Issues:	Cost of Capital
Witness:	Donald A. Murry
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Aquila
Case No:	
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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. _____

DIRECT TESTIMONY

OF

DONALD A. MURRY, Ph.D.

ON BEHALF OF

AQUILA, INC.
d/b/a
AQUILA NETWORKS – MPS
and
AQUILA NETWORKS – L&P

Oklahoma City, Oklahoma
August 2003

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

AFFIDAVIT OF DONALD A. MURRY

Donald A. Murry, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled, "Direct Testimony of Donald A. Murry"; that said testimony was prepared by him and under his direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge, information and belief.

Donald A. Murry

Subscribed and sworn to before me this 22d day of July, 2003.

Carolyn S. Hanes
Notary Public, # 01019787

My Commission expires:
December 4, 2005

NOTARY SEAL PUBLIC
CAROLYN S. HANES
Oklahoma County
Notary Public in and for
State of Oklahoma
My commission expires Dec. 4, 2005.

DIRECT TESTIMONY OF
DONALD A. MURRY, Ph.D

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Donald A. Murry. My address is 5555 North Grand Blvd., Oklahoma City, Oklahoma 73112.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am a Vice President and economist with C. H. Guernsey & Company in Oklahoma City. I am also a Professor Emeritus of Economics on the faculty of the University of Oklahoma.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I have a B. S. in Business Administration, and an M.A. and a Ph.D. in Economics from the University of Missouri - Columbia.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL BACKGROUND.

A. From 1964 to 1974, I was an Assistant and Associate Professor and Director of Research on the faculty of the University of Missouri - St. Louis. For the period 1974-98, I was a Professor of Economics at the University of Oklahoma and since 1998 I have been a Professor Emeritus at the University of Oklahoma. Until 1978, I also served as the Director of the Center for Economic and Management Research. In each of these positions, I directed and performed academic and applied research projects related to energy and regulatory policy. During this time, I also

served on several state and national committees associated with energy policy and regulatory matters. I published and presented a number of papers in the field of regulatory economics in the energy industries.

Q. PLEASE DESCRIBE YOUR REGULATORY EXPERIENCE.

A. Since 1964, I have consulted for a number of private and public utilities, state and federal agencies, and other industrial clients regarding energy and regulatory matters in the United States, Canada and other countries. In 1971-72, I served as Chief of the Economic Studies Division, Office of Economics of the Federal Power Commission. From 1978 to early 1981, I was a Vice President and Corporate Economist for Stone & Webster Management Consultants, Inc. and am now a Vice President of C. H. Guernsey & Company. In all of these positions I have directed and performed a wide variety of applied research projects and conducted other projects related to regulatory matters. Recently, I have assisted both private and public companies and government officials in areas related to regulatory, financial and competitive issues associated with the restructuring of the utility industry in the United States and other countries.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE OR BEEN AN EXPERT WITNESS IN PROCEEDINGS BEFORE REGULATORY BODIES?

A. Yes, I have appeared before the U.S. District Court-Western District of Louisiana, U.S. District Court-Western District of Oklahoma, District Court-Fourth Judicial District of Texas, U.S. Senate Select Committee on Small Business, Federal Power Commission, Federal Energy Regulatory

Commission, Interstate Commerce Commission, Alabama Public Service Commission, Colorado Public Utilities Commission, Florida Public Service Commission, Georgia Public Service Commission, Illinois Commerce Commission, Iowa Commerce Commission, Kansas Corporation Commission, Kentucky Public Service Commission, Louisiana Public Service Commission, Maryland Public Service Commission, Missouri Public Service Commission, New Mexico Public Service Commission, New York Public Service Commission, Power Authority of the State of New York, Nevada Public Service Commission, North Carolina Utilities Commission, Oklahoma Corporation Commission, South Carolina Public Service Commission, Tennessee Public Service Commission, Tennessee Regulatory Authority, Texas Public Utilities Commission, the Railroad Commission of Texas, the State Corporation Commission of Virginia and the Public Service Commission of Wyoming.

Q. WHAT IS THE NATURE OF YOUR TESTIMONY IN THIS CASE?

A. I have been retained by Aquila, Inc. ("Aquila") to analyze the current cost of capital and to recommend rates of return that are appropriate for ratemaking for two of its Missouri gas operating divisions. These operating divisions are Aquila Networks-MPS and Aquila Networks-L&P.

Q. HOW DID YOU PROCEED IN DEVELOPING YOUR ANALYSIS AND RECOMMENDATION?

A. The current economic environment is important in assessing the cost of capital of these operating divisions of Aquila. Consequently, I reviewed

such current economic and financial conditions as the level of interest rates and the current condition of the equity markets. I studied rates in the context of their effect upon the cost of capital of utilities in general and on Aquila Networks-MPS and Aquila Networks-L&P in particular. I also reviewed the characteristics of the two operating divisions, primarily for the purpose of identifying financial and business risks. I estimated the cost of capital of the two operating divisions, using market analyses of the cost of capital of a group of comparable gas utilities.

Q. ARE YOU SPONSORING ANY SCHEDULES WITH YOUR TESTIMONY?

A. Yes. I am sponsoring Schedules DAM-1 through DAM-24.

Q. WERE THESE SCHEDULES PREPARED EITHER BY YOU OR UNDER YOUR DIRECT SUPERVISION?

A. Yes.

Q. HOW DOES UTILITY REGULATION AFFECT YOUR COST OF CAPITAL TESTIMONY?

A. Historically, the presumed presence of market power in the market of a franchised utility is a principal economic rational for regulation. The likelihood for economies of scale to make a single-firm provider of utility service at the retail level the most efficient, lowest cost provider is the source of the potential market power.

Q. HOW DOES THIS SINGLE-FIRM SERVICE AFFECT THE ROLE OF REGULATION?

A. The presence of a single firm providing key utility services in a market is the basis for regulation. In a single-firm market, market pressure cannot achieve the same pricing and service results as in competitive markets. Consequently, regulation incorporates the objective of substituting for these competitive pressures, yet maintaining the production efficiencies of a single-firm supplier. This concept served as a guide in my determining the cost of capital and recommending an allowed return.

Q. WHAT IS THE PRINCIPAL OBJECTIVE IN SETTING THE ALLOWED RETURN IN A REGULATORY PROCEEDING?

A. Setting an allowed return that is sufficient, but not larger than necessary, to allow a utility to recover the costs of providing service is the principal objective. One could say that this is the same as setting a "fair" rate of return on invested capital. Setting a rate of return that is sufficient to attract and maintain capital is both the principle and precedent of regulation.

In this context I am using the term fair rate of return to refer to a return that meets the standards set by the United States Supreme Court decision in *Bluefield Water Works and Improvement Company vs. Public Service Commission, 262 U.S. 679 (1923) ("Bluefield")*, as further modified in *Federal Power Commission vs. Hope Natural Gas Company, 320 U.S. 591 (1944) ("Hope")*. In these decisions the rate of return is "fair" if it provides earnings to investors similar to returns on alternative investments in companies of equivalent risk.

Q. HOW DO YOU INTERPRET THESE LEGAL DECISIONS IN SETTING AN ALLOWED RETURN FOR A REGULATED UTILITY?

A. Conceptually, these decisions are the basis for the economic principles used to establish a rate of return for a regulated utility. Based upon these decisions, a fair rate of return will provide the opportunity for a utility to earn a return equal to that of comparable investments of corresponding risk and uncertainty. In this way, the return will be sufficient to enable the company to operate successfully, maintain its financial integrity, attract capital, and compensate its investors for the risks assumed.

Q. HOW DID YOU APPLY THESE PRINCIPLES OF REGULATION IN YOUR ANALYSIS IN THIS PROCEEDING?

A. I followed these principles in analyzing the cost of capital and in developing my rate of return recommendations for the two Missouri gas operating divisions of Aquila. I developed a technique for measuring the cost of attracting and maintaining capital to serve the customers of Aquila Networks-MPS and Aquila Networks-L&P.

Q. CAN YOU EXPLAIN THE RATIONALE FOR THE TECHNIQUE THAT YOU DEVELOPED AND USED IN THIS CASE?

A. Yes. Since Aquila Networks-MPS and Aquila Networks-L&P do not issue common stock and long-term debt, I could not measure the cost of capital of these divisions directly. Since the cost of capital of Aquila, Inc., is influenced heavily by its international and non-utility operations, I could not use the cost of capital of the parent as a proxy for the cost of capital

of the utility gas operating divisions. This would not be consistent with the principle of setting an allowed return equivalent to a return earned by an investment with comparable risk. In this instance, it is appropriate for ratemaking purposes to distinguish between the cost of capital requirements of Aquila's utility operations and the cost of capital for the overall corporate entity. Consequently, I could not follow some of the common techniques for assessing the cost of capital of a regulated utility in ratemaking.

Q. YOU EXPLAINED WHY YOU WERE UNABLE TO DIRECTLY MEASURE THE COST OF CAPITAL OF THE GAS OPERATING DIVISIONS OF AQUILA, AND WHY YOU WERE UNABLE TO USE THE COST OF CAPITAL OF AQUILA, INC. AS A PROXY FOR THE COST OF CAPITAL OF THE GAS OPERATING DIVISIONS. HOW DID YOU MEASURE THE COST OF CAPITAL OF AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P?

A. Because I could not use these common methods for measuring the cost of capital of Aquila's regulated utilities, I used the measurable cost of capital of similar, comparable gas utility companies to determine the relevant range of costs of capital of gas distribution companies. From this and other information, I determined the cost of capital that should be applied to Aquila Networks-MPS and Aquila Networks-L&P.

Q. WHAT ARE THE APPROPRIATE CAPITAL STRUCTURES FOR AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P IN THIS PROCEEDING?

A. As shown in Schedule DAM-1, the capital structure that is appropriate for both Aquila Networks-MPS and Aquila Networks-L&P in this proceeding is long-term debt of 50 percent and a common stock equity component of 50 percent of total capital.

This is the capital structure that is the target book-divisional capital structure for the gas operating divisions. It is the capital structure used by Aquila Networks-MPS and Aquila Networks-L&P for financing and capital budgeting purposes. Aquila developed the book-divisional capital structure in accordance with relevant risks and industry standards, and has used it in the capital allocation process for its gas operating divisions for many years. Significantly, it is also consistent with current industry norms.

Q. WHY IS THE BOOK-DIVISIONAL CAPITAL STRUCTURE OF THE GAS OPERATING DIVISIONS APPROPRIATE FOR REGULATORY PURPOSES?

A. Aquila can be thought of as a portfolio of assets, each of which has differing degrees of risk. The cost of capital for a division or specific asset depends on the level of risk of the investment and not on the source of the funds. This is so because the cost of capital is the opportunity cost foregone by the investor on investments of comparable risk. Separating the capital costs of the individual business units, such as the Missouri gas

operating divisions, and allocating the appropriate capital costs to these entities, links the resulting book divisional capital structure more closely to the costs of capital of the unit.

Q. WHAT IS YOUR UNDERSTANDING OF THE FACTORS THAT WERE CONSIDERED IN DETERMINING THE BOOK DIVISIONAL CAPITAL STRUCTURE FOR THE GAS OPERATING DIVISIONS IN MISSOURI?

A. The factors used to determine an appropriate capital structure for all of the Aquila operating divisions include the line of business being financed, comparative industry norms, contemporary business and regulatory practices, and accepted financial theory. Originally, the capital ratios applied to the gas utilities were developed using a proxy group of gas utility companies, taking into account the appropriateness of the capital ratios analyzed in light of relevant risk, industry standards and rating agency guidelines. It is my understanding that Aquila has subsequently evaluated these ratios to assure their continued relevance. Through capital budgeting and cash management processes, Aquila updates the level of the capital ratios.

Q. DID YOU INDEPENDENTLY VERIFY THAT THIS DIVISIONAL CAPITAL STRUCTURE WAS APPROPRIATE FOR SETTING ALLOWED RETURNS FOR AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P IN THIS PROCEEDING?

A. Yes, I did. I compared the 50 percent common stock equity ratio for the gas operating divisions to the recent equity ratios of a group of comparable gas utilities.

Q. HOW DID YOU SELECT THE COMPANIES THAT YOU USED AS COMPARABLE TO AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P?

A. I selected the comparable companies from a group of natural gas distribution utilities reported by *Value Line,* using criteria that were similar to the characteristics of gas operating divisions of Aquila, and appropriate for setting rates. First, I selected only companies that pay a dividend and have not reduced it since 1998. I selected companies that had a current market capitalization of $1.2 billion or less and that are equal to or greater than $425 million. Finally, because I was trying to determine the cost of capital of a healthy gas utility for rates in a future time period, I excluded any companies for which *Value Line* reports "No meaningful figure" for its projected rates.

Q. FROM THIS PROCESS, WHAT COMPANIES DID YOU DETERMINE WERE APPROPRIATE FOR USE AS COMPARABLE GAS UTILITIES FOR YOUR ANALYSIS?

A. I selected a group of eight gas utilities that are similar in several important respects to the Missouri gas operating divisions of Aquila and are useful in my analysis. This group of companies includes Atmos Energy, New

Jersey Resources, NICOR, Northwest Natural Gas, Piedmont Natural Gas, Southwest Gas, UGI, and WGL Holdings.

Q. YOU STATED THAT YOU EVALUATED THE FINANCIAL RISK OF THE MISSOURI GAS OPERATING DIVISIONS OF AQUILA. WHAT DO YOU MEAN BY FINANCIAL RISK?

A. Financial risk is the exposure to common stock investors because of the level of claims on returns that precede the claims of common-stock holders. The primary indicator of the financial risk of common stock is the proportion of outstanding debt. This was, of course, one of the important criteria that I used in selecting the comparable companies. That is, I selected gas utilities that had common equity ratios similar to the equity ratio of the gas operating divisions of Aquila.

Q. WHEN YOU COMPARED THE COMMON EQUITY RATIO THAT YOU USED FOR AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P TO THE EQUITY RATIOS OF THESE SIMILAR COMPANIES, WHAT DID YOU DETERMINE?

A. As Schedule DAM-2 shows, the average common stock equity ratio of the comparable companies, 49.1 percent at 2003E, is virtually equivalent to the 50 percent common stock equity that I used in my analysis of the two gas-operating divisions.

Q. DID YOU CONSIDER USING THE CAPITAL STRUCTURE OF AQUILA, INC. AS THE CAPITAL STRUCTURE FOR RATEMAKING FOR ITS MISSOURI GAS OPERATING DIVISIONS?

A. Yes, I did consider if using Aquila's capital structure for the two gas utilities in Missouri was representative and appropriate for this proceeding. Based on my analysis of Aquila's current capital structure and the circumstances surrounding it, Aquila's capital structure is clearly inappropriate for setting the rates for the two natural gas utilities. The common stock of Aquila has lost most of its value in the past two years because of non-utility operations. The market value of the common stock does not reflect the level of common stock that is the realistic requirement of capital for a gas utility. The book value reflects the diverse operations of Aquila, including non-utility operations, and does not have a direct relationship to the capital used to support the gas operating utilities.

Q. DOES THE CAPITAL STRUCTURE THAT YOU ARE RECOMMENDING FOR THE TWO GAS UTILITIES IN MISSOURI INCLUDE SHORT-TERM DEBT?

A. No, it does not. According to established financial theory, permanent capital sources should fund the assets of a utility. Short-term debt is simply not permanent capital. Utilities normally use short-term debt to finance working capital and construction projects pending permanent refinancing.

Aquila's policy and practice is to fund cash requirements not met by permanent capital, and associated with seasonal fluctuations and other business requirements, through inter-company short-term advances. Similarly, excess cash balances are collected and redistributed.

Accordingly, Aquila periodically eliminates and replaces short-term debt with permanent capital. Aquila's policy and practice follows the sound financial theory that permanent capital should finance long-term assets.

Q. IS YOUR ANALYSIS IN THIS PROCEEDING AFFECTED BY AQUILA'S POLICY AND PRACTICE REGARDING THE FINANCING OF LONG-TERM ASSETS?

A. Yes. In accordance with its policy and practice historically, Aquila raises capital for its operating divisions and assigns the cost of this capital proportionally to the divisions with capital needs. These capital assignments then link the cost of capital of each operating division specifically to the assets used by that division to serve its customers. Consequently, Aquila's policy of assigning the costs of long-term debt and common stock to Aquila Networks-MPS and Aquila Networks-L&P links these costs directly to the costs of serving the customers of each utility.

Q. WHAT IS THE COST OF LONG-TERM DEBT THAT IS APPROPRIATE FOR AQUILA NETWORKS-MPS IN THIS PROCEEDING?

A. The cost of long-term debt for Aquila Networks-MPS is 7.23 percent. The calculation of this cost of long-term debt, with the relevant debt issues and their effective cost for Aquila Networks-MPS, is shown in Schedule DAM-3.

Q. WHAT IS THE COST OF LONG-TERM DEBT FOR AQUILA NETWORKS-L&P THAT IS APPROPRIATE FOR THIS PROCEEDING?

A. The cost of long-term debt for Aquila Networks-L&P is 7.67 percent. The calculation of this cost of debt is shown in Schedule DAM-4.

Q. HOW HAS THE DOWNGRADE OF THE BOND RATING OF AQUILA, INC., THE PARENT OF THE GAS OPERATING DIVISIONS IN MISSOURI, AFFECTED THEIR COST OF DEBT?

A. The recent downgrade in the bond rating of Aquila has not affected the cost of debt of either Aquila Networks-MPS or Aquila Networks-L&P that is appropriate for use in this proceeding. The bond rating downgrade of Aquila occurred after the issuance of the assigned debt to the operating gas companies in Missouri. This downgrade by Standard & Poor's on November 19, 2002, from BBB- to BB, is a criterion for Aquila's practice that protects the utility divisions from the non-utility risks. As I understand Aquila's policy, the cost of new debt assigned to the utility operating divisions will be no more than the cost of BBB debt prevailing at that time. This is a provision that will, of course, protect the ratepayers from any future impacts of the decline in the bond rating of Aquila because of the risk of non-utility operations.

Q. HOW DID YOU ESTIMATE THE COST OF COMMON STOCK EQUITY FOR THESE GAS UTILITIES IN REACHING YOUR RECOMMENDATION FOR ALLOWED RETURNS FOR AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P?

A. As I stated, I estimated the cost of common stock of the comparable companies. I used these calculations to determine the cost of common

stock components of the capital structure of Aquila Networks-MPS and Aquila Networks-L&P. No significant, distinguishable risk differentials exist between these two utilities; therefore, I used the same comparable companies to measure the cost of capital of both gas utilities. As I evaluated the results and the unique characteristics of the two Missouri gas utilities, I determined that there were cost of debt differences that I should consider in forming my recommendations for allowed returns in this proceeding.

Q. WHAT METHODS DID YOU USE FOR MEASURING THE COST OF COMMON STOCK OF THE COMPARABLE COMPANIES?

A. I used two methods in my analysis for estimating the cost of common stock, which I believe are the most commonly used. I used the Discounted Cash Flow ("DCF") analysis as the primary method. The DCF is probably the method most often used by analysts to estimate the cost of common equity of a utility in a rate proceeding. As a second method, I used a Capital Asset Pricing Model ("CAPM"). I used each of these methods to estimate the cost of common stock of each comparable company.

Q. YOU MENTIONED THE DCF METHOD FOR DETERMINING COST OF COMMON STOCK. CAN YOU EXPLAIN THE DCF METHOD FOR MEASURING THE COST OF COMMON EQUITY?

A. Yes. Typically, in the DCF calculation the investor's required rate of return is expressed as:

$$K = D/P + g$$

Where: K = cost of common equity

D = dividend per share

P = price per share

g = rate of growth of dividends or alternatively common stock earnings

In this expression, K is a capitalization rate required to convert the stream of future returns into a current value.

Q. IS THE DCF METHOD APPROPRIATE FOR THIS PROCEEDING?

A. Yes. I selected comparable gas utilities that are publicly traded and that have financial information presented by *Value Line.* This affords the opportunity to develop comparable DCF measured costs of capital for each of these companies.

For setting rates of a regulated utility, there are some obvious advantages in using the DCF technique. The principal advantages, in my opinion, are that it is a market-based measure of the cost of capital, and it is theoretically sound. Calculation is straight-forward, and it is easy to understand. It recognizes investors' expectations by using market price information and the company's dividend and earnings performance to determine the value that an investor places on anticipated returns. Since an investor expects returns on investment in the form of dividends and capital gains, he or she will expect a market price equal to the present value of that stream of returns. Using these market relationships, we can estimate the opportunity cost of an investor's funds. In a regulatory setting, it is also important that the DCF method is widely recognized and accepted by analysts.

Q. ARE THERE ANY ANALYTICAL DIFFICULTIES IN USING THE DCF METHOD TO MEASURE COST OF CAPITAL FOR A REGULATED UTILITY?

A. Yes, there are two problems that may arise with the DCF technique when it is used to measure cost of capital in a regulatory proceeding. One of these is the limitation of the data available to the analyst. A second is the potential for an analyst's misinterpretation of the meaning of the data.

Q. HOW SHOULD AN ANALYST DEAL WITH THESE ANALYTICAL PROBLEMS?

A. To deal with the data problem, an analyst should carefully select data used in the DCF analysis and recognize that even though caution and diligence have been exercised in the selection process, weaknesses may still exist in the data. To avoid the problem of misinterpretation, the analyst should simply use analytical procedures based on sound theory.

Q. DO YOU BELIEVE THESE PROBLEMS THAT YOU NOTED WITH THE DCF TECHNIQUE COULD AFFECT ANALYSES IN THIS PROCEEDING?

A. Yes. The recent equity markets have produced valuations that are difficult to analyze for ratemaking purposes because of structural changes in the energy markets. This compounds the data problem. From an analytical standpoint, a clear distinction exists between the historical data and the forecasted data. In fact, the historical data and the forecasted data come from two quite different market environments. There is, for example, a

marked distinction between data from the periods before and after the Enron collapse. This also compounds the problem of potential misinterpretation of the results; comparisons and interpretations may be more difficult relative to periods not affected by such market shifts.

Q. WHY IS THIS IMPORTANT?

A. Since rates are being set for the future, a sharp division between prospective and historical data in current markets diminishes the usefulness of historical data for analytical purposes. This is an important structural change in the equity markets that an analyst should recognize.

Q. HOW DID THE CHANGES IN THE EQUITY MARKETS AFFECT YOUR INTERPRETATION OF THE DCF ANALYSIS IN THIS CASE?

A. Because the purpose of the analysis is to set rates for the future, I concentrated on the forecasted returns. Although I reviewed historical dividends and earnings, the recent structural shift in the market rendered the historical data less useful for estimating investor expectations. I focused primarily upon the forecasted returns- that is, the forecasted common stock dividends and forecasted earnings per share.

Q. PLEASE EXPLAIN YOUR FINDINGS CONCERNING THE HISTORICAL AND FORECASTED GROWTH RATES OF THE COMPARABLE COMPANIES.

A. As I have illustrated in Schedule DAM-5, the forecasted earnings growth rates are higher than the forecasted dividend growth rates. As I mentioned, there also has been a shift in the equities markets, and there

is a sharp distinction between the level of historical growth rates and forecasted growth rates.

This change affects the use and interpretation of the DCF model. The DCF model is an analysis that links the market value of an investment with the investors' expectations of returns from that investment. The expected returns are the key determinant of the price of the security. Consequently, it is imperative that an analyst considers the data that influence investors.

Because there is such a sharp distinction between historical and forecasted earnings and between earnings and dividends, it is not logical that they all have equal weights to investors. Nevertheless, empirically we can infer what is more relevant to investors.

Q. CAN YOU EXPLAIN WHAT YOU MEAN BY THE STATEMENT THAT YOU CAN INFER WHAT IS MORE RELEVANT TO INVESTORS?

A. Yes, I can explain how one can look at related data and infer some important investor perceptions of interrelationships among them. For example, Schedule DAM-6 shows relatively low dividend growth in recent years for the comparable companies, barely keeping pace with inflation. Schedule DAM-7 shows the dividend payout ratios for the same group of companies. It is clear that there has been a steady decline in the dividend payout ratios for these comparable gas companies over this period of time. This means that despite growing earnings, the boards of directors of

these companies have not increased their dividends commensurately and are redeploying cash from earnings for other purposes.

With the competitive uncertainties from deregulation in the gas industry, it is not surprising that gas distribution companies are conserving cash from operations. Moreover, *Value Line* has forecast further declines in the dividend payout ratios for the same companies. Under these circumstances, knowledgeable investors will not acquire these companies' common stock in anticipation of dividend growth. If they anticipate an investment growth, this is most likely to come from the growth in earnings per share and any resulting capital gains that they receive from holding the security.

Q. HOW DID THESE OBSERVATIONS AFFECT YOUR ANALYSIS?

A. Since investors must look beyond these flat dividends to prospective future earnings, an analyst should do likewise. This highlights the importance of earnings growth. The DCF analysis based on earnings growth estimates becomes a more reliable measure of the potential gain from common stock ownership.

Q. HOW DID YOU DETERMINE COMMON STOCK PRICES FOR YOUR DCF ANALYSIS OF THE COMPARABLE COMPANIES?

A. I used the high and low common stock prices for the past year as reported by the *Wall Street Journal*; I also used current prices from a recent two-week period as reported by *YAHOO! Finance*. In this way, I tried to

capture both current market conditions and market conditions over the past year.

Q. WHAT WERE THE RESULTS OF YOUR DCF ANALYSIS?

A. The mechanical calculation of the DCF cost of capital used the dividends for the comparable companies combined with the common stock prices for the past 52 weeks. This resulted in average estimated cost of common stock in a range of 6.57 percent to 8.96 percent for the comparable companies. These results are shown in schedule DAM-8. Because of low dividend growth rates these estimates are not surprising, but they surely are not as representative of investor expectations as estimates in earnings per share growth. The projected earnings per share growth rates, combined with prices over the past 52 weeks, resulted in average cost of capital estimates ranging from 9.21 percent to 14.42 percent for the comparable companies. These results are shown in schedules DAM-9 and schedule DAM-10.

Q. WHAT DID YOUR DCF ANALYSIS USING CURRENT MARKET PRICES SHOW?

A. Using current market prices to measure a current cost of capital of the comparable companies was similar, but produced a somewhat narrower set of estimates. I have illustrated the result using the dividend growth rate, which is very low, in Schedule DAM-11. This result was a low 7.28 percent to 7.36 percent. These results, which are comparable to the earnings on debt instruments, confirm the inappropriateness of using the

dividend growth rates in the DCF for estimating the cost of common stock of these companies. The DCF calculations using earnings per share growth rates, which are more relevant for setting an allowed return for the future, are higher. The combined historical and forecasted growth rates in earnings per share for the comparable companies are shown in Schedule DAM-12. The average for the comparable companies ranges from 11.24 percent to 11.33 percent.

Investors are looking to future returns, and the DCF results using only projected earnings per share growth rates and current price levels are shown in Schedule DAM-13. These results, which probably most closely reflect expectations of investors in the comparable companies during the current period, average between 9.76 percent and 12.66 percent.

Q. HOW WOULD YOU SUMMARIZE THE RESULTS OF YOUR DCF CALCULATIONS?

A. From these analyses, it is apparent that the most significant results for the purpose of ratemaking are the DCF calculations relying on forecasted growth in earnings per share. In this analysis, I looked at the prices of common stock over the past year and in a recent period. As shown in Schedule DAM-14, they range from 9.76 percent to a high of 12.66 percent using current prices. The average DCF calculation using the past year's stock prices is a range of 9.21 percent to 14.42 percent.

Q. YOU INDICATED THAT YOU DEVELOPED AN ANALYSIS BASED ON THE CAPM MODEL. WHAT IS THE CAPM MODEL?

A. The Capital Asset Pricing Model, or CAPM model, is based on an investor's ability to diversify by combining risky securities into an investment portfolio. It measures the risk differential between a given security and the market as a whole. The diversification of investments reduces risk to the investor. However, some risk is non-diversifiable, e.g., the market risk, and investors remain exposed to that market risk. The theoretical CAPM model is expressed as:

$$K = R_F + \beta (R_M - R_F)$$

Where: K = the required return.

R_F = the risk-free rate

R_M = the required overall market return

B = beta, a measure of security risk relative to the overall market

Note that the value of market risk is the differential between the market return and the risk-free rate. Beta is the relative measure of the risk of a security and the market as a whole. By estimating the risk differential between an individual security and the market as a whole, one can measure the relative cost of that security compared to the market as a whole.

Q. HOW DID YOU USE THE CAPM COST OF CAPITAL RESULT IN YOUR ANALYSIS?

A. The CAPM links the incremental cost of capital of an individual company with the risk differential between that company and the market as a whole. The CAPM, which is a risk premium method, provides a very useful comparison to the DCF measured cost of common stock because it uses

current debt costs as a basis for measuring the cost of common stock. The CAPM, which is less sensitive to prices and current conditions than the DCF method, is useful as a verification of the general level of the cost of capital and as a check on the DCF analysis.

Q. WHAT IS YOUR ESTIMATED COST OF COMMON STOCK OF THE COMPARABLE COMPANIES USING THE CAPITAL ASSET PRICING MODEL?

A. I used two CAPM approaches for calculating the cost of capital. The results of these CAPM analyses are shown in Schedules DAM-15 and DAM-16. The average historical CAPM-estimated cost of capital for these gas distribution companies is 11.48 percent, with a range from 10.75 percent to 13.26 percent. For the size-adjusted CAPM, the range was from 10.01 percent to 12.11 percent, averaging 10.89 percent.

Q. IN YOUR OPINION, HOW SHOULD ONE INTERPRET THESE TWO RESULTS FROM THE CAPM ANALYSIS?

A. In as much as they are less sensitive to current market conditions, the CAPM measures provide a longer view of the cost of capital. In this way, they are useful as comparative benchmarks to the DCF analysis.

Q. WHAT DID YOU REVIEW CONCERNING MARKET CONDITIONS IN YOUR ANALYSIS?

A. A major market condition is the Federal Reserve's recent policy of lowering short-term interest rates to stimulate the U.S. economy. Schedule DAM-17 (which shows the 90-day T-Bill rate and the 30-Year Treasury

bond rate) illustrates the sharp drop in short-term rates; however, it also shows that long-term rates have dropped less abruptly in response to this policy. This is important because the longer-term rates are likely to be closer substitutes for common equity investments in utilities.

Q. DID YOU CONSIDER OTHER MARKET FACTORS IN YOUR ANALYSIS OF THE COST OF CAPITAL OF AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P?

A. Yes. Since I was studying the returns to a group of gas utilities, I was also concerned about the level of the financial market's current acceptance of gas utility common stocks. Although it is common knowledge that the market for common stock equities has been depressed, it is also apparent that utility stocks are even in less favor with investors than the industrial common stocks. Schedule DAM-18 shows the decline in the Dow Jones Industrial Index and the Dow Jones Utility Index over the last 12 months. The Industrial Index has declined during this period, which is common knowledge, but the Utility Index has declined even further.

Q. DID YOU DETERMINE IF THE MARKET DECLINE APPLIED TO GAS UTILITIES AS WELL AS TO THE GENERAL UTILITY INDEX?

A. Yes, I did. I examined the price-earnings ratios of the comparable companies over recent years, and I found significant declines. As Schedule DAM-19 shows, there is a general deterioration of the price-earnings ratios of these companies over the past five years. The price-

earnings ratios declined from an average of 18.7 times to 13.5 times in this time period.

Q. DID YOU REVIEW OTHER MARKET INFORMATION THAT AFFECTED YOUR ANALYSIS OF THE COST OF CAPITAL OF THE COMPARABLE COMPANIES?

A. I reviewed statistics of the comparable companies that were indicative of the business risk of these companies. As Schedule DAM-20 shows, the "Safety Rank" from *Value Line* shows that the comparable companies are all viewed as being as safe as the average common stock, or better. In a ranking from 1 to 5, with 1 the most "safe," the average is 2.3. Similarly, Schedule DAM-21 shows the "Timeliness" ranking by *Value Line*. This shows the common stocks of these companies as average investments.

Q. WHY DO YOU BELIEVE ANALYSTS DO NOT CONSIDER REGULATED GAS DISTRIBUTION COMPANIES AMONG THE MOST "SAFE" INVESTMENTS?

A. The natural gas industry has experienced substantial change in recent years, and this could be an important factor that sets this industry apart from some others even in a period when the market has been generally depressed. The traditional role of local distribution companies ("LDCs") as intermediaries between pipelines and customers has been transformed by policy initiatives at both federal and state levels. LDCs face higher demand risk because LDC customers now have alternative means of meeting their energy requirements. Furthermore, LDCs face higher supply

risks due to commodity price swings and the need to manage complex procurement, storage, and transportation contracts. Concerns regarding the efficacy of price indices may lead to unraveling of existing contracts and reduce the willingness of parties to enter into new contracts. Additionally, in 2003, the natural gas industry faces unprecedented challenges because of the deteriorating financial condition of many market participants following the collapse of Enron and the resulting turmoil in the energy trading market.

Q. WERE THERE OTHER FACTORS THAT INFLUENCED YOUR INTERPRETATION OF YOUR DCF RESULTS?

A. Yes. One of these influencing factors was the nature of the DCF method itself. The DCF method, because of its theoretical basis, estimates the marginal cost of common stock equity to the comparable companies. In that way, it is an estimate of the minimal return necessary to attract marginal, or incremental, investment in common stock equities. However, the method does not account for any other factors that may affect the ability of the company to earn that return. There is no cushion in this estimate of the cost of common stock to assure that a regulated company will earn its allowed return.

Regulators and analysts often use adjustments to compensate for the marginal cost nature of the DCF methodology, such as a flotation adjustment. I did not apply a specific flotation adjustment, but I recognized

the significance of the need to issue common stock on the part of the comparable companies when I evaluated the common stock results.

Q. WHAT ARE YOUR RECOMMENDED ALLOWED RETURNS FOR THE COMMON STOCK COMPONENTS OF AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P IN THIS PROCEEDING?

A. Relying primarily on the DCF current estimates based on earnings forecasts of the comparable companies, I believe that the costs of the common stock components of Aquila Networks-MPS and Aquila Networks-L&P are the same. I have determined that the cost of equity capital of these two gas distribution utilities and their allowed returns for ratemaking is in the range of 12.0 percent to 12.5 percent. The mid-point of this range, which is 12.25, is an effective single-point recommendation for an allowed return on common stock of the two Missouri gas-operating divisions of Aquila.

Q. EARLIER YOU REFERRED TO THE FINANCIAL DIFFICULTIES OF AQUILA. DID THE FINANCIAL CIRCUMSTANCES OF AQUILA INFLUENCE YOUR RECOMMENDED ALLOWED RETURNS ON THE COMMON STOCK COMPONENTS OF THE MISSOURI GAS OPERATING DIVISIONS?

A. No. I developed a method for evaluating the cost of common stock equity of Aquila Networks-MPS and Aquila Networks-L&P that would not let the financial circumstances of Aquila, Inc., influence my calculations. Instead, the methodology that I used insulated the ratepayers of the gas operating

divisions in Missouri from the capital cost of the two Missouri gas-operating divisions. I evaluated the cost of capital of gas utilities that I selected based on their similarity to the gas operating divisions in Missouri.

Q. DID YOU ESTIMATE THE REQUIRED RETURNS ON TOTAL CAPITAL FOR AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P THAT ARE RELEVANT TO THIS PROCEEDING?

A. Yes. I have illustrated the total cost of capital in the range of 9.61 percent to 9.86 percent for Aquila Networks-MPS in Schedule DAM-22. The mid-point of this range for Aquila Networks-MPS is 9.74 percent. The total cost of capital of Aquila Networks-L&P is in the range of 9.84 to 10.09 percent, as shown in Schedule DAM-23. The midpoint of the range for Aquila Networks-L&P is 9.96 percent.

Q. DID YOU TEST THE ADEQUACY OF YOUR RECOMMENDATIONS IN ANY WAY?

A. Yes. I reviewed the after-tax interest coverage ratios of my recommendations for both Aquila Networks-MPS and Aquila Networks-L&P as measures of adequacy. I evaluated the after-tax interest coverage that would result for each of these utilities at my recommended returns. The after-tax interest coverage for Aquila Networks-MPS is 2.69 times at the midpoint of my recommended range. This is similar to the 2.67 times average coverage for the comparable companies shown in Schedule DAM-24. My recommended return clearly will produce an adequate, but

not excessive, coverage level. The after-tax interest coverage at the mid-point of my recommended range for Aquila Networks-L&P is 2.60 times. This coverage is even lower than the average after-tax interest coverage of the comparable companies. This comparison confirms that my recommended allowed return for Aquila Networks-L&P is adequate, but it is not excessive. In both cases, these recommended allowed returns are sufficient and reasonable.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY AT THIS TIME?

A. Yes, it does.

Aquila Networks – MPS and Aquila Networks - L&P

Summary of Schedules

Aquila Networks - MPS

Aquila Networks - L&P

Pro Forma Cost of Capital

December 2002

	Ratio
Long-Term Debt	50.00%
Common Equity	50.00%
Total	100.00%

Source: Aquila Networks - MPS and Aquila Networks - L&P Work Papers

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Companies

Comparison of Common Equity Ratios

Company	1999	2000	2001	2002	2003E
Atmos Energy	50.0%	51.9%	45.7%	46.1%	45.0%
New Jersey Resources	51.2%	52.9%	49.9%	49.4%	55.5%
NICOR	64.0%	66.7%	61.7%	65.0%	68.0%
Northwest Natural Gas	49.9%	50.9%	53.2%	50.5%	48.5%
Piedmont Natural Gas	53.8%	53.9%	52.4%	56.1%	58.0%
Southwest Gas	35.5%	35.8%	39.6%	34.3%	36.0%
UGI	19.8%	19.1%	17.4%	21.7%	29.0%
WGL Holdings, Inc.	56.1%	54.8%	56.3%	52.4%	53.0%
Comparable Companies' Averages	47.5%	48.3%	47.0%	46.9%	49.1%

Source: Value Line Investment Survey

Aquila Networks - MPS

Embedded Cost of Long-Term Debt

December 2002

Assigned Debt	Total Outstanding	Effective Rate	Effective Interest Expenses
15 Yr 9.03%, Due 12/1/05	$12,863,524.00	9.48%	$1,219,462.08
30 Yr 8.27%, Due 11/15/21	$26,300,000.00	8.39%	$2,206,570.00
15 Yr 8.2%, Due 1/15/07	$16,545,000.00	8.87%	$1,467,541.50
30 Yr 8.0%, Due 3/1/23	$16,800,000.00	8.05%	$1,352,400.00
RHINOS 5.7763%, Due 9/30/02	$0.00	3.50%	$0.00
Sr 6.70%, Due 10/15/06	$67,041,515.00	6.83%	$4,578,935.47
Sr 6.875%, Due 10/1/04	$109,326,961.00	6.97%	$7,620,089.18
Wamego 96, Due 3/1/26	$7,300,000.00	3.00%	$219,000.00
Environ Improve, Due 5/1/28	$5,000,000.00	3.00%	$150,000.00
Sanwa Bank Loan, Due 12/9/09	$5,069,161.87	6.99%	$354,334.41
Sr 7.0%, Due 7/15/04	$71,257,000.00	7.00%	$4,987,990.00
Sr 7.625%, Due 11/15/09	$45,759,000.00	7.74%	$3,542,661.78
UCT PEPS Loan 9.75%	$0.00	7.39%	$0.00
Total	$383,262,161.87		$27,698,984.43
Embedded Cost of Long-Term Debt			7.23%

Source: Aquila Networks - MPS Work Papers

Aquila Networks - L&P

Embedded Cost of Long-Term Debt

December 2002

Assigned Debt	Total Outstanding	Effective Rate	Cost of Debt
Poll Cntrl Bonds 5.85%, Due 2/1/13	5,600,000.00	5.85%	327,600.00
20 Yr MTN 7.13%, Due 11/29/13	1,000,000.00	7.13%	71,300.00
20 Yr MTN 7.16%, Due 11/29/13	9,000,000.00	7.16%	644,400.00
30 Yr MTN 7.17%, Due 12/1/23	7,000,000.00	7.17%	501,900.00
30 Yr MTN 7.33%, Due 11/30/23	3,000,000.00	7.33%	219,900.00
10 Yr MTN 8.36%, Due 3/15/05	20,000,000.00	8.36%	1,672,000.00
Sr 7.625%, Due 11/15/09	86,900,000.00	7.74%	6,727,798.00
Total	132,500,000.00		10,164,898.00

Embedded Cost of Long-Term Debt 7.67%

Source: Aquila Networks - L&P Work Papers

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

Growth Rate Summary

	Value Line 1998 TO 2007 Estimate			Value Line Five Year Historical			Projections Value Line		S & P
	EPS	DPS	Book Value	EPS	DPS	Book Value	EPS	DPS	EPS
Atmos Energy	5.8%	2.5%	2.5%	-0.5%	4.0%	5.0%	9.0%	2.0%	6.0%
New Jersey Resources	8.1%	2.8%	9.5%	7.0%	2.5%	5.0%	8.5%	3.0%	7.0%
NICOR	4.2%	4.8%	2.3%	5.5%	5.0%	3.0%	3.5%	4.5%	5.0%
Northwest Natural Gas	5.4%	1.0%	3.3%	0.5%	1.0%	4.0%	6.5%	1.5%	5.0%
Piedmont Natural Gas	5.8%	4.5%	4.5%	3.5%	6.0%	5.5%	8.0%	4.0%	5.0%
Southwest Gas	6.4%	0.0%	4.0%	18.5%	0.0%	2.0%	8.5%	0.0%	5.0%
UGI	13.1%	3.7%	10.4%	15.5%	2.0%	-2.5%	11.5%	4.0%	6.0%
WGL Holdings, Inc.	4.5%	1.2%	3.5%	-1.5%	2.0%	4.5%	7.0%	1.0%	4.0%
Comparable Companies' Averages	6.67%	2.54%	5.00%	6.06%	2.81%	3.31%	7.81%	2.50%	5.38%

Sources:
Value Line Investment Survey
Standard & Poor's Earnings Guide

Schedule DAM - 5

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Companies

Comparison of Dividends per Share

Company	1999	2000	2001	2002	2003E	Growth '99-'03
Atmos Energy	1.10	1.14	1.16	1.18	1.20	2.04%
New Jersey Resources	1.12	1.15	1.17	1.20	1.24	2.44%
NICOR	1.54	1.66	1.76	1.84	1.84	4.77%
Northwest Natural Gas	1.23	1.24	1.25	1.26	1.27	0.80%
Piedmont Natural Gas	1.36	1.44	1.52	1.60	1.66	5.20%
Southwest Gas	0.82	0.82	0.82	0.82	0.82	0.00%
UGI	0.98	1.02	1.05	1.08	1.13	3.38%
WGL Holdings, Inc.	1.22	1.24	1.26	1.27	1.28	1.20%
Comparable Companies' Averages	1.17	1.21	1.25	1.28	1.31	2.48%

Source: Value Line Investment Survey

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Companies

Comparison of Dividend Payout Ratios

Company	1999	2000	2001	2002	2003E	Five Year Average	Forecast '06-'08
Atmos Energy	136%	112%	79%	82%	77%	97.2%	60.0%
New Jersey Resources	67%	63%	59%	56%	52%	59.4%	44.0%
NICOR	60%	56%	58%	63%	74%	62.2%	62.0%
Northwest Natural Gas	74%	70%	67%	78%	71%	72.0%	57.0%
Piedmont Natural Gas	72%	71%	75%	83%	79%	76.0%	60.0%
Southwest Gas	64%	67%	71%	70%	56%	65.6%	38.0%
UGI	111%	95%	75%	60%	53%	78.8%	53.0%
WGL Holdings, Inc.	82%	69%	67%	112%	64%	78.8%	56.0%
Comparable Companies' Averages	83.2%	75.4%	68.9%	75.5%	65.8%	73.7%	53.8%

Source: Value Line Investment Survey

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

52 Week Cost of Capital

	Share Prices Low	Share Prices High	2003 Dividend	52 Week Yields Low	52 Week Yields High	1997-99 Dividend	2006-08E Dividend	Growth Rate	Cost of Capital Low	Cost of Capital High
Atmos Energy	17.56	24.31	1.20	4.94%	6.83%	1.06	1.32	2.50%	7.44%	9.34%
New Jersey Resources	24.35	34.79	1.24	3.56%	5.09%	1.09	1.40	2.79%	6.35%	7.88%
NICOR	18.09	49.00	1.84	3.76%	10.17%	1.47	2.24	4.77%	8.52%	14.94%
Northwest Natural Gas	23.46	30.70	1.27	4.14%	5.41%	1.22	1.33	0.96%	5.10%	6.38%
Piedmont Natural Gas	27.35	38.00	1.66	4.37%	6.07%	1.28	1.90	4.46%	8.82%	10.53%
Southwest Gas	18.09	24.74	0.82	3.31%	4.53%	0.82	0.82	0.00%	3.31%	4.53%
UGI	17.11	32.55	1.13	3.47%	6.60%	0.97	1.34	3.70%	7.17%	10.30%
WGL Holdings, Inc.	19.25	27.50	1.28	4.65%	6.65%	1.20	1.33	1.18%	5.84%	7.83%
Comparable Companies' Averages	20.66	32.70	1.31	4.03%	6.42%	1.14	1.46	2.54%	6.57%	8.96%

Source : Value Line Investment Survey

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

52 Week Cost of Capital

	Share Prices		2003	52 Week Yields		1997-99	2006-08E	Growth	Cost of Capital	
	Low	High	Dividend	Low	High	EPS	EPS	Rate	Low	High
Atmos Energy	17.56	24.31	1.20	4.94%	6.83%	1.33	2.20	5.75%	10.69%	12.59%
New Jersey Resources	24.35	34.79	1.24	3.56%	5.09%	1.56	3.15	8.10%	11.66%	13.19%
NICOR	18.09	49.00	1.84	3.76%	10.17%	2.48	3.60	4.24%	8.00%	14.41%
Northwest Natural Gas	23.46	30.70	1.27	4.14%	5.41%	1.49	2.40	5.41%	9.55%	10.83%
Piedmont Natural Gas	27.35	38.00	1.66	4.37%	6.07%	1.89	3.15	5.84%	10.21%	11.91%
Southwest Gas	18.09	24.74	0.82	3.31%	4.53%	1.23	2.15	6.40%	9.72%	10.93%
UGI	17.11	32.55	1.13	3.47%	6.60%	0.89	2.70	13.12%	16.60%	19.73%
WGL Holdings, Inc.	19.25	27.50	1.28	4.65%	6.65%	1.62	2.40	4.46%	9.12%	11.11%
Comparable Companies' Averages	20.66	32.70	1.31	4.03%	6.42%	1.56	2.72	6.67%	10.69%	13.09%

Source : Value Line Investment Survey

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Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

52 Week Cost of Capital

	Share Prices		2003	52 Week Yields		EPS Estimates		Cost of Capital	
	Low	High	Dividend	Low	High	Value Line	S&P	Low	High
Atmos Energy	17.56	24.31	1.20	4.94%	6.83%	9.00%	6.00%	10.94%	15.83%
New Jersey Resources	24.35	34.79	1.24	3.56%	5.09%	8.50%	7.00%	10.56%	13.59%
NICOR	18.09	49.00	1.84	3.76%	10.17%	3.50%	5.00%	7.26%	15.17%
Northwest Natural Gas	23.46	30.70	1.27	4.14%	5.41%	6.50%	5.00%	9.14%	11.91%
Piedmont Natural Gas	27.35	38.00	1.66	4.37%	6.07%	8.00%	5.00%	9.37%	14.07%
Southwest Gas	18.09	24.74	0.82	3.31%	4.53%	8.50%	5.00%	8.31%	13.03%
UGI	17.11	32.55	1.13	3.47%	6.60%	11.50%	6.00%	9.47%	18.10%
WGL Holdings, Inc.	19.25	27.50	1.28	4.65%	6.65%	7.00%	4.00%	8.65%	13.65%
Comparable Companies' Averages	20.66	32.70	1.31	4.03%	6.42%	7.81%	5.38%	9.21%	14.42%

Sources:
Value Line Investment Survey
Standard & Poor's Earnings Guide

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

Current Cost of Capital

	Share Prices		Current	Current Yields		1997-99	2006-08E	Growth	Cost of Capital	
	Low	High	Dividend	Low	High	Dividend	Dividend	Rate	Low	High
Atmos Energy	22.31	22.62	1.20	5.31%	5.38%	1.06	1.32	2.50%	7.81%	7.88%
New Jersey Resources	33.81	34.46	1.24	3.60%	3.67%	1.09	1.40	2.79%	6.38%	6.45%
NICOR	29.64	30.23	1.84	6.09%	6.21%	1.47	2.24	4.77%	10.85%	10.97%
Northwest Natural Gas	25.38	25.77	1.27	4.93%	5.00%	1.22	1.33	0.96%	5.89%	5.97%
Piedmont Natural Gas	36.84	37.41	1.66	4.44%	4.51%	1.28	1.90	4.46%	8.89%	8.96%
Southwest Gas	20.15	20.62	0.82	3.98%	4.07%	0.82	0.82	0.00%	3.98%	4.07%
UGI	30.81	31.52	1.13	3.58%	3.67%	0.97	1.34	3.70%	7.28%	7.36%
WGL Holdings, Inc.	26.81	27.23	1.28	4.70%	4.78%	1.20	1.33	1.18%	5.88%	5.96%
Comparable Companies' Averages	28.22	28.73	1.31	4.58%	4.66%	1.14	1.46	2.54%	7.12%	7.20%

Sources:
Value Line Investment Survey
Yahoo! FINANCE

Schedule DAM - 11

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

Current Cost of Capital

	Share Prices		Current	Current Yields		1997-99	2006-08E	Growth	Cost of Capital	
	Low	High	Dividend	Low	High	EPS	EPS	Rate	Low	High
Atmos Energy	22.31	22.62	1.20	5.31%	5.38%	1.33	2.20	5.75%	11.06%	11.13%
New Jersey Resources	33.81	34.46	1.24	3.60%	3.67%	1.56	3.15	8.10%	11.69%	11.76%
NICOR	29.64	30.23	1.84	6.09%	6.21%	2.48	3.60	4.24%	10.33%	10.45%
Northwest Natural Gas	25.38	25.77	1.27	4.93%	5.00%	1.49	2.40	5.41%	10.34%	10.42%
Piedmont Natural Gas	36.84	37.41	1.66	4.44%	4.51%	1.89	3.15	5.84%	10.28%	10.35%
Southwest Gas	20.15	20.62	0.82	3.98%	4.07%	1.23	2.15	6.40%	10.38%	10.47%
UGI	30.81	31.52	1.13	3.58%	3.67%	0.89	2.70	13.12%	16.71%	16.79%
WGL Holdings, Inc.	26.81	27.23	1.28	4.70%	4.78%	1.62	2.40	4.46%	9.16%	9.24%
Comparable Companies' Averages	28.22	28.73	1.31	4.58%	4.66%	1.56	2.72	6.67%	11.24%	11.33%

Sources:
Value Line Investment Survey
Yahoo! FINANCE

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

Current Cost of Capital

	Share Prices		Current	Current Yields		EPS Estimates		Cost of Capital	
	Low	High	Dividend	Low	High	Value Line	S&P	Low	High
Atmos Energy	22.31	22.62	1.20	5.31%	5.38%	9.00%	6.00%	11.31%	14.38%
New Jersey Resources	33.81	34.46	1.24	3.60%	3.67%	8.50%	7.00%	10.60%	12.17%
NICOR	29.64	30.23	1.84	6.09%	6.21%	3.50%	5.00%	9.59%	11.21%
Northwest Natural Gas	25.38	25.77	1.27	4.93%	5.00%	6.50%	5.00%	9.93%	11.50%
Piedmont Natural Gas	36.84	37.41	1.66	4.44%	4.51%	8.00%	5.00%	9.44%	12.51%
Southwest Gas	20.15	20.62	0.82	3.98%	4.07%	8.50%	5.00%	8.98%	12.57%
UGI	30.81	31.52	1.13	3.58%	3.67%	11.50%	6.00%	9.58%	15.17%
WGL Holdings, Inc.	26.81	27.23	1.28	4.70%	4.78%	7.00%	4.00%	8.70%	11.78%
Comparable Companies' Averages	28.22	28.73	1.31	4.58%	4.66%	7.81%	5.38%	9.76%	12.66%

Sources:
Value Line Investment Survey
Standard & Poor's Earnings Guide
Yahoo! FINANCE

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

Summary of Discounted Cash Flow Analysis

	DCF Range	
	Low	High
DCF Using Earnings and Current Share Prices		
Comparable Companies' Averages	11.24%	11.33%
DCF Using Projected Growth Rates and Current Share Prices		
Comparable Companies' Averages	9.76%	12.66%

Sources: Schedules DAM-15 and DAM-16

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

Cost of Equity : Historical Capital Asset Pricing Model

	Market Total Returns	Long-Term Corporate Bonds Return	Risk Premium	Beta	Adjusted Risk Premium	Aaa Corporate Bonds Return	Cost of Equity
Atmos Energy	14.55%	6.20%	8.35%	0.60	5.01%	5.74%	10.75%
New Jersey Resources	14.55%	6.20%	8.35%	0.65	5.43%	5.74%	11.17%
Nicor	14.55%	6.20%	8.35%	0.90	7.52%	5.74%	13.26%
Northwest Natural Gas	14.55%	6.20%	8.35%	0.60	5.01%	5.74%	10.75%
Piedmont	14.55%	6.20%	8.35%	0.65	5.43%	5.74%	11.17%
Southwest Gas	14.55%	6.20%	8.35%	0.70	5.85%	5.74%	11.59%
UGI Corp	14.55%	6.20%	8.35%	0.75	6.26%	5.74%	12.00%
WGL Holdings, Inc.	14.55%	6.20%	8.35%	0.65	5.43%	5.74%	11.17%
Comparable Companies' Average	14.55%	6.20%	8.35%	0.69	5.74%	5.74%	11.48%

Sources :
Value Line Investment Survey
Ibbotson Associates 2003 SBBI Yearbook: Valuation Edition
Federal Reserve Statistical Release

Aquila Networks - MPS

Aquila Networks - L&P

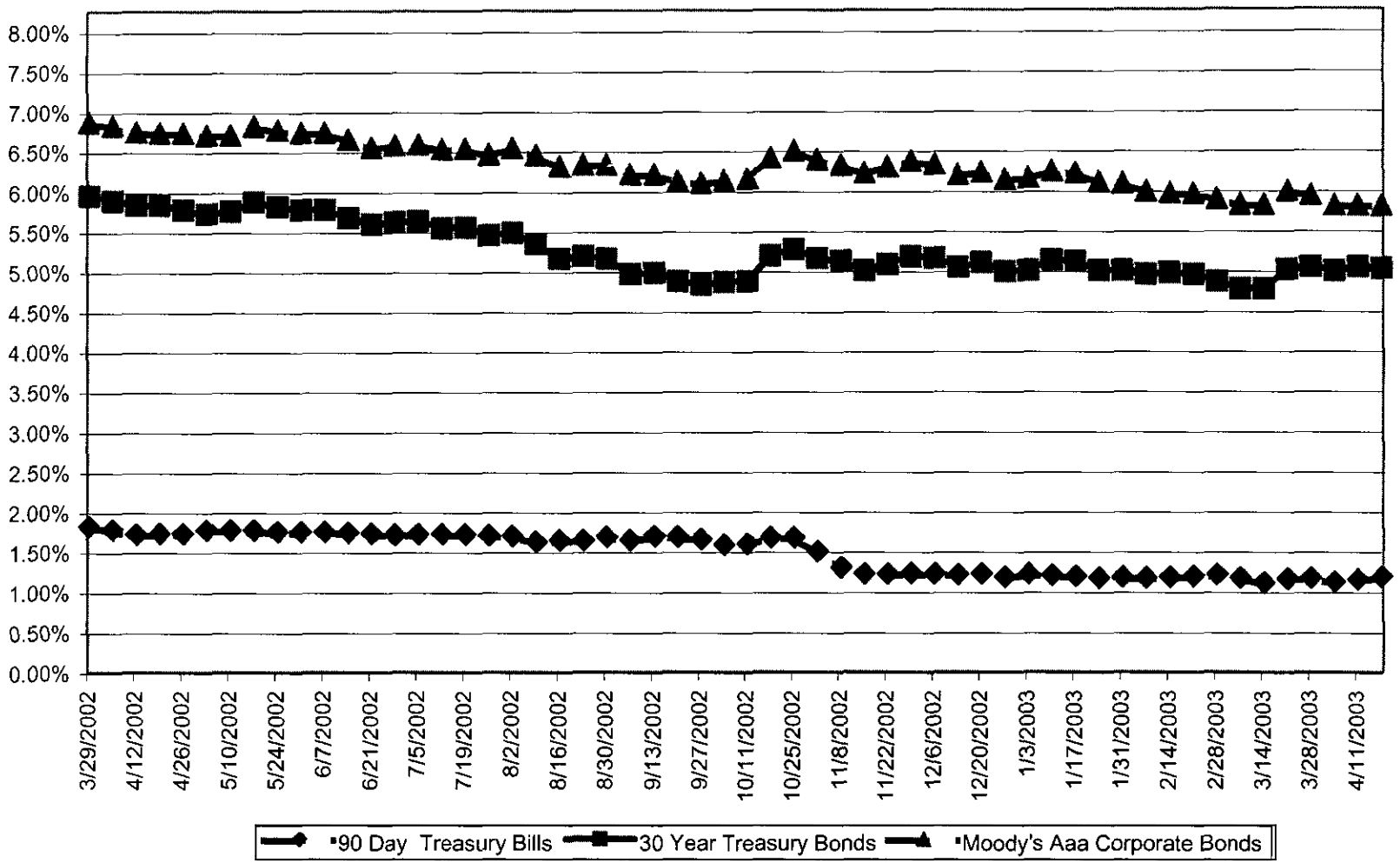
Comparable Gas Companies

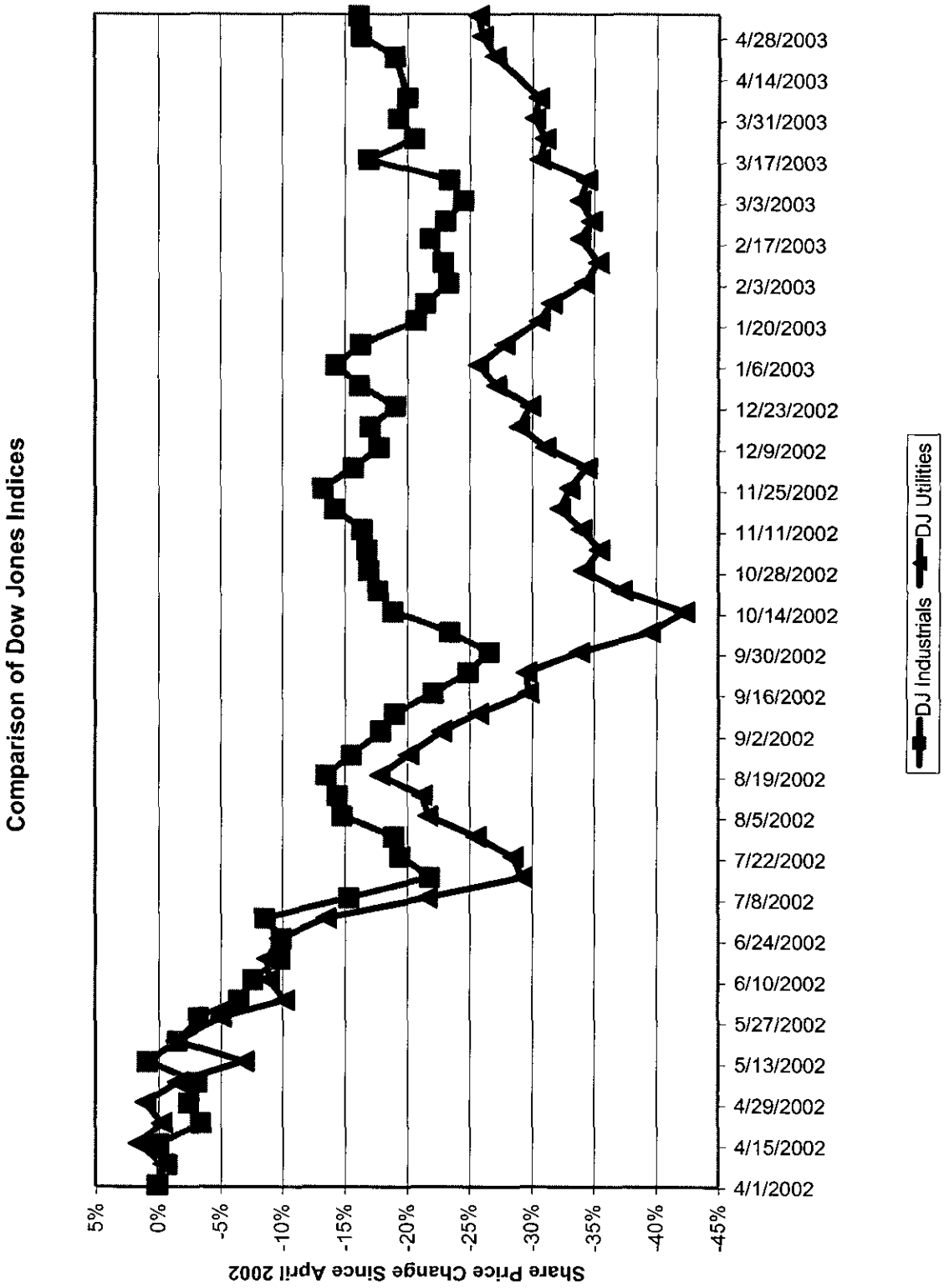
Cost of Equity : Size Adjusted Capital Asset Pricing Model

	Risk Free Return	Beta	Equity Risk Premium	Adjusted Equity Risk Premium	Size Premium	Cost of Equity
Atmos Energy	4.99%	0.60	7.00%	4.20%	0.82%	10.01%
New Jersey Resources	4.99%	0.65	7.00%	4.55%	1.52%	11.06%
Nicor	4.99%	0.90	7.00%	6.30%	0.82%	12.11%
Northwest Natural Gas	4.99%	0.60	7.00%	4.20%	1.52%	10.71%
Piedmont	4.99%	0.65	7.00%	4.55%	0.82%	10.36%
Southwest Gas	4.99%	0.70	7.00%	4.90%	1.52%	11.41%
UGI Corp	4.99%	0.75	7.00%	5.25%	0.82%	11.06%
WGL Holdings, Inc.	4.99%	0.65	7.00%	4.55%	0.82%	10.36%
Comparable Companies' Average	4.99%	0.69	7.00%	4.81%	1.08%	10.89%

Sources :
Value Line Investment Survey
Ibbotson Associates 2003 SBBI Yearbook: Valuation Edition
Federal Reserve Statistical Release

Comparison of Bond Yields




Comparison of Dow Jones Indices
Share Price Change Since April 2002
5%
0%
-5%
-10%
-15%
-20%
-25%
-30%
-35%
-40%
-45%
4/28/2003
4/14/2003
3/31/2003
3/17/2003
3/3/2003
2/17/2003
2/3/2003
1/20/2003
1/6/2003
12/23/2002
12/9/2002
11/25/2002
11/11/2002
10/28/2002
10/14/2002
9/30/2002
9/16/2002
9/2/2002
8/19/2002
8/5/2002
7/22/2002
7/8/2002
6/24/2002
6/10/2002
5/27/2002
5/13/2002
4/29/2002
4/15/2002
4/1/2002
DJ Industrials
DJ Utilities

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Companies

Comparison of Average Annual P/E Ratio

Company	1999	2000	2001	2002	2003	Five Year Average	Forecast '06-'08
Atmos Energy	33.0	18.9	15.6	15.2	13.5	19.2	13.5
New Jersey Resources	15.2	14.7	14.2	14.7	13.6	14.5	15.0
NICOR	14.6	11.9	12.8	13.1	9.7	12.4	13.0
Northwest Natural Gas	14.5	12.4	12.9	17.2	14.5	14.3	12.0
Piedmont Natural Gas	17.7	14.3	16.7	18.4	16.1	16.6	15.5
Southwest Gas	21.1	16.0	19.0	19.8	14.9	18.2	17.0
UGI	15.9	13.6	12.1	11.4	13.3	13.3	11.0
WGL Holdings, Inc.	17.3	14.6	14.7	23.1	12.4	16.4	13.0
Comparable Companies' Averages	18.7	14.6	14.8	16.6	13.5	15.6	13.8

Source: Value Line Investment Survey

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Local Distribution Companies

Comparison of Value Line's Safety Rank

	Safety Rank
Atmos Energy	3
New Jersey Resources	2
NICOR	2
Northwest Natural Gas	2
Piedmont Natural Gas	2
Southwest Gas	3
UGI	3
WGL Holdings, Inc.	1
Comparable Companies' Average	2.3

Source: Value Line Investment Survey

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Local Distribution Companies

Comparison of Value Line's Timeliness Rank

	Timeliness Rank
Atmos Energy	3
New Jersey Resources	3
NICOR	4
Northwest Natural Gas	4
Piedmont Natural Gas	3
Southwest Gas	3
UGI	2
WGL Holdings, Inc.	3
Comparable Companies' Average	3.1

Source: Value Line Investment Survey

Aquila Networks - MPS

Proposed Cost of Capital

December 2002

	Ratio	Cost of Debt	Weighted Cost of Capital Cost of Common Stock		
			12.50%	12.25%	12.00%
Long-Term Debt	50.00%	7.23%	3.61%	3.61%	3.61%
Common Equity	50.00%		6.25%	6.13%	6.00%
Total	100.00%		9.86%	9.74%	9.61%

Source: Aquila Networks - MPS Work Papers

Aquila Networks - L&P

Proposed Cost of Capital

December 2002

	Ratio	Cost of Debt	Weighted Cost of Capital Cost of Common Stock		
			12.50%	12.25%	12.00%
Long-Term Debt	50.00%	7.67%	3.84%	3.84%	3.84%
Common Equity	50.00%		6.25%	6.13%	6.00%
Total	100.00%		10.09%	9.96%	9.84%

Source: Aquila Networks - L&P Work Papers

Aquila Networks - MPS

Aquila Networks - L&P

Comparable Gas Companies

Comparison of After-Tax Times Long Term Interest Earned Ratios

Aquila Networks - MPS	@12.25% ROE	2.69
Aquila Networks - L&P		2.60
Atmos Energy		2.45
New Jersey Resources		4.11
NICOR		3.96
Northwest Natural Gas		2.45
Piedmont Natural Gas		2.84
Southwest Gas		1.49
UGI		1.92
WGL Holdings, Inc.		2.17
Comparable Companies' Average		2.67

Source : Value Line Investment Survey