utility's capital structure is appropriate relative to its level of business risk and relative to other utilities.

As discussed in Section III of my testimony, the purpose of determining the proper capital structure for a utility is to help ascertain the capital costs of the company. 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. In this process, the rate base is derived from the asset side of the balance sheet and the cost of capital is derived from the liabilities/owners' equity side of the balance sheet. 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.

The common equity ratio (i.e., the percentage of common equity in the capital structure) is the capital structure item that normally receives the most attention. This is the case since common equity: (1) usually commands the highest cost rate; (2) generates associated income tax liabilities; and (3) causes the most controversy since its cost cannot be precisely determined.

Q. HOW IS QUESTAR GAS FINANCED?

A. Questar Gas's common stock is owned by QRS, which is wholly owned by Questar. As a result, Questar Gas obtains all of its equity funding ultimately from Questar. Questar Gas

obtains its debt financing either through public offerings of debt securities or borrowing from Questar.

Q. HOW HAVE YOU EVALUATED THE CAPITAL STRUCTURE OF QUESTAR GAS?

A. I have examined the five-year historical (1997-2001) capital structure ratios of Questar Gas and Questar. These are shown on CCS Exhibit 4.5.

I have summarized below the common equity ratios for Questar Gas and Questar for the last five years:

	Questar Gas		Questar	
	Inc'l S-T Debt	Exc'l S-T Debt	Inc'l S-T Debt	Exc'l S-T Debt
1997	41.5%	51.0%	54.8%	60.4%
1998	42.2%	51.4%	50.7%	58.7%
1999	47.2%	55.0%	50.9%	55.5%
2000	45.1%	55.0%	51.2%	57.7%
2001	47.2%	52.6%	41.8%	52.6%

The decline in Questar's 2001 common equity ratio was, according to the Company's Annual Report, the result of the acquisition of Shenandoah Energy.

Q. HOW DO THESE CAPITAL STRUCTURE RATIOS COMPARE TO THE GAS DISTRIBUTION UTILITY INDUSTRY?

A. I have prepared CCS Exhibit 4.6 to make this comparison. This shows the December 31, 2001, (i.e., most recent annual period available) capital structure ratios of the three groups of comparison gas distribution companies identified in the following section.

CCS Exhibit 4.6 indicates that the three groups have the following common equity ratios at the end of 2001:

Group	Including S-T Debt	Excluding S-T Debt
Value Line Group	36.8%	42.3%
Moody's Group	40.8%	48.4%
Williamson Proxy Group	42.1%	47.7%
Questar	41.4%	52.0%

These common equity ratios are all lower than those of Questar Gas. This indicates that Questar Gas has below-average financial risk, as well as below-average business risk.

Q. WHAT CAPITAL STRUCTURE RATIO HAS QUESTAR GAS REQUESTED IN THIS PROCEEDING?

A. The Company requests use of the following capital structure:

Capital Item	Percentage
Debt	47.4%
Common Equity	52.6%

According to Questar Gas witness Robinson, these are the December 31, 2001 capital structure ratios of Questar Gas adjusted for the annualized effects of issuing $60 million long-term debt and $40 million of capital stock in the fourth quarter of 2001.

Q. WHAT CAPITAL STRUCTURE DO YOU PROPOSE TO USE IN THIS PROCEEDING?

A. I have modified the adjusted test period capital structure of Questar Gas to include short-term debt. As my CCS Exhibit 4.5 indicates, Questar Gas has consistently utilized short-

term debt during recent years. Questar provides this short-term debt. I believe it is appropriate to include short-term debt in the capital structure when a utility consistently employs this type of capital. I would note that rating agencies such as Standard & Poor's include short-term debt in their benchmark ratios.

Q. WHAT ARE THE COST RATES OF LONG-TERM DEBT AND SHORT-TERM DEBT?

A. The Company's filing cites a long-term debt cost of 7.92 percent. I use this cost rate in my cost of capital analyses. For the cost of short-term debt, I use the actual Questar cost of 2.27 percent at the end of 2001, as reflected in the 2001 Annual Report.

Q. CAN THE COST OF COMMON EQUITY BE DETERMINED WITH THE SAME DEGREE OF PRECISION AS THE COSTS OF DEBT?

A. No. The cost rates of debt are largely determined by interest payments, issue prices, and related expenses. Even though alternative methodologies exist for determining the embedded cost rate, the cost rate for debt is generally agreed to, at least within a relatively small range.

The cost of common equity, on the other hand, cannot be precisely measured, primarily because this cost is an opportunity cost. There are, however, several models that can be employed to estimate the cost of common equity. Three of the primary methods - DCF, CAPM, and CE - are developed in the following sections of my testimony.

VII. SELECTION OF COMPARISON GROUPS

Q. HOW HAVE YOU ESTIMATED THE COST OF COMMON EQUITY FOR QUESTAR GAS?

A. Questar Gas is not a publicly traded company; rather, it is a subsidiary of Questar Corp. As a result, it is not possible to conduct direct analyses of the cost of common equity for Questar Gas. While it is possible to conduct studies of Questar's cost of equity, the diversified nature of this company's operations indicates this is not an adequate proxy for the cost of equity for Questar Gas. Therefore, it is necessary to also analyze groups of comparison or "proxy" companies as a substitute for Questar Gas to determine its cost of common equity.

The most frequently used alternative is to select a group of comparison natural gas distribution utilities. I have examined three such groups for comparison to Questar Gas. I have selected one large group as the Value Line Gas Distribution Group. I have also used Moody's Gas Distribution Group. I have further conducted studies of the cost of equity for the group of gas distribution proxy companies selected by Questar Gas's witness J. Peter Williamson.

Q. DO YOU BELIEVE THE SELECTION OF COMPARISON COMPANIES IN THIS PROCEEDING IS A PRIMARY SOURCE OF THE DIFFERENCE IN COST OF EQUITY RECOMMENDATIONS BETWEEN YOURSELF AND DR. WILLIAMSON?

A. No. It is apparent from my analyses that the cost of capital for each of these groups is approximately the same. As a result, the actual groups of companies selected for comparison purposes should not be construed as a primary source of disagreement between my recommendations and those of Questar Gas witness Williamson.

VIII. DISCOUNTED CASH FLOW ANALYSIS

Q. WHAT IS THE THEORY AND METHODOLOGICAL BASIS OF THE DISCOUNTED CASH FLOW MODEL?

A. The discounted cash flow (DCF) model is one of the oldest and most commonly-used, models for estimating the cost of common equity for public utilities. The DCF model is based on the "dividend discount model" of financial theory, which maintains that the value (price) of any security or commodity is the discounted present value of all future cash flows. When applied to common stocks, the dividend discount model describes the value of a stock as follows:

$$P = \frac{D_1}{(1+K_1)} + \frac{D_2}{(1+K_2)^2} + \ldots + \frac{D_n}{(1+K_n)^n} = \sum_{i=1}^{n} \frac{D}{(1+K)^n}$$

where: P = current price

D_1 = dividends paid in period 1, etc.

K_1 = discount rate in period 1, etc.

n = infinity

This relationship can be simplified if dividends are assumed to grow at a constant rate of g. This variant of the dividend discount model is known as the constant growth or Gordon DCF model. In this framework, the price of a stock is determined as follows:

$$P = \frac{D}{(K - g)}$$

where: P = current price

D = current dividend rate

K = discount rate (cost of capital)

g = constant rate of expected growth

This equation can be solved for K (i.e., the cost of capital) to yield the following formula:

$$K = \frac{D}{P} + g$$

This formula essentially states that the return expected or required by investors is comprised of two factors: the yield (current income) and expected growth (future income).

Q. PLEASE EXPLAIN HOW YOU HAVE EMPLOYED THE DCF MODEL.

A. I have primarily utilized the constant growth DCF model. In doing so, I have combined the current dividend yield for each group of natural gas utility stocks described in the previous section with several indicators of expected growth.

Q. HOW DID YOU DERIVE THE DIVIDEND YIELD COMPONENT OF THE DCF EQUATION?

A. There are several methods that can be used for calculating the yield component. These methods generally differ in the manner in which the dividend rate is employed, i.e., current versus future dividends or annual versus quarterly compounding of dividends. I believe the most appropriate yield component is a quarterly compounding variant that is expressed as follows:

$$Yield = \frac{D_0(1 + 0.5g)}{P_0}$$

This yield component recognizes the timing of dividend payments and dividend increases.

The P_o in my yield calculation is the average (of high and low) stock price for each company for the most recent three-month period (May-July, 2002). The D_o is the current annualized dividend rate for each company.

Q. HOW HAVE YOU ESTIMATED THE GROWTH COMPONENT OF THE DCF EQUATION?

A. The growth rate component of the DCF model is usually the most crucial and controversial element involved in using this methodology. The objective of estimating the growth component is to reflect the growth expected by investors that is embodied in the price (and yield) of a company's stock. As such, it is important to recognize that individual investors have different expectations and consider alternative indicators in deriving their expectations. A wide array of techniques exists for estimating the growth expectations of investors. As a result, it is evident that no single indicator of growth is always used by all investors. It therefore is necessary to consider alternative indicators of growth in deriving the growth component of the DCF model.

I have considered five indicators of growth in my DCF analyses. These are:

1. 1997-2001 (5 year average) earnings retention, or fundamental growth;
2. Five-year average of historical growth in earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS);
3. 2002-2007 projections of earnings retention growth;
4. 2000-2006 projections of EPS, DPS, and BVPS; and
5. Five-year projections of EPS growth as reported in First Call (formerly I/B/E/S).

I believe this combination of growth indicators is a representative and appropriate set from which to estimate investor expectations of growth for the groups of natural gas companies.

Q. PLEASE DESCRIBE YOUR DCF CALCULATIONS.

A. CCS Exhibit 4.7 presents my DCF analysis. Page 1 shows the calculation of the "raw" (i.e., prior to adjustment for growth) dividend yield. Pages 2-3 show the growth rate for the groups of comparison natural gas companies. Page 4 shows the DCF calculations, which are presented on several bases: average, median, mid-point of individual growth

rates/DCF costs, and range of low/high values. These results can be summarized as follows:

	Mid-Point	Average	Median	Range
Comparison Groups:				
Value Line Group	9.6 %	9.7%	9.7%	8.2-10.9%
Moody's Group	9.6%	9.5%	9.5%	7.8-11.3%
Williamson Proxy Group	10.3%	10.1%	10.2%	9.0-11.5%
Questar	10.8%	10.4%	--	9.3-12.2%

Q. WHAT DO YOU CONCLUDE FROM YOUR DCF ANALYSES?

A. Based upon my analyses, I believe a range of 9½ percent to 11 percent represents the current DCF cost of equity for natural gas distribution utilities. The lower end of this range reflects the mid-point, average, and median of the DCF results for the groups of comparison companies while the upper end of the range reflects the upper portion of the DCF calculations for the groups examined. I have focused on the upper portion of the DCF calculations since current financial conditions (low interest rates and high market-to-book ratios for utilities) have the effect of driving DCF results to low levels compared to historical standards. I do not, however, focus exclusively on the high-end results since this would place total reliance on a single growth rate, which is improper.

IX. CAPITAL ASSET PRICING MODEL ANALYSIS

Q. PLEASE DESCRIBE THE THEORY AND METHODOLOGICAL BASIS OF THE CAPITAL ASSET PRICING MODEL.

A. The Capital Asset Pricing Model (CAPM) is a version of the risk premium method. The CAPM describes and measures the relationship between a security's investment risk and its market rate of return. The CAPM was developed in the 1960s and 1970s as an extension of modern portfolio theory (MPT), which studies the relationships among risk, diversification, and expected returns.

Q. HOW IS THE CAPM DERIVED?

A. The general form of the CAPM is:

$$K = R_f + \beta\,(R_m - R_f)$$

where: K = cost of equity

R_f = risk free rate

R_m = return on market

$\exists$ = beta

R_m-R_f = market risk premium

As noted previously, the CAPM is a variant of the risk premium method. I believe the CAPM is generally superior to the simple risk premium method because the CAPM specifically recognizes the risk of a particular company or industry, whereas the simple risk premium method does not.

Q. WHAT GROUPS OF COMPANIES HAVE YOU UTILIZED TO PERFORM YOUR CAPM ANALYSES?

A. I have performed CAPM analyses for the same groups of natural gas utilities evaluated in my DCF analyses.

Q. WHAT RATE DID YOU USE FOR THE RISK-FREE RATE?

A. The first term of the CAPM is the risk-free rate (R_f). The risk-free rate reflects the level of return that can be achieved without accepting any risk.

In reality, there is no such thing as a truly riskless asset. In CAPM applications, the risk-free rate is generally recognized by use of U.S. Treasury securities. This follows since Treasury securities are default-free owing to the government's ability to print money and/or raise taxes to pay its debts.

Two types of Treasury securities are often utilized as the R_f component - short-term U.S. Treasury bills and long-term U.S. Treasury bonds. I have performed CAPM calculations using the three-month average yield (May-July, 2002) for 25-year U.S. Treasury bonds. Over this three--month period, these bonds had an average yield of 5.66 percent.

Q. WHAT BETAS DID YOU EMPLOY IN YOUR CAPM?

A. I utilized the most current Value Line betas (as of June 21, 2002) for each company in the groups of comparison natural gas companies. These are shown on CCS Exhibit 4.9 and are seen to be within a range of 0.55 to 0.80 (the beta for the entire market is 1.00).

Q. HOW DID YOU ESTIMATE THE MARKET RETURN COMPONENT?

A. The market return component (R_m) represents the expected return from holding the entire market portfolio. In the CAPM, this term technically reflects the return from holding the weighted combination of all assets (i.e., stocks, bonds, real estate, collectibles, etc.). However, the traditional use of CAPM in utility rate proceedings focuses on R_m as the return on common stocks.

Alternative methods have been prepared with which to estimate R_m. As was the case in the DCF analysis concerning investors' expectations of growth, investors do not universally share the same expectations of the return on the overall market. My analysis

of the R_m focuses on various returns for two Standard & Poor's groups which are well-recognized indices of the overall stock market. Two measures of return for the S&P groups have been performed.

CCS Exhibit 4.8 shows the return on equity for the S&P 400 Industrials for the period 1949-2000 (all available years reported by S&P). I examined the S&P 400 since the S&P 400 Industrials goes back to 1949 whereas the S&P 500 only goes back to 1978. The average return on equity for the S&P 400 Industrials over the 1949-2000 period is 14.86 percent. Based upon these returns, I conclude that the expected return on equity is about 14.86 percent for the S&P 400 group.

I have also considered the total return for the S&P 500 group, as tabulated by Ibbotson Associates, using both arithmetic and geometric means. I have considered the total returns for the entire 1926-2001 period, which are as follows:

Arithmetic	12.7%
Geometric	10.7%

I conclude from this that the expected total return for the S&P 500 group is about 11¾ percent.

I combine the results of the return on common equity (14.86 percent) and the total return (11¾ percent) and conclude that 13.25 percent is the expected R_m.

Q. PLEASE DESCRIBE THE RESULTS OF YOUR CAPM ANALYSIS.

A. CCS Exhibit 4.9 shows my CAPM results. The results are as follows:

	Average	Median
Comparison Groups:		
Value Line Group	10.5%	10.2%
Moody's Group	10.3%	10.2%
Williamson Proxy Group	10.5%	10.2%
Questar	11.0%	

Q. WHAT IS YOUR CONCLUSION CONCERNING THE CAPM COST OF EQUITY FOR THE GROUPS OF COMPARISON COMPANIES?

A. The CAPM results collectively indicate a cost of about 10¼ percent to 10½ percent for the three groups of comparison natural gas distribution companies.

X. COMPARABLE EARNINGS ANALYSIS

Q. PLEASE DESCRIBE THE BASIS OF THE CE METHODOLOGY.

A. The CE method is derived from the "corresponding risk" standard of the Bluefield and Hope cases. This method is based upon the economic concept of opportunity cost. As previously noted, the cost of capital is an opportunity cost: the prospective return available to investors from alternative investments of similar risk. 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. Through this mechanism, opportunity-cost-driven pricing signals should direct capital to its most productive uses.

The CE method is designed to measure the returns expected to be earned on the original cost book value of similar risk enterprises. Thus, this method provides a direct measure of the fair return, since it translates into practice the competitive principle upon which regulation rests.

The CE method normally examines the experienced and/or projected returns on book common equity. The logic for returns on book equity follows from the use of original cost rate base regulation for public utilities that uses a utility's book common equity to determine the cost of capital. This cost of capital is, in turn, used as the fair rate of return that is then applied (multiplied) to the book value of rate base to establish the dollar level of capital costs to be recovered by the utility. This technique is thus consistent with the rate base methodology used to set utility rates.

It can be maintained that the CE standard is easy to calculate and the amount of subjective judgment required is minimal. The reason is because this method avoids several of the subjective factors involved in other cost of capital methodologies. For example, the DCF method requires the determination of the growth rate contemplated by

investors, which is a subjective factor. The CAPM requires the specification of several expectational variables, such as market return and beta. The risk premium method requires the determination of the expected risk premium, which is a subjective factor. In contrast, the CE approach makes use of simple readily available accounting data. In fact, investors are provided with accounting data (i.e., annual reports, Form 10-Ks, prospectuses) on a more frequent basis than market data.

In addition, this method is easily understood and is firmly anchored in regulatory tradition (i.e., Bluefield and Hope). Furthermore, this method is not influenced by the regulatory process to the same extent market-based methods such as DCF and CAPM are influenced. The base to which the comparable earnings standard is applicable is the utility's book common equity, which is much less vulnerable to regulatory influences than stock price (which is the base to which the market-based standards are applied).

Q. HOW HAVE YOU EMPLOYED THE CE METHODOLOGY IN YOUR ANALYSIS OF QUESTAR GAS' COMMON EQUITY COST?

A. I conducted the CE methodology by examining realized returns on equity for several groups of companies and evaluating the investor acceptance of these returns by reference to the resulting market-to-book ratios. In this manner it is possible to assess the degree to which a given level of return equates to the cost of capital. It is generally recognized for utilities that market-to-book ratios of greater than one (i.e., 100%) reflect a situation where a company is able to attract new equity capital without dilution (i.e., above book value). As a result, one objective of a fair cost of equity is the maintenance of stock prices above book value.

I would further note that the CE analysis, as I have employed it, is based upon market data (through the use of market-to-book ratios) and is thus essentially a market test. As a result, my comparable earnings analysis is not subject to the criticisms occasionally made by some who maintain that past-earned returns do not represent the cost of capital. In

addition, my comparable earnings analysis uses prospective returns and thus is not strictly backward looking.

Q. WHAT TIME PERIODS HAVE YOU EXAMINED IN YOUR CE ANALYSIS?

A. My CE analysis considers the experienced equity returns of the comparison groups of natural gas utilities for the period 1992-2001 (i.e., last 10 years). The comparable earnings analysis requires that I examine a relatively long period of time in order to determine trends in earnings over at least a full business cycle. Further, in estimating a fair level of return for a future period, it is important to examine earnings over a diverse period of time in order to avoid any undue influence by unusual or abnormal conditions that may occur in a single year or shorter period. Therefore, in forming my judgment of the current cost of equity I have focused on two periods: 1997-2001 (the last five years), and 1992-2001 (the most recent business cycle).

Q. PLEASE DESCRIBE YOUR CE ANALYSIS.

A. CCS Exhibits 4.10 and CCS 4.11 contain summaries of experienced returns on equity for several groups of companies, while CCS Exhibit 4.12 presents a risk comparison of utilities versus unregulated firms.

CCS Exhibit 4.10 shows the earned returns on average common equity and market-to-book ratios for the three groups of natural gas distribution utilities and Questar. These can be summarized as follows

	Historical		Prospective
Group	ROE	M/B	ROE
Comparison Groups			
Value Line	11.0-11.1%	174-183%	11.4-13.4%
Moody's Group	10.4-11.1%	167%	10.4-12.4%
Williamson Proxy Group	12.3-12.4%	182-190%	11.6-13.3%
Questar	12.8-13.1%	202-208%	10.5-13.5%

These results indicate that historical returns of 10.4-12.4 percent have been adequate to produce market-to-book ratios of 167-190 percent. I note, further, that over these

periods, returns on equity have generally declined while market-to-book ratios have increased. This reflects a decreasing cost of common equity over recent years.

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. HAVE YOU ALSO REVIEWED EARNINGS OF UNREGULATED FIRMS?

A. Yes. As an alternative, I also examined a group of largely unregulated firms. I have examined the Standard & Poor's 500 Composite group, since this is a well-recognized group of firms that is widely utilized in the investment community and is indicative of the competitive sector of the economy. CCS Exhibit 4.11 presents the earned returns on equity and market-to-book ratios for the S&P 500 group over the past nine years (i.e., 1992-2000). As this exhibit indicates, over the two periods this group's average earned returns ranged from 19.6-22.0 percent with market-to-book ratios ranging between 436-546 percent. Over the past nine years market-to-book ratios have increased dramatically, reflecting a decline in the return levels required by investors. Throughout this period, market-to-book ratios have been over 271 percent; they exceeded 300 percent in 1995-2000.

Q. HOW CAN THE ABOVE INFORMATION BE USED TO ESTIMATE THE COST OF EQUITY FOR QUESTAR GAS?

A. The recent earnings of the natural gas distribution utility and S&P 500 groups can be utilized as an indication of the level of return realized and expected in the regulated and competitive sectors of the economy. In order to apply these returns to the cost of equity for natural gas distribution utilities, however, it is necessary to compare the risk levels of the natural gas distribution utility industry with those of the competitive sector. I have done this in CCS Exhibit 4.12 that compares several risk indicators for the S&P 500 group and the natural gas distribution utility groups.

The information in this schedule indicates that the S&P 500 group is more risky than the natural gas distribution utility comparison groups.

Q. WHAT RETURN ON EQUITY IS INDICATED BY THE CE ANALYSIS?

A. Based on the recent earnings and market-to-book ratios, I believe the CE analysis indicates that the cost of equity for natural gas distribution utilities is no more than 11 percent. Recent returns of 10.4-12.4 percent have resulted in market-to-book ratios of 166 and greater. Prospective returns of 10.4-13.4 percent have been accompanied by market-to-book ratios of over 166 percent. As a result, it is apparent that returns below this level would result in market-to-book ratios of well above 100 percent. An earned return of less than 11 percent should thus result in a market-to-book ratio of at least 100 percent.

XI. RETURN ON EQUITY RECOMMENDATION

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR THREE COST OF EQUITY ANALYSES.

A. My three methodologies produce the following results for the natural gas distribution utility industry, as summarized below:

Discounted Cash Flow	9½ - 11%
Capital Asset Pricing Model	10¼ -10½%
Comparable Earnings	11%

My overall conclusion from these results is a range of 9½ percent to 11 percent.

Q. WHAT RETURN ON EQUITY DO YOU RECOMMEND FOR QUESTAR GAS?

A. My analyses have indicated a cost of equity for natural gas utilities of 9½ percent to 11 percent. I have considered several factors in reaching a conclusion as to how Questar Gas's cost of equity should be derived from this range.

First, my cost of equity model results focused on the higher results (i.e., use of upper portion of DCF findings, use of long-term treasury bond yields in CAPM Model) and thus already reflect returns in the upper end of the fair rate of return range.

Second, Questar Gas is viewed as a below-average risk gas distribution utility (as measured by its bond rating), in spite of the fact that its rating is negatively influenced by the more risky non-regulated activities of Questar.

Third, the combination of a number of factors has the effect of reducing the Company's business risk.

Fourth, Questar Gas has an above-average common equity ratio, in relation to other gas distribution utilities. This indicates that Questar Gas has below-average financial risk.

Based upon these factors, it is my belief that the fair cost of common equity for Questar Gas is the lower portion of the 9½ percent to 11 percent range groups of natural gas distribution utilities that I have examined. I thus recommend a range of 9½ percent to 10½ percent for Questar Gas. My recommended point estimate within this range is the mid-point, or 10 percent.

I also recommend that, should the Commission approve the Company's request to change its ratemaking methodology from a historic to a projected test period, a lower cost of equity be set for the Company to recognize the lower level of risk associated with a future test period.

XII. TOTAL COST OF CAPITAL

Q. WHAT IS THE TOTAL COST OF CAPITAL FOR QUESTAR GAS?

A. CCS Exhibit 4.13 reflects the total cost of capital for the Company using the Questar Gas capital structure, the Company's proposed cost of long-term debt, and my short-term debt and common equity recommendations. The resulting total cost of capital is a range of 8.09 percent to 8.56 percent, with a mid-point of 8.32 percent.

Q. DOES YOUR COST OF CAPITAL RECOMMENDATION PROVIDE THE COMPANY WITH A SUFFICIENT LEVEL OF EARNINGS TO MAINTAIN ITS FINANCIAL INTEGRITY?

A. Yes, it does. CCS Exhibit 4.14 shows the pre-tax coverage that would result if Questar Gas earned the mid-point of my cost of capital recommendation. As the results indicate, the mid-point of my recommended range would produce a coverage level that is near the benchmark range for an A rated utility. In addition, the debt ratio is consistent with that of an A rated utility.

I note that the implied 3.08 times interest coverage in my cost of capital recommendation compares favorably with the actual interest coverage levels of Questar Gas over the past five years, as shown below:

Year	EBIT Interest Coverage
1997	3.2x
1998	3.1x
1999	2.4x
2000	2.8x
2001*	2.9x

* 12 months ended June 30.

Source: Response to Data Request 8.8 of Committee of Consumer Services.

XIII. COMMENTS ON COMPANY TESTIMONY

Q. HAVE YOU REVIEWED THE TESTIMONY OF QUESTAR GAS WITNESS J. PETER WILLIAMSON?

A. Yes. I have.

Q. WHAT IS YOUR UNDERSTANDING OF DR. WILLIAMSON'S TESTIMONY AND CONCLUSIONS?

A. Dr. Williamson primarily uses a DCF model, which he first applies to a group of nine natural gas companies. He also applies his DCF method to a sub-group of eight companies (i.e., gas proxy group excluding Questar). He also employs CAPM and risk premium models to these groups of companies.

Dr. Williamson's model results and recommendations can be summarized as follows:

	Proxy Group	Proxy Group Excl. Questar	Questar
DCF			
Median	12.61%	12.53%	
Average	12.21%	12.21%	12.15%
CAPM	12.3%		13.1%

Risk Premium - results of 16.2 percent and 13.1 percent.

His conclusion and recommendation is 12.6 percent, which is derived from his DCF analysis for his proxy group.

I believe that each of these methodologies over-states the cost of common equity for gas distribution utilities and Questar Gas.

Q. WHAT IS YOUR REACTION TO DR. WILLIAMSON'S DCF METHODOLOGY?

A. Dr. Williamson's DCF analyses consider four sets of growth rates with the following results:

Growth Rate	Means	Medians
IBES EPS Forecasts	11.23%	11.68%
Value Line EPS Forecasts	13.77%	13.80%
Value Line DPS Forecasts	7.28%	6.33%
Internal Growth	11.62%	12.36%

In reaching his 12.6 percent DCF recommendation, Dr. Williamson did not rely on the DPS forecasts. His 12.6 percent recommendation is the average of the median results for the remaining three growth rates.

Q. DO YOU AGREE WITH DR. WILLIAMSON'S DCF METHODOLOGY AND CONCLUSIONS?

A. No, I do not. I first disagree with his refusal to consider DPS growth in his DCF analyses. The DCF model is a "cash flow" model - the cash flow in the ownership of common stocks is dividends. 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.

The growth factors that Dr. Williamson does consider are heavily weighted by EPS forecasts of analysis. There are a number of reasons why analysts' forecasts are not appropriate as the proxy for investors' expectations of common stock growth in a DCF context.

First, recent academic scholarship has challenged the accuracy of analysts' EPS forecasts. A prominent example is a November/December 1998 article in the Financial Analysts Journal titled "Why So Much Error in Analysts' Earnings Forecasts?" by Vijay Kumar Chopra. In this article, the author concluded, "Analysts' forecasts of EPS and growth in

EPS tend to be overly optimistic." He concluded that analyst forecasts of EPS over the past 13 years have been more than twice the actual growth rate.

A second source is less academic and more directly in the financial mainstream. On March 26, 2002, Federal Reserve Chairman Alan Greenspan spoke to an audience at the Stern School of Business of New York University. In that speech, (available at the FRB's website: http://www.federalreserve.gov), the Chairman addressed the historical relationships and roles of corporations, financial institutions and brokerage-based investment analysts:

> "For the most part, despite providing limited incentives for board members to safeguard shareholder interest, this paradigm has worked well. We are fortunate for financial markets have had no realistic alternative other than to depend on the chief executive officer to ensure an objective evaluation of the prospects of the corporation. Apart from a relatively few large institutional investors, not many existing or potential shareholders have the research capability to analyze corporate reports and thus to judge the investment value of a corporation. This vitally important service has become dominated by firms in the business of underwriting or selling securities."
>
> "But, as we can see from recent history, **long-term earnings forecasts of brokerage-based securities analysts, on average, had been persistently overly optimistic.** Three-to five-years earnings forecasts for each of the S&P 500 corporations, compiled from projections of securities analysts by **I/B/E/S, averaged almost 12 percent** per year between 1985 and 2001. **Actual earnings growth** over the **period averaged about 7 percent."**
>
> "Perhaps the last sixteen years for which systematic data have been available are an historic aberration. But the **persistence** of the **bias year after year** suggests that it more likely results, at least in part, from the **proclivity** of **firms** that **sell securities** to retain and promote **analysts** with an **optimistic inclination**. Moreover, the **bias** apparently has been especially large when the brokerage firm issuing the forecast also serves as an underwriter for the company's securities."

> "The performance of securities analysts may improve as a result of the recent joint initiative by the National Associates of Securities Dealers and the New York Stock Exchange to require brokerage firms to include in research reports the distribution of the firms ratings among "buy," "sell," and "hold" for example. Brokerage firms must also include in research reports a record that indicates when an analyst assigned of changes a rating for a company."
>
> "I suspect that with the underlying database publicly available, it is just a matter of time before the ex post results of analysts' recommendations are compiled and published on a regular basis. I venture to day that with such transparency, the **current upward bias of analysts' earnings projections** would diminish rather rapidly, because investment firms are well aware that security analysis without credibility has no market value." **[Emphasis added]**

A third source of new insight and perspective is, unfortunately, the well-publicized Enron and WorldCom debacles. These sagas demonstrate dramatically how analysts are often either unwilling or incapable of discerning potentially disastrous impacts on a Company's projected EPS, and how even current earnings can be distorted by the complex financial machinations of large, aggressive corporations. A dramatic illustration is that, as recent as 2001, the very year in which Enron toppled and eventually collapsed, IBES EPS projections for Enron stood at 16.50 percent.

Fourth, one of the largest investment firms, Merrill Lynch & Co., recently reached an agreement with the New York State Attorney General that lifted a court order and compelled the Company to make significant additional disclosures related to its stock research activities. One of the bases of the Attorney General's complaint was a belief that Merrill Lynch has "an inherent conflict of interest." An April 19, 2002 Wall Street Journal article elaborated, stating that the New York Attorney General accuses Merrill Lynch of "misleading investors with overly optimistic corporate research that…was published to help the firm win lucrative investment-banking work." Merrill Lynch reportedly denies the latter charge, but the firm's agreement to significantly expand its disclosures regarding the issuance of research reports for the same firms from which it is receiving investment-banking fees, reflects the recognition that investors have not, in the

past, fully appreciated the potential for an upward bias in analysts' forecasts. This and other, similar investigations and complaints have underscored a growing awareness that analysts' estimates cannot be considered an unbiased source of growth expectations by investors, and this has important implications for a DCF analysis that incorporates any such estimates.

Q. DO YOU HAVE ANY COMMENTS ABOUT DR. WILLIAMSON'S CAPM ANALYSIS?

A. Yes, I do. My primary concern with Dr. Williamson's CAPM methodology is his use of a 16.2 percent expected market return, which he derives from combining the S&P 500 dividend yield of 1.4 percent and the IBES growth forecast of 14.8 percent. I have previously indicated why it is inappropriate to place primary reliance on analysts' forecasts.

In this instance, it is especially inappropriate to rely on analysts' forecasts as an indicator of expected investor returns. For example, in 2000 investors in the S&P 500 suffered a financial decline of 8.5 percent and in 2001 they experienced an additional decline of 11.9 percent. In addition, during the first six months of 2002, investors in the S&P 500 suffered a financial decline of 13.8 percent. I find it doubtful that investors currently expect 16.2 percent annual returns on common stock.

Q. DO YOU HAVE ANY COMMENTS ABOUT DR. WILLIAMSON'S RISK PREMIUM METHOD?

A. Yes, I do. Dr. Williamson's first risk premium (10.5%) is also based on his 16.2 percent expected return for the S&P 500. This is subject to the same criticisms as I described concerning his CAPM method. His second risk premium (7.4%) is derived from the 1926-2000 experiences of common stock returns versus using long-term treasury bonds.

I note first that although Dr. Williamson refuses to acknowledge historic growth rates in his DCF model, his second risk premium model relies exclusively on historical data.

In addition, the holding period returns, as tabulated by Ibbotson Associates, merely describe the historical experience of the indices examined. Although I do not oppose using this procedure as one of several components of an estimate of investor expectations (as I do in estimating the R_m in my CAPM analysis), I do not believe it is appropriate to take a single 1926-2000 relationship as a direct component in the risk premium model as Dr. Williamson has done. His procedure implicitly assumes that investors have equal expectations with respect to the experience of the Great Depression, World War II, the high inflation of the late 1970's-early 1980's, and the most recent period of low inflation.

The negative financial performance of the S&P 500 over the past three years further diminishes investors' expectations that historical return levels can be expected to be maintained.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.