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Witness:	Kathleen C. McShane
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Union Electric Company
Case No.:	
Date Testimony Prepared:	May 23, 2003

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. _____

DIRECT TESTIMONY

OF

KATHLEEN C. McSHANE

ON BEHALF OF

UNION ELECTRIC COMPANY,
d/b/a AmerenUE

St. Louis, Missouri
May 2003

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a AmerenUE for Authority to File Tariffs Increasing Rates for Gas Service Provided to Customers in the Company's Missouri Service Area.	)))))	Case No. _____

AFFIDAVIT OF KATHLEEN C. McSHANE

STATE OF MARYLAND)
) **ss**
CITY OF BETHESDA)

Kathleen C. McShane, being first duly sworn on her oath, states:

1. My name is Kathleen C. McShane. I work in Bethesda, Maryland, and I am employed by Foster Associates, Inc. as a Senior Vice President.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Union Electric Company d/b/a AmerenUE consisting of 51 pages, Appendix A, Appendix B and Schedules KCM-1 through KCM-15, all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

Kathleen C. McShane

Subscribed and sworn to before me this 21st day of May, 2003.

Patricia J Bradley
Notary Public

MY COMMISSION EXPIRES 10/1/2006

My commission expires: _____

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DIRECT TESTIMONY

OF

KATHLEEN C. McSHANE

CASE NO. _____

I. INTRODUCTION AND SUMMARY OF CONCLUSIONS

Q. Please state your name and business address.

A. My name is Kathleen C. McShane. My business address is 4550 Montgomery Avenue, Suite 350N, Bethesda, Maryland 20814.

Q. By whom and in what capacity are you employed?

A. I am a Senior Vice President of Foster Associates, Inc., an economic consulting firm founded in 1956.

Q. What is your educational background, work experience and duties of your position?

A. I hold a Masters in Business Administration with a concentration in Finance from the University of Florida (1980) and am a Chartered Financial Analyst (1989). I have testified in over 100 cases in federal, state, provincial and territorial jurisdictions in the U.S. and Canada since 1987. My professional experience is detailed in Appendix A, which is attached to this testimony.

Q. What is the purpose of your direct testimony?

A. I have been asked to render an opinion on the fair rate of return on equity for the Missouri gas operations of Union Electric Company, d/b/a AmerenUE ("AmerenUE" or "Company").

My analysis and conclusions regarding the fair return follow; the statistical support for the studies I have conducted is contained in Schedules KCM-1 through KCM-15 attached to this testimony.

Q. Please summarize the results of your analysis.

A. The results of the three tests I conducted indicate the following:

Discounted Cash Flow Test	11.5-13.25%
Equity Risk Premium Test	11.5-13.5%.
Comparable Earnings Test	14.75-15.0%

Q. What factors did you consider in arriving at a final recommendation?

A. My recommendation takes into account the following considerations:

(1) No single test result should be given exclusive weight; each test provides a different perspective and has its own strengths and weaknesses which vary with both the business cycle and stock market conditions.

(2) Both the discounted cash flow ("DCF") and the equity risk premium tests are market-related tests for measuring the cost of attracting capital by reference to market value. By contrast, the comparable earnings test, which reflects returns on book equity, addresses the fairness standard enunciated in the courts, e.g.,

> 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. [*Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679, (1923)].

(3) While the DCF test estimates the return required on the market value of common equity, regulatory convention applies that return to the book value of the assets

included in rate base. When the market value of a company's stock is close to the book value, the DCF test result can be directly applied to book value. The further the market value of equity is above book value, the greater the extent to which an unadjusted current DCF cost of equity understates the fair return on book equity. Without an adjustment to the rates to recognize the significant deviation between current market value and book value, the application of the DCF test will, by definition, significantly understate the return on original cost book value that investors require.

(4) Estimates of the cost of attracting capital derived from the equity risk premium tests also tend to understate a fair return on book equity for reasons similar to those applicable to the DCF model. Primarily, the understatement lies in the incompatibility of the premise that a market-derived cost is a measure of the fair return when market values exceed book values. Consequently, at a minimum, a financing flexibility allowance, sufficient to maintain the market value equal to book value in the event new equity is raised, is required. The upper end of the range of the equity risk premium test results equates to a return on book equity compatible with a longer-term equilibrium market/book ratio of approximately 1.5 times.

(5) In principle, the comparable earnings test is most compatible with regulation on an original cost book value rate base. Under current capital market conditions, characterized by market valuations which exceed book values by a significant margin, it is of paramount importance to give significant weight to the results of the comparable earnings test.

(6) The results of the three tests indicate a fair return for an average risk local distribution company ("LDC") in the range of 11.5-13.5%, or a mid-point of 12.5%.

The proposed capital structure for AmerenUE's Missouri gas operations includes a somewhat higher common equity ratio than maintained by the proxy sample of LDCs. Consequently, the Company's lower financial risk leads me to recommend a common equity return for AmerenUE's Missouri gas operations below the mid-point of the range of reasonableness, i.e., at 12.25%.

II. PROXY FIRMS FOR ESTIMATION OF THE FAIR RETURN ON EQUITY

Q. What principal have you applied in determining how to estimate the fair return for AmerenUE's Missouri gas operations?

A. The determination of the fair return for AmerenUE's Missouri gas operations is premised on the "stand-alone" principle. That principle holds that the fair return should reflect the business and financial risks to which the Missouri gas operations are exposed, not those of its parent; the happenstance of ownership should not dictate the determination of a fair return.

The parent company, Ameren Corporation, for which market data are available, is primarily an electric utility, and its market data reflect the risks associated with that business. Hence, rather than estimate a fair return for AmerenUE's Missouri gas operations by reference to market data for Ameren, the cost of attracting capital tests should be applied by reference to proxy companies that operate in the gas distribution business to ensure that the market data capture the business risks to which AmerenUE's Missouri gas operations are exposed.

Q. To what companies have you applied the three tests you employ to estimate the fair return on equity for AmerenUE's Missouri gas operations?

A. For purposes of applying the equity risk premium and discounted cash flow tests, I relied on a sample of relatively pure play LDCs to serve as a proxy for AmerenUE's Missouri gas operations.

Q. How did you select the sample of LDCs?

A. The selection criteria are described in Section V.B.2 of this testimony.

Q. Reliance on a sample of gas distributors as a proxy for AmerenUE's Missouri gas operations implies that the latter is of similar total risk (business plus financial) to the sample. Is this a reasonable assumption?

A. Yes. Standard & Poor's ("S&P") ranks the business risk of regulated firms on a scale of "1" to "10", with "1" being the least risky and "10" being the most risky. The key elements of business risk that are evaluated include customer markets, competitive position, supply position and regulatory environment.

The average S&P business profile ranking of the LDCs in my sample is "3". By comparison, AmerenUE's overall operations are ranked "4". Although AmerenUE is riskier on this scale than the average LDC, there is no critical element of the business risk profile of AmerenUE's Missouri gas operations that would lead investors to perceive that AmerenUE's Missouri gas operations face materially higher or lower business risks than the average LDC in my sample.

Q. How does the financial risk of AmerenUE's Missouri gas operations compare to its peers?

A. The financial risk can be expressed in terms of the proposed capital structure for ratemaking purposes.

The proposed capital structure for AmerenUE's Missouri gas operations is equivalent to the actual capital structure of AmerenUE at 12/31/2002, the end of the test year used by the Company in its filing. This capital structure is as follows:

Long term debt	37.6%
Preferred stock	2.6%
Common equity	59.8%

Q. How does the proposed capital structure compare to those maintained by other local gas distribution utilities?

A. The average common equity ratio for the four quarters ended 09/30/02 for my sample of relatively pure-play LDCs was 52.5%, based on total permanent capital, with a standard deviation of 6.4% (Schedule KCM-1-1). AmerenUE's proposed common equity ratio lies within the range maintained by the proxy sample, but is slightly more than one standard deviation above the mean.

Q. In your opinion, is the proposed capital structure reasonable for ratemaking purposes?

A. Yes. In principle, the actual capital structure should be relied upon for ratemaking purposes as long as it is compatible with the range of capital structures maintained by the industry. As noted above, the proposed capital structure is within the range which has been maintained by the sample of gas distributors. Further, the actual capital structure maintained by AmerenUE has allowed it to maintain debt ratings[1] in the A category and a relatively low cost of debt, from which the Missouri gas customers have

[1] The most recent debt ratings on AmerenUE's senior secured debt are:

Fitch	A+
Moody's	A1
Standard & Poor's	A-

benefited. However, since AmerenUE has a somewhat higher common equity ratio relative to the typical LDC in the proxy sample, it faces a lower level of financial risk. Given AmerenUE's lower level of financial risk, the allowed return on equity should be set below the mid-point of the range of reasonableness applicable to the proxy sample.

Q. To what companies did you apply the comparable earnings test?

A. I relied on a sample of low risk consumer-oriented industrial companies for purposes of applying the comparable earnings test. Application of the test to utilities would be circular. The difference in investment risk between the industrials and the LDCs was accounted for by an adjustment to the industrials' returns. The sample selection process and the list of companies in the resulting sample are found in Section IV.B.2 of this testimony.

III. ECONOMIC AND CAPITAL MARKET TRENDS

Q. Please summarize recent economic and capital market trends which bear on the cost of capital environment.

A. I will address these in turn, starting with trends in economic growth:

A. ECONOMIC GROWTH

From 1991 to 2000, the U.S. economy experienced the longest expansion in U.S. history. Over this period real gross domestic product ("GDP") growth averaged 3.2%, fueled by strong consumer spending and corporate investment (Schedule KCM-3). Soaring equity markets throughout most of the period, which pumped up the consumer's net worth, provided a key impetus for consumer confidence and consumer spending. Investment spending was particularly strong in technology-related areas, giving rise to strong productivity gains and healthy growth in corporate profits (close to 7.5% per year) (Schedule

KCM-3). Returns on equity for the S&P Industrials Composite averaged 21% from 1991 to 2000, compared to an average of 14.5% achieved during the prior ten years (1981 to 1990).

The strength of the U.S. economy was exemplified by its resilience in the face of a global capital market crisis during this period. Despite the confluence of events domestically and abroad (the Asian financial crisis, defaults in the Russian bond market and the near-collapse of a major hedge fund) which precipitated a global capital market crisis in mid-1998, the U.S. economy was able to maintain a healthy rate of growth. Even with the significant drag on the export sector, largely due to economic weakness in Asia, the U.S. economy continued to expand at a robust pace until mid-2000.

In mid-1999, concerned that the economy was growing too rapidly, the Federal Reserve ("Fed") began raising the Federal Funds rate. By gradually raising interest rates, the Fed hoped to steer the booming economy into a soft landing. By mid-2000, the Fed had raised the Fed Funds rate six times by a total of 175 basis points.

Between mid-2000 and summer 2001, the economy had slowed considerably. The deceleration in growth was prompted by the Fed's actions to increase interest rates, as well as by rising energy prices, which began to put a squeeze on profit margins and reduce business spending. Signs of a slumping economy spilled over into the equity markets, which were widely viewed as overvalued. By the end of August 2001, the Dow Jones Industrials Average had fallen 15% from its January 2000 peak; the technology-laden NASDAQ had plummeted by over 57%. As equity markets weakened and the public's net worth shrank, consumer confidence dropped, and with it consumer spending. Reversing course, the Fed took steps to halt the economic slide. It lowered interest rates seven times between January and August 2001, for a total of 300 basis points, as the economy continued to weaken and

threatened to sink into recession. With the Fed's actions, by early September 2001 the consensus view was that the U.S. would avoid an outright recession.

The September 11, 2001, terrorist attacks on the U.S. materially worsened the near-term outlook for the economy. The attacks further damaged already drooping consumer confidence and produced a sharp downturn in consumer spending, which had remained the only significant source of U.S. economic growth in the first half of the year. In the wake of the September 11 attacks, the Fed began to cut interest rates in an effort to ensure sufficient monetary policy stimulus to turn the economy around.

Initially, it was believed that the U.S. economy had not experienced a true recession during 2001. However, the data now show that the economy actually shrank in three quarters of 2001 (quarter-over-quarter).

While a rebound in the economy was registered in 2002, with real GDP growth for the year at 2.4%, the rebound is fragile. Unemployment rates have risen, corporate profits have not yet rebounded from their 2000-2001 declines, energy prices have experienced considerable volatility, investors have lost confidence in the equity markets and the Iraq situation has created significant uncertainty for consumers and investors. The Federal Funds rate sits at 1.25%, giving the Federal Reserve relatively little margin for further lowering interest rates. A stimulus package of tax cuts and incentives for job creation remains under debate. Despite a high level of uncertainty, the consensus view is that the economy will experience moderate growth in 2003 (2.6%), rising to 3.6% in 2004 (Blue Chip *Economic Indicators*, March 10, 2003). Following three straight years of decline, the consensus for 2003 anticipates moderate growth in business investment (3.4%) followed by a surge to 7.6% in 2004. Corporate profits after tax, which declined in each of the years 2000

through 2002, are expected to rebound in 2003 and 2004 (7.3% and 10.4% growth respectively). The optimistic forecasts for 2004 are premised on an economic and equity market rebound subsequent to the resolution of the Iraq situation.

For the long term (2005 to 2014), real growth is forecast at 3.2% (Blue Chip *Economic Indicators*, March 10, 2003), virtually identical to the rate experienced over the past business cycle and above the 2.5% that had historically been viewed as sustainable. The higher long-term growth estimates are consistent with the view that technology-driven productivity gains will allow higher sustainable long-term growth in conjunction with inflation maintained at acceptable levels.

B. INFLATION

Inflation remained in check throughout the cyclical expansion, averaging only 2.7% as measured by the Consumer Price Index ("CPI") from 1991 to 1999 (Schedule KCM-3). Concerns that a tight labor market would trigger a wage-price spiral were not realized. High levels of business investment in new technology resulted in increased efficiency, reduction in costs, and an increase in work force productivity. Large gains in productivity kept inflation in check as gains in output covered higher employment costs.

Spurred by rising energy prices, the CPI reached a cyclical high in 2000, rising 3.4%. However, with weakening economic activity, declining energy prices and higher unemployment rates, inflation has since moderated. CPI inflation averaged 2.8% in 2001, and was only 1.6% in 2002. For 2003 and 2004, the consensus forecast anticipates that inflation will remain relatively benign, increasing by 2.3% in both years (Blue Chip *Economic Indicators*, March 10, 2003). However, the risk of higher inflation arises from the

recent spike in oil and gas prices, and the potential for further increases due to the war with Iraq.

Over the longer-term (2005-2014), inflation, as measured by the CPI, is expected to average 2.6%, and, as measured by the GDP Deflator, 2.25% (Blue Chip *Economic Indicators*, March 10, 2003). The expected longer-term inflation rates are slightly lower than those experienced over the past business cycle.

C. INTEREST RATES

Over the past seven years, short-term interest rates have been buffeted by the effects of monetary policy initiatives. From 1995 until the global market crisis of August 1998, 90-day Treasury bill ("T-bill") yields fluctuated in the relatively narrow range of 4.8-5.8% (Schedule KCM-4). With the combination of Fed actions to relieve the August 1998 crisis and increasing inflows of capital to the "safe haven" of U.S. government securities, T-bill rates fell to 4.1% in October 1998.

However, given the underlying strength of the U.S. economy, which led to multiple increases in the Federal Funds rate in 1999 to 2000, 90-day T-bill rates gradually rose. By November 2000, T-bill rates had risen over 200 basis points from their mid-1998 lows, peaking at 6.2%. With the weakening economy, exacerbated by the events of September 11, and the upheaval in the Middle East, aggressive Federal Funds rate cuts have produced 90-day T-bills yields that are at their lowest levels since the late 1950s.

Ten and 30 year Treasury notes and bonds followed a similar up-and-down pattern to T-bills from 1995 through 1997. Ten-year T-bills averaged 6.5%, while 30-year Treasuries averaged 6.7%. A decline in 10-year and 30-year rates in 1998 to approximately 4.6% and 5.0% respectively – supported by the demand for safe U.S. Treasuries in the face of

turbulent global markets – was short-lived. As short-term rates were pushed up as the economy boomed, so too were the 10 and 30 year Treasury yields, peaking at 6.7% and 6.5% respectively in January 2000.

In January 2000, faced with significant Federal government budget surpluses, the U.S. Treasury Department announced a plan to pay down the national debt. The announcement had an immediate impact on the long end of the government bond yield curve, as investors scurried to acquire a diminishing supply of longer-term government securities. By month-end January 2000, the normally upward sloping yield curve developed a hump between 10-year and 30-year Treasuries. By May 2000, the spread between 10-year and 30-year Treasuries was a negative 30 basis points.

An article published in *Business Economics* described the shrinkage in long-term U.S. government debt as follows,

> More recently, however, the supply of 30-year Treasury bonds has been shrinking at an astounding rate, thanks to mounting Federal budget surpluses in 1998, 1999 and projected for 2000. Over the coming decade, the Congressional Budget Office projects that a continuation of these annual surpluses will result in a dramatic shrinkage in Treasury debt held by the public from $3.6 trillion at the end of fiscal 1999 to only $0.9 trillion at the end of fiscal 2009. Reflecting these declining Treasury demands on the U.S. capital market, only $20 billion in 30-year Treasury bonds were auctioned in 1999; and this year these bond sales are expected to whither away further to $15 billion, dramatically reducing trading activity and liquidity in the long-term sector of the Treasury securities market. In addition, the Treasury has announced a "buy back" plan amounting to $30 billion in 2000 aimed at phasing out long-term bonds sporting the highest interest rates and at maintaining efficiently large auction size and liquidity of the most recent (on-the-run) issues. The powerful pull of shrinking supply on the 30-year Treasury bond yield caused it to drop below the yield on 10-year Treasury notes at the start of 2000, defying the normal relationship between these yields implied by an upward sloping yield curve. Some market observers are speculating that the Treasury will eliminate its 30-year bond offering altogether, as

budget surpluses mount and government borrowing needs contract further.[2]

In May 2000, the *Wall Street Journal* announced that it would no longer rely on the 30-year Treasury bond for its benchmark[3] yield. Instead, it would rely on the 10-year Treasury note as the benchmark. The government plan to eliminate all outstanding debt by 2013 even called into question the reliability of the 10-year Treasury note as a benchmark.

With the deterioration in the economy, the expected surpluses became less certain, and the concern with the supply of long-term government debt diminished. As the yield curve became increasingly upward sloping, the spread between 10 and 30 year Treasuries resumed a more normal level.

On October 31, 2001, the U.S. Treasury announced that it would no longer issue 30-year bonds. The announcement, intended to direct downward pressure on long-term rates and push investors into short-term securities, again created an anomaly in the yield curve. The anomaly has been most obvious in the spreads between 20 and 30 year Treasury yields. On October 30th, the day before the announcement, the 20/30 year spread was 1 basis point. Two days after the announcement, the spread was a negative 21 basis points. The announcement that 30-year bonds would no longer be issued confirmed that the 30-year bond has become less reliable as a proxy for the risk-free rate. Despite the rising federal

[2] David M. Jones, "The Demise of the 30-Year Treasury Bond as a Benchmark for Pricing Fixed-Income Securities", *Business Economics*, October 2000.

[3] The term "benchmark" has been defined as follows:

> …backed by the full faith and credit of the U.S. government, Treasury yields can be considered the risk-free rate, thus becoming the critical input when discounting cash flows of other securities. Examples include valuing non-government debt, equity, derivatives, and currencies. The risk-free rate is also the basis for corporations and other investors evaluating projects or potential acquisition candidates using discounted cash flow analysis. This role transcends borders, as a key characteristic of a good benchmark is to facilitate such analysis across currencies. (Steven A. Zamsky, "Diminishing Treasury Supply: Implications and Benchmark Alternatives", *Business Economics*, October 2000).

budget deficit, the government has stated publicly (February 2003) that it has no plans to revive the 30-year bond.

With respect to the new benchmark, the 10-year T-note, the combination of the economic slump, monetary policy stimulus and expected reduction in the supply of longer-term securities have pushed yields to their lowest levels in decades. From their January 2000 peak of 6.7%, 10-year yields declined to a low of 4.2% in early November 2001, before beginning to rebound, rising to 5.4% by April 1, 2002. The rebound has been temporarily reversed, as consumers' and investors' shaky confidence and steep declines in the equity markets since that time have sent investors fleeing to the safety of government securities. At February 28, 2003, 10-year Treasury yields stood at 3.7%.

The Blue Chip *Financial Forecasts* (March 1, 2003) forecasts 10-year Treasury yields to average 4.2% in 2003 and 4.9% in the first half of 2004. For the longer-term (2005-2014), the 10-year yield is expected to be 5.8% (Blue Chip *Economic Indicators*, March 10, 2003).

The recent low yields on 10-year notes reflect in large measure: (1) the Federal Reserve's efforts to jump-start the economy by lowering the Federal Funds rate 525 basis points between January 2001 and December 10, 2001; (2) the Treasury Department's efforts to lower longer-term rates by eliminating sales of 30-year bonds; and (3) a flight to safety as investors have abandoned the equity market. What was a speculative "bubble" in the equity markets in the late 1990s is now, according to some analysts, a speculative, but unsustainable, "bubble" in the government bond market.

An examination of the trends in utility bond yields indicates that the current yields on longer-term government securities are not an accurate reflection of the overall

utility cost of capital environment. In the six months preceding the August 1998 global market crisis, A-rated utility bond yields were 7.1%, compared to the 10-year T-note yield of 5.6%. The resulting A-rated utility/10-year Treasury spread was 1.5%. However, during 2001, the average yield on A-rated utility bonds was approximately 60 basis points higher than in early 1998, while the yield on 10-year Treasuries was 60 basis points lower, so that the spread had risen to an average of 220 basis points. Since the end of 2001, spreads continued to widen; at the end of February 2003, the Moody's A-rated utility/10-year Treasury yield spread was 314 basis points, with A-rated utility bonds yielding 6.85%.

Q. What are the key messages that the analysis of government vs. corporate bond yields delivers?

A. Essentially, the trend in, and spreads on, utility bond yields relative to government securities deliver two key messages:

(1) the current low levels of longer-term government bond yields reflect a combination of factors, including the impact of monetary policy, a "scarcity premium", investors' fears of the equity market, economic weakness and the potential effects of a war. The current levels are inconsistent with economic fundamentals and unlikely to be sustained.

(2) the level of and trend in utility bond yields are indicators of the trends in the utility cost of equity, inasmuch as corporate yields are a reflection of investors' perceptions of the underlying business and financial risks of the issuing corporations. The levels of utility bond yields are evidence that the cost of equity under current capital market conditions has not declined in tandem with government bond yields.

D. EQUITY MARKETS

Q. How has the equity market behaved in recent years?

A. Much of the period since the mid-1990s was characterized by an exuberant but volatile bull market which favored high growth, high-tech, "New Economy" stocks. In their enthusiasm for technology-based equities, investors essentially shunned stocks that were deemed to be "Old Economy" companies. From the beginning of 1995 to its 2000 peak, the S&P 500 price index increased 230%; the NASDAQ rose by 580%. At the market peak, valuations had been pushed to historically high levels. During the market bubble, it appeared that the only risk investors perceived was the risk of not being in the market.

As the economy began to deteriorate in mid-2000, investors precipitously abandoned the high flying "New Economy" stocks, turning to the safe havens of the perennial "defensive" sectors of the economy. From its 2000 peak to its trough in September 2001, the S&P 500 declined by 40%; the corresponding decline in the NASDAQ was 72%. Irrational exuberance was replaced by irrational pessimism.

Despite fears of further terrorist attacks and the Enron Corporation debacle, investor confidence had regained ground by the beginning of 2002. By January 2002 the S&P 500 had climbed over 20% from its September trough; the NASDAQ had risen almost 45%. The renewed confidence did not persist. A wave of accounting scandals and blows to the credibility of investment analyst research, combined with weak corporate profits, and the uncertain global political climate eroded investor confidence in the equity markets. At February 28, 2003, the S&P 500 and NASDAQ lay 28% and 35%, respectively, below their January 2002 peaks.

The future path of the equity market remains highly uncertain. Despite assurances that the U.S. economy is fundamentally strong, the equity markets have been experiencing what has been termed "malaise", with investors essentially frozen in place. The malaise has been brought on by a myriad of factors, including a distrust in corporate America and an unsettled global political environment. Economists' forecasts of economic growth are generally premised on a successful resolution of the Iraqi situation within the year and a subsequent recovery of the equity market.

IV. ESTIMATE OF A FAIR RETURN ON EQUITY

A. CONCEPTUAL CONSIDERATIONS

Q. Please summarize your approach to estimating a fair return on equity for AmerenUE's Missouri LDC operations.

A. My estimate of a fair return on equity starts with a recognition of the objective of regulation. That objective is to simulate competition, i.e., to establish a regulatory framework which will mimic the competitive model. Under the competitive model, a firm should be able to anticipate a return on equity which reflects the opportunity cost of capital, i.e., a return which is commensurate with the returns available on foregone investments of similar risk.

The objective of regulation, in conjunction with a utility's obligation to serve, has given rise to multiple criteria for a fair and reasonable return. Three criteria in particular have been promulgated by both judicial[4] and regulatory precedents. The three criteria provide the opportunity for a utility:

[4] Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia, 262 U.S. 679 (1923) and Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 391 (1944).

1. to attract capital on reasonable terms;

2. to maintain its financial integrity; and,

3. to achieve returns commensurate with those achievable on alternative investments of comparable risk.

Further, my approach to estimating a fair return for a utility is premised on the following:

1. The return on equity, in an original cost regulatory framework, is applied to the book value of common equity. There should be a compatibility between the context in which estimates of the required return on equity are derived (e.g., market value), and the context in which the return is applied (i.e., book value).

2. The estimation of a fair return on equity is not a mechanical exercise. There are multiple models available to estimate the cost of equity. Each has different premises. Each has strengths and weaknesses. The fair return on equity cannot be determined with the precision that is sometimes implied by the recommendations of experts. The exercise of estimating a fair return entails by its very nature a degree of judgment (constrained by facts). As a result, it is incumbent on the analyst to rely on several models to arrive at a well-reasoned determination of a fair return.

Q. What tests have you relied upon to estimate a fair return on equity for AmerenUE's Missouri LDC operations?

A. I have utilized the discounted cash flow model, risk premium tests (including the capital asset pricing model), and the comparable earnings test.

B. DISCOUNTED CASH FLOW MODEL

B.1. Conceptual Underpinnings

Q. Please discuss the conceptual basis for the DCF model.

A. The discounted cash flow approach proceeds from the proposition that the price of a common stock is the present value of the future expected cash flows to the investor, discounted at a rate which reflects the riskiness of those cash flows. If the price of the security is known (can be observed), and if the expected stream of cash flows can be estimated, it is possible to approximate the investor's required return (or capitalization rate) as the rate which equates the price of the stock to the discounted value of future cash flows.

Theoretically, the cash flows extend to infinity. However, as the expected cash flows extend further into the future, their discounted value adds less and less to the price of the stock. Investors in common stocks are unlikely to forecast (or be able to forecast with any accuracy) cash flows beyond five years.

There are multiple versions of the discounted cash flow model available to estimate the investor's required return. An analyst can employ a constant growth model or a multiple period model to estimate the cost of equity. The constant growth model rests on the assumption that investors expect cash flows to grow at a constant rate throughout the life of the stock.

The assumption that investors expect a stock to grow at a constant rate over the long-term is most applicable to stocks in mature industries. Growth rates in these industries will vary from year to year and over the business cycle, but will tend to deviate around a long-term expected value. As a pragmatic matter, the application of a constant growth model is compatible with the likelihood that investors do not forecast beyond five

years. Hence, the current market price and dividend yield do not explicitly anticipate any changes in the outlook for growth.

The constant growth model is expressed as follows:

$$\text{Cost of Equity (k)} = \frac{D_1}{P_o} + g,$$

where,

D_1 = next expected dividend
P_o = current price
g = constant growth rate

Q. How does the model set forth above reflect a simplification of reality?

A. First, it is based on the notion that investors expect all cash flows to be derived through dividends. Second, the underlying premise is that dividends, earnings, and price all grow at the same rate.

Q. Are these assumptions likely to represent reality?

A. No; it is likely that in the near-term, investors expect growth in dividends to be lower than growth in earnings.[5]

Q. How does one adapt the model given the potential disparity between earnings and dividend growth?

A. The model can be adapted by recognizing that all investor returns must ultimately come from earnings. Hence, focusing on investor expectations of earnings growth will encompass all of the sources of investor returns (e.g., dividends and retained earnings).

[5] To illustrate, the average growth rate in dividends forecast by *Value Line* for my proxy sample of gas distributors for the period through 2006 is 2.3%; the corresponding average *Value Line* forecast of earnings growth for the same period is 7.6%.

B.2. Proxy Companies

Q. To what companies did you apply the DCF test?

A. I applied the discounted cash flow test to a sample of eight LDCs that serve as a proxy for AmerenUE's Missouri gas operations. This sample includes every LDC:

1. classified by *Value Line* as a gas distribution utility;
2. with no less than 85% of total assets devoted to gas distribution operations;
3. whose Standard & Poor's debt rating is A- or higher; and,
4. for which at least three analysts' earnings growth rate forecasts are available from a combination of the I/B/E/S and Zacks[6] data bases.

The resulting eight LDCs are listed on Schedule KCM-5.

Q. Why did you not apply the discounted cash flow test specifically to Ameren Corporation, the parent company of AmerenUE?

A. I have not applied the discounted cash flow test specifically to Ameren Corporation for three reasons:

1. Ameren Corporation is primarily an integrated electric utility, as noted in Section II of this testimony;
2. circularity; and,
3. potential for measurement error.

Q. What difference does it make if Ameren Corporation is primarily an electric utility?

[6] This requirement was imposed to ensure that the forecasts are a "consensus" view, not those of a single analyst.

A. The fair return for AmerenUE's gas distribution operations is a function of the cost of equity of those operations. That cost of equity is, in turn, a function of the business risks faced by the gas operations specifically, not the overall risks of Ameren Corporation.

Q. What do you mean by circularity?

A. For a utility, the growth component of the DCF formula is integrally linked to the allowed return on equity ("ROE"). As noted in *Regulatory Finance: Utilities' Cost of Capital* by Dr. Roger Morin (Arlington, VA: Public Utilities Reports, 1994, p. 161),

> To estimate what ROE resides in the minds of investors is equivalent to estimating the market's assessment of the outcome of regulatory hearings. Expected ROE is exactly what regulatory commissions set in determining an allowed rate of return. If the ROE input required by the model differs from the recommended return on equity, a fundamental contradiction in logic follows. In other words, the method requires an estimate of return on equity before it can even be implemented. Common sense would dictate the inconsistency of a return on equity recommendation that is different than the expected ROE that the method assumes the utility will earn forever. For example, using an expected return on equity ROE of 13% to determine the growth rate and using the growth rate to recommend a return on equity of 11.5% is inconsistent. It is not reasonable to assume that this company is expected to earn 13% forever, but recommend an 11.5% return on equity. The only way this utility can earn 13% is that rates be set by the regulator so that the utility will in fact earn 13%.

Q. What is "measurement error"?

A. As noted earlier, the application of the DCF approach requires inferring investor growth expectations. The resulting DCF cost is very sensitive to the growth expectations inferred. Measurement error results when the growth forecast inferred does not equate to the expectation embedded in the dividend yield component. By relying on a sample of companies, the amount of "measurement error" in the data can be reduced. The larger the sample, the more confidence the analyst has that the sample results are representative of the cost of equity. As noted in a widely utilized finance textbook,

> Remember, [a company's] cost of equity is not its personal property. In well-functioning capital markets investors capitalize the dividends of all securities in [the company's] risk class at exactly the same rate. But any estimate of [the cost of equity] for a single common stock is noisy and subject to error. Good practice does not put too much weight on single-company cost-of-equity estimates. It collects samples of similar companies, estimates [the cost of equity] for each, and takes an average. The average gives a more reliable benchmark for decision making.[7]

Q. What factual support do you have for the existence of potential measurement error?

A. In principle, the cost of equity for firms of similar risk in the same industry should be quite similar. The fact that individual company DCF costs differ widely (see Schedules KCM-6 through KCM-8) is a strong indication that a single company DCF cost is not a reliable estimate.

B.3. Investor Growth Expectations

Q. Please discuss how you have estimated investor growth expectations.

A. I have estimated investor growth expectations using consensus forecasts of long-term earnings growth. Specifically, I relied on two widely available sources: I/B/E/S International and Zacks.

Q. Why have you utilized only forecast growth rates and not historic growth rates?

A. I have utilized forecast growth rates for the following reasons. First, various studies have concluded that analysts' forecasts are a better predictor of growth than naïve

[7] Richard A. Brealey and Stewart C. Myers, *Principles of Corporate Finance*, Sixth Edition, Boston, MA: Irwin McGraw Hill, 2000, p. 69 (emphasis added).

forecasts equivalent to historic growth; moreover, analysts' forecasts have been shown to be more closely related to investors' expectations.[8]

Second, to the extent history is relevant in deriving the outlook for earnings, it should already be reflected in the forecasts. Therefore, reliance on historic growth ratios is at best redundant, and, at worst, potentially double counts growth rates which are irrelevant to future expectations.

B.4. Application Of The DCF Model

Q. Please summarize your application of the DCF model.

A. I applied the DCF model to the sample of eight LDCs using the following inputs:

1. the annualized dividend paid during the three months ending February 28, 2003 as D_o;

[8] Empirical studies that conclude that investment analysts' growth forecasts serve as a better surrogate for investors' expectations than historic growth rates include Lawrence D. Brown and Michael S. Rozeff, "The Superiority of Analyst Forecasts as Measures of Expectations: Evidence from Earnings", *The Journal of Finance*, Vol. XXXIII, No. 1, March 1978; Dov Fried and Dan Givoly, "Financial Analysts' Forecasts of Earnings, A Better Surrogate for Market Expectations", *Journal of Accounting and Economics*, Vol. 4, 1982; R. Charles Moyer, Robert E. Chatfield, Gary D. Kelley, "The Accuracy of Long-Term Earnings Forecasts in the Electric Utility Industry", *International Journal of Forecasting*, Vol. I, 1985; Robert S. Harris, "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return", *Financial Management*, Spring 1986; James H. Vander Weide and William T. Carleton, "Investor Growth Expectations: Analysts vs. History", *The Journal of Portfolio Management*, Spring 1988; and David Gordon, Myron Gordon and Lawrence Gould, "Choice Among Methods of Estimating Share Yield," *The Journal of Portfolio Management*, Spring 1989.

The Vander Weide and Carleton study cited

> …found overwhelming evidence that the consensus analysts' forecast of future growth is superior to historically oriented growth measures in predicting the firm's stock price [and that these results] also are consistent with the hypothesis that investors use analysts' forecasts, rather than historically oriented growth calculations, in making stock buy-and-sell decisions.

The Gordon, Gordon and Gould study concluded,

> …the superior performance by KFRG [forecasts of earnings] growth by securities analysts] should come as no surprise. All four estimates [securities analysts' forecasts plus past growth in earnings and dividends and historic retention growth rates] rely upon past data, but in the case of KFRG a larger body of past data is used, filtered through a group of security analysts who adjust for abnormalities that are not considered relevant for future growth."

2. the average of the monthly high and low stock prices for the three months ending February 28, 2003 as P_o; and

3. the average of the most recent I/B/E/S and Zacks earnings growth forecasts to estimate "g" in both the growth component and the dividend yield component.

Table 1 summarizes the DCF results for the sample of proxy LDCs:

Table 1

Expected Dividend Yield		**Expected Growth Rate**		**DCF Cost of Equity**	
Mean	Median	Mean	Median	Mean	Median
5.2%	5.2%	5.3%	4.9%	10.5%	10.7%

Source: Schedule KCM-6.

Q. What is the cost of equity indicated by the constant growth model?

A. Based on the mean and median DCF costs of equity for the sample, the estimated required return on the current (market) value of common equity is in the range of 10.5-10.7%.

Q. Did you test the reasonableness of these results?

A. I tested the reasonableness of the results based on consensus earnings growth forecasts by also making DCF estimates using *Value Line* longer-term (2005-2007) forecast sustainable growth rates. Sustainable growth, or earnings retention growth, is premised on the notion that future dividend growth depends on the firm reploughing or reinvesting a portion of its earnings in order to produce dividends in the future. The sustainable growth rate is estimated as the expected return on equity multiplied by the fraction of earnings expected to be retained. As shown in detail on Schedule KCM-7, the sample median DCF cost was 10.7%; the sample mean was 11.3%.

I also tested the reasonableness of the results using a further alternative measure of investors' long-term growth expectations, growth in cash flow. Cash flow is considered by analysts to be the second most important input (after earnings) to the analysis of securities.[9]

For this purpose, I used *Value Line* forecasts, since neither I/B/E/S nor Zacks provide a consensus of cash flow per share growth. Based on cash flow per share growth, the indicated sample median DCF cost of equity was 11.2%; the corresponding sample mean was 11.3% (Schedule KCM-8).

The results using the alternative measures of investor growth expectations lend support to the conclusion that the cost of equity for the sample of LDCs is in the range of approximately 10.5-11.25%.

Q. What does the 10.5-11.25% DCF cost represent?

A. It represents the return investors expect to earn on the current market value of their utility common equity investments. It is not, however, the return that investors expect the LDCs to earn on the book value of their common equity. *Value Line*, which publishes its projections of utility ROEs quarterly, anticipates (2005-2007) that the average ROE for the sample of eight LDCs over the period will be 12.5-13.6% (Schedule KCM-7).

Q. Isn't there a "disconnect" in logic if one expects the allowed return on equity to be set at the DCF cost of equity?

A. Yes. If a utility whose market/book ratio was 175% (approximately the 2001-2002 median level) were expected to earn only 11.0% on book value, the market price would tend to decline to book value, so that investors experience a capital loss of 43%. The

[9] Stanley B. Block, "A Study of Financial Analysts: Practice and Theory", *Financial Analysts' Journal*, July/August 1999.

idea that investors are willing to pay a price equal to 175% of book value in order to see the market value of their investment drop by 43% is illogical.[10]

Q. Should regulators discard use of the DCF test under today's market conditions?

A. Not as long as appropriate adjustments are made. The appeal of the discounted cash flow test as a measure of the fair return lies in the relative simplicity of its application. As a measure of the fair return, however, in a regulatory framework that relies on original cost book value as the base to which the return is applied, as is the case in Missouri, the DCF test has limitations. The investor's required return as measured by the DCF test (derived directly from the current market price) and the expected return on book value will only converge when the market value is close to book value. In today's capital market environment, that premise does not hold, since utility market values are significantly higher than book value. The median 2002 market/book ratio for sample of LDCs was 173%.

Q. How does one adjust the DCF cost in light of the deviation between book and market value so as to translate the current cost of equity into a fair return on book value?

[10] To illustrate, assume a utility's book value is $10.00 and its stock sells at $17.50 (so that its market-to-book ratio is 175%); its approved return is 11.0% (earnings per share of $1.10); and its expected payout ratio is 55% (dividend per share of $0.605). An application of the DCF formula would show a yield of 3.5% ($0.605 / $17.50), and a longer-term "sustainable" growth rate of 4.95% (45% x 11.0%, i.e., sustainable growth = percent of earnings retained x return on equity), for a DCF cost of 8.45%.

If the calculated DCF cost of 8.45% were applied to book value, earnings would decline to $0.845 per share ($10.00 x 8.4%), the payout ratio would rise to 72% ($0.605 / $0.845) and the longer-term growth rate would decline to 2.4% (1.0 - .72) x 8.4%. Hence, investors' expectations for growth of 4.95% would not be realized, and the stock price would decline to book value. The expected return on the revalued stock would be 8.45%, comprised of a dividend yield of 6.05% ($0.605 / $10.00) and growth of only 2.4%. However, the realized holding period return for an investor purchasing the stock at $17.50 per share (assuming a one year work-out period) would be a capital loss of 43%. The proposition that investors are willing to invest $17.50 per share to end up with a stock whose value is $10.00 defies common sense.

A. At a minimum, the DCF test result should be augmented by an increment for financial flexibility, or alternatively a flotation cost allowance. This allowance is intended to serve two distinct but related purposes: first, it permits a company to recover all costs associated with issuing additional stock as required to meet its obligation to serve, at not less than book value per share, and thus without harming (diluting) the investment of existing shareholders; and second, it positions the company at all times such that if it needs to issue additional equity to meet its obligation to serve, it can do so without harm to its existing shareholders. As discussed in Appendix B, a minimum allowance is 50 basis points, which raises the 10.5-11.25% DCF test result to no less than 11.0-11.75%.

Q. Does this adjustment for financing flexibility fully account for the deviation between book and market value so as to translate the current cost of equity into a fair return on book value?

A. No. As noted in Section IV.A of this testimony, the first step is the recognition that regulation is intended to emulate competition. Under competition, equity market values tend to gravitate toward the replacement cost of the underlying assets. Absent inflation, the market value of firms operating in a competitive environment would tend to equal their book value or cost. This is due to the economic proposition that, if the discounted present value of expected returns (market value) exceeds the cost of adding capacity, firms will expand until an equilibrium is reached, i.e., when the market value equals the replacement cost of the productive capacity of the assets. However, the fact that inflation has occurred changes the above analysis. With inflation, under competition, the market value of a firm trends toward the current cost of its assets. The book value of the assets in contrast, reflects the historic depreciated cost of the assets. Since there have been moderate to

relatively high levels of inflation over the past two business cycles (1982-1991 and 1992-2002), one would expect the market value to deviate systematically from the book value.

For the DCF model to produce a return compatible with the premise that regulation is a surrogate for competition, the DCF cost should be adjusted to reflect the replacement cost/book value. In principle, the replacement cost/book value ratio should correspond to the long-run equilibrium market/book ratio.

By repricing the equity of the LDCs for past inflation, an approximation of the replacement cost can be made. To reprice the equity, each annual increment to common equity must be increased to reflect inflation experienced from the time the equity was added to the present. The total repriced equity is a proxy for replacement cost. The total repriced equity is then compared to the original cost book value of the equity to arrive at an estimate of the replacement cost/book value ratio.

The replacement cost/book value ratio is, in turn, an estimate of the expected long-run equilibrium market value/book ratio that should be anticipated under competition. The resulting median replacement cost/book value for the eight LDCs was 158% at the end of 2002 (see Schedule KCM-5).[11] Hence, an adjustment to the 10.5-11.25% DCF cost of equity to reflect a replacement cost/book value ratio of approximately 150% would be warranted. In my opinion, if an adjustment of this nature is made to the DCF cost, the test results will provide an approximate measure of the fair return on book equity under current market conditions.

[11] Due to data limitations, the increments to equity were only repriced for the past 24 years (20 years for Atmos Energy).

The replacement cost/book value relationship provides an economically sound basis for adjusting the current DCF cost of equity to a fair return on book value. The DCF model itself provides the technique for making the required adjustment.

$$ROE = \frac{M/B\ (k)}{1 + [r\ (M/B-1)]}$$

where,

ROE = return on book equity
k = market-derived cost of equity
r = earnings retention rate

The derivation of the formula is found on Schedule KCM-9.

Using a repriced equity/book value ratio of 150% as a proxy for the longer-run equilibrium market/book ratio, a market-derived DCF cost of equity of 10.875% (mid-point of range) and a longer-term expected earnings retention rate of approximately 45% (based on *Value Line* forecasts; see Schedule KCM-7), the fair return can be estimated as follows:

$$\frac{1.50\ (10.875\%)}{1 + [.45\ (1.50 - 1.0)]} = 13.3\%$$

Q. What is the range of the DCF returns on equity?

A. The low end of the range is 11.0-11.75% reflecting a minimal adjustment for financing flexibility; the upper end of the range is 13.25% which fully accounts for the deviation between book and market values.

C. EQUITY RISK PREMIUM TEST

C.1 Conceptual Underpinnings

Q. What is the underlying premise of the equity risk premium test?

A. The equity risk premium test is derived from the basic concept of finance that there is a direct relationship between the level of risk assumed and the return required. Since

an investor in common equity is exposed to greater risk than an investor in bonds, the former requires a premium above bond yields as compensation for the greater risk. The risk premium test is a measure of the market-related cost of attracting capital, i.e., a return on the market value of the common stock, not the book value.

Q. How did you apply the equity risk premium test?

A. I used the Capital Asset Pricing Model ("CAPM") and two direct estimates of LDC risk premiums, the first by reference to historic achieved risk premiums and the second by reference to forward-looking risk premium estimates.

C.2 Capital Asset Pricing Model

C.2.1. Conceptual Underpinnings of CAPM

Q. Please discuss the assumptions that underpin the CAPM.

A. The CAPM is a formal equity risk premium model which specifies that the required return on an equity security is a linear function of the required return on a risk-free investment. In its simplest form, the CAPM posits the following relationship between the required return on the risk-free investment and the required return on an individual equity security (or portfolio of equity securities):

$$R_E = R_F + b_e (R_M - R_F)$$

where,

R_E	=	Required return on individual equity security
R_F	=	Risk-free rate
R_M	=	Required return on the market as a whole
b_e	=	Beta on individual equity security.

The CAPM relies on the premise that an investor requires compensation for non-diversifiable risks only. Non-diversifiable risks are those risks that are related to overall market factors (e.g., interest rate changes, economic growth). Company-specific risks,

according to the CAPM, can be diversified away by investing in a portfolio of securities, and therefore the shareholder requires no compensation to bear those risks.

The non-diversifiable risk is captured in the beta, which, in principle, is a forward-looking (expectational) measure of the volatility of a particular stock or group of stocks, relative to the market. Specifically, the beta is equal to:

$$\frac{\text{Covariance } (R_E, R_M)}{\text{Variance } (R_M)}$$

The variance of the market return is intended to capture the uncertainty related to economic events as they impact the market as a whole. The covariance between the return on a particular stock and that of the market reflects how responsive the required return on an individual security is to changes in events which also change the required return on the market.

C. 2.2. Risk-Free Rate

Q. What is the proxy for the risk-free rate?

A. The simple CAPM model is a single period model which, if the model were applied rigorously, would entail using a short-term government interest rate as the risk-free rate. However, it is widely recognized that short-term rates are largely the effect of monetary policy and, as such, are administered, rather than market-driven, rates. Hence, most analysts rely on a long-term government yield, which is risk-free in that there is no default risk associated with U.S. Treasury securities. Moreover, reliance on a long-term yield is consistent with the longer-term nature of utility investments.

In previous testimony presented to this Commission, I have utilized the forecast yield on the 30-year Treasury bond as a proxy for the risk-free rate. However, since the U.S. Treasury has no plans to issue 30-year Treasuries, the 30-year Treasury yield has

become a less reliable proxy for the risk-free rate. As a result, my CAPM analysis relies on the benchmark 10-year Treasury yield as the risk-free rate proxy.

Q. What is the appropriate 10-year yield to be used as the risk-free rate in the CAPM analysis?

A. The forecast yields on 10-year Treasury notes for the near term lie below the levels compatible with long-term fundamentals, and the long-term average risk premium. In equilibrium, the nominal risk-free rate should reflect the real cost of capital plus the expected rate of inflation over the term of the issue. The long-term (2005-2014) forecast of inflation based on the GDP deflator is approximately 2.25% (Blue Chip *Economic Indicators*, March 10, 2003). The yield on the 10-year real return (inflation-indexed) government bonds – which provides a proxy for the real cost of capital – is also at historically low levels (2.3%), consistent with the fragile nature of the economic recovery, but has averaged approximately 3.6% since these bonds were first issued in 1997.[12] In the long run, the real cost of capital – which reflects the productivity of capital – should be approximately equal to the rate of growth in the economy, which is forecast to average 3.2% from 2005-2014 (Blue Chip *Economic Indicators*, March 10, 2003). Based on these data, the real cost of long-term capital is in the range of 3.2-3.6%. Combining the long-term expected inflation rate (2.25%) with a long term real cost of capital of 3.2-3.6% indicates a fundamental value for 10-year Treasuries of approximately 5.5-5.9%.

The fundamental analysis above is consistent with the longer-term forecasts of 10-year Treasuries, which, as shown in Section III, are expected to be approximately 5.8%. Based both on the fundamental analysis and the longer-term forecasts of 10-year Treasury

[12] The average includes yields through February 28, 2003.

note yields, a reasonable estimate of the risk-free rate for purposes of the CAPM is 5.5-5.75%.

C.2.3. Market Risk Premium

Q. Please discuss your estimate of the required market risk premium.

A. While the market risk premium concept is deceptively simple, its quantification is in principle quite complex, because the level of the risk premium expected or required by investors is not static; it changes with economic and capital market conditions (particularly with inflation expectations), as well as with investors' willingness to bear risk.

The required market equity risk premium can be developed: (1) from an analysis of achieved market risk premiums; and (2) from estimates of prospective market risk premiums. With respect to the latter, the discounted cash flow model can be used to estimate the cost of equity, where the expected return is comprised of the dividend yield plus investor expectations of longer-term growth based on prevailing capital market conditions. The estimated equity risk premiums are obtained by subtracting the corresponding government bond yield from the estimated cost of equity.

Experienced Market Risk Premium

The estimation of the expected market risk premium from achieved market risk premiums is premised on the notion that investors' expectations are linked to their past experience. Basing calculations of achieved risk premiums on the longest periods available reflects the notion that it is necessary to include as broad a range of event types as possible to avoid overweighting periods that represent unusual circumstances. On the other hand, since the objective of the analysis is to assess investor expectations in the current economic and capital market environment, weight should be given to periods whose equity characteristics,

on balance, are more closely aligned with what today's investors are likely to anticipate over the longer term.

The estimation of the required market risk premium begins with the analysis of achieved risk premiums in the U.S. market. In principle, when historic risk premiums are used as a basis for estimating the expected risk premium, arithmetic averages should be used. The appropriateness of arithmetic averages, as opposed to geometric averages, for this purpose is succinctly explained by Ibbotson Associates (*Stocks, Bonds, Bills and Inflation, 1998 Yearbook*, pp. 157-159):

> The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values . . . in the investment markets, where returns are described by a probability distribution, the arithmetic mean is the measure that accounts for uncertainty, and is the appropriate one for estimating discount rates and the cost of capital.

Expressed simply, the arithmetic average recognizes the uncertainty in the stock market; the geometric average removes the uncertainty by smoothing over annual differences.

Equity risk premiums were calculated for two historic periods: 1926-2002 and 1947-2002. The 1926-2002 period represents the longest period over which the seminal Ibbotson Associates data are available. The data for the post-World War II period (1947-2002) were also relied upon, because the end of World War II marked significant changes in the economic structure which remain relevant today.

The key structural changes that have occurred since the end of World War II are:

1. The globalization of the economy, which has been facilitated by the reduction in trade barriers of which GATT (1947) was a key driver;
2. The exertion of the independence of the Federal Reserve commencing in 1951, and its focus on promoting domestic economic stability, which has been instrumental in tempering economic cyclicality;
3. Demographic changes, specifically suburbanization and the rise of the middle class, which have impacted the patterns of consumption;
4. Transition from a predominately manufacturing to a service-oriented economy; and,
5. Technological change, particularly in the areas of telecommunications and computerization, which have facilitated both market globalization and rising productivity.

The experienced risk premiums for the two periods are as follows:

1926-2002	**1947-2002**
7.0%	6.9%

Source: Schedule KCM-10

Q. The preceding historic average risk premiums reflect differentials between equity market returns and income returns on a 20 year government security. How would you adjust the risk premiums for the fact that you are using a 10-year Treasury note as the risk-free rate?

A. Since 1993, the average spread between 10 and 20-year Treasury bonds has been approximately 50 basis points.[13] Hence, the addition of 50 basis points to the achieved

[13] The 20-year constant maturity yield reported by the Department of the Treasury since October 1993 is based on outstanding Treasury bonds with approximately 20 years remaining to maturity. The Treasury discontinued issuing a 20-year bond in 1986.

historic market risk premiums approximates the historic equity market/10-year Treasury risk premium, leading to a long-term average risk premium of approximately 7.5%.

Forward-Looking Market Risk Premium

The experienced market risk premium may converge with investor expectations over the longer term, but the application of a current interest rate to a longer-term average may be unrepresentative of investor expectations in a specific capital market environment.

It is widely accepted that the required market risk premium is not static, but varies with the outlook for inflation, interest rates and profits. Hence, a direct measure of the prospective market risk premium may provide a more accurate measure of the current level of the expected differential between stock and bond returns than experienced risk premiums.

The value of independent estimates of the forward looking risk premium are:

- the equivalence of past returns to what were investors' *ex ante* expectations may be pure coincidence;
- the determination of a fair return on equity reflective of the expected interest rate environment requires a direct assessment of current stock market expectations.

The forward-looking market premium may be determined by an application of the discounted cash flow model to the S&P 500. To estimate the DCF cost for the S&P 500, the I/B/E/S consensus of analysts' forecasts of normalized earnings growth for the companies in the market index was used as a proxy for investor expectations of long-term growth. To illustrate, the average December 2002 to February 2003 dividend yield for the S&P 500 was 1.9%. The corresponding three-month average of the I/B/E/S consensus forecast for five-

year normalized earnings growth rates for the S&P 500 index was 12.7%. The resulting expected market return is 14.6%. At a forecast 10-year Treasury note yield of 5.5-5.75%, the forward looking estimate of the market risk premium would be approximately 9.0%.

An alternative estimate of the expected market return over the next five years was made using *Value Line*'s estimate of the capital appreciation potential for its 1700 stock composite, annualized, plus the recent dividend yield on the composite. As of February 28, 2003, *Value Line* estimated the total 3-5 year capital appreciation potential of the 1700 stock composite at 90%. Over a five-year period, this translates into a compound annual average growth rate of 13.7%. The corresponding dividend yield was 2.3%, which is equivalent to an expected market return of 16.0%. The *Value Line* market return expectations – relative to the outlook for 10-year Treasury yields – also indicate a near-to medium-term market equity risk premium of 10.25-10.5%.

Expected Market Risk Premium

Giving primary weight to the historic data, but recognizing the higher near-term equity market return expectations, the indicated market risk premium (in relation to the normalized forecast yield on 10-year Treasury notes) is approximately 7.5-9.5%.

C. 2.4 Beta

Q. What is the appropriate beta for the sample of LDCs?

A. In estimating the appropriate beta, there were two main considerations:

1. Empirical studies have shown that the CAPM understates the return requirement for companies with betas less than the market mean of 1.0.[14] Reliance on *Value Line* betas, which are adjusted for betas' tendency to trend toward the market mean of 1.0, assists in mitigating the model's tendency toward understatement of required returns for low beta (e.g., utility) stocks.

2. The beta is a forward-looking concept. Typically, betas are calculated from historic data.[15] The applicability of a calculated historic beta to a future period must be analyzed in the context of events that gave rise to the calculation.

Q. What is a reasonable beta for the sample of LDCs that you used?

A. The most recent *Value Line* betas (median and mean) have been 0.68 and 0.69 respectively. The corresponding Bloomberg betas (as of March 11, 2003) were 0.66 and 0.67 (Schedule KCM-11). The recent betas are in line with the longer-term observed betas for LDCs (Schedule KCM-12). The data indicate a beta of approximately 0.65-0.70.

C. 2.5. CAPM Risk Premium

Q. Please provide your CAPM risk premium for your sample of LDCs based on your estimated values for the market risk premium and the proxy LDC sample beta.

[14] Evidence of this is found in the following studies:

Fisher Black, Michael C. Jensen, and Myron S. Scholes, "The Capital Asset Pricing Model: Some Empirical Tests," *Studies in the Theory of Capital Markets*, edited by Michael Jensen. (New York: Praeger, 1972), pp. 79-121.

Marshall E. Blume and Irwin Friend, "A New Look at the Capital Asset Pricing Model," *Journal of Finance*, Vol. XXVIII (March 1973), pp. 19-33.

Eugene F. Fama, and James D. MacBeth, "Risk, Return and Equilibrium: Empirical Tests." Unpublished Working Paper No. 7237, University of Chicago, Graduate School of Business, August 1972.

Nancy Jacob, "The Measurement of Systematic Risk for Securities and Portfolios: Some Empirical Results," *Journal of Financial and Quantitative Analysis*, Vol. VI (March 1971), pp. 815-834.

[15] Calculated betas are typically simple regressions between the daily, weekly or monthly price changes for individual stocks and the corresponding price for changes of the market index for the past five years.

A. The CAPM risk premium is in the range of 5.25-6.25%, or approximately 5.75%, based on the following:

Risk Premium = Beta x Market Risk Premium

5.2% = 0.70 x 7.5%

6.2% = 0.65 x 9.5%

C. 3. RISK PREMIUM BASED ON ACHIEVED RISK PREMIUMS FOR THE GAS DISTRIBUTION INDUSTRY

Q. Please summarize the basis for estimating the required LDC risk premium by reference to historic data.

A. Reliance on achieved risk premiums for the gas distribution industry as an indicator of what investors expect for the future is based on the same proposition as that used in the development of the market risk premium: over the longer term, investors' expectations and experience converge. The more stable an industry, the more likely it is that this convergence will occur.

Q. What have been the historic LDC equity risk premiums?

A. The achieved equity risk premiums for Standard & Poor's/Moody's Gas Distribution Index[16] were calculated over the period 1947-2001. The historic arithmetic (1-year) average equity risk premium relative to the 20-year U.S. Treasury bond income return was 6.3% (Schedule KCM-10). Adding 50 basis points (1993-2002 average spread) to

[16] Standard & Poor's gas distribution index was utilized from 1947-1984, when it was combined with S&P's gas pipeline index. The data from 1985 forward are for the Moody's Gas Distribution Index. At the end of 2001, the Moody's Gas Distribution Index included the following six companies: AGL Resources, Inc.; Keyspan Energy; Laclede Gas Co.; Northwest Natural Gas Co.; Peoples Energy Corp.; and Washington Gas Light Co. Moody's discontinued its LDC Index in mid-2002.

adjust for the historic differential between 10 and 20-year Treasuries results in a premium of approximately 6.8% relative to the benchmark 10-year Treasury bond.

C. 4. DCF-Based Equity Risk Premium Test For LDCs

Q. Please summarize your DCF-based risk premium test.

A. A forward-looking risk premium for a utility can be estimated as a series of differences between the discounted cash flow estimates of the cost of equity for a representative sample of utilities and the corresponding long government bond yield, where the DCF cost is the sum of the dividend yield (adjusted for growth) and investors' expectations of long-term growth. The I/B/E/S investment analysts' consensus forecasts of five-year (normalized) earnings growth can be used as a proxy for investors' expectations of long-term growth.

For each gas distributor in the LDC sample used in the DCF test, monthly DCF costs were estimated as the sum of the month-end dividend yield (as adjusted for growth) and the corresponding I/B/E/S five-year earnings growth expectation. The monthly risk premium was calculated as the difference between the DCF cost and the month-end 10-year Treasury bond yield. The analysis was limited to the period after 1992, the year in which the Federal Energy Regulatory Commission issued Order 636, which unbundled the services of interstate natural gas pipelines and thereby significantly changed the business of LDCs.

The average risk premium over the 1993-2002 period was 4.9%; the corresponding average 10-year Treasury bond yield was 5.9%. However, the average masks the fact that the risk premiums have been higher at lower levels of interest rates and vice versa, as shown on Table 3 below.

Table 3

10-Year Treasury Yield	Average 10-Year Treasury Yield	Average Risk Premium
Less than 5.0%	4.5%	6.4%
5.0-6.0%	5.5%	5.3%
Over 6.0%	6.7%	4.2%

Source: Schedule KCM-13.

A simple regression between the 10-year Treasury yields and the corresponding equity risk premiums shows the following:

Equity Risk Premium = 9.86 - .85 (10-year Treasury Yield)

R^2 = 71%

At a 10-year government bond yield of 5.5-5.75%, the indicated LDC equity risk premium is 5.1%.

In light of the increasing spreads between government bond yields and utility bond yields, the study was expanded to test the relationship between the utility equity risk premiums, 10-year government bond yields, and the spread between A-rated utility bond yields and 10-year government bond yields.

The analysis indicated the following:

LDC Risk Premium = 7.15 - .55 TY + .51 Spread

where,

TY = 10-year Treasury Yield

Spread = Spread between Moody's A-rated Utility Bond Yields and 10-year Treasury Yields

Thus, the data indicate that, while the utility risk premium is negatively related to the level of government bond yields, it has been positively related to the spread between utility bond yields and government bond yields.[17]

The average spread over the period covered by the analysis was 180 basis points; however, spreads increased materially subsequent to the August 1998 global market crisis (averaging 240 basis points since September 1998). Spreads have recently been at historically high levels (over 300 basis points at the end of February 2003) reflecting a lethargic economy and an investor flight to safety. Based on a normalized risk-free rate of 5.5-5.75%, a reasonable (normalized) estimate of the spread with A-rated utility bond yields, for purposes of estimating the equity risk premium is approximately 200 basis points. Solving the equation, the indicated LDC equity risk premium is 5.1%.

C. 5 Conclusions From The Equity Risk Premium Tests

Q. Please summarize the results of your equity risk premium tests.

A. The table below summarizes the results of the equity risk premium tests.

Capital Asset Pricing Model	5.75%
Achieved LDC Equity Risk Premiums	6.7%
DCF-Based Risk Premium for LDCs	5.1%

The results indicate a required LDC equity risk premium of approximately 5.0-6.0% at a 10-year Treasury yield of 5.5-5.75%. The resulting market-derived cost of equity is 10.75-11.5%.

[17] Statistics for the equation:

R^2	74.8%
t-statistics:	
Ten-year Treasury bond yield:	-6.30
Utility/10-year Treasury bond yield spread:	4.09

Q. What does the 10.75-11.5% equity risk premium test result represent?

A. Similar to the DCF result, the 10.75-11.5% cost determined by using variants of the equity risk premium test is a market-derived cost, which measures the return investors expect on the market value of their equity investments. As with the DCF test, the equity risk premium cost rate needs to be adjusted to recognize the disparity between market and book value. At a minimum, the adjustment should permit the utility to recover all flotation costs associated with equity financing, to be in a position to raise equity capital without dilution of book value, and to provide a cushion against unanticipated market conditions. A minimum allowance for financing flexibility is 50 basis points (See Appendix B). The addition of a 50 basis point allowance for financing flexibility results in a return on equity of 11.25-12.0%.

Q. What is the indicated return as determined by reference to the proxy LDCs if a similar adjustment is made for the long-run market/book ratio as was made in the application of the DCF test?

A. The equity risk premium result that is compatible with a longer-run market/book ratio of 1.50 is approximately 13.5%.[18]

Q. What is the range of the equity risk premium returns on equity?

A. The range is 11.5-13.5%.

D. COMPARABLE EARNINGS TEST

D.1. Conceptual Underpinnings

Q. Please discuss the conceptual underpinnings of the comparable earnings test.

[18] $\frac{1.50\ (11.125\%)}{1 + (.45\ (1.50 - 1.0))} = 13.62\%$

A. The comparable earnings test provides a measure of the fair return based on the concept of opportunity cost. Specifically, the test is derived from the premise that capital should not be committed to a venture unless it can earn a return commensurate with that available prospectively in alternative ventures of comparable risk. Since regulation is intended to be a surrogate for competition, the opportunity cost principle entails permitting utilities the opportunity to earn a return commensurate with the levels achievable by competitive firms of similar risk. The comparable earnings test, which measures returns in relation to book value, is the only test that can be directly applied to the equity component of an original cost rate base without an adjustment to correct for the discrepancy between book values and current market values.

The concept that regulation is a surrogate for competition implies that the regulatory application of a fair return to an original cost rate base should result in a value to investors commensurate with that of similar risk competitive ventures. The fact that a return is applied to an original cost rate base does not mean that the original cost of the assets is the appropriate measure of their fair market value. The comparable earnings standard, as well as the principle of fairness, suggests that, if competitive industrial firms of similar risk are able to maintain the value of their assets considerably above book value, the return allowed to utilities should likewise not foreclose them from maintaining the value of their assets as reflected in current stock prices.

Q. Why have you applied the comparable earnings test to competitive firms, and not utilities?

A. Application of the test to utilities would be completely circular. The achieved returns of utilities are in large measure a function of allowed returns. In contrast, the

earnings of competitive firms represent returns available to alternative investments independent of the regulatory process.

D.2. Principal Application Issues

Q. What are the principal issues arising in the application of the comparable earnings test?

A. The principal issues in the application of the comparable earnings test are:

- The selection of a sample of industrials of reasonably comparable risk to LDCs;
- The selection of an appropriate time period over which returns are to be measured in order to estimate prospective returns; and,
- The need for an adjustment to the "raw" comparable earnings results to reflect the differential risk of LDCs relative to the selected industrials.

Q. Please discuss the selection process.

A. The selection process starts with the recognition that industrials are generally exposed to higher business risk, but lower financial risk, than LDCs. The selection of industrials focuses on total investment risk, i.e., the combined business and financial risks. The comparable earnings test is based on the premise that industrials' higher business risks can be offset by a more conservative capital structure, thus permitting selection of industrial samples of reasonably comparable investment risk to LDCs.

LDCs are generally characterized by relatively low volatility with respect to both earnings and stock market performance. Since consumer-oriented industries, due to their demand characteristics, are likely to exhibit relatively greater stability than other industries (e.g., extractive industries), the initial selection was limited to all *Value Line*

companies in these industries[19] (SIC codes 2000-3999 and 5000-5999) having a *Value Line* Safety Rank of "2." This resulted in 80 companies.

From this group of 80 companies, only U.S. firms with book data available since 1991, market data available since December 1997, non-negative common equity throughout the period and 2001 common equity over $250 million were selected. This resulted in 62 companies. From the group of 62, 7 companies whose 1992-2001 average returns were above or below one standard deviation from the average were eliminated in order to exclude companies whose earnings are either extraordinarily high or chronically depressed. Finally, all companies with *Value Line* betas greater than or equal to 1.0 or with no available beta were eliminated. The final sample contains 39 companies and is found on Schedule KCM-14.

Q. What are the industrial sample's risk characteristics relative to those of LDCs?

A. The sample has the following risk characteristics, compared to the sample of LDCs:

Table 4

	Industrials (Median)	**LDCs (Median)**
S&P Debt Ratings	A-	A
Value Line Risk Measures:		
Safety Rank	2	2
Earnings Predictability	80	70
Financial Strength	B++	B++
Beta	0.85	0.68

Source: Schedules KCM-5 and KCM-14.

[19]The major industrials represented by these SIC codes are: Food and Kindred Products, Tobacco Products, Textiles, Lumber and Wood Products, Paper Products, Petroleum Refining, Chemicals, Rubber, Plastics, Glass, Concrete, Primary Metals, Fabricated Metals, Industrial/Commercial Machinery, Transportation Equipment, Computer and Electronic Equipment, Measuring Equipment, Wholesale and Retail Operations for both durable and non-durable goods.

Although the individual values for the LDCs and industrials are not identical, they are similar enough so that the returns for the industrials can be used as a point of departure. As suggested earlier, the average common equity ratios (based on permanent capital) of the industrials are higher than those of the LDCs, confirming that the industrials' higher business risks tend to be offset by lower financial risks (Schedules KCM-1-1 and KCM-14). To recognize that the betas indicate that the LDCs face lower investment risk, an adjustment to the industrials' return can be quantified using the relative beta coefficients of the two samples.

D.3. Period For Measurement Of Returns

Q. Over what period did you measure the industrials' returns?

A. The measurement of returns for competitive industrials is, in large part, historical. However, like every test used to estimate a fair return, this test is intended to be prospective in nature. Therefore, the returns earned in the past should be analyzed in the context of the longer-term outlook for the economy to determine the reasonableness of relying on past returns as a proxy for the future. Since returns on equity tend to be cyclical, the returns should be measured over an entire business cycle, in order to give fair representation to years of expansion and decline. The forward looking nature of the estimate of the fair return requires selection of a cycle which is reasonably representative of prospective economic conditions. The business cycle (measured from point to point) covering the period 1992-2001 meets those criteria, essentially because it reflects an inflation rate (2.0% based on the GDP Price Index) and real economic growth rate (3.4%) (Schedule KCM-3) that are quite close to the March 2003 consensus estimates for longer-term (10-year)

inflation and growth (2.25% inflation measured by the GDP Price Index; 3.2% expected growth in real GDP).

The achieved returns of the 39 companies for 1992-2001 are as follows:

Table 5

Average	17.0%
Median	17.5%
Average of Annual Medians	17.6%

Source: Schedule KCM-15.

The results indicate that a low risk industrial in the consumer-oriented industries may be expected to earn a return of no less than 17.0-17.5%.

Q. Do forecasts of returns for the industrial sample support the conclusion that low risk competitive firms will continue to earn returns at the level achieved over the last business cycle?

A. Yes. The median and average *Value Line* forecast returns on year-end equity for the sample over the period 2005-2007 are 16.5% and 18.2%, respectively (Schedule KCM-15).[20]

D.4. Relative Risk Adjustment

Q. Given the higher betas of the industrials relative to LDCs, how should the results of the comparable earnings test be adjusted to take account of the risk differential?

A. The returns of the industrials can be adjusted by applying the relative betas of the LDCs and industrials to that portion of the book return in excess of the forecasts for 10-year Treasury bonds (i.e., the risk premium). Using a forecast yield of 5.5% on 10-year

[20] The return on mid-year book value would be higher.

Treasury bonds, the median *Value Line* LDC beta of 0.68, and the median industrial beta of 0.85 (Schedules KCM-5 and KCM-14), the adjustment is made as follows:[21]

.68/.85 (17.0% - 5.5%) + 5.5% = 14.7%

.68/.85 (17.5% - 5.5%) + 5.5% = 15.1%

The risk-adjusted return on equity range of approximately 14.75-15.0% represents a fair return on original cost book equity, and, as such, a return which is compatible with providing an opportunity to a utility to earn a return in relation to original cost book value commensurate with that achievable by competitive firms of similar investment risk.

Q. Why are the results of the comparable earnings test relevant if the sample itself is not of precisely the same risk to the LDCs?

A. There is no legal or economic requirement that the sample of competitive firms must be equal in risk to the regulated company. What is required is the application of appropriate adjustments to the results so that the return is compatible with the risk profile of the regulated firm. That adjustment has been made.

Since the objective of regulation is to simulate competition, it is critical that the determination of a fair return explicitly consider the returns achievable by competitive firms on a risk-adjusted basis. This avoids the circularity which a focus on only other regulated companies entails and ensures that the objective of regulation is achieved.

[21] The adjustment effectively relies on the assumptions underpinning the Capital Asset Pricing Model.

E. CONCLUSIONS

Q. Please summarize your test results.

A. The test results, as applied to the benchmark, or proxy, sample of LDCs is as follows:

Discounted Cash Flow	11.5-13.25%
Equity Risk Premium	11.5-13.5%
Comparable Earnings	14.75-15.0%

Q. Based on the three test results above, what is a reasonable return on equity for AmerenUE's Missouri LDC operations?

A. In my opinion, a fair return for an average risk LDC is no less than 11.5%. A reasonable return on equity should be viewed as falling within a range of 11.5-13.5%, with a mid-point of 12.5%. Given AmerenUE's somewhat lower financial risk relative to the proxy sample of LDCs, I recommend a common equity return of 12.25%, 25 basis points below the mid-point of the range.

Q. Does this conclude your direct testimony?

A. Yes, it does.

QUALIFICATIONS OF KATHLEEN C. McSHANE

Kathleen McShane is a Senior Vice President and senior consultant with Foster Associates, Inc., where she has been employed since 1981. She holds an M.B.A. degree in Finance from the University of Florida, and M.A. and B.A. degrees from the University of Rhode Island. She is also a Chartered Financial Analyst.

Ms. McShane worked for the University of Florida and its Public Utility Research Center, functioning as a research and teaching assistant, before joining Foster Associates. She taught both undergraduate and graduate classes in financial management and assisted in the preparation of a financial management textbook.

At Foster Associates, Ms. McShane has worked in the areas of financial analysis, energy economics and cost allocation. Ms. McShane has presented testimony in more than 100 proceedings on rate of return and capital structure before federal, state, provincial and territorial regulatory boards, on behalf of U.S. and Canadian telephone companies, gas pipelines and distributors, and electric utilities. These testimonies include the assessment of the impact of business risk factors (e.g., competition, rate design, contractual arrangements) on capital structure and equity return requirements. Ms. McShane has also provided consulting services for numerous U.S. and Canadian companies on financial and regulatory issues, including financing, dividend policy, corporate structure, cost of capital, automatic adjustments for return on equity, and form of regulation (including performance-based regulation).

Ms. McShane was principal author of a study on the applicability of alternative incentive regulation proposals to Canadian gas pipelines. She was instrumental in the design and preparation of a study of the profitability of 25 major U.S. gas pipelines, in which she developed estimates of rate base, capital structure, profit margins, unit costs of providing services, and

various measures of return on investment. In a study prepared for the Canadian Ministry of Energy, Ms. McShane analyzed Federal regulation of U.S. pipelines, including trends in rate design and rate structures. Ms. McShane has also co-managed market demand studies, focusing on demand for Canadian gas in U.S. markets. Other studies performed by Ms. McShane include a comparison of municipal and privately owned gas utilities, an analysis of the appropriate capitalization and financing for a new gas pipeline, risk/return analyses of proposed water and gas distribution companies and an independent power project, pros and cons of performance-based regulation, and a study on pricing of a competitive product for the U.S. Postal Service. She has also conducted seminars on cost of capital for regulated utilities, with focus on the Canadian regulatory arena.

Publications and Papers

- "The Effects of Unbundling on a Utility's Risk Profile and Rate of Return", (co-authored with Owen Edmondson, Vice President of ATCO Electric), presented at the Unbundling Rates Conference, New Orleans, Louisiana sponsored by Infocast, January 2000.
- Atlanta Gas Light's Unbundling Proposal: More Unbundling Required?" presented at the 24th Annual Rate Symposium, Kansas City, Missouri, sponsored by several Commissions and Universities, April 1998.
- "Incentive Regulation" An Alternative to Assessing LDC Performance", (co-authored with Dr. William G. Foster), presented at the Natural Gas Conference, Chicago, Illinois sponsored by the Center for Regulatory Studies, May 1993.
- "Alternative Regulatory Incentive Mechanisms", (co-authored with Stephen F. Sherwin), prepared for the National Energy Board, Incentive Regulation Workshop, October 1992.
- "Market-Oriented Sales Rates and Transportation Services of U.S. Natural Gas Distribution Companies", (co-authored with Dr. William G. Foster), published by the IAEE in *Papers and Proceedings of the Eighth Annual North American Conference*, May 1987.
- "Canadian Gas Exports: Impact of Competitive Pricing on Demand", (co-authored with Dr. William G. Foster), presented to A.G.A.'s Gas Price Elasticity Seminar, February 1986.
- "Marketing Canadian Natural Gas in the U.S.", (co-authored with Dr. William G. Foster), published by the IAEE in *Proceedings: Fifth Annual North American Meeting*, 1983.

Expert Testimony/Opinions

on

Rate of Return & Capital Structure

Alberta Natural Gas	1994
Alberta Power/ATCO Electric	1989, 1991, 1993, 1995, 1998, 1999, 2000
AltaGas Utilities	2000
Ameren (Central Illinois Public Service & Union Electric)	2000 (3 cases), 2002 (3 cases)
ATCO Gas	2000, 2003
ATCO Pipelines	2000, 2003
BC Gas	1992, 1994
Bell Canada	1987, 1993
Benchmark Utility Cost of Equity (British Columbia)	1999
Canadian Western Natural Gas	1989, 1998, 1999
Centra Gas B.C.	1992, 1995, 1996, 2002
Centra Gas Ontario	1990, 1991, 1993, 1994, 1996
Dow Pool A Joint Venture	1992
Edmonton Water/EPCOR Water Services	1994, 2000
Enbridge Gas Distribution	1988, 1989, 1991-1997, 2001, 2002
Enbridge Gas New Brunswick	2000
Gas Company of Hawaii	2000
Gaz Metropolitain	1988
Gazifère	1993, 1994, 1995, 1996, 1997, 1998
Heritage Gas	2002
HydroOne/Ontario Hydro Services Corp.	1999, 2000
Laclede Gas Company	1998, 1999, 2001, 2002
Maritimes NRG (Nova Scotia) and (New Brunswick)	1999
Multi-Pipeline Cost of Capital Hearing (National Energy Board)	1994
Natural Resource Gas	1994, 1997

Newfoundland & Labrador Hydro	2001
Newfoundland Power	1998, 2002
Newfoundland Telephone	1992
Northwestel, Inc.	2000
Northwestern Utilities	1987, 1990
Northwest Territories Power Corp.	1990, 1992, 1993, 1995, 2001
Nova Scotia Power Inc.	2001, 2002
Ozark Gas Transmission	2000
Pacific Northern Gas	1990, 1991, 1994, 1997, 1999, 2001
Platte Pipeline Co.	2002
St. Lawrence Gas	1997, 2002
Southern Union Gas	1990, 1991, 1993
Stentor	1997
Tecumseh Gas Storage	1989, 1990
Telus Québec	2001
TransCanada PipeLines	1988, 1989, 1991 (2 cases), 1992, 1993
TransGas and SaskEnergy LDC	1995
Trans Québec & Maritimes Pipeline	1987
Union Gas	1988, 1989, 1990, 1992, 1994, 1996, 1998, 2001
Westcoast Energy	1989, 1990, 1992 (2 cases), 1993
West Kootenay Power/Utilicorp United Networks (B.C.)	1995, 1999, 2001
Yukon Electric Co. Ltd./Yukon Energy	1991, 1993

Expert Testimony/Opinions

on

Other Issues

Client	Issue	Date
Gaz Metro/ Province of Québec	Cost Allocation/ Incremental vs. Rolled-In Tolling	1984
Canadian Western Natural Gas	Cash Working Capital/ Compounding Effect	1989
Maritime Electric	Form of Regulation	1995
Enbridge Gas Distribution	Principles of Cost Allocation	1998
Enbridge Gas Distribution	Unbundling/Regulatory Compact	1998
Gazifère Inc.	Cash Working Capital	2000
Maritime Electric	Subsidies	2000
ATCO Electric	Carrying Costs on Deferral Account	2001
Newfoundland & Labrador Hydro	Rate Base, Cash Working Capital	2001

ADJUSTMENT FOR FINANCING FLEXIBILITY

The discounted cash flow and equity risk premium test results represent a return which conceptually, if applied to the book value of equity, would cause the utility market/book ratio to equal 1.0. This cost needs to be adjusted to permit the utility a certain degree of financial flexibility and integrity.

The adjustment for financing flexibility or, alternatively, the flotation cost allowance is intended to serve two distinct but related purposes: first, to permit a company to recover all costs associated with issuing additional stock as required to meet its obligation to serve, at not less than book value per share, and thus without harming (diluting) the investment of existing shareholders, and second, to position the company at all times such that if it needs to issue additional equity to meet its obligation to serve, it can do so without harm to its existing shareholders.

The adjustment should at a minimum include:

(a) Financing costs, or out-of-pocket issue expenses. These comprise primarily administrative costs and the underwriters' fee. For gas distributors, this component averaged 5.8% over the 10-year period 1985-1994. On an after-tax basis, the cost is approximately 3.75%.[1]

(b) An allowance for market pressure, i.e., the tendency for the price of the stock to fall as an additional supply of stock is introduced into the market, of approximately 2-3 percent of the market price.

[1]EBASCO Services, Inc., *Analysis of Public Utility Financing*, various issues, 1985-1994.

The article entitled "Total Flotation Costs for Electric Company Equity Issues", by Victor M. Borun and Susan L. Malley, *Public Utilities Fortnightly*, (February 20, 1986), summarizes the various studies which have been performed using utility data, as well as presents the results, of a study covering 641 electric utility issues. The various studies provide support for a market pressure adjustment of 2-3%.

Conceptually, the measurement of market pressure should be made by reference to the change in market price from the time of the announcement of the sale of additional equity to the time of the sale of this equity, with due regard to the trend of market prices in this period. However, the anticipation of raising equity may precede the announcement, particularly for utilities, so that the market may already reflect (partly, or entirely) the impact of dilution at the time of the announcement. It may then appear that there is no market pressure, when in fact it is merely not statistically measurable. To capture the impact of market pressure, it is therefore necessary to rely on a large number of observations. Moreover, since the flotation cost allowance is essentially a composite figure which is designed to recover flotation costs associated with past and future issues of various sizes, measurement of the market pressure component by reference to a large sample of issues of many relative sizes is appropriate.

The sum of the first two elements (6-7%) comprises an estimate of the minimum allowance required to afford a utility some financing flexibility. The flotation cost allowance should permit a company to recover all costs associated with issuing additional stock as required to meet its obligation to serve, at not less than book value per share, and thus without harming (diluting) the investment of existing shareholders, as well as, to position the company at all times such that if it needs to issue additional equity to meet its obligation to serve, it can do so without harm to its existing shareholders.

This total gives no consideration to the fairness principle, which would recognize that competitive industrials have, in periods of moderate inflation, consistently been able to maintain the real value of their assets, as evidenced by market/book ratios significantly in excess of 1.0. Utilities should not be precluded from achieving a level of financial integrity that gives some recognition to the tendency for industrial market values to equate to

replacement costs and thus produce market/original cost book values significantly in excess of 1.0. This is not only a fairness argument, but an economic argument, inasmuch as it is the role of regulation to simulate competition, under which long-run market value should equate to the replacement cost of the productive capacity. The argument is even stronger when regulated utilities are also exposed to competition with other regulated utilities or alternative energy service providers. Hence, an adjustment of 6.0% in the context of original cost regulation is conservative.

A 6.0% flotation cost adjustment is approximately equivalent to an adjustment sufficient to permit a utility to maintain a market/book ratio of 1.06. The DCF formula provides a means of adjusting the market-derived cost to arrive at the book return required for a market/book ratio of 1.06:

$$\text{Return on Book Equity} = \frac{\text{Market/Book Ratio x Market-Derived Cost}}{1 + [\text{earnings retention rate } (M/B - 1)]}$$

To achieve a market/book ratio of 1.06, based on the LDCs' historic dividend payout ratio of 75% (retention rate of 25%) and a market-derived DCF cost of capital of 10.875% (the mid-point of the range of the DCF cost of equity), the required return is 11.36%.

$$11.36\% = \frac{1.06\ (10.875)}{1 + [.25\ (1.06 - 1.0)]}$$

Hence, a minimum adjustment for financing flexibility, equal to the difference between 11.36% and 10.875%, is approximately 50 basis points.

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SCHEDULE KCM-12: HISTORIC VALUE LINE BETAS FOR SELECTED LOCAL NATURAL GAS DISTRIBUTION UTILITIES

SCHEDULE KCM-13: SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES RISK PREMIUM STUDY

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CAPITAL STRUCTURE RATIOS FOR SELECTED
LOCAL NATURAL GAS DISTRIBUTION COMPANIES
BASED ON PERMANENT CAPITAL
(AVERAGE OF FOUR QUARTERS ENDING SEPTEMBER 2002)

	Long-Term Debt	Preferred Stock	Common Equity
AGL RESOURCES INC	56.7	0.0	43.3
ATMOS ENERGY CORP	52.7	0.0	47.3
NEW JERSEY RESOURCES	52.4	0.0	47.5
NICOR INC	36.3	0.5	63.2
NORTHWEST NATURAL GAS CO	44.8	3.6	51.6
PEOPLES ENERGY CORP	43.1	0.0	56.9
PIEDMONT NATURAL GAS CO	44.4	0.0	55.6
WGL HOLDINGS INC	43.5	1.9	54.6
MEAN	**46.8**	**0.8**	**52.5**
MEDIAN	**44.6**	**0.0**	**53.1**

Source: Standard & Poor's Research Insight, 10-Qs.

Schedule KCM-1-1

CAPITAL STRUCTURE RATIOS FOR SELECTED
LOCAL NATURAL GAS DISTRIBUTION COMPANIES
BASED ON TOTAL CAPITAL
(AVERAGE OF FOUR QUARTERS ENDING SEPTEMBER 2002)

	Long-Term Debt	Short-Term Debt	Preferred Stock	Common Equity
AGL RESOURCES INC	46.0	18.9	0.0	35.1
ATMOS ENERGY CORP	47.9	9.1	0.0	43.0
NEW JERSEY RESOURCES	48.8	6.9	0.0	44.3
NICOR INC	30.0	17.3	0.4	52.2
NORTHWEST NATURAL GAS CO	41.8	6.9	3.3	48.0
PEOPLES ENERGY CORP	34.9	19.1	0.0	46.0
PIEDMONT NATURAL GAS CO	42.7	3.9	0.0	53.4
WGL HOLDINGS INC	39.9	8.2	1.8	50.1
MEAN	**41.5**	**11.3**	**0.7**	**46.5**
MEDIAN	**42.3**	**8.7**	**0.0**	**47.0**

Source: Standard & Poor's Research Insight, 10-Qs.

Schedule KCM-1-2

STANDARD & POOR'S DEBT RATINGS, BUSINESS PROFILE SCORES,
DEBT AND INTEREST COVERAGE RATIOS FOR U.S. INVESTOR-OWNED LDCs

	Debt Rating	Business Profile Scores	Debt Ratio (1999-2001)	Average Pre-Tax Interest Coverage (1999-2001)
Nicor Gas Co	AA	2	55.0	5.0
Nicor Inc	AA	3	52.9	5.3
WGL Holdings Inc	AA-	3	48.5	4.2
Average (AA)		**3**	**52.1**	**4.8**
Laclede Gas Co	A+	3	57.1	2.7
Questar Gas Co	A+	2	54.3	2.6
Southern California Gas Co	A+	2	45.0	5.2
Boston Gas Co	A	3	51.0	1.3
Colonial Gas Co	A	3	43.8	1.4
KeySpan Corp	A	3	61.4	2.8
New Jersey Natural Gas Co	A	2	45.9	5.6
Northwest Natural Gas Co	A	3	51.6	3.1
ONEOK Inc	A	5	66.9	2.4
Piedmont Natural Gas Co Inc	A	3	51.6	3.4
Wisconsin Gas Co 1/	A	3	55.6	3.4
AGL Resources Inc	A-	3	56.2	2.8
Alabama Gas Corp	A-	2	48.7	3.9
Atmos Energy Corp	A-	4	62.5	2.2
Indiana Gas Co Inc	A-	2	65.4	2.6
North Shore Gas Co	A-	3	42.6	4.4
Peoples Energy Corp	A-	4	55.6	3.7
Peoples Gas Light & Coke Co	A-	3	48.9	4.3
Average (A) Rated		**3**	**53.6**	**3.2**
Cascade Natural Gas Corp	BBB+	3	53.5	3.9
Michigan Consolidated Gas Co	BBB+	3	58.3	2.5
South Jersey Gas Co	BBB+	3	59.4	2.9
Southern Connecticut Gas Co	BBB+	3	52.6	2.6
Southern Union Co	BBB+	3	57.4	1.8
TXU Gas Co	BBB+	5	41.7	0.8
UGI Utilities Inc	BBB+	4	53.2	4.9
NUI Corp	BBB	3	63.0	2.7
Southwestern Energy Co	BBB	8	66.5	0.9
SEMCO Energy Inc	BBB-	4	68.8	1.9
Southwest Gas Corp	BBB-	4	64.8	1.8
Average (BBB Rated)		**4**	**58.1**	**2.4**
Average (All LDCs)	**A**	**3**	**53.3**	**3.0**

1/ Debt ratio and interest coverage ratio for 1998-2000.

Source: Standard & Poor's Utilities and Perspectives, March 3, 2003; Standard & Poor's CreditStats, August 20, 2002.

SELECTED INDICATORS OF ECONOMIC ACTIVITY
(1989 = 100)

Year		Gross Domestic Product a/ Constant Dollars (1)	Gross Domestic Product a/ Current Dollars (2)	Industrial Production (3)	GDP Implicit Price Deflator Index a/ (4)	GDP Implicit Price Deflator Index b/ (5)	Consumer Price Index (6)	Consumer Price Index b/ (7)	Corporate Profit Index (8)	Corporate Profits as a % of GDP (9)
1989		100.0	100.0	100.0	100.0		100.0		100.0	
1990		102.1	105.7	99.8	103.6	3.6	105.4	5.4	110.9	4.5
1991		101.6	109.1	97.9	107.3	3.6	109.8	4.2	120.1	4.7
1992		104.7	115.1	100.9	109.9	2.4	113.2	3.0	131.1	4.9
1993		107.5	121.0	104.4	112.6	2.5	116.5	3.0	146.6	5.2
1994		111.9	128.5	110.1	114.9	2.0	119.5	2.6	164.3	5.5
1995		114.8	134.8	115.4	117.4	2.2	122.9	2.8	194.4	6.2
1996		118.9	142.3	120.6	119.7	2.0	126.5	2.9	213.6	6.4
1997		124.2	151.5	128.9	121.7	1.6	129.5	2.3	236.0	6.7
1998		129.6	160.0	135.2	123.5	1.5	131.5	1.6	205.0	5.5
1999		134.8	169.0	140.9	125.2	1.4	134.4	2.2	218.6	5.5
2000		139.9	179.0	148.8	128.1	2.3	138.9	3.4	222.3	5.3
2001		140.3	183.7	141.7	130.9	2.2	142.8	2.8	200.1	4.7
2002		143.7	190.3	140.8	132.4	1.2	145.1	1.6	-	-
2000	1Q	138.5	175.8	143.0	127.1	2.0	137.0	3.1	223.6	5.5
	2Q	140.1	178.9	145.8	127.8	2.3	138.5	3.3	226.6	5.4
	3Q	140.3	179.9	146.9	128.4	2.4	139.6	3.5	222.4	5.3
	4Q	140.7	181.3	149.3	129.0	2.4	140.3	3.3	216.4	5.1
2001	1Q	140.5	182.7	144.7	130.0	2.3	141.7	3.4	208.1	4.9
	2Q	140.0	183.1	142.6	130.7	2.2	143.2	3.4	215.5	5.0
	3Q	139.9	184.0	141.0	131.4	2.3	143.4	2.7	194.7	4.5
	4Q	140.8	185.0	138.6	131.4	1.9	143.0	1.9	182.1	4.2
2002	1Q	142.5	187.9	139.4	131.8	1.4	143.5	1.3	185.7	4.2
	2Q	143.0	189.0	140.8	132.2	1.2	145.0	1.3	188.8	4.3
	3Q	144.4	191.4	142.0	132.6	0.9	145.6	1.6	192.8	4.3
	4Q	144.9	192.9	141.0	133.1	1.3	146.1	2.2	-	-

Source: Economic Indicators, prepared by the Council of Economic Advisors

a/ Data are based on Chain Weighted Indexes.
b/ Inflation rate measured against prior year period.

Schedule KCM-3

TREND IN INTEREST RATES AND OUTSTANDING BOND YIELDS
(Percent Per Annum)

Year		Prime Rate	Government Securities: 3-Month Bills a/	Government Securities: 10-Year Bonds	Government Securities: Long-term Bonds b/	Moody's Utility Bonds: AA	Moody's Utility Bonds: A	Moody's Corporate Bonds: AAA
1976		6.84	5.00	7.61	7.86	8.92	9.29	8.43
1977		6.83	5.26	7.42	7.67	8.43	8.61	8.02
1978		9.06	7.22	8.41	8.49	9.10	9.29	8.73
1979		12.67	10.04	9.44	9.29	10.22	10.49	9.63
1980		15.27	11.51	11.46	11.30	13.00	13.34	11.94
1981		18.87	14.08	13.91	13.44	15.30	15.95	14.17
1982		14.86	10.69	13.00	12.76	14.79	15.86	13.79
1983		10.79	8.63	11.10	11.18	12.83	13.66	12.04
1984		12.04	9.58	12.44	12.39	13.66	14.03	12.71
1985		9.93	7.49	10.62	10.79	12.06	12.47	11.37
1986		8.33	5.97	7.68	7.80	9.30	9.58	9.02
1987		8.22	5.82	8.39	8.59	9.77	10.10	9.38
1988		9.32	6.69	8.85	8.96	10.26	10.49	9.71
1989		10.87	8.12	8.49	8.45	9.56	9.77	9.26
1990		10.01	7.51	8.55	8.61	9.65	9.86	9.32
1991		8.46	5.42	7.86	8.14	9.09	9.36	8.77
1992		6.25	3.45	7.01	7.67	8.55	8.69	8.14
1993		6.00	3.02	5.87	6.59	7.44	7.59	7.22
1994		7.23	4.34	7.08	7.37	8.21	8.31	7.96
1995		8.81	5.44	6.58	6.88	7.77	7.89	7.59
1996		8.27	5.04	6.44	6.73	7.57	7.75	7.37
1997		5.44	5.11	6.32	6.58	7.54	7.60	7.26
1998		8.31	4.79	5.26	5.54	6.91	7.04	6.53
1999		8.02	4.70	5.69	5.91	7.50	7.62	7.04
2000		9.27	5.85	5.99	5.91	8.04	8.22	7.62
2001		6.77	3.34	4.99	5.51	7.54	7.74	7.07
2002		4.67	1.63	4.56	5.38	7.17	7.35	6.48
2001	Jan	9.00	4.99	5.19	5.54	7.63	7.73	7.15
	Feb	8.50	4.73	4.90	5.33	7.55	7.68	7.10
	Mar	8.00	4.20	4.97	5.46	7.61	7.82	6.98
	Apr	7.50	3.95	5.34	5.78	7.80	8.01	7.20
	May	7.00	3.71	5.41	5.78	7.75	7.98	7.29
	June	6.75	3.65	5.42	5.75	7.63	7.85	7.18
	July	6.75	3.54	5.07	5.51	7.41	7.68	7.13
	Aug	6.50	3.35	4.84	5.48	7.32	7.47	7.02
	Sep	6.00	2.38	4.59	5.48	7.52	7.76	7.17
	Oct	5.50	2.05	4.25	5.27	7.25	7.36	6.96
	Nov	5.00	1.78	4.79	5.24	7.53	7.71	7.02
	Dec	4.75	1.74	5.07	5.48	7.42	7.77	6.61
2002	Jan	4.75	1.76	5.07	5.44	7.20	7.56	6.54
	Feb	4.75	1.79	4.88	5.42	7.23	7.60	6.52
	Mar	4.75	1.79	5.42	5.98	7.51	7.79	6.90
	Apr	4.75	1.77	5.11	5.73	7.43	7.54	6.71
	May	4.75	1.74	5.08	5.76	7.38	7.48	6.73
	June	4.75	1.70	4.86	5.67	7.31	7.42	6.61
	July	4.75	1.71	4.51	5.45	7.11	7.23	6.53
	Aug	4.75	1.69	4.14	5.08	7.11	7.20	6.28
	Sep	4.75	1.57	3.63	4.80	6.89	6.99	6.15
	Oct	4.75	1.44	3.93	5.13	7.03	7.21	6.34
	Nov	4.25	1.33	4.22	5.20	7.08	7.17	6.39
	Dec	4.25	1.22	3.83	4.91	6.81	6.99	6.09
2003	Jan	4.25	1.18	4.00	4.97	6.78	7.03	6.04
	Feb	4.25	1.20	3.71	4.78	6.58	6.85	5.83

a/ Rates on new issues.

b/ 20-year constant maturities for 1974-1978; 30-year maturities for 1978-January 2002; Long-term average (25 years and above) after Jan. 2002. Series represents yields on the more actively traded issues adjusted to constant maturities by the U.S. Treasury based on daily closing bids.

Note: Monthly data reflect rate in effect at end of month, except for Moody's data, which reflect monthly average.
Source: Annual Statistical Digest (Federal Reserve System); Federal Reserve Bulletin (various issues); Moody's Credit Perspectives.

INDIVIDUAL COMPANY RISK DATA FOR
SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES

	Value Line						S & P			
Company	Safety Rank	Earnings Predictability	Financial Strength	Beta	Forecast Common Equity Ratio 2005-7	Common Equity Ratio [2/] 2002	Business Profile	Debt Rating	Market / Book Ratio 2002	Repriced Equity / Book 2002
AGL RESOURCES INC	2	60	B++	0.75	45.0	40.0	3	A-	189.1	158.2
ATMOS ENERGY CORP	3	50	B+	0.60	50.0	46.0	4	A-	156.3	117.0
NEW JERSEY RESOURCES	2	100	B++	0.65	57.5	48.0	2[1/]	A[1/]	245.0	148.8
NICOR INC	2	95	A	0.85	69.5	64.5	3	AA	203.8	250.5
NORTHWEST NATURAL GAS CO	2	65	B++	0.60	52.0	50.5	3	A	142.4	158.2
PEOPLES ENERGY CORP	1	75	A	0.75	66.0	59.5	4	A-	148.2	271.4
PIEDMONT NATURAL GAS CO	2	85	B++	0.70	64.5	58.0	3	A	200.7	140.1
WGL HOLDINGS INC	1	65	A	0.65	52.0	52.0	3	AA-	151.5	162.3
MEAN	**2**	**74**	**B++**	**0.69**	**57.1**	**52.3**	**3**	**A**	**179.6**	**175.8**
MEDIAN	**2**	**70**	**B++**	**0.68**	**54.8**	**51.3**	**3**	**A**	**172.7**	**158.2**

Source: Value Line (December 20, 2002);
Standard & Poor's Utilities and Perspectives (March 3, 2003).

1/ For subsidiary, New Jersey Natural Gas
2/ All Figures are 2002 estimates, except Peoples Energy and WGL Holdings, which are actuals.

Schedule KCM-5

DCF COSTS OF EQUITY FOR SELECTED
LOCAL NATURAL GAS DISTRIBUTION COMPANIES
(BASED ON ANALYSTS' EARNINGS GROWTH FORECASTS)

Company	Annualized Last Paid Dividend (1)	December - February 2003 Average High/Low Price (2)	Expected Dividend Yield [1/] (3)	Long-Term EPS Forecasts I/B/E/S (February 2003) (4)	Long-Term EPS Forecasts Zacks (March 2003) (5)	Average of Growth Forecasts (6)	DCF Cost of Equity [2/] (7)
AGL RESOURCES INC	1.08	23.65	4.9	7.5	5.6	6.6	11.4
ATMOS ENERGY CORP	1.20	22.58	5.6	6.0	6.1	6.1	11.7
NEW JERSEY RESOURCES	1.24	31.92	4.1	7.5	5.8	6.7	10.8
NICOR INC	1.84	32.38	6.0	5.5	4.4	4.9	10.9
NORTHWEST NATURAL GAS	1.26	26.29	5.0	5.0	4.7	4.8	9.9
PEOPLES ENERGY	2.08	37.29	5.8	5.3	4.2	4.7	10.6
PIEDMONT NATURAL GAS	1.60	35.08	4.8	4.5	4.5	4.5	9.3
WGL HOLDINGS INC	1.27	24.41	5.4	4.0	3.8	3.9	9.3
Mean	**1.45**	**29.20**	**5.2**	**5.7**	**4.9**	**5.3**	**10.5**
Median	**1.27**	**29.10**	**5.2**	**5.4**	**4.6**	**4.9**	**10.7**

1/ Expected Dividend Yield = (col (1) / col (2)) * (1 + Col (6))
2/ Expected Dividend Yield (3) + Average of Growth Forecasts (6)

Source: Standard & Poor's Research Insight, I/B/E/S, Zacks

Schedule KCM-6

DCF COSTS OF EQUITY FOR SELECTED
LOCAL NATURAL GAS DISTRIBUTION COMPANIES
(BASED ON SUSTAINABLE GROWTH RATES)

Company	Annualized Last Paid Dividend (1)	December - February 2003 Average High/Low Price (2)	Expected Dividend Yield [1/] (3)	Sustainable Growth (December 2002) (4)	DCF Cost of Equity [2/] (5)	Value Line ROE Forecast (2005-2007) (6)	Value Line Dividend Payout Forecast (2005-2007) (7)
AGL RESOURCES INC	1.08	23.65	4.8	5.8	10.7	12.0	51.4
ATMOS ENERGY CORP	1.20	22.58	5.6	4.8	10.3	13.0	63.4
NEW JERSEY RESOURCES	1.24	31.92	4.2	8.1	12.3	14.0	41.9
NICOR INC	1.84	32.38	6.2	9.2	15.4	21.0	56.0
NORTHWEST NATURAL GAS	1.26	26.29	5.0	4.9	9.9	11.0	55.4
PEOPLES ENERGY	2.08	37.29	5.9	5.7	11.6	13.5	57.4
PIEDMONT NATURAL GAS	1.60	35.08	4.8	4.3	9.1	12.0	63.9
WGL HOLDINGS INC	1.27	24.41	5.5	5.3	10.7	12.0	56.2
Mean	**1.45**	**29.20**	**5.2**	**6.0**	**11.3**	**13.6**	**55.7**
Median	**1.27**	**29.10**	**5.3**	**5.5**	**10.7**	**12.5**	**56.1**

1/ Expected Dividend Yield = (col (1) / col (2)) * (1 + Col (4))
2/ Expected Dividend Yield (3) + Sustainable Growth (4)

Source: Standard & Poor's Research Insight, Value Line (December 2002).

Schedule KCM-7

DCF COSTS OF EQUITY FOR SELECTED
LOCAL NATURAL GAS DISTRIBUTION COMPANIES
(BASED ON CASH FLOW GROWTH RATES)

Company	Annualized Last Paid Dividend (1)	December - February 2003 Average High/Low Price (2)	Expected Dividend Yield [1/] (3)	Cash Flow Per Share Growth (December 2002) (4)	DCF Cost of Equity [2/] (5)
AGL RESOURCES INC	1.08	23.65	4.8	6.0	10.8
ATMOS ENERGY CORP	1.20	22.58	5.7	8.0	13.7
NEW JERSEY RESOURCES	1.24	31.92	4.2	8.0	12.2
NICOR INC	1.84	32.38	5.9	4.5	10.4
NORTHWEST NATURAL GAS	1.26	26.29	5.0	4.0	9.0
PEOPLES ENERGY	2.08	37.29	5.9	6.5	12.4
PIEDMONT NATURAL GAS	1.60	35.08	4.8	5.5	10.3
WGL HOLDINGS INC	1.27	24.41	5.5	6.0	11.5
Mean	**1.45**	**29.20**	**5.2**	**6.1**	**11.3**
Median	**1.27**	**29.10**	**5.3**	**6.0**	**11.2**

1/ Expected Dividend Yield = (col (1) / col (2)) * (1 + Col (4))
2/ Expected Dividend Yield (3) + Cash Flow Per Share Growth (4)

Source: Standard & Poor's Research Insight, Value Line (Dec. 2002).

Schedule KCM-8

DERIVATION OF IMPLICIT RELATIONSHIP
AMONG "BARE-BONES" COST OF CAPITAL, RETURN ON BOOK EQUITY
AND MARKET/BOOK RATIO

Assume the following:

k = the equity capitalization rate, i.e., the "bare-bones" cost of equity
D = dividend per share
E = earnings per share
M = current market price
B = current book value per share
b = retention rate
r = return on book equity
RE = per-share retained earnings
g = sustainable growth as measured by b(r)

DCF cost of capital:

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

Price of stock:

$$(2)\quad M = \frac{D}{k - g}$$

From the definition of return on book equity:

$$(3)\quad r = \frac{E}{B} = \frac{D}{B} + \frac{RE}{B}$$

If, from the assumptions,

$$(4)\quad g = br,$$

(5) by definition, $$g = \frac{RE}{E} \times \frac{E}{B} = \frac{RE}{B}$$

Substitute Equation (5) into Equation (3):

$$(6)\quad r = \frac{D}{B} + g$$

Solve for Equation (6) for B:

$$(7)\quad B = \frac{D}{r - g}$$

Divide Equation (2) by Equation (7) to obtain an expression of the market/book ratio:

$$(8)\quad M/B = \frac{\frac{D}{k - g}}{\frac{D}{r - g}} = \frac{r - g}{k - g}$$

From the formulation of g = b(r) in Equation (4):

$$(9)\quad M/B = \frac{r - [b(r)]}{k - (b)(r)} = \frac{(1 - b)r}{k - br}$$

Solve Equation (9) for r:

$$(10)\quad r = \frac{M/B \times k}{1 + b\ (M/B - 1)}$$

HISTORIC MARKET EQUITY RISK PREMIUMS
(Percentages)

	Annual Average Returns		Risk Premium in Relation to:
	S & P 500 Common Stock Index	U.S. Treasury Bonds 1/	S & P 500 Common Stock Index
1926-2002	12.2	5.2	7.0
1947-2002	13.0	6.1	6.9

	Annual Average Returns		Risk Premium in Relation to:
	S&P / Moody's Gas Distribution Stock Index	U.S. Treasury Bonds 1/	S&P / Moody's Gas Distribution Stock Index
1947-2001	12.4	6.1	6.3

1/ Average of annual income returns for 20-year bond.

Note: S&P Gas Distribution Index was discontinued in 1985; Moody's Gas Distribution Stock Index has been discontinued as of July 2002.

Source: Ibbotson Associates: Stocks, Bonds, Bills and Inflation: 2002 Yearbook; Standard & Poor's Price Index Record; Standard & Poor's Analyst's Handbook; Mergent / Moody's Public Utility Manual; Mergent Corporate News Reports Monthly.

BETAS FOR SELECTED LOCAL NATURAL GAS DISTRIBUTION UTILITIES

Company	Value Line	Bloomberg
AGL RESOURCES INC	0.75	0.68
ATMOS ENERGY CORP	0.60	0.65
NEW JERSEY RESOURCES	0.65	0.60
NICOR INC	0.85	0.88
NORTHWEST NATURAL GAS	0.60	0.55
PEOPLES ENERGY	0.75	0.66
PIEDMONT NATURAL GAS	0.70	0.66
WGL HOLDINGS INC	0.65	0.64
MEAN	**0.69**	**0.67**
MEDIAN	**0.68**	**0.66**

Source: Value Line, December 2002; Bloomberg.com, March 11, 2003

Schedule KCM-11

HISTORIC VALUE LINE BETAS FOR
SELECTED LOCAL NATURAL GAS DISTRIBUTION UTILITIES

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
AGL RESOURCES INC	0.60	0.60	0.70	0.75	0.75	0.65	0.65	0.60	0.60	0.75
ATMOS ENERGY CORP	0.50	0.55	0.60	0.65	0.55	0.55	0.55	0.55	0.55	0.60
NEW JERSEY RESOURCES	0.65	0.65	0.65	0.65	0.60	0.55	0.55	0.55	0.55	0.65
NICOR INC	0.60	0.60	0.70	0.70	0.75	0.65	0.60	0.60	0.60	0.85
NORTHWEST NATURAL GAS	0.60	0.55	0.50	0.45	0.60	0.60	0.60	0.60	0.60	0.60
PEOPLES ENERGY	0.75	0.80	0.80	0.80	0.90	0.80	0.75	0.70	0.70	0.75
PIEDMONT NATURAL GAS	0.60	0.60	0.60	0.65	0.60	0.55	0.55	0.60	0.60	0.70
WGL HOLDINGS INC	0.65	0.70	0.65	0.70	0.75	0.60	0.60	0.60	0.60	0.65
MEDIAN	**0.60**	**0.60**	**0.65**	**0.68**	**0.68**	**0.60**	**0.60**	**0.60**	**0.60**	**0.68**

Source: Value Line, 4th Quarter issues.

Schedule KCM-12

SELECTED LOCAL NATURAL GAS DISTRIBUTION COMPANIES
RISK PREMIUM STUDY
(Quarterly Averages of Monthly Data)

	Dividend Yields 1/	I/B/E/S EPS Growth Forecast	DCF Cost	10-Year Treasury Yield	Risk Premium
1993 1Q	5.5	6.2	11.7	6.3	5.4
2Q	5.3	6.2	11.5	6.0	5.5
3Q	5.0	6.2	11.2	5.6	5.6
4Q	5.4	5.8	11.2	5.6	5.6
1994 1Q	5.6	5.4	11.0	6.1	4.9
2Q	5.9	5.5	11.4	7.1	4.3
3Q	6.1	5.4	11.5	7.3	4.2
4Q	6.4	5.0	11.4	7.8	3.5
1995 1Q	6.1	4.6	10.7	7.5	3.3
2Q	5.9	4.7	10.7	6.6	4.0
3Q	5.9	4.6	10.5	6.3	4.1
4Q	5.5	4.8	10.3	5.9	4.4
1996 1Q	5.5	4.8	10.3	5.9	4.4
2Q	5.5	4.9	10.3	6.7	3.6
3Q	5.4	5.1	10.4	6.8	3.6
4Q	5.1	5.2	10.2	6.3	3.9
1997 1Q	5.2	5.1	10.3	6.6	3.7
2Q	5.2	5.0	10.2	6.6	3.6
3Q	5.0	5.1	10.0	6.2	3.9
4Q	4.7	5.2	9.9	5.8	4.1
1998 1Q	4.7	5.5	10.1	5.6	4.5
2Q	4.7	5.5	10.2	5.6	4.6
3Q	5.1	5.7	10.8	5.1	5.7
4Q	4.7	5.9	10.6	4.7	5.9
1999 1Q	5.3	6.2	11.5	5.0	6.5
2Q	5.2	6.1	11.4	5.6	5.8
3Q	5.1	6.1	11.2	5.9	5.3
4Q	5.3	5.4	10.7	6.3	4.4
2000 1Q	5.9	5.7	11.6	6.4	5.2
2Q	5.8	5.7	11.5	6.2	5.3
3Q	5.4	6.0	11.4	5.9	5.5
4Q	5.1	5.8	10.9	5.4	5.5
2001 1Q	5.1	5.8	10.6	5.0	5.6
2Q	4.9	5.8	10.8	5.4	5.4
3Q	5.0	6.2	11.2	4.8	6.4
4Q	5.1	5.7	10.8	4.7	6.1
2002 1Q	5.3	5.5	10.8	5.1	5.7
2Q	4.7	5.4	10.2	5.0	5.2
3Q	5.3	5.7	11.0	4.1	6.9
4Q	5.1	5.6	10.7	4.0	6.7
Averages					
1993-2002	**5.3**	**5.5**	**10.8**	**5.9**	**4.9**
1999-2002	**5.2**	**5.8**	**11.0**	**5.3**	**5.7**
Averages for 10-year Treasury yields:					
Less than 5.0			**10.9**	**4.5**	**6.4**
5.0 - 6.0			**10.8**	**5.5**	**5.3**
Over 6.0			**10.8**	**6.7**	**4.2**

1/ Dividend Yield is adjusted for half of I/B/E/S growth

Source: Standard & Poor's Research Insight, I/B/E/S International, Inc.,
U.S. Federal Reserve Statistical Release

S&P DEBT RATINGS AND VALUE LINE RISK MEASURES
FOR 39 LOW RISK INDUSTRIALS

	Value Line Risk Measures				S&P	Common
	Safety Rank	Earnings Predictability	Financial Strength	Beta	Debt Rating	Equity Ratio 1/
Albertson's, Inc.	2	90	A	0.65	BBB+	52.6
Amerada Hess	2	5	A	0.85	BBB	48.2
Ashland Inc.	2	45	B++	0.85	BBB	55.5
Avery Dennison	2	90	A	0.95	A	59.7
Baldor Electric	2	60	B++	0.80		72.7
Banta Corp.	2	95	B++	0.70		75.7
CLARCOR Inc.	2	95	B++	0.75		67.0
Clorox Co.	2	80	A+	0.75	A+	73.5
ConAgra Foods	2	80	A	0.65	BBB+	42.9
ConocoPhillips	2	35	B++	0.85		60.7
Curtiss-Wright	2	85	B++	0.65		94.2
Donaldson Co.	2	100	B++	0.90		76.3
Donnelley (R.R) & Sons	2	75	B++	0.90	A	50.2
Eaton Corp.	2	60	A	0.90	A-	52.4
Ecolab Inc.	2	95	B++	0.85	A	63.2
Engelhard Corp.	2	70	B++	0.90	A-	80.8
Federal Signal	2	85	A	0.90		60.7
Int'l Flavors & Frag.	2	75	B++	0.75	BBB+	35.8
Knight Ridder	2	40	B++	0.85	A	49.8
Lancaster Colony	2	85	A	0.75		99.8
Lincoln Elec Hldgs.	2	90	A	0.75		95.4
Liz Claiborne	2	100	A+	0.90	BBB	73.2
McCormick & Co.	2	95	B++	0.45	A-	50.5
Minerals Techn.	2	90	B++	0.80		85.2
Murphy Oil Corp.	2	30	A	0.85	A-	74.2
Nordson Corp.	2	60	B++	0.95		57.9
Pall Corp.	2	45	A	0.95	A-	68.2
Pitney Bowes	2	95	A	0.95	AA	26.8
Scripps (E.W.) 'A'	2	80	B+	0.90	A	92.5
Sensient Techn.	2	80	B++	0.65	BBB	50.4
Sherwin-Williams	2	90	A	0.95	A	74.7
Sigma-Aldrich	2	95	A	0.75	A-	82.0
Smucker (J.M.)	2	80	B++	0.60		67.5
Sunoco, Inc.	2	10	B++	0.95	BBB	59.0
Superior Inds. Int'l	2	70	B++	0.95		100.0
Tecumseh Products 'A'	2	60	A	0.70		98.6
Universal Corp.	2	85	A	0.65	A-	51.7
Wendy's Int'l	2	95	A	0.60	BBB+	61.3
Wyeth	2	95	A+	0.90	A	35.6
MEAN	**2**	**74**	A	**0.80**	A-	**66.1**
MEDIAN	**2**	**80**	B++	**0.85**	A-	**63.2**

1/ Based on permanent capital.

Source: S&P Research Insight, S&P Bond Guide, Value Line.

RETURNS ON EQUITY
FOR 39 LOW RISK INDUSTRIALS

	Returns on Equity											Value Line
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Average 1992-2001	Forecast 2005-07
Albertson's, Inc.	21.3	24.5	27.1	25.5	23.5	22.2	21.7	10.0	13.4	8.6	19.8	13.5
Amerada Hess	0.2	-9.3	2.4	-13.7	21.8	0.2	-15.7	15.4	29.6	20.8	5.2	8.5
Ashland Inc.	-5.4	12.1	14.5	0.4	13.3	15.7	9.8	13.4	3.6	20.3	9.8	10.0
Avery Dennison	9.8	10.9	15.1	18.6	21.4	24.5	26.7	26.2	34.6	27.7	21.6	22.0
Baldor Electric	10.9	12.7	15.3	16.3	17.1	18.2	17.6	16.5	17.6	8.6	15.1	15.5
Banta Corp.	14.7	14.9	15.1	14.9	12.6	10.4	12.8	4.2	16.2	12.9	12.9	11.0
CLARCOR Inc.	16.9	16.9	18.6	17.7	18.0	17.0	17.9	17.8	17.8	16.2	17.5	14.0
Clorox Co.	14.7	19.7	23.7	21.7	23.7	25.3	28.1	18.5	23.4	17.6	21.7	31.0
ConAgra Foods	17.1	19.3	20.0	7.6	26.0	23.9	12.6	13.2	19.9	18.9	17.9	19.5
ConocoPhillips	9.9	9.1	17.2	15.3	35.0	21.2	5.2	13.9	35.0	16.1	17.8	10.0
Curtiss-Wright	14.7	-2.0	12.9	11.0	9.1	14.4	13.4	16.0	15.0	19.6	12.4	12.5
Donaldson Co.	17.2	16.9	17.6	18.8	19.3	21.4	22.8	24.1	25.9	25.2	20.9	22.5
Donnelley (R.R) & Sons	13.1	9.7	14.1	14.4	-8.3	8.1	20.4	25.3	22.5	2.4	12.2	25.5
Eaton Corp.	13.3	17.5	23.9	21.8	16.9	21.9	16.9	26.4	18.0	6.9	18.4	14.0
Ecolab Inc.	20.0	21.2	20.2	21.6	23.2	25.0	31.0	24.2	27.5	23.0	23.7	27.0
Engelhard Corp.	14.3	2.8	20.6	20.3	19.2	5.9	22.2	23.7	20.5	24.0	17.4	21.0
Federal Signal	20.0	21.0	22.3	22.0	23.8	20.6	19.1	17.0	16.4	13.3	19.6	17.0
Int'l Flavors & Frag.	18.2	21.7	23.8	23.4	17.3	21.0	20.9	18.0	16.5	20.1	20.1	25.0
Knight Ridder	12.5	12.2	13.9	14.3	23.9	30.8	22.8	18.9	18.3	11.4	17.9	19.5
Lancaster Colony	21.7	26.3	27.9	27.4	25.3	25.7	24.7	23.1	23.9	20.6	24.7	17.0
Lincoln Elec Hldgs.	-19.8	-23.7	28.4	23.5	20.6	20.6	20.2	15.7	17.4	17.7	12.1	19.5
Liz Claiborne	22.9	12.7	8.4	12.9	15.5	19.0	17.8	20.4	21.3	20.3	17.1	14.5
McCormick & Co.	23.0	22.0	12.8	19.3	10.3	23.3	26.6	26.8	37.1	35.7	23.7	26.5
Minerals Techn.	8.1	8.1	9.2	9.9	10.0	11.0	12.0	12.8	11.2	10.0	10.2	11.5
Murphy Oil Corp.	7.2	7.2	8.6	-10.0	13.0	12.6	-1.4	11.8	26.4	24.0	9.9	13.0
Nordson Corp.	23.9	21.8	22.8	23.7	22.3	21.5	9.6	21.8	23.3	9.6	20.0	17.5
Pall Corp.	17.5	14.4	17.5	19.2	20.0	8.6	11.8	6.9	19.7	15.4	15.1	15.0
Pitney Bowes	18.3	20.1	21.8	30.6	21.8	25.6	32.8	38.9	43.1	44.9	29.8	42.5
Scripps (E.W.) 'A'	15.1	16.2	12.6	11.7	14.7	15.8	12.4	13.2	13.4	10.5	13.6	14.5
Sensient Techn.	14.0	18.6	16.1	19.2	12.4	17.7	18.5	19.1	14.0	17.4	16.7	16.5
Sherwin-Williams	16.3	17.0	17.9	17.7	17.5	17.4	16.5	17.8	1.0	17.8	15.7	19.5
Sigma-Aldrich	20.0	19.4	17.1	17.3	16.7	16.6	14.6	13.9	30.2	16.9	18.3	16.5
Smucker (J.M.)	17.3	13.4	14.7	11.0	10.9	12.2	12.1	8.3	11.3	11.7	12.3	9.5
Sunoco, Inc.	-13.0	14.6	5.0	14.6	-19.5	30.7	23.1	6.4	26.3	23.8	11.2	14.0
Superior Inds. Int'l	23.8	28.8	29.9	24.7	19.5	20.6	17.5	21.3	21.2	13.1	22.0	17.0
Tecumseh Products 'A'	7.7	12.3	16.3	14.3	12.3	10.3	7.4	14.1	6.6	4.3	10.6	9.5
Universal Corp.	20.5	22.3	9.7	6.7	17.7	22.7	27.8	23.4	22.0	21.5	19.4	18.0
Wendy's Int'l	12.9	14.0	15.2	14.7	16.6	11.6	11.0	15.6	15.5	18.0	14.5	16.5
Wyeth	33.5	39.5	37.6	34.3	30.1	27.0	27.8	-15.5	-52.5	66.3	22.8	44.0
Median	15.1	16.2	17.1	17.7	17.7	20.6	17.8	17.0	19.7	17.7	17.5	16.5
Average	14.0	14.8	17.6	16.3	17.0	18.4	17.1	16.9	18.6	18.8	17.0	18.2
Average of Annual Medians											17.6	

Source: Standard and Poor's Research Insight; Value Line