BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of Missouri Public Service tariff sheets designed to increase rates for gas service provided to customers in the Missouri service area of the company.	))))	Case No. GR-93-172

AFFIDAVIT OF JOHN A. TUCK

STATE OF MISSOURI)
) SS
COUNTY OF COLE)

John A. Tuck, of lawful age, being first duly sworn, deposes and states:

1. My name is John A Tuck. I am a Public Utility Accountant II for the Office of the Public Counsel.

2. Attached hereto and made part hereof for all purposes is my direct testimony consisting of pages 1 through 66, Appendixes A - F, and Schedules 1 - 15.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

John A. Tuck

Subscribed and sworn to before me this 28th day of May, 1993.

Bonnie S. Howard
Notary Public

My commission expires May 3, 1997.

DIRECT TESTIMONY

OF

JOHN A. TUCK

UTILICORP UNITED INC.

MISSOURI PUBLIC SERVICE DIVISION

CASE NO. GR-93-172

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. John A. Tuck, P.O. Box 7800, Jefferson City, Missouri 65102.

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

A. I am employed by the Office of Public Counsel of the State of Missouri (OPC or Public Counsel) as a Public Utility Accountant.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

A. I received a Bachelor of Science Degree in Accounting from Southwest Missouri State University in May, 1990. In December, 1992, I earned a Master's in Business Administration with an emphasis in Finance from Southwest Missouri State University.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION?

A. Yes. Schedule (1), attached to this Direct testimony, contains the list of cases in which I have filed testimony before the Missouri Public Service Commission.

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. I will present a cost of capital analysis for the gas operations of UtiliCorp United's Missouri-regulated operating division; Missouri Public Service (MoPub, MPS, the Company). As part of that analysis, I will recommend and testify to the fair rate of return that should be allowed in this proceeding.

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

A. Yes. I have prepared an analysis, attached to this testimony, consisting of (15) Schedules. This analysis was prepared by me and is correct to the best of my knowledge and belief.

Q. PLEASE SUMMARIZE YOUR TESTIMONY AND FINDINGS CONCERNING THE COST OF COMMON EQUITY CAPITAL AND THE OVERALL COST OF CAPITAL WHICH SHOULD BE ALLOWED IN ESTABLISHING THE REVENUE REQUIREMENT FOR THE GAS OPERATIONS OF MISSOURI PUBLIC SERVICE.

A. My analysis indicates that Missouri Public Service, a division of UtiliCorp United Inc., should be allowed to earn a return of no more than 9.39 percent on its original cost gas rate base. This return has been determined using a hypothetical (i.e., appropriate ratemaking) capital structure consisting of 44.25 percent common equity; 5.94 percent preference stock; and 49.81 percent long-term debt. These recommended capital structure ratios are based on a study (included in

this testimony) of capital structure components for other regulated electric/gas utilities.

As discussed subsequently in this testimony, it is not appropriate, in this instance, to base MPS's revenue requirement on the financial data of UtiliCorp United. Specifically, UtiliCorp's cost of equity capital and cost rate for long-term debt should not be used in determining the total costs borne by Missouri ratepayers. Thus, for reasons that will be thoroughly covered later in this testimony, the capital structure and cost of common equity recommended in this proceeding have been determined through the analysis of two groups of "comparative" utilities.

The appropriate embedded cost rate for long-term debt is 8.71 percent and the embedded cost of preference stock is 9.13 percent. In addition, I am recommending the Company be allowed a rate of return on common equity of no more than 10.20 percent. This is the rate, used in conjunction with the proposed capital structure, that I believe allows Missouri Public Service to earn a return consistent not only with the principles set forth in Bluefield Water Works and Improvement v. Public Service Commission, 262 U.S. 679 (1923) and FPC v. Hope Natural Gas Co., 320 U.S. 591 (1944) but also with the Missouri Public Service Law.

Q. HOW DOES YOUR RECOMMENDED RETURN ON COMMON EQUITY COMPARE TO THE RECOMMENDATION OF COMPANY WITNESS JOHN DUNN?

A. While my analysis indicates that a return on equity of 10.20 percent is fair and reasonable, witness Dunn has recommended the rate of return on common equity be set at 13.75 percent for the purpose of setting rates in this proceeding. Several important factors account for the large discrepancy between my testimony and that of witness Dunn's.

First, my analysis simply contains more recent information. While witness Dunn's dividend yield analysis incorporates stock price information from September through November of 1992, my analysis is based on more recent information; stock price data from February through April of 1993.

A comparison between current yields and those existing in late 1992 reveals the fact that dividend yields have dropped significantly. Furthermore, while current dividend yields may seem relatively "low" - recent stock price data does accurately measure current investor expectations, that is - investors are requiring relatively "low" returns on common equity investments in regulated utilities. This fact is supported by the following quotes taken from the March 31, 1993 Gas Utilities Update published by A.G. Edwards & Sons, Inc.:

> In the most recent quarter, the average dividend yield fell 40 basis points to 5.1% from 5.5%. At the same time, long-term interest rates fell 60 basis points to 6.92%.
>
> Relative yield (median LDC dividend yield as a percentage of 30-year government bond yields) is in line with historic levels.

Secondly, while I have elected to use a more traditional approach to calculating the DCF cost of capital, witness Dunn has elected to include a flotation cost adjustment and an unnecessary risk adjustment used to compensate for the "alleged" risk differentials between MPS and other gas distribution utilities. Consequently, the difference between my return on equity recommendation and witness Dunn's is significant.

DEVELOPMENT & PURPOSES OF REGULATION

Please see Appendix A, attached to this Direct testimony.

CALCULATING THE WEIGHTED AVERAGE COST OF CAPITAL

Please see Appendix B, attached to this Direct testimony.

LEGAL REQUIREMENT FOR A FAIR RATE OF RETURN

Please see Appendix C, attached to this Direct testimony.

REGULATION IN MISSOURI

Please see Appendix D, attached to this Direct testimony.

ADDITIONAL REQUIREMENTS FOR A FAIR RATE OF RETURN

Q. ARE THERE ANY ADDITIONAL PHILOSOPHIES THAT YOU BELIEVE TO BE IMPORTANT CONSIDERATIONS WHEN SETTING THE ALLOWED RATE OF RETURN FOR A PUBLIC UTILITY?

A. Yes. The rate of return is a crucial variable in the task of developing the revenue requirement for a public utility. According to Trebing & Howard (1969, preface):

> It serves as an inducement to attract capital, as compensation to the suppliers of capital, and as a criterion for judging the feasibility of investment expenditures. In these roles, rates of return perform an important allocative function and ultimately become an element of cost to be borne by consumers as a part of the cost of service. For the regulatory agency to fulfill its responsibilities in promoting the public interest, it is important that the allowance for the rate of return be kept at levels that do not permit extortionist prices or the confiscation of capital. Nor should the rate of return remain at levels which are conducive to resource misallocation and the production of services that are inconsistent with consumer wants.

In order to achieve this balanced end result, Dr. Gordon (p.4) argues that the objective of regulation is to determine a price above the cost of producing a utility's product that provides the utility with the lowest rate of return on its capital consistent with the level of investment in plant and facilities the public interest requires. In this way, consistent with both Hope and Bluefield, consumer interests are secured, while the utility is protected against the confiscation of capital; assured the opportunity to achieve earnings comparable to those of other enterprises

with similar risks; and afforded the opportunity to earn a return that ensures financial integrity, support of existing capital, and capital attraction. In addition, this philosophy is consistent with the Public Service Commission Act by emphasizing the efficient use of facilities and the proper balance of interests between ratepayers and the utility.

Q. WHAT TYPE OF NEGATIVE IMPACTS FLOW FROM A SITUATION WHERE A UTILITY'S AUTHORIZED RATE OF RETURN IS ABOVE ITS ACTUAL COST OF CAPITAL?

A. If a utility is allowed to earn a return on equity that is above the actual cost of that capital (i.e. the investors' required rate of return) an additional burden is placed on the consumer insofar as it encourages too much investment in plant and equipment that will ultimately earn a return equal to the weighted average cost of capital. It should be noted, this burden of excessive investment is in addition to the strains on consumer welfare (the result of higher utility rates) created when a utility is allowed to recover (through rates) a return on equity that is above the investors' required rate of return.

Q. DOES A REGULATED ENTITY, SUCH AS MISSOURI PUBLIC SERVICE, HAVE AN OBLIGATION TO ITS CUSTOMERS TO SUSTAIN ITS CAPITAL STRUCTURE IN A MANNER THAT MINIMIZES THE WEIGHTED AVERAGE COST OF CAPITAL?

A. Yes. Given that a primary objective of utility regulation is to produce market results that closely approximate the conditions that would be obtained if utility rates were determined in a competitive atmosphere, a

regulated entity, such as MPS, most definitely has an obligation to its ratepayers (and shareholders) to sustain a capital structure that, over time, minimizes the weighted average cost of capital. While it cannot be denied that a regulated utility has a lawful right to manage its own affairs, it also has an obligation to not injuriously affect the public through its actions.

Q. HOW IS A REGULATED UTILITY'S OBLIGATION TO CAPITALIZE ITS ASSETS IN THE MOST EFFICIENT MANNER CONSISTENT WITH A PRIMARY OBJECTIVE OF UTILITY REGULATION, THAT IS - TO PRODUCE RESULTS SIMILAR TO THOSE OBTAINED IF UTILITY RATES WERE DETERMINED IN A COMPETITIVE MANNER?

A. In a competitive environment, competition between companies offering similar goods or services automatically drives firms to minimize their capital costs. Capital budgeting theory generally indicates that an unregulated firm should invest in any project which, given a certain level of risk, is expected to earn a rate of return at or above its weighted average cost of capital. Therefore, if the average capital costs can be lowered, the firm's investment opportunities are expanded, competitive position is enhanced, and the chances for survival are increased. Consequently, competition between companies automatically drives unregulated firms to minimize their capital costs. Furthermore, since regulation stands in the place of competition, supervision over total capital costs, as they are affected by capital structure proportions, is critical.

ECONOMIC INFORMATION

Q. PLEASE DESCRIBE THE CURRENT ECONOMIC AND FINANCIAL CONDITIONS, AS WELL AS PROJECTED FINANCIAL VARIABLES, THAT HELP SUPPORT YOUR COST OF EQUITY CAPITAL RECOMMENDATION.

A. At the present, capital costs are very low. The opportunities for an investor to earn a 10.20 percent return on a low risk investment, such as the stock of an electric or gas distribution company, are hard to find. Additionally, it appears that inflation, interest rates, and equity capital costs will remain near current levels. In the March 26, 1993 Quarterly Economic Review, Value Line states:

> ...the recovery took on a fair degree of momentum in the final half of '92. Still, this improvement, which continues, doesn't yet seem to be generating the kind of excesses needed for a sustained increase in inflation. Nor is it encouraging the Fed to abandon its accommodative monetary stance. In our opinion, the coming months are likely to bring modest growth, modest inflation, and relative stability on the interest rate front. This favorable pattern, moreover, could well persist through 1996-98, assuming steadiness on the industrial and consumer fronts and a sensible approach to deficit reduction and individual and corporate taxation

Further, Value Line projects the prime rate, which currently stands at 6.00 percent, will stay in the 6.10 to 6.50 percent range through 1994. Additionally, the 30-Year Treasury Bond Rate, currently near 6.80 percent, is projected by Value Line to hover between 7.0 and 7.3 percent through 1994.

While the current levels for capital costs, in general, and equity capital costs, specifically, may appear "unusually low," market-derived capital costs indicated by DCF methodology do accurately reflect current market sentiment, that is - that investors are expecting relatively "low" returns from their investments in regulated utilities. The fact that investors are currently requiring relatively "low" returns from their investments in regulated electric utilities is reflected in the following quote taken from the April 16, 1993 issue of Value Line:

> Value Line expects long-term interest rates to hold relatively steady through the end of 1994. Accordingly, we don't expect a tremendous sell-off of this group's stocks, but we don't look for much share-price growth, either, especially since these issues have outperformed the broad market averages so far in 1993.
>
> In our latest Quarterly Economic Review we reduced our forecast for long-term interest rates, compared with what we had projected three months earlier. Hence, we have lowered the projected 3- to 5-year yields for many electric utilities, and thus, have raised their target price ranges. Even so, our interest-rate forecast for the late 1990's still calls for significantly higher rates than those that exist today. Thus, many electric utility equities still are trading near, at, or above the upper level of their 1996-98 target price ranges, and projected total returns over that time might only match, or even lag, the inflation rate.

Q. ARE THERE OTHER CAPITAL MARKET INDICATIONS THAT EQUITY COSTS FOR UTILITIES ARE IN THE RANGE YOU RECOMMEND?

A. Yes. The current ratio of market price per share to book value per share for electric/gas and natural gas distribution utilities strongly suggests that investor-required returns are relatively "low" - in fact,

substantially below the level of earned or projected returns for many regulated utilities. For example, the 44 electric/gas utilities covered in the May, 1993 C.A. Turner Utility Reports have an average earned return on equity of 11.10 percent, while the market-to-book ratio for these companies averaged 1.66, or 166 percent. Furthermore, for the 60 utilities covered by C.A.Turner that provide primarily electric service, the current earned return on book equity averaged just 11.40 percent, while the market price-to-book ratio averaged 170 percent. Finally, the 53 natural gas distribution and integrated natural gas companies covered by C.A. Turner are currently earning, on average, 11.90 percent on book value, while the market price-to-book value ratio average 192 percent.

This relationship indicates that the return investors require on the market price they provide for those companies is significantly below the current levels of earned return on book value. Consequently, investors are expecting many regulated utilities to over-earn their cost of capital.

Q. DOES THE FINANCIAL COMMUNITY RECOGNIZE THIS RELATIONSHIP BETWEEN MARKET-TO-BOOK RATIOS AND THE INVESTORS' REQUIRED RATE OF RETURN?

A. A.G. Edwards & Sons does. In the Gas Utilities Update published by A.G. Edwards, the following statement explains the current relationship between market-to-book ratios and the investors' required rate of return:

> Market-to-book values are not a function solely of a company's return on common equity but of a utility's profitability returns relative to that required by investors. Higher price-to-book value ratios reflect the fact that regulators have not reduced utility allowed returns on equity as fast as the required rate of return by investors has fallen. This concept is often referred to as "reverse regulatory lag." Reverse regulatory lag will continue only as long as interest rates continue to fall. Once we reach a period where interest rates stop falling and allowed utility returns catch up to interest rates, we would expect to see market-to-book ratios begin to fall.

Additionally, the following statements, taken from the Gas Utilities Update published by A.G. Edwards, provides further evidence that investors are currently expecting relatively "low" returns from their investments in gas distribution utilities:

> On a long-term basis, we believe earnings growth will be approximately 2.5% annually. Slowing earnings growth reflects lower allowed returns on equity being granted by state commissions.

> Dividend growth is expected to be below earnings growth for several years to lower dividend payout levels and then stabilize around 2.5% on a long-term basis.

> Through discussions with companies, we believe that dividend payout is of primary concern to many companies and that dividends are likely to grow at a rate below the rate of normalized earnings over the next five years in order to lower dividend payout. We project median dividend growth of 2.0% annually until dividend payout has been reduced to a level of approximately 75%. On a long-term basis, we expect dividends to grow at a rate of 2.5% annually.

HISTORICAL INFORMATION

Q. PLEASE PROVIDE SOME BACKGROUND INFORMATION ON UTILICORP UNITED.

A. The following statements were taken from the UtiliCorp United Corporate Profile, March 1993,

> UtiliCorp United is an electric and natural gas utility company with total assets of more than $2.5 billion. The company was formed in 1985 from Missouri Public Service Company. Today it operates utilities in eight states through seven divisions, and in one Canadian province through a subsidiary. At December 31, 1992, the company had approximately 1,010,000 utility customers and 4,361 employees.
>
> The operating divisions of UtiliCorp are Missouri Public Service, WestPlains Energy, Peoples Natural Gas, Michigan Gas Utilities, West Virginia Power, Northern Minnesota Utilities and Kansas Public Service. West Kootenay Power operates as a Canadian subsidiary. In addition to these utility operations, UtiliCorp is active in non-regulated areas of the utility industry through two subsidiaries, Aquila energy and UtilCo Group. The company also markets natural gas in the United Kingdom through several joint ventures.
>
> Aquila Energy, one of the nation's largest independent marketers of natural gas, was originally purchased as part of Peoples Natural Gas. It was made a wholly-owned subsidiary of UtiliCorp in 1986 to take advantage of the many marketing and transportation opportunities created by deregulation.
>
> UtiliCorp's strategy is to balance its services by business segment, region, climate, and regulatory jurisdiction, and to be in the forefront of utility deregulation. In pursuit of these goals, the company actively seeks expansion opportunities in both the regulated and non-regulated segments of the industry.

UTILICORP'S VS. MPS'S CAPITAL STRUCTURE

Q. IN THE DIRECT TESTIMONY FILED BY THE COMPANY IN THIS PROCEEDING, THE PROPOSED CAPITAL STRUCTURE IS CHARACTERIZED AS MPS'S PER BOOKS CAPITAL STRUCTURE AT SEPTEMBER 30, 1992 (DUNN DIRECT, PAGE 19, LINE 4). IS MOPUB'S CAPITAL STRUCTURE REALLY AUTONOMOUS FROM THE CAPITAL STRUCTURE OF UTILICORP UNITED?

A. No. Missouri Public Service is an operating division of UtiliCorp United and, therefore, has no market-tested capital structure of its own. The capital structure proposed by the Company in this proceeding is simply the capital configuration that UtiliCorp assigned to MPS after the completion of a study designed to measure the "proper" capital requirements for each of its divisions. However, it is UtiliCorp that must raise additional capital for all of its operating divisions, including Missouri Public Service. MoPub does not issue any form of capital by itself. Investments in the assets of the division are made by UtiliCorp through funds acquired by the issuance of long-term debt, short-term debt, preference stock and common equity.

As stated, investors cannot invest directly in Missouri Public Service, but must instead invest in the consolidated entity, UtiliCorp. While investors are cognizant of the fact that MoPub is a division of UtiliCorp and, as such, plays an important role in shaping UtiliCorp's profitability, cash flows, and risk characteristics, they are quite aware that common stock, preference stock, and long-term debt are only

available at the consolidated level. In addition, it is the cash flows, earnings potential, and equity structure of UtiliCorp that potential investors will analyze when considering the purchase of either debt or equity instruments issued by the entity to raise capital.

To further illustrate this point, the following statement was taken from the Company's Minimum Filing Requirements submitted as part of this proceeding, "Missouri Public Service is assigned long-term debt from UtiliCorp United Inc." Moreover, the following statement, related to MoPub's short-term debt requirements, is also part of the Minimum Filing Requirements:

> Missouri Public Service, as a division of UtiliCorp United Inc., receives support for its operations through the corporate entity's access to capital markets. Therefore, Missouri Public Service does not maintain it's own bank lines of credit. UtiliCorp United, Inc. maintains lines of bank credit to support its own activities and the short-term requirements of Missouri Public Service.

In addition, the Company also states, "Permanent financing plans are not projected on a divisional basis. UtiliCorp United Inc. provides financing for all of its divisions."

Q. HOW IS UTILICORP UNITED PRESENTLY CAPITALIZED?

A. At March 31, 1993, UtiliCorp's capital structure consisted of 42.32 percent common equity, 4.89 percent preferred and preference stock, and 52.79 percent long-term debt. The percentage of long-term debt in

the capital structure is inclusive of current maturities of long-term obligations.

Q. IS THIS CURRENT CAPITAL STRUCTURE CONSISTENT WITH HOW UTILICORP UNITED HAS BEEN CAPITALIZED IN THE PAST?

A. Yes. Schedule (2) shows UtiliCorp's capitalization amounts and percentages, including short-term debt, since 1982. As can be seen, the Company's common equity ratio has varied between a low of 28.50 percent in 1985 and a high of 40.40 percent in 1988. Also shown in Schedule (2) is the Company's yearly return on average common equity; yearly market-to-book ratios; yearly pre-tax total interest coverage ratios; and yearly earnings, dividends, and book value per share.

Q. HOW DOES UTILICORP'S CURRENT CAPITAL STRUCTURE COMPARE WITH THAT OF OTHER ELECTRIC/GAS UTILITY COMPANIES?

A. UtiliCorp's capital structure is not drastically different from the industry averages. For example, the average equity ratio for the 44 Combination Electric & Gas Utilities covered by the C.A. Turner Utility Reports was just 45 percent in May, 1993. Further, the average equity ratio for the 60 Electric Companies covered by C.A. Turner was 42 in May, 1993. In addition, Composite Statistics for the Electric Utility Industry provided by Value Line show an average equity ratio of 44.50 percent in 1993 and a projected equity ratio of 44.50 percent and 46 percent in 1994 and 1996-98 respectively.

Q. DO YOU RECOMMEND THE ADOPTION OF UTILICORP'S CURRENT CAPITAL STRUCTURE FOR PURPOSES OF SETTING RATES IN THIS PROCEEDING?

A. I do not recommend the use of UtiliCorp's actual capital structure for the purpose of setting rates charged to MPS's customers. One very important reason forms the basis for my decision to recommend the adoption of a hypothetical capital structure and cost of common equity based on two groups of "comparable" companies.

UtiliCorp is a diversified utility company with substantial non-regulated operations. As such, UtiliCorp financial data incorporates the risk/return characteristics of its non-regulated subsidiaries, as well as the risk/return characteristics of its regulated electric and gas divisions. To approve of the use of UtiliCorp's actual capital structure for the purpose of determining the charges borne by Missouri ratepayers implies the accepted use of UtiliCorp's stock price and embedded long-term debt cost data.

To include the embedded cost rates for all of UtiliCorp's long-term debt in the cost of capital calculation for Missouri Public Service does not represent the best interests of the Company or Missouri ratepayers. Nor does it represent the best interests of either the Company or the ratepayers to include UtiliCorp's stock price data in the Discounted Cash Flow Model used to determine the appropriate cost of common equity.

Q. PLEASE PROVIDE AN EXAMPLE THAT DEMONSTRATES WHY UTILICORP'S COMMON EQUITY DATA SHOULD NOT BE INCORPORATED INTO THE COST OF CAPITAL ANALYSIS THAT WILL ULTIMATELY DETERMINE THE CHARGES BORNE BY MISSOURI RATEPAYERS.

A. One needs to look no further than to the recent debacle that occurred at the Company's Aquila Energy subsidiary to find a dramatic example of the whammy that could be inflicted upon Missouri ratepayers if UtiliCorp-specific data is employed in a Missouri jurisdictional cost of capital analysis.

Last year, UtiliCorp officials revealed that it would be necessary for the Company to take an $11.6 million pre-tax charge against earnings ($7.4 million after taxes) due to the misappropriation of approximately $21.6 million in funds by two employees at the Aquila Energy subsidiary. The losses were the result of improper payments made by the two former employees of the UtiliCorp subsidiary in connection with oil and gas acquisitions in Texas, Oklahoma and offshore in the Gulf of Mexico. In addition to the $0.21 per share originally written off, another $6.1 million ($3.9 million after tax) charge against earnings was confirmed on October 29, 1992. This loss is recognized in the September 1992 financial statements.

The news of this misappropriation caused the Company's stock price to fall from $27 per share to $22 per share before rebounding later in the year. As stated in the Company's 1992 Annual Report (p.4), "The trading price of UtiliCorp common shares fell nearly 21 percent within

two days of [the] announcement." If we assume that investors' expectations regarding the current dividend payment stayed the same (roughly $1.60) as news relating to this mishap unfolded, the current dividend yield rose from 5.90 percent before news of the scandal was made public to 7.30 percent after investors had time to react to these tragic events. This, of course, demonstrates a dramatic impact on the investors' required rate of return; the variable regulators must accurately measure in order to properly set the rates ultimately borne by the consumer. In fact, assuming the growth rate remained unchanged, this shift in stock price reflects a 140 basis point change in the cost of equity capital.

There is no doubt the unfortunate occurrence at the Aquila subsidiary was an isolated event. However, it emphasizes a very important fact: Missouri jurisdictional operations (i.e., Missouri Public Service) are not subject to the same level of risk as UtiliCorp (a diversified company with substantial non-regulated businesses). In addition, even though the events last year at Aquila are not likely to be repeated, it is a fact that Aquila's operations (being non-regulated and subject to strong competition) are more risky than the operations of Missouri Public Service (a regulated utility). Further, it is impossible to estimate the impact that Aquila's operations (or any of UtiliCorp's other diversified operations for that matter) have on UtiliCorp's stock price. As such, Missouri ratepayers deserve to be shielded from the adverse consequences that could result from using UtiliCorp's financial data

(i.e., stock price) in estimating the capital costs for Missouri Public Service.

Q. YOU STATED THAT MISSOURI RATEPAYERS DESERVE TO BE SHIELDED FROM THE EFFECTS THAT NON-REGULATED OPERATIONS, SUCH AS UTILICORP'S AQUILA SUBSIDIARY, HAVE ON THE COST OF CAPITAL. HOW DOES THIS COMMENT RELATE TO STATEMENTS MADE BY COMPANY WITNESS DUNN IN HIS DIRECT TESTIMONY BEGINNING ON PAGE 45, LINE 6?

A. Mr. Dunn states on page 45 of his direct testimony, "The use of a division capital structure insulates and separates each of the existing divisions from the other activities of UtiliCorp (and the activities of other divisions and subsidiaries)." Mr. Dunn goes on to say,

> The importance of this insulating effect was demonstrated in the unfortunate occurrences at Aquila. While Aquila has had some financial and accounting problems related to a very small group of employees, those difficulties have been totally confined to Aquila as a result of the insulation of the accounting system and capital structure process.

However, it is not the adoption of UtiliCorp's capital assignment procedure that will ultimately protect Missouri ratepayers from the actions of UtiliCorp's non-regulated subsidiaries. In addition, it is not the use of unnecessarily high cost of equity capital recommendations in rate proceedings involving UtiliCorp's regulated operations that will shield Missouri ratepayers from events such as the Aquila debacle. Instead, it is the exclusion of UtiliCorp's financial data (i.e., stock

price) from a cost of capital analysis that will ultimately protect Missouri ratepayers from the more risky non-regulated operations of UtiliCorp United. Thus, while Mr. Dunn and I are in full agreement that Missouri ratepayers deserve to be shielded from negative consequences stemming from UtiliCorp's non-regulated operations, we do not agree on the mechanism that actually accomplishes this objective.

OPC PROPOSED CAPITAL STRUCTURE AND COST RATES

Q. PLEASE DESCRIBE THE ANALYSIS YOU PERFORMED IN ORDER TO DEVELOP AN APPROPRIATE CAPITAL STRUCTURE AND CAPITAL COST RATE THAT ACCURATELY REPRESENTS THE OPERATIONS OF MISSOURI PUBLIC SERVICE.

A. I have performed a type of "pure play" or "comparative" company analysis that is very similar to the analysis performed by UtiliCorp and described by Company witness Dunn in his Direct testimony beginning on page 22, line 14.

As Mr. Dunn points out, the objective of a "pure play" analysis is to develop a group of companies whose operations are very similar in nature so that reasonable operational and financial characteristics for that "line of business" can be determined. In this case, the objective was to develop a group of electric/gas utilities with operating and financial characteristics similar to Missouri Public Service (i.e., no significant diversified or non-regulated operations) in order to determine a

reasonable capital structure and cost of common equity for use in this proceeding.

This type of "pure play" or "comparative" company analysis is not substantially different from the "similar sample group" approach that is a part of virtually all cost of capital studies. The "pure play" technique, like the "similar sample group" approach, yields a more accurate determination of the appropriate capital structure or cost of equity capital than does the analysis of data from one individual company since it can reduce the probability of an error of estimation (i.e., the difference between an estimated value and the true value).

Like the "similar sample group" approach, the "pure play" method is based upon the economic concept of "opportunity cost", which maintains that the true cost of owning an asset is the best available alternative use of the funds that were used to purchase the asset. The "opportunity cost" principle is consistent with the fundamental principle of utility regulation - that it is intended to act as a surrogate for competition.

In addition, the "pure play" or "comparative" technique, like the "similar sample group" approach, is consistent with the concepts promulgated in the Bluefield and Hope cases. Specifically, these cases established the comparable earnings standard (i.e., a utility is entitled to a return similar to that being earned by other enterprises with similar risks) and the financial integrity/capital attraction standard. By looking to the results of similar companies, the "pure play" approach embraces both the

comparable earnings standard and the financial integrity/capital attraction standard detailed in Bluefield and Hope by creating results that will ultimately allow a utility to earn a return that insures both financial soundness and the ability to attract new capital.

Q. DOES YOUR CAPITAL STRUCTURE ANALYSIS FOCUS PRIMARILY ON ELECTRIC/GAS UTILITIES EVEN THOUGH IT IS JUST GAS RATES BEING SET IN THIS PROCEEDING?

A. Yes. I believe that it is still most appropriate to look to "comparable" electric/gas utilities to develop the correct ratemaking capital structure, as opposed to looking at average equity ratios for the gas distribution industry. The reasoning behind this methodology, as in Case No. ER-93-37, parallels the objective of both cases, which is to develop an appropriate ratemaking capital structure for Missouri Public Service, which is primarily an electric utility.

According to the Company's 1992 Annual Report (p.4), 88 percent of MPS's total 1992 revenues were derived from electric operations, with 12 percent coming primarily from gas operations. This relationship between electric and gas revenues is very similar to the level of electric and gas revenues sustained by the eleven "pure play" or "comparative" companies ultimately used in this analysis to develop the appropriate ratemaking capital structure. As can be seen on Schedule (4), approximately 86 percent of revenues for the eleven "comparative" companies were derived from electric operations, with the remaining 14 percent coming primarily from gas operations. Consequently, the

average revenue breakdown for the companies used to establish the appropriate ratemaking capital structure in this proceeding is almost identical to the revenue mix for Missouri Public Service. Furthermore, since these same companies were used to establish the hypothetical capital structure in the electric rate case (and as such, their gas operations impacted the derived capital structure), I believe that it is most appropriate to incorporate them into the analysis again.

Q. PLEASE EXPLAIN HOW YOU DEVELOPED A GROUP OF UTILITIES WITH OPERATIONS SIMILAR TO MISSOURI PUBLIC SERVICE SO THAT AN APPROPRIATE CAPITAL STRUCTURE COULD BE DETERMINED.

A. Please see Appendix E, attached to this Direct testimony.

Q. WHAT EQUITY RATIOS ARE INDICATED BY THE "COMPARABLE" COMPANIES?

A. As shown in Schedule (4), the average common equity ratio for the eleven "comparable" utilities averaged 48.09 percent for the years 1989 to 1992 and to date in 1993. The standard deviation, also shown in Schedule (5), is 3.84 percent. The interval about the mean that falls within plus or minus one standard deviation is 44.25 percent to 51.93 percent. In my opinion, this equity ratio range represents a "zone of reasonableness" for utilities with operating characteristics similar to Missouri Public Service.

Q. COULD YOU PLEASE EXPLAIN THE SIGNIFICANCE OF THE RANGE THAT FALLS WITHIN PLUS OR MINUS ONE STANDARD DEVIATION OF THE MEAN?

A. The standard deviation of a set of (n) measurements can be defined as the square root of the population variance - which, in turn, is defined as the average of the squares of the deviations of the individual measurements about their mean. By definition, approximately 68 percent of the measurements in a data set fall within plus or minus one standard deviation of the mean.

Q. WHY DO YOU BELIEVE THAT 44.25 PERCENT TO 51.93 PERCENT REPRESENTS A "ZONE OF REASONABLENESS" FOR THE COMMON EQUITY RATIOS OF THE COMPANIES WITH OPERATING CHARACTERISTICS SIMILAR TO MISSOURI PUBLIC SERVICE?

A. It is a well accepted tenant of financial theory that every financial manager should strive for the optimal or most efficient capital structure. For most purposes, the optimal capital structure is defined as the combination of long-term and short-term debt, preferred stock, and common equity that minimizes the weighted average or overall cost of capital. For all firms, finding the optimal capital structure helps ensure that shareholder wealth is maximized. It also helps ensure survival. For public utilities, finding this optimal capital structure both maximizes the wealth of current shareholders and affords the consumer an opportunity to secure the lowest utility rates.

Unfortunately, it is difficult for financial managers to pinpoint with exacting precision the optimal capital structure. Over the years, many theories have been proposed in an attempt to quantify the process of determining the most efficient mix of debt and equity but the findings have been varied.

What has come to be known as the tradeoff models, however, have a great deal of intuitive appeal and some empirical support (Brigham & Gapenski, p.191). According to the tradeoff models, each firm should set a target capital structure which balances the costs and benefits of leverage because such a structure will minimize the overall cost of capital and maximize the value of the firm. That is, the optimal capital structure is found by balancing the lower cost rates and tax shield benefits of leverage against the increased risk and financial distress associated with excessive long-term debt.

Since common stock shareholders are last in line for payment and because common stock is, under most circumstances, more risky than long-term debt, common equity is generally a more expensive form of capital than long-term debt. Not only does long-term debt have a lower cost rate than common equity, interest on long-term debt is also tax deductible. So, for example, while it takes only one dollar of net earnings before taxes to pay one dollar of interest on a bond, it takes $1.56 before taxes to earn one dollar net on common equity after payment of 36 percent combined state and federal corporate tax.

Consequently, it is a generally believed that long-term debt provides substantial cost of capital reductions due to the lower cost rate and tax deductibility of interest payments. As stated, there is, however, an optimal level of debt financing. Financial distress places limits on debt usage - that is, beyond some point, these costs offset the lower cost rate and tax advantages of debt.

As stated, it is difficult to quantify with exacting precision the costs and benefits of debt financing, and hence it is very difficult to determine the exact capital structure that minimizes the weighted average cost of capital. However, according to Brigham and Gapenski (p.198) relatively large deviations from the optimum can occur without materially affecting the value-maximizing qualities of a given capital structure. This is because the relationship between the degree of leverage and the overall cost of capital is relatively stable. In other words, a firm can, over time, incur varying levels of leverage without significantly altering the weighted average cost of capital. Therefore, it is not surprising that firms with similar operating characteristics can and do have varying degrees of leverage in their capital structures.

Consequently, it is generally believed the optimal capital structure for a set of companies with similar risk characteristics actually exists as a range of debt vs. equity tradeoffs or as a "zone of reasonableness." Thus, for purposes of setting rates in this proceeding, it is reasonable to assume that, if MoPub were a separate and distinct entity (which as a division of UtiliCorp it is not), the capital structure that would 1)

allow the Company to achieve earnings similar to those being earned by other utilities with corresponding risks and 2) enable the Company to efficiently attract and maintain capital would actually fall within a "zone of reasonableness."

Q. WHAT EQUITY RATIO HAVE YOU UTILIZED IN THE DEVELOPMENT OF A WEIGHTED AVERAGE COST OF CAPITAL FOR MISSOURI PUBLIC SERVICE?

A. Since UtiliCorp's actual capital structure at March 31, 1993 contains only 42.32 percent common equity, I believe it is appropriate to bump this equity ratio up to the low end of the range that falls within plus or minus one standard deviation of the "comparative" mean. Therefore, I am recommending the appropriate equity ratio be set at 44.25 percent for this proceeding. As discussed earlier, since UtiliCorp actually finances MPS's assets with a capital structure that only contains 42.32 common equity, I believe that it is both fair and reasonable to set MoPub's hypothetical capital structure at the low end of the "zone of reasonableness" established by analyzing the capital structures of the eleven "pure play" companies; a zone that, by definition, incorporates approximately 68 percent of the data points. To set MoPub's ratemaking capital structure at any point above the low end of developed range would be unnecessary.

Q. WHAT PERCENTAGE OF PREFERENCE STOCK HAVE YOU INCORPORATED INTO THE HYPOTHETICAL CAPITAL STRUCTURE?

A. Schedule (5) shows the average level of preferred stock contained in the capital structures of the "comparative" companies. As shown, preferred stock represents, on average, 5.94 percent of the total capital for the eleven companies. Consequently, this is the level of preference stock I have adopted in this cost of capital study. It should be noted that this value (5.94%) falls very close to the level of preference stock actually on the books of UtiliCorp United (4.89%).

Q. WITH WHAT CAPITAL STRUCTURE DO YOU RECOMMEND RATES BE SET FOR MISSOURI PUBLIC SERVICE IN THIS PROCEEDING?

A. The following table shows the capital structure I have proposed for use in setting rates for the gas operations of Missouri Public Service:

	PERCENT
COMMON STOCK	44.25%
PREFERENCE STOCK	5.94%
LONG-TERM DEBT	49.81%

Q. WHAT IS THE APPROPRIATE COST RATE FOR PREFERENCE STOCK?

A. The cost of preference stock, found on the first page of Schedule (6), is 9.13 percent.

Q. WHAT LONG-TERM DEBT EMBEDDED COST RATE DO YOU RECOMMEND FOR USE IN ESTABLISHING RATES IN THIS PROCEEDING?

A. Schedule (6) also shows my analysis of the appropriate embedded cost of long-term debt at March 31, 1993. As shown on the second and third

pages of Schedule (6), the appropriate embedded cost rate (8.711%) is based on a method that: 1) allocates all long-term debt issued by MPS prior to the formation of UtiliCorp United and still outstanding at March 31, 1993 to the hypothetical capital structure for MPS; 2) excludes all long-term debt on the books of companies that ultimately became operating divisions or subsidiaries of UtiliCorp United; 3) determines the embedded cost of all long-term debt issued after the formation of UtiliCorp; and 4) applies this cost rate to the remaining debt levels used in the hypothetical capital structure.

Q. PLEASE EXPLAIN FURTHER THIS CALCULATION OF THE EMBEDDED COST RATE FOR LONG-TERM DEBT.

A. As stated, the first step in my analysis of the appropriate embedded cost of long-term debt at was to assign all of the first mortgage debt and other debt that was on the books of Missouri Public Service prior to the formation of UtiliCorp and outstanding at March 31, 1993 to the hypothetical capital structure I am recommending for adoption in this proceeding. The cost rate for this long-term debt can be found at the top of the second page of Schedule (6) to be 7.365 percent.

The second step in my analysis was to identify which long-term debt securities, outstanding at March 31, 1993, were issued and on the books of companies that ultimately became operating divisions or subsidiaries of UtiliCorp United. This debt was eliminated from the MoPub embedded cost of long-term debt analysis.

It should be noted that the Company also believes these debt securities should be excluded from the embedded cost of debt analysis for Missouri Public Service. Specifically, the Company has not included any of these debt securities in the embedded cost of long-term debt analysis contained in the Minimum Filing Requirements. In addition, Company witness Dunn states the following on page 42 of his direct testimony, "..some long-term debt on the consolidated balance sheet was assumed as a part of the acquisition of Michigan Gas Utilities. That long-term debt was not available to finance any of the properties now under construction by Missouri Public Service Company or any other division or subsidiary." Witness Dunn goes on to say, "..the long-term debt used in financing properties in Canada is absolutely precluded under current circumstances from flowing to the United States to finance properties constructed for utility customers in the United States."

Like Company witness Dunn, the Office of Public Counsel believes, in this instance, long-term debt originally on the books of companies that ultimately became operating divisions or subsidiaries of UtiliCorp United should not be included in the calculation of the embedded cost of long-term debt that is ultimately used to determine the charges borne by Missouri ratepayers.

Q. DOES THIS CONCLUDE YOUR EMBEDDED COST OF LONG-TERM DEBT STUDY?

A. No. As witness Dunn points out in his Direct testimony, the consolidated balance sheet of UtiliCorp United contains not only the issues of long-

term debt that were originally on the books of companies ultimately acquired by UtiliCorp United, but also contains long-term debt capital issued subsequent to the formation of UtiliCorp United. Under the current procedure, Missouri Public Service is assigned long-term debt from UtiliCorp United based upon requests by the operating division for debt financing. Witness Dunn states on page 30 of his Direct testimony, "The debt assigned is the division's request as a percent of all division requests applied to the amount of long-term debt actually issued by UtiliCorp."

Q. HOW DOES YOUR ANALYSIS PROCEED?

A. The next step in my embedded cost of debt study was to calculate the embedded cost of all current long-term debt securities issued after to the formation of UtiliCorp. This calculation is found at the bottom of the second page of Schedule (6) to be 9.081 percent. This embedded cost rate is then applied to the percentage of long-term debt in MoPub's hypothetical capital structure not already accounted for by debt issued prior to the formation of UtiliCorp.

Q. HOW DID YOU COMBINE THE COST RATE FOR DEBT ISSUED BY MOPUB PRIOR TO THE FORMATION OF UTILICORP UNITED AND THE COST RATE FOR LONG-TERM DEBT ISSUED SUBSEQUENT TO THE FORMATION OF UTILICORP?

A. The third page of Schedule (6) contains the calculation of this cost rate (8.711%) at March 31, 1993. As shown, I have calculated the percentage of long-term debt in MoPub's appropriate ratemaking capital structure

that was actually on the books of Missouri Public Service prior to the formation of UtiliCorp United (21.569%). Next, I calculated the percentage of long-term debt in the hypothetical capital structure that was issued subsequent to the formation of UtiliCorp (78.431%). Finally, as shown in Schedule (6), I calculated the "weighted average" cost of long-term debt for Missouri Public Service. As stated, this cost rate is 8.711 percent.

COST OF EQUITY CAPITAL

Q. WHY IS THE DETERMINATION OF AN APPROPRIATE COST OF EQUITY CAPITAL COMMONLY A POINT OF CONTENTION IN RATE PROCEEDINGS?

A. The cost of senior capital, such as long-term debt or preferred stock, is fixed by contractual agreement between the seller and purchaser of the security and is, therefore, usually identified with relative ease. Ultimately, the cost rates for these contractually fixed obligations are determined in the capital markets and by general economic forces. Therefore, these cost rates are not subject to regulatory control.

While the determination of the cost of debt and preferred stock is relatively uncomplicated, the determination of the appropriate cost of equity capital is more difficult to obtain since no fixed rate of return agreement exists between a utility and its common stockholders. Since equity holders share in the residual that remains from revenues after expenses, including interest, are paid, there is no contractual

commitment, either expressed or implied, as to the level of future earnings or dividends. While the cost of common equity is ultimately determined by market forces, the regulatory body must decide the allowed rate of return on this capital component by establishing investors' return expectations.

In recent years, the Discounted Cash Flow Model, or DCF Method, has become the most popular technique for establishing the cost of common equity, and is generally accepted by most state and federal public utility commissions (Bonbright, Danielsen & Kamerschen, 1988, p.317). Bonbright et al. (p.318) have found that virtually all cost of capital witnesses use this method, and most of them consider it their primary technique.

DISCOUNTED CASH FLOW MODEL

Please see Appendix F, attached to this Direct testimony for a review of DCF principles and methodologies.

Q. IS THE DISCOUNTED CASH FLOW MODEL INHERENTLY CAPABLE OF ADJUSTING APPROPRIATELY FOR THE LEVEL OF REAL OR PERCEIVED RISKINESS TO A GIVEN SECURITY?

A. Yes. It is impossible for any one analyst to systematically interpret the impact that each and every risk variable facing an individual firm has on the cost of equity capital to that firm. Fortunately, this type of risk-by-risk analysis is not necessary when determining the appropriate

variables to be plugged into the DCF formula. As stated earlier, the DCF Model can correctly identify the cost of equity capital to a firm by adding the current dividend yield (D/P) to the correct determination of investor-expected growth (g). Thus, the difficult task of determining the cost of equity capital is made easier, in part, by the relative ease of locating dividend and stock price information and the efficient nature of the capital markets.

Q. PLEASE EXPLAIN THAT STATEMENT.

A. The DCF Model is based on the assumption that investors (1) calculate intrinsic values for stocks on the basis of their interpretation of available information concerning future cash flows and risk, (2) compare the calculated intrinsic value for each stock with its current market price, and (3) make buy or sell decisions based on whether a stock's intrinsic value is greater or less than its market price.

Only if its market price is equal to or lower than its intrinsic value as calculated by the marginal investor will a stock be demanded by that investor. If a stock sells at a price significantly above or below its calculated intrinsic value, buy or sell orders will quickly push the stock towards market equilibrium. The DCF Model takes on the following form when used by investors to calculate the intrinsic value of a given security,

$$\hat{P} = D/k-g$$

where $\hat{P}$ = the intrinsic value of the security,

D = the current dividend,

g = the expected growth rate, and

k = the required return on the security

Since the required rate of return for any given investor is based on both the perceived riskiness of the security and return opportunities available in other segments of the market, it can be easily demonstrated that when perceived riskiness is increased, the investors' required return is also increased, and the market value of the investment falls as it is valued less by the marginal investor. Returning to the form of the DCF model used to determine the cost of equity capital to the firm,

$$k = D/P + g$$

we see that the required return (cost of capital) rises as an increase in the perceived risk associated with a given security drives the price down. Within this context, the DCF formula incorporates all known information, including information regarding risks, into the cost of equity capital calculation.

Q. IS THE "EFFICIENT MARKET" HYPOTHESIS SUPPORTED IN THE FINANCIAL LITERATURE?

A. Yes. According to Melicher (1979, p.326), modern investment theory maintains that the U.S. capital markets are efficient and, at any point in time, the prices of publicly traded stocks and bonds reflect all available information about the underlying form. "Furthermore, as new

information is provided, security prices are characterized by instantaneous or rapid adjustment." This implies that, at any given time, security prices reflect "real" or intrinsic values.

This point is further clarified by Cohen, Zinbarg & Zeikel (p.13). According to Cohen et.al,

> The market is assumed to be efficient in modern financial theory because it consists of a large number of rational, profit-seeking, risk-averting investors. They compete freely with each other in estimating the future value of individual stocks. Since any new change affecting a given stock is quickly known throughout the entire investment community, it is therefore rapidly reflected in the price of the stock to which it relates. Under these circumstances, one would expect judgements about the price of a given stock emerging from the data, and from other resources of any one analyst or investor, to be roughly the same as or close to the valuations of other investors who have quickly learned of developments affecting the stock. Thus, the market is said to be efficient because it quickly incorporates any new change or event affecting the value of the security. The efficient-market theory, therefore, holds that, at any given time, the price of a stock represents its best valuation since all factors affecting it would have been taken into consideration.

Q. PLEASE IDENTIFY THE MOST COMMONLY NOTED GROWTH RATE PARAMETERS (g) THAT ARE USED IN THE DCF MODEL TO MEASURE INVESTORS' EXPECTATIONS.

A. Three basic methods are commonly used to estimate the investor-expected growth rate to be utilized in the DCF Model: 1) the calculation of historical growth rates, 2) the interpretation of analysts' forecasts of expected growth rates, and 3) the determination of sustainable or retention growth.

There are three commonly employed historic growth rate parameters that can be used to estimate investor-expected growth: 1) earnings per share, 2) dividends per share, and 3) book value per share growth. In addition, analysts' forecasts of future earnings, dividends, or book value growth can be used to estimate the growth expected by investors.

The retention growth rate, or intrinsic growth rate, is attributed to Dr. Gordon. Because it is critical to understand the actual sources of dividend growth when developing a sustainable growth rate recommendation, the retention growth rate technique is an inherently attractive growth rate methodology. This method is based on the reality that future dividends will be generated by future earnings. The source of the growth in future dividends is derived from reinvesting earnings back into the firm rather than paying them out in dividends. The retention growth rate method estimates future growth based on the percentage of earnings retained by the firm and the historic or projected rate of return on book equity. Additionally, the retention growth rate methodology accounts for external growth in dividends by measuring investor-expected growth stemming from the sales of additional common stock at prices above book value.

Q. YOU STATED THAT IT IS IMPORTANT TO UNDERSTAND THE ACTUAL SOURCES OF INVESTOR-EXPECTED GROWTH WHEN DEVELOPING A SUSTAINABLE GROWTH RATE RECOMMENDATION. PLEASE EXPLAIN THE ACTUAL SOURCE OF DIVIDEND GROWTH.

A. To understand how investors develop a growth rate expectation, it is helpful to look at an illustration that shows how expected growth is measured. To do this, assume that a hypothetical utility has a first period common equity or book value per share of $20, the investor-expected return on that equity is 12% and the stated company policy is to pay out 50% of earnings in dividends. The first period earnings per share are expected to be $2.40 ($20/share book equity x 12% equity return) and the expected dividend is $1.20. The amount of earnings not paid out to shareholders ($1.20), referred to as retained earnings, raises the book value of the equity to $21.20 in the second period. The table on the following page continues the hypothetical for a three year period and illustrates the underlying determinants of growth:

	Year 1	Year 2	Year 3	Growth
Book Value	$20.00	$21.20	$22.47	6.00%
Equity Return	12.00%	12.00%	12.00%	
Earnings/Sh.	$2.40	$2.54	$2.67	6.00%
Payout Ratio	50.00%	50.00%	50.00%	
Dividend/Sh.	$1.20	$1.27	$1.34%	6.00%

As can be seen, under steady-state conditions, earnings, dividends and book value all grow at the same rate. Moreover, key to this growth is the amount of earnings retained or reinvested in the firm and the return on that new portion of equity. If we let "b" equal the retention ratio of the firm (or 1-the payout ratio) and let "r" equal the firm's expected

return on equity, the DCF growth rate "g" (also referred to as the sustainable growth rate) is equal to their product, or

$$g = br.$$

As shown in the example, the growth rate for the hypothetical company is 6.00% (12% ROE x 50% retention rate = 6.00%).

Dr. Gordon, who is generally credited with developing the Discounted Cash Flow Model and was the first to introduce it into the regulatory arena, has determined that this equation embodies the underlying fundamentals of growth and, therefore, is a primary measure of growth to be used in the DCF model (Gordon, 1974, p.81). It should be noted, however, Dr. Gordon's research also indicates that analysts' growth rate projections are useful in estimating investor-expected growth. As a result, analysts' published growth rate projections are also considered in this analysis for the purpose of reaching an accurate estimation of the expected sustainable growth rate.

Q. CAN THE RETENTION GROWTH RATE MODEL BE FURTHER REFINED IN ORDER TO BEST REPRESENT INVESTORS' EXPECTATIONS?

A. Yes. The above hypothetical does not allow for the existence of external sources of equity financing (i.e., sales of common stock at prices above book value). Stock financing will cause investors to expect additional growth if the company is expected to issue new shares at a market price which exceeds book value. The excess of market value over book value

would benefit current shareholders by increasing their per share equity value. Therefore, if the company is expected to continue to issue stock at a price that exceeds book value, the shareholders would continue to expect their book value to increase and would add that growth expectation to that stemming from earnings retention or internal growth.

On the other hand, if a company is expected to issue new equity at a price below book value, that would have a negative effect on shareholders' current growth rate expectations. Finally, with little or no expected equity financing or a market-to-book ratio near one, investors would expect the sustainable growth rate for the company to exactly equal the growth from earnings retention or internal growth. Dr. Gordon identifies the growth rate which includes both expected internal and external financing as,

$$g = br + sv$$

where,

g = DCF expected growth rate,

r = return on equity,

b = retention ratio,

v = fraction of new common stock sold that accrues to the current shareholder, and

s = funds raised from the sale of stock as a fraction of existing equity.

Additionally,

$$v = 1 - BV/MP$$

where,

MP = market price,

BV = book value.

The second term (sv), which represents the external portion of the expected growth rate, does not normally represent a major source of growth when compared to the expected growth attributed to the retention of earnings. For example, the FERC Generic Rate of Return model has estimated the (sv) component in the range of 0.1% to 0.2%. Thus, for purposes of this analysis, the formula is reduced to (br) with 0.15% added to represent the external source of growth (sv).

Q. IN THE PREVIOUS EXAMPLE, EARNINGS PER SHARE GREW AT THE SAME RATE AS THE RETENTION GROWTH RATE. IS THE HISTORIC OR PROJECTED GROWTH RATES IN EARNINGS, THEREFORE, APPROPRIATE FOR DETERMINING THE DCF GROWTH RATE?

A. No, not always. The growth rate derived from historic or projected earnings per share can be unreliable for ratemaking purposes due to external influences on those parameters such as changes in the earned return on common equity. For example, if we take the hypothetical example previously stated and assume that, in year two, the expected return on equity rises from 10 percent to 15 percent, the resulting growth rates in earnings per share and dividends per share dramatically exceed what the company could sustain indefinitely. The potential error

that can result from exclusive reliance on historic or projected earnings per share growth rates is illustrated in Table (2):

TABLE 2

	Year 1	Year 2	Year 3	Gr.
Book Value	$20.00	$21.20	$22.79	6.75%
Eq. Return	12.00%	15.00%	15.00%	
Earnings/Sh.	$2.40	$3.18	$3.42	19.37%
Payout Ratio	50.00%	50.00%	50.00%	
Dividends/Sh.	$1.20	$1.59	$1.71	19.37%

Due to the change in return on equity in year two, the compound annual growth rate for earnings and dividends is greater than 19 percent, which is the result only of a short-term increase in the equity return rather than the intrinsic ability of the firm to grow continuously at a 19 percent annual rate.

For year one, the sustainable rate of growth (g=br) is 6.00 percent, just as it was in the previous example. On the other hand, in years two and three the sustainable growth rate increases to 7.50 percent (15% ROE * 50% retention rate = 7.50%). Consequently, if the utility is expected to continually earn a 15 percent return on equity and retain 50 percent of earnings for reinvestment, a growth rate of 7.50 percent would be a reasonable estimate of the long-term sustainable growth rate. However, the compound growth rate for earnings and dividends, which is over 19

percent, dramatically exceeds the actual investor-expected growth rate.

As can be seen in the hypothetical, this inflated growth rate is simply the result of the change in return on equity from year one to year two, not the firm's ability to grow sustainably at that rate. Consequently, this type of growth rate cannot be relied upon to accurately measure investors' sustainable growth rate expectations. In this instance, to rely on either earnings or dividend growth would be to assume the return on equity could continue to increase indefinitely. This, of course, is a faulty assumption; the recognition of which, emphasizes the need to analyze the fundamentals of actual growth.

Q. HOW HAVE YOU DETERMINED THE VARIOUS HISTORIC AND PROJECTED DCF GROWTH RATE PARAMETERS FOR THE ELECTRIC/GAS "COMPARABLE" COMPANIES?

A. In addition to looking at Value Line's five and ten-year historic growth rates, I have examined my own calculations of historic growth based on the compound growth rate method. I have also examined both the historic and projected retention growth rates for each of the eleven companies. Additionally, I have looked at projected growth rates published by Value Line and I/B/E/S. As detailed in Schedule (7), pages 1-11, the following growth rate parameters have been analyzed for each of the eleven electric/gas "comparative" companies: 1) the historic compound growth rate in earnings per share, dividends per share, and book value per share; 2) the average of Value Line's five and ten-year historic growth rates in earnings, dividends, and book value; 3) the

projected growth rate in earnings per share, dividends per share, and book value per share; 4) the historic retention growth rate; and 5) the projected retention growth rate.

Each of the eleven pages contained in Schedule (7) contains information on only one "comparative" company. For example, the first page of Schedule (7) contains only the growth rate parameters for CIPSCO Inc. Continuing the example, the second page of Schedule (7) contains only the growth rate calculations for Central Louisiana Electric, etc..

As stated, the historic growth in earnings, dividends, and book value were calculated in two different ways. First, the compound growth rate method was used to calculate the growth in earnings, dividends and book value for the five-year periods ending 1990, 1991, 1992. These three five-year growth rates were then averaged. This figure, for each company and for each of the three historic growth parameters discussed (EPS, DPS, BVPS), can be found in the middle of each page of Schedule (7).

Second, the average of Value Line's five and ten-year historical growth computations for earnings per share, dividends per share, and book value per share (found just below the average five-year compound growth rates) have been calculated in order to add further reliability to the historical growth estimations. Value Line's historic growth calculations are employed for the following reasons: 1) the Value Line growth rates reflect both a five and ten-year time frame; 2) the Value

Line growth rates are readily available for investor use; and 3) the Value Line rates of change are measured from an average of three base years to an average of three ending years, thus, smoothing the results and limiting the impact of nonrecurring events.

Value Line's projected growth rates in earnings, dividends, and book value, for each of the "comparative" companies, are included in Schedule (7), at the bottom of each page. Value Line's projected growth in earnings per share has been averaged with the I/B/E/S mean projected earnings growth in order to best reflect information that is readily available to the average investor.

The calculation of the historic retention growth rate for each of the eleven electric/gas "comparables" can be found on the upper right side of each page contained in Schedule (7). This growth rate was calculated by multiplying the average earned return on equity by the fraction of earnings retained in each year beginning in 1988 and ending in 1992.

However, as mentioned previously in this testimony, an investors' sustainable growth rate analysis does not end upon the determination of the internal growth rate stemming from earnings retention. Investors' expectations regarding growth from external sources (sales of additional stock at prices above book value) must also be determined. As stated earlier, the FERC Generic Rate of Return Model estimates the (sv) component to fall within the range of 0.1 to 0.2 percent. Therefore, I

have chosen to take the midpoint (0.15%) and add this amount to the (b*r) component calculated for each of the eleven companies.

Finally, projected growth, using the retention growth rate method, has been calculated for each company. These figures are derived by multiplying the projected earned return on equity times the projected retention ratio (taken from Value Line) with the same external growth factor added to represent investor-expected growth driven from the future sale of stock at prices above book value.

Q. PLEASE SUMMARIZE THE HISTORIC AND PROJECTED GROWTH RATES FOR THE ELEVEN ELECTRIC/GAS "COMPARATIVE" COMPANIES.

A. Schedule (8), consisting of two pages, summarizes the growth rates for the electric/gas "comparables." The following growth rate parameters, calculated for each of the eleven companies, are summarized in this Schedule: 1) the historic annual compound growth rate in earnings per share, dividends per share, and book value per share; 2) the average of Value Line's five and ten-year historic growth rates in earnings, dividends, and book value per share; 3) the projected growth rate in earnings per share, dividends per share, and book value per share; 4) the historic retention growth rate; and 5) the projected retention growth rate.

It should be noted that several of the historic growth rate parameters found on page (1) of Schedule (8) originally fell below 2.50 percent. However, each asterisk found beside the growth rate parameters listed

on page (1) of Schedule (8) indicates growth calculations that originally fell below, but have subsequently been raised to, 2.50 percent. This adjustment has been made as a conservative mechanism that helps ensure the reasonableness of the calculated growth rates and raises the final result. Page (2) of Schedule (8) contains the calculated growth rate parameters before this adjustment was made. As can be seen, adjusting the "low" historic growth rate parameters to a minimum of 2.50 percent has the effect of raising the average historical growth rates. The following table outlines the results of the growth rate study for the electric/gas "comparables" summarized in Schedule (8):

	Compound Hist'c Gr.	Value Line Hist'c Gr.	Projected Growth
EPS	2.97%	3.68%	3.03%
DPS	3.37%	3.61%	2.77%
BVPS	3.83%	3.75%	3.09%

	Hist'c Gr.	Proj'd Gr.
(BR+SV)	3.69%	3.42%

These results (also found at the bottom of Schedule 8) indicate that a relatively tight band of growth rate parameters exists for the eleven "comparative" companies. In fact, nine of the eleven growth rate parameters calculated in this cost of equity capital study fall within the range of 3.03 to 3.83 percent. The only two growth rate parameters that do not fall within the range 3.03 to 3.83 percent (i.e., historic earnings

growth and projected dividend growth rate) actually fall below this relatively tight band of investor-expected growth calculations.

Q. WHICH GROWTH RATE PARAMETERS DO YOU CONSIDER TO BE MOST REFLECTIVE OF THE GROWTH RATE APPROPRIATE FOR THE ELECTRIC/ GAS "COMPARATIVE" COMPANIES?

A. In my opinion, the growth rate range 3.61 to 3.83 percent best represents investor-expected growth for the eleven "comparable" companies. The low end of this range (3.61%) is based on the historic growth rate in dividends; calculated as the average of Value Line's five and ten-year growth rates. I chose Value Line's historic growth rate in dividends over the results of the compound growth rate calculation simply because Value Line's calculations produce a higher end result.

The high end of this range (3.83%) is the historic growth rate in book value per share for the eleven companies. Again, I chose this growth rate over the historic or projected retention growth rate simply as a conservative mechanism that helps support the reasonableness of my recommended cost of equity. It should be noted that the following growth rate parameters for the eleven companies fall within the range that I believe represents investor expected growth and, therefore, are inherently included in the established growth rate range: 1) Value Line's compound growth in earnings per share; 2) Value Line's compound growth rate in book value per share; and 3) the historic retention growth rate. The remaining growth rate parameters fall below the range that I have set forward for the "comparative" electric/gas utilities.

Q. HAVE YOU ALSO CALCULATED THE COST OF EQUITY FOR A "COMPARATIVE" GROUP OF GAS DISTRIBUTION COMPANIES?

A. Yes. Even though the eleven electric/gas "comparables" have, on average, a revenue mix very similar to Missouri Public Service, I believe it is reasonable, in this instance, to examine the returns currently being required from investments in regulated gas distribution utilities. Accordingly, I have calculated the current cost of equity capital for a representative group of local distribution companies.

Q. WHAT UTILITIES ARE INCLUDED IN YOUR GAS DISTRIBUTION "COMPARATIVE" GROUP?

A. Witness Dunn, on Schedule 4 of his Direct testimony, lists fourteen gas distribution companies (LDC's), described on page 50 as, "...a reasonably homogenous group of local distribution companies. The companies reflect the characteristics of reasonably sized, publicly traded, well known LDC's..." These companies, also listed on Schedule (9) of this Direct testimony, fairly represent, in my opinion, the typical healthy, high quality gas distribution company. Consequently, I have adopted this group of LDC's for my cost of equity analysis. Schedule (9), details some key operating and financial characteristics for each company.

Q. HOW HAVE YOU DETERMINED THE VARIOUS HISTORIC AND PROJECTED DCF GROWTH RATE PARAMETERS FOR THE NATURAL GAS DISTRIBUTION "COMPARABLE" COMPANIES?

A. I have calculated the historic and projected growth rate parameters for the LDC's in a manner virtually identical to that used for the electric/gas "comparative" group. As shown in Schedule (10), pages 1-14, the following growth rate parameters have been analyzed for each of the gas distribution "comparative" companies: 1) the historic compound growth rate in earnings per share, dividends per share, and book value per share; 2) the average of Value Line's five and ten-year historic growth rates in earnings, dividends, and book value; 3) the projected growth rate in earnings per share, dividends per share, and book value per share; 4) the historic retention growth rate; and 5) the projected retention growth rate.

The historic annual compound growth rates for earnings, dividends and book value, as they appear in Schedule (10), pages 1-14, reflect the average of the compound growth rates for the five-year periods ending 1990, 1991, and 1992. The Value Line historic growth rates for each company and for each growth rate parameter discussed (EPS, DPS, and BVPS) reflect the average of five and ten-year growth rates. The projected growth in dividends and book value for each LDC are determined solely by Value Line; whereas, the projected growth in earnings reflects an average of Value Line's projected growth and the mean projected growth determined by I/B/E/S.

The historic retention growth for each company has been calculated using an average of historic earned returns on equity multiplied by the appropriate retention ratio, while projected retention growth has been

determined with information on future earned returns and earnings retention provided by Value Line. Both the historic retention growth rates and the projected retention growth rates incorporate a factor used to represent investor-expected external growth (i.e., growth stemming from the sales of additional stock at prices above book value).

Q. PLEASE SUMMARIZE THE HISTORIC AND PROJECTED GROWTH RATES FOR THE FOURTEEN NATURAL GAS DISTRIBUTION COMPANIES.

A. Schedule (11), consisting of two pages, summarizes the growth rates for the LDC "comparables." It should be noted that several of the historic growth rate parameters found on page (1) of Schedule (11) originally fell below 2.50 percent. However, each asterisk found beside the historic growth rate parameters listed on page (1) of Schedule (11) indicates growth calculations that originally fell below, but have subsequently been raised to, 2.50 percent. As was the case for the electric/gas "comparables," this adjustment has been made as a conservative mechanism that helps ensure the reasonableness of the calculated growth rates. Page (2) of Schedule (11) contains the calculated growth rate parameters before this adjustment was made. As can be seen, adjusting the historic growth rate parameters to a minimum of 2.50 percent has the effect of raising average historical growth.

The following table outlines the results of the growth rate study for the LDC "comparables" summarized in Schedule (11):

	Compound Hist'c Gr.	Value Line Hist'c Gr.	Projected Growth
EPS	2.86%	3.32%	6.39%
DPS	4.48%	5.05%	3.32%
BVPS	4.32%	4.21%	4.25%

	Hist'c Gr.	Proj'd Gr.
(BR+SV)	2.91%	4.08%

Q. IS THE SOLE RELIANCE ON PROJECTED GROWTH RATES IN EARNINGS PER SHARE, IN THIS INSTANCE, AN APPROPRIATE BASIS FOR DETERMINING THE COST OF EQUITY FOR THE LDC "COMPARABLES?"

A. No. The highest calculated growth parameter for the fourteen "comparative" LDC's is the projected growth rate in earnings (calculated as the average of Value Line's projected earnings growth and the I/B/E/S mean projected growth). However, as discussed previously in this testimony, projected earnings growth, used alone, is not an appropriate parameter for use in the DCF equation, in this instance, because it overstates the growth rate which could reasonably be expected to be sustained by these companies.

The exaggerated nature of the projected earnings estimates is the result of considerably higher projected earned returns on equity over the next

three-to-five years, as compared to those currently being earned by the LDC's. This projected increase in the return on equity inflates the projected growth estimates since they only represent growth in earnings through 1996-98, as opposed to the sustainable growth rate investors expect over the long haul.

As shown in Schedule (13), Value Line is projecting substantially higher earned returns on equity in '96-98 than are currently being earned by the fourteen "comparative" LDC's. As shown in Schedule (13), the 1993 average earned returns on equity for the LDC's is expected to be 11.96 percent. However, Value Line is projecting earned equity returns for these companies to average 13.29 percent in '93-96. Thus, the projected growth rate in earnings could only be expected to continue if we could assume that equity returns are capable of increasing indefinitely; an unlikely scenario.

Consequently, while earnings projections may have an impact on investors' growth rate expectations, investors, in general, do not rely solely on projected earnings growth alone in determining their return requirements for gas distribution companies. Additionally, it should be noted that the growth rate I will ultimately recommend for use in the DCF equation is actually higher than either the projected growth in dividends or book value for the fourteen LDC's, but lower than the projected growth in earnings.

Q. WHICH GROWTH PARAMETERS DO YOU CONSIDER TO BE MOST REFLECTIVE OF THE INVESTOR-EXPECTED GROWTH FOR THE LDC "COMPARATIVE" COMPANIES?

A. While it appears that most investors do not expect future growth rates in dividends per share to match historic dividend growth, I believe the historic growth in dividends does have some degree of impact on investors' growth rate expectations. The fact that investors are not expecting future dividend growth to match historic dividend growth is evidenced by Value Line's projected growth rates in dividends per share, found on Schedule (11-1) to average 3.32 percent. This rate is a full 1.45 percentage points below average historical dividend growth.

Projected retention growth is substantially higher than historic retention growth. This reflects the fact that investors are indeed expecting future historic returns on equity to be above average earned returns over the last several years. Consequently, projected retention growth appears to be more representative of investors' expectations than historic retention growth.

As previously discussed, projected earnings growth is well above historic growth in earnings per share. Historic book value growth, on the other hand, is nearly identically to the average projected growth in book value per share.

In my opinion, given the current relationships between historic and projected growth rates, investors are expecting growth to fall in the

range that: 1) on the low end, is defined by average historic dividend growth (4.48%+5.05% = 9.53%/2 = 4.77%); and 2) on the high end, is defined by the average of projected earnings and dividends per share growth (6.39% + 3.32% / 2 = 4.86%). There is, however, evidence that investors' growth expectations for the gas distribution industry are indeed lower than either 4.77 or 4.86 percent. The following statements are taken from the Gas Utilities Update published by A.G. Edwards:

> On a long-term basis, we believe earnings growth will be approximately 2.50% annually.

> Dividend growth is expected to be below earnings growth for several years to lower dividend payout levels and then stabilize around 2.50% on a long-term basis.

> Declining interest rates have led to lower returns on equity as allowed by state regulators. In response, many LDC's have begun to slow the rate at which they raise their common dividends. We expect this trend to continue in future years, even under the assumption of stable interest rates.

Q. DOES THIS CONCLUDE THE GROWTH RATE PORTION OF YOUR DCF ANALYSIS?

A. Yes, it does.

DIVIDEND YIELD

Q. PLEASE EXPLAIN YOUR CALCULATION OF THE APPROPRIATE DIVIDEND YIELD FOR BOTH THE ELECTRIC/GAS AND LDC "COMPARABLE" COMPANIES.

A. Schedule (12) contains my calculations of the expected dividend yield for both the electric/gas "comparables" and the gas distribution "comparables." As shown in Schedule (12), I have actually computed two different dividend yields for both the electric/gas and gas distribution "comparable" companies.

The first dividend yield calculation is based on the FERC generic rate of return measure developed for electric utilities. The Federal Energy Regulatory Commission (FERC) developed the following form of the DCF Model as part of its generic rate of return proceedings:

$$k = Do\ (1+0.5g)/Po + g$$

where, Do = dividends per share in period o (i.e., current dividends per share),
Po = current stock price, and
g = investor-expected sustainable growth in dividends per share.

The results from applying this methodology, for the electric/gas and LDC "comparables," can be found in column (4) Schedule (12).

As detailed in column (1), the determination of the current stock price was calculated as the average stock price over the twelve week period beginning February 5, 1993 and ending April 23, 1993. I have adopted a twelve week period because I believe that period of time is long enough to avoid daily fluctuations and recent enough so the stock price captured during the study period is representative of current investor expectations.

Column (2) of Schedule (12) lists the most recent quarterly dividends paid by each company utilized in this analysis. Column (3) was calculated by annualizing the quarterly dividends (i.e., current quarterly dividends multiplied by four) and adding to that annualized dividend 1/2 the estimated growth rate. In accordance with the FERC Model, this adjusted annual dividend is then divided by the average stock price shown in column (1). The results, found in column (4), indicate the average dividend yield for the eleven electric/gas "comparables" of 5.71 percent. The average dividend yield for the LDC's, as shown on Schedule (12) is 5.34 percent.

Even though I believe dividend yield determined through the application of the FERC Model is the most appropriate measure to employ in a DCF analysis, I have included an additional measure of the dividend yield. Column (5) shows Value Line's year-ahead estimated dividend yield. This dividend yield is calculated by Value Line as the estimated total of cash dividends to be declared over the next 12 months, divided by the recent price. Thus, this figure represents the yield an investor could

expect during the fist twelve months of ownership. Using this methodology, produces an average dividend yield for the electric/gas "comparables" of 5.61 percent. The average dividend yield for the LDC's is 5.18 percent.

DCF COST OF EQUITY

Q. WHAT IS THE RESULTING DCF COST OF EQUITY CAPITAL FOR THE ELECTRIC/GAS AND GAS DISTRIBUTION "COMPARABLES" BASED ON THE PREVIOUSLY DETERMINED DIVIDEND YIELDS AND GROWTH RATES?

A. The following table outlines my estimation of the appropriate rate of return on common equity for the eleven electric/gas "comparable" companies:

Dividend Yield	Growth	Cost of Equity
5.71%	3.61%	9.32%
5.71%	3.83%	9.54%

As shown in the next table, the cost of equity for the fourteen natural gas distribution "comparables" is slightly higher:

Dividend Yield	Growth	Cost of Equity
5.34%	4.77%	10.11%
5.34%	4.86%	10.20%

Q. WHAT COST OF EQUITY CAPITAL DO YOU RECOMMEND FOR ADOPTION IN THIS PROCEEDING?

A. In my opinion, a cost of equity capital of 10.20 percent should be used to establish rates in this proceeding. Since the common stock ratio I am recommending for adoption in this proceeding falls at the low end of the "zone of reasonableness" I believe that, in this instance, it is appropriate to use the high-end DCF cost of equity in order to compensate for any increased risk that might follow from the use of a capital structure set at the low end of the "zone of reasonableness."

MARKET-TO-BOOK ANALYSIS

Q. IS THERE A MARKET-RELATED MEASURE OF CURRENT UTILITY EQUITY COSTS THAT SUBSTANTIATES THE REASONABLENESS OF YOUR RECOMMENDED RETURN ON EQUITY FOR MISSOURI PUBLIC SERVICE?

A. Yes. The current ratio of market price to book value per share for both groups of "comparative" companies used to determine the cost of equity capital in this proceeding provide a solid indicator that an equity capital cost of 10.20 percent is reasonable for Missouri Public Service.

The "comparable" companies employed in this analysis to determine a reasonable cost of equity for Missouri Public Service have a current market price-to-book ratio greater than one (1.90 for the electric/gas utilities and 1.85 for the natural gas distribution companies - Schedule 13) because investors expect these companies to earn a return on book

value which is greater than their cost of capital. If investors expected the eleven electric/gas "comparables" to earn a return between 12.41 and 13.32 percent (as projected by Value Line), then the actual cost of equity must be substantially below these levels or investors would not be willing to provide a market price above book value; most certainly not a price that is 190 percent of book value. Further, if investors expected the fourteen natural gas distribution "comparables" to earn a return between 11.96 and 13.29 percent (as projected by Value Line) then investors again would not be willing to provide a market price substantially above book value.

This is due to the fact that equity returns are allowed and earned on book value. Investors are aware of this fact when they make their buy and sell decisions in the open market. Thus, when these investors are willing to pay a price substantially above book value, the investors' required rate of return must be below the level of earned or expected returns.

Q. IS THERE SUPPORT IN THE FINANCIAL LITERATURE FOR THE RELATIONSHIP BETWEEN MARKET-TO-BOOK RATIOS AND THE INVESTORS' REQUIRED RATE OF RETURN?

A. Yes. Not only does the financial community recognize the relationship between market-to-book ratios and the cost of equity capital, as demonstrated previously in this testimony, the market-to-book ratio and its relationship to required rates of return is also supported in the financial literature.

In his seminal book, The Cost of Equity Capital to a Public Utility, (1974), Dr. Gordon explains the relationship between market price, book value, allowed (expected) return on equity, and the cost of equity capital for a public utility. According to Dr. Gordon, when the market-to-book ratio is greater than (equal to, less than) one, the ratio of the allowed (or expected) rate of return to the cost of capital is greater than (equal to, less than) one. In other words, if the market prices are greater than book value, the market price-to-book ratio exceeds one and the expected book equity returns exceed the actual cost of equity capital.

A simple example will help illustrate Dr. Gordon's point. Assume that a utility has a book value of equity capital of $10 per share and that, for simplicity, this utility pays out all its earnings in dividends. If regulators allow the utility a 12% return on that equity, investors will expect the company to earn (and pay out) $1.20 per share. If investors require a 12% return on this investment, they will be willing to provide a market price of $10 per share for this stock ($1.20 dividends/$10 market price = 12% required return). In that case, the allowed/expected return (12%) is equal to the cost of capital (investors' required return, 12%), and the per share market price is equal to the book value.

Now, assume the investor-required return (utility's cost of equity capital) is only 10%. Investors would be drawn to a utility stock in a risk class for which they require a 10% return but which was expected to pay out a 12% return. This increased demand by investors would result in an

increase in the market price of the stock until the total share yield equaled the investors' required return. In our example, that point would be $12 per share ($1.20 dividends/$12 market price = 10% required return). In that case, the allowed/expected return (12%) is greater than the required return (10% - the cost of equity capital) and the per share market price ($12/share) exceeds the book value ($10/share) producing a market-to-book ratio greater than one ($12/$10 = 1.20).

Q. CAN MARKET-TO-BOOK RATIOS BE UTILIZED, WITHIN THE BASIC CONCEPTS OF DCF METHODOLOGY, TO ESTIMATE THE COST OF EQUITY CAPITAL?

A. Yes. The Market-To-Book (M/B) Method is a derivative of the DCF Model that compensates for inequalities between market price and book value per share. The M/B formula is derived from the standard DCF formula as follows:

$$P = D/(k-g) \qquad \text{(Eq.1)}$$

In order to derive the M/B formula, we can recognize that the dividend (D) is equal to earnings (E) times the earnings payout ratio, or one minus the retention ratio (b), or

$$D = E(1-b) \qquad (2)$$

Substituting (2) into (1) reveals the following:

$$P = \frac{E(1-b)}{(k-g)} \qquad (3)$$

Earnings (E) are equal to the return on equity (r) times the book value of that equity (B). Substitution reveals the following:

$$P = \frac{rB(1-b)}{(k-g)} \qquad (4)$$

Dividing both sides of (4) by book value (B) and noting that g = br+sv yields the following:

$$\frac{P}{B} = \frac{r(1-b)}{k-br-sv} \qquad (5)$$

Finally, solving (5) for the cost of equity (k) yields the M/B formula:

$$k = \frac{r(1-b)}{P/B} + br + sv \qquad (6)$$

Additionally, (br+sv) can be restated as (g).

Equation (6) indicates the cost of equity can be calculated as the expected return on equity multiplied by the payout ratio, divided by the market-to-book ratio, plus growth. Schedule (14) shows the results obtained from applying this methodology to both the electric/gas and LDC "comparative" companies. The results for the electric/gas

"comparable" companies, found on page (1) of Schedule (14), were derived by using Value Line's current-year projections and by using Value Line's projections for '96-98. As shown, the average cost of equity, using this methodology, is 9.13 and 9.09 percent, based on current-year and 3-5 year projections, respectively. The average cost of equity for the gas distribution companies is 9.68 and 9.62 percent, based on current-year and 3-5 year projections, respectively.

WEIGHTED AVERAGE COST OF CAPITAL

Q. WHAT WEIGHTED AVERAGE COST OF CAPITAL IS INDICATED BY YOUR ANALYSIS?

A. The weighted average cost of capital computed for the gas operations of Missouri Public Service using a cost of common equity of 10.20 percent is 9.39 percent (See Schedule 15). This overall cost rate is based on: 1) an embedded cost of long-term debt of 8.71 percent; 2) a cost of preference stock of 9.13 percent; 3) a cost of common equity of 10.20 percent; and 4) a hypothetical capital structure consisting of 44.25 percent common equity, 5.94 percent preference stock, and 49.81 percent long-term debt.

This is the weighted average cost of capital that I believe is consistent with the principles established in Bluefield and Hope by allowing MPS both the opportunity to earn a fair rate of return on the capital employed and the ability to sustain and attract capital on a reasonable basis. In addition, I believe this rate is in agreement with the Public Service

Commission Act passed by the Missouri General Assembly by promoting both efficient facilities and substantial justice between MPS's ratepayers and the Company.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

APPENDIX A

DEVELOPMENT & PURPOSES OF REGULATION

Q. WHY ARE PUBLIC UTILITIES SUCH AS MPS REGULATED?

A. Due to the necessity of utility services, regulation is generally considered to be a necessary outgrowth of the provision of such services. In fact, public utilities are generally considered to be firms "deeply affected with the public interest" and "dedicated to the public use." According to Dr. Gordon, a well respected author generally credited with developing the Discounted Cash Flow technique and first to introduce it into the regulatory arena:

> It may be inefficient to allow two or more firms to compete in the production or distribution of goods and services such as electricity, water, gas, and telecommunications. Consequently, either the government provides the product or a private firm is given an exclusive franchise subject to regulation by a government agency. Regulation, which protects the consumer against monopoly pricing by the firm, includes control over the prices the utility charges for it products (Gordon, 1974, p.1).

Since it is generally agreed the nature of public utility services requires a monopolistic mode of operation, only a limited number of companies (and quite often only one) are normally allowed to provide a particular utility service in a specific geographic area. (Hahne & Aliff, p.1-10). Consequently, public utilities are often referred to as "natural" monopolies; a state created by such powerful economies of scale or scope

that only one firm can or should provide a given service (Samuelson & Nordhaus, p.522).

In order to secure the benefits arising from monopolistic operations, utilities are awarded a franchise (or certificate of public convenience) by the appropriate governmental body. This franchise gives the utility an exclusive right to provide a particular service in a specified area. Since an exclusive franchise generally protects the firm from the effects of competition, it is critical that governmental control over the rates and services provided by public utilities is exercised. Consequently, a primary objective of utility regulation is to produce market results that closely approximate the conditions that would be obtained if utility rates were determined in a competitive atmosphere (Parcell, p. 1-5). Therefore, it is widely accepted that regulation should protect consumers against unreasonable pricing, restriction of output, and deterioration of service.

Based on this competitive standard, utility regulation must secure safe and adequate service and establish rates sufficient to provide the utility with the opportunity to cover all reasonable costs, including a fair rate of return on the capital employed. In this way, the interests of the company are protected while society is afforded the opportunity to reap a portion of the benefits accruing from the economies of scale and limited competition that exists within the utility arena (Parcell, p. 1-3). It is this philosophy that has provided the foundation for the public utility regulatory process in the United States.

APPENDIX B

CALCULATING THE WEIGHTED AVERAGE COST OF CAPITAL

Q. HOW IS THE OVERALL COST OF CAPITAL USED IN A TRADITIONAL RATEMAKING APPROACH?

A. The basic standard of rate regulation is the revenue requirement standard, often referred to as the rate base-rate of return standard. Simply stated, a regulated firm must be permitted to set rates which will cover operating costs and provide an opportunity to earn a reasonable rate of return on the property devoted to the business. Thus, a utility's total revenue requirement can be expressed as the following formula:

$$R = O + (V - D + A)r$$

where R = the total revenue required,

O = cost of operations,

V = the gross value of the property,

D = the accrued depreciation,

A = other rate base items, and

r = the allowed rate of return/weighted average cost of capital.

This formula indicates that the process of determining the total revenue requirement for a public utility involves three major steps. First, allowable operating costs must be ascertained. These include all types of operating expenses (wages, fuel, maintenance, research, etc.) plus annual charges for depreciation and operating taxes. Second, the net

or depreciated value of the tangible and intangible property, or net investment in the property, of the enterprise must be determined. This net value, or investment (V - D), along with other allowable items is referred to as the rate base.

Finally, a "fair rate of return" or overall cost of capital must be determined. This rate, expressed as a percentage, is multiplied by the rate base in order to arrive at the fair return component of the firm's revenue requirement. The weighted average cost of capital (WACC) is applied to the rate base (V-D+A) since it is recognized that the rate base is financed with the capital structure and these two items are normally very similar in size.

The allowed rate of return or weighted average cost of capital component (r) is typically defined as follows:

$$r = i(D/C) + l(P/C) + k(E/C)$$

where i = embedded cost of debt capital,

D = amount of debt capital,

l = embedded cost of preferred stock,

P = amount of preferred stock,

k = cost of equity capital,

E = amount of equity capital, and

C = amount of total capital.

This formula indicates that the process of determining the weighted average cost of capital involves separate determinations for each type of capital utilized by a utility. Under the weighted cost approach, a utility company's total invested capital is expressed as 100 percent and is divided into percentages that represent the capital secured by the issuance of long-term debt, preferred or preference stock, common stock, and sometimes short-term debt.

This division of the corporate capital by reference to its major sources permits the analyst to compute separately the cost of both debt and equity capital. The cost rate of each component is weighted by the appropriate percentage that it bears to the overall capitalization. The sum of the weighted cost rates is equal to the overall cost of capital and is used as the basis for the fair rate of return that is ultimately applied to rate base.

APPENDIX C

LEGAL REQUIREMENT FOR A FAIR RATE OF RETURN

Q. IS THERE A JUDICIAL REQUIREMENT RELATED TO THE DETERMINATION OF THE APPROPRIATE RATE OF RETURN FOR A REGULATED UTILITY?

A. Yes. The criteria established by the U.S. Supreme Court closely parallels economic thinking on the determination of an appropriate rate of return under the cost of service approach to regulation. The judicial background to the regulatory procedure for determining capital costs is largely contained in two seminal decisions handed down in 1923 and 1944. These decisions are:

Bluefield Water Works and Improvement Company v. Public Service Commission, 262 U.S. 679 (1923), and

FPC v. Hope Natural Gas Co., 320 U.S. 591 (1944)

These decisions have been recognized and supported by this Commission. In the Bluefield, the Court specifically stated:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in

> other business undertakings which are attended by corresponding risks and uncertainties; but has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time, and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally.

This case, along with Hope, established the following standards for a fair rate of return:

1) Comparable earnings - a utility is entitled to a return similar to that being earned by other enterprises with similar risks;

2) Financial integrity - a utility is entitled to a return reasonably sufficient to assure financial soundness;

3) Capital attraction - a utility is entitled to a return sufficient to support its existing credit and raise new capital;

4) Changing level of returns - a fair return can change along with economic conditions and capital markets.

In addition to these points, the Court also makes quite clear in Hope that regulation does not guarantee utility profits and, in Permian Basin, 390 US 747 (1968), that, while investor interests (profitability) are certainly pertinent to setting adequate utility rates, those interests do not exhaust the relevant considerations.

APPENDIX D

REGULATION IN MISSOURI

Q. WHAT IS THE ORIGIN AND RATIONALE FOR THE REGULATION OF PUBLIC UTILITIES IN THE STATE OF MISSOURI?

A. All investor-owned public utilities operating in the state of Missouri are subject to the Public Service Commission Act, as amended. The Public Service Commission Act was initially passed by the Forty-Seventh General Assembly on April 15, 1913. (Laws of 1913 pp.557-651, inclusive). In State ex rel Kansas City v. Kansas City Gas Co. 163 S.W. 854 (Mo.1914), the case of first impression pertaining to the Public Service Commission Act, the Missouri Supreme Court described the rationale for the regulation of public utilities in Missouri as follows:

> That act (Public Service Commission Act) is an elaborate law bottomed on the police power. It evidences a public policy hammered out on the anvil of public discussion. It apparently recognizes certain generally accepted economic principles and conditions, to wit: That a public utility (like gas, water, car service, etc.) is in its nature a monopoly; that competition is inadequate to protect the public, and, if it exists, is likely to become an economic waste; that regulation takes the place of and stands for competition; that such regulation to command respect from patron or utility owner, must be in the name of the overlord, the state, and, to be effective, must possess the power of intelligent visitation and the plenary supervision of every business feature to be finally (however invisible) reflected in rates and quality of service. (Kansas City Gas Co. at 857-58).

The General Assembly has determined that the provisions of the Public Service Commission Act "shall be liberally construed with a view to the public welfare, efficient facilities and substantial justice between patrons and public utilities" (See: 386.610 RSMo 1978). Pursuant to the above legislative directive, when developing the cost of equity capital for a public utility operating in Missouri, it is necessary do so with a view toward the public welfare, giving the utility an amount that will allow for efficient use of its facilities and allow for the proper balance of interests between ratepayers and the utility.

APPENDIX E

OPC PROPOSED CAPITAL STRUCTURE

Q. PLEASE EXPLAIN HOW YOU DEVELOPED A GROUP OF UTILITIES WITH OPERATIONS SIMILAR TO MISSOURI PUBLIC SERVICE SO THAT AN APPROPRIATE CAPITAL STRUCTURE COULD BE DETERMINED.

A. My analysis, originally developed in Case No. ER-93-37 (MoPub's electric rate case), begins with a look at the publicly traded electric and electric/gas utilities covered by Value Line. Each of these companies are contained in one of the following three Value Line sections: electric utility industry (east); electric utility industry (central); and electric utility industry (west). Together, these three sections represent the Composite electric and electric/gas utility industry covered by Value Line.

All of the utilities initially considered in the analysis of "comparable" companies were required to have S&P bond ratings that were BBB+ or greater. In order to properly develop a group of market-traded companies that would be an appropriate surrogate for the operations Missouri Public Service (which has no market-tested financial data), it was necessary to look closely at bond ratings to insure the "comparative" group would correctly reflect companies that are proficient at both sustaining current capital and attracting new capital. Utilities with S&P Bond Ratings of BBB+ or greater are generally able to do both.

This is due to the fact that Standard & Poor's analyzes a variety of factors when assigning bond ratings for public utilities. S&P's utility rating methodology encompasses both qualitative business analysis and quantitative financial analysis. The following business risk factors are considered by Standard & Poor's when assigning debt ratings: markets/competitive position, fuel/power supply, operating efficiency, regulatory treatment, construction risk/asset concentration, non-utility activities, and management. In addition, Standard & Poor's analyzes the following financial risk factors: earnings protection, debt leverage, cash flow adequacy, and financial flexibility/capital attraction.

Therefore, utilities with S&P Bond Ratings of BBB+ or greater generally have adequate cash flows, sufficient coverage ratios, and a healthy total debt to total capital ratio. This means, all else held the same, these companies have higher equity ratios than those companies with S&P bond ratings of BBB or below. Since the primary purpose for the development of this group of "comparable" companies is to develop a hypothetical capital structure for the operations of Missouri Public service, this bond rating criteria can be viewed as a conservative selection mechanism that helps ensure the fairness of the proposed equity ratio.

From this group of BBB+ companies covered by Value Line, I selected only utilities that possessed the following characteristics: no significant diversified or non-regulated operations; no Missouri regulated operations; at least 70 percent of revenues derived from electric

operations; total capital less than $6 billion; and total revenues less than $3.5 billion.

This left the 35 utilities outlined in Schedule (3), pages (1-3). Missouri-regulated utilities were eliminated in order to negate any circularity problems that might exist from using utilities that have their allowed rate of return established by the Missouri Public Service Commission. As can be seen from this Schedule, the average common equity ratio for this group of predominantly mid-sized, non-diversified, electric and electric/gas utilities ranged from 44.06 percent to 45.49 percent between 1989 and 1992. In my opinion, this group of utilities fairly represents the mid-sized, non-diversified, electric and electric/gas utility industry.

Q. IS THIS THE GROUP OF UTILITIES YOU USED AS A FAIR AND REASONABLE SURROGATE FOR THE OPERATIONS OF MISSOURI PUBLIC SERVICE?

A. No. My study does not end with the determination of this representative group of electric and electric/gas utilities. The selection criteria have been further refined in order to develop a group of companies that best reflect the operating characteristics of Missouri Public Service and to create a group of companies similar to the "pure play" group used by MPS and described by Company witness John Dunn.

From the group of thirty-five companies, I have eliminated those that are not contained in Value Line's central electric utility industry. Next, I have eliminated those utilities that possess nuclear facilities. The eleven remaining companies are contained in Schedule (4). It should be noted that LG&E Energy Corporation's percent of revenues derived from electric operations has dropped to 67 percent since the filing of Direct testimony in Case No. ER-93-37. However, I believe this change is not significant and that LG&E should still be included in the "comparable" group used to establish the appropriate ratemaking capital structure in this proceeding.

This group of mid-sized, non-diversified, non-nuclear, mid-western electric and electric/gas utilities represent, in my opinion, a fair and reasonable characterization of the total operations of Missouri Public Service.

APPENDIX F

DISCOUNTED CASH FLOW MODEL

Q. PLEASE DESCRIBE THE DISCOUNTED CASH FLOW (DCF) MODEL YOU USED TO ARRIVE AT A DETERMINATION REGARDING THE COST OF EQUITY CAPITAL FOR MISSOURI PUBLIC SERVICE.

A. The basic premise behind the DCF Model is the assumption that the value of any asset can be determined by calculating the present value of all future cash flows at the appropriate risk-adjusted discount rate.

Two fundamental principles are key to the DCF Model. First, the DCF Model is based on the postulate that investors value an asset on the basis of the future cash flows (i.e., dividends and ultimate sale price - for common stocks) they expect to receive from owning the asset.

Under DCF theory, since the price an investor expects to receive at the time of sale is based on the future value of all cash flows from that point forward (i.e., dividends and ultimate sale price), the value of any common stock can be determined as simply the present value of all future dividends discounted at the appropriate risk adjusted rate.

The second DCF principle is based on the assumption that investors view a dollar received in the future as being worth less than a dollar received today, i.e., the "time value of money." The rate used by investors to discount future cash flows to the present is the appropriate risk adjusted

discount rate, comprised of a risk-free real return and a "premium" which is compensation for holding an asset prone to a certain level of risk.

Within this context, the discount rate that creates equality between the present value of the anticipated future dividends and the current market price of the security is defined as the required return demanded by the marginal investor or the cost of common equity capital to the firm.

If dividends are expected to grow at a constant rate (i.e., the constant growth model) and the required rate of return is assumed to be greater than expected growth (a reasonable assumption since a continuous growth rate in excess of the discount rate would produce an infinite present value), the sum of the current dividend yield and the expected growth rate in the dividend equals the required rate of return or cost of equity to the firm. This cost of equity can be represented by the following equation,

$$k = D/P + g$$

where "k" is the cost of equity capital (i.e. investors' required return), "D/P" is the current dividend yield (dividend divided by the stock price) and "g" is the expected sustainable growth rate.

The DCF Model most commonly used in the regulatory arena is known as the Constant Growth or Gordon Model. This Model is based on the following assumptions:

1) A constant rate of growth,
2) The constant growth will continue for an infinite period,
3) Investors require the same return each year,
4) The dividend payout ratio remains constant,
5) The discount rate exceeds the growth rate, and
6) The stock price grows proportionately to the growth rate.

Several studies have shown that these assumptions do not hold in a technical sense (Parcell, 1991). However, the relaxation of these assumptions does not make the model unreliable. For example, as demonstrated in this testimony, informed interpretation of the results of a complete DCF analysis can release the need for a constant payout ratio.

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TUCK-DIRECT
GR-93-172

CASES:

Missouri Cities Water Company; Case Nos. WR-92-207 & SR-92-208.

Missouri Public Service; Case No. ER-93-37.

United Cities Gas Company; Case No. GR-93-37.

St. Joseph Light & Power Company; Case Nos. ER-93-41 & GR-93-42.

SCHEDULE 1

TUCK-DIRECT
GR-93-172

UTILICORP UNITED

HISTORIC FINANCIAL DATA

Capital Component:	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92
Common Equity	30.40%	35.30%	40.00%	28.50%	37.80%	38.90%	40.40%	37.30%	36.70%	36.70%	35.10%
Pref. & Pf'd Stock	12.90%	13.20%	13.00%	7.20%	5.90%	3.70%	4.40%	9.80%	7.50%	5.40%	5.00%
Long-Term Debt	56.20%	50.40%	42.70%	40.50%	50.60%	47.10%	48.50%	44.30%	52.10%	51.70%	47.60%
Short-Term Debt	0.50%	1.10%	4.30%	23.80%	5.70%	10.30%	6.70%	8.60%	3.70%	6.20%	12.30%
Total:	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Return on Equity:	12.96%	17.78%	17.54%	16.24%	13.40%	11.85%	12.85%	11.62%	10.69%	13.32%	6.93%
Market-to-Book Ratio:	83.00%	100.00%	105.00%	111.00%	145.00%	100.00%	122.00%	134.00%	120.00%	149.00%	148.00%
Pre-Tax Total Interest Coverage Ratio:	2.75x	3.66x	4.24x	4.66x	2.45x	2.74x	2.61x	2.41x	2.30x	2.70x	1.88x
Primary Earnings Per Share:	$1.07	1.58	1.74	1.8	1.69	1.64	1.93	1.84	1.77	2.37	1.32
Dividends Per Share:	$0.52	0.59	0.64	0.77	0.87	0.93	1.04	1.42	1.46	1.54	1.60
Book Value Per Share:	$8.48	9.46	10.56	11.79	13.31	14.20	15.49	16.36	17.00	19.18	18.66
Cash Dividend Payout Ratio:	48.70%	37.29%	36.70%	42.56%	51.50%	51.70%	53.89%	77.17%	82.49%	64.98%	121.21%

SOURCE: UTILICORP UNITED CORPORATE PROFILE, MARCH 1993

Schedule 2

MISSOURI PUBLIC SERVICE

ELECTRIC/GAS UTILITY INDUSTRY
EQUITY RATIO ANALYSIS

	% REV. ELEC.	% CAPACITY NUCLEAR	TOTAL CAPITAL $MIL	TOTAL REV. $MIL	S&P BOND RATING	COMMON EQUITY RATIO '89	'90	'91	'92^
ELEC. UTILITY (EAST)									
ALLEGHENY POWER	100.00%	0.00%	3901.70	2315.80	AA-	45.00%	44.00%	44.00%	47.00%
ATLANTIC ENERGY	100.00%	33.00%	1660.30	816.60	A	46.00%	43.00%	44.00%	46.00%
CAROLINA POWER	100.00%	41.00%	5625.10	2692.20	A	44.00%	39.00%	43.00%	43.00%
CENTRAL HUDSON G&E	83.00%	9.00%	918.00	506.10	A-	38.00%	38.00%	39.00%	41.00%
CENTRAL MAINE POWER	100.00%	30.00%	1246.50	884.80	BBB+	39.00%	41.00%	45.00%	45.00%
C. VERMONT PUB. SERV.	100.00%	45.00%	329.20	255.00	BBB+	50.00%	49.00%	51.00%	49.00%
DQE	100.00%	26.00%	2756.40	1209.60	BBB+	35.00%	37.00%	38.00%	40.00%
DELMARVA POWER	88.00%	15.00%	1651.00	842.90	A+	44.00%	41.00%	42.00%	44.00%
GEN'L PUBLIC UTIL	100.00%	19.00%	5276.70	3443.60	A-	43.00%	43.00%	45.00%	45.00%
GREEN MOUNTAIN POW	100.00%	26.50%	186.20	144.30	A-	52.00%	49.00%	46.00%	48.00%
NEW ENGLAND ELECTRI	98.00%	18.00%	3368.10	2119.10	A+	36.00%	39.00%	42.00%	44.00%
NEW YORK STATE E&G	86.00%	7.00%	3667.4	1630.70	BBB+	37.00%	37.00%	41.00%	44.00%
PENNSYLVANIA P&L	100.00%	34.00%	5917.60	2688.20	A	35.00%	37.00%	38.00%	40.00%
POTOMAC ELEC PWR	100.00%	0.00%	4955.20	1593.10	AA-	47.00%	34.00%	38.00%	38.00%
ROCHESTER G&E	72.00%	54.00%	1617.70	877.90	BBB+	38.00%	39.00%	40.00%	38.00%
SCANA CORPORATION	75.00%	22.00%	2123.70	1146.40	A	44.00%	43.00%	43.00%	49.00%
ELEC. UTILITY (CENTRAL)									
*CIPSCO, INC.	82.00%	0.00%	1160.80	724.30	AA+	51.00%	50.00%	51.00%	52.00%
*C. LOUISIANA ELEC.	100.00%	0.00%	720.60	339.90	A	43.00%	45.00%	47.00%	42.00%
*CINCINNATI G&E	76.00%	0.00%	3771.90	1527.00	BBB+	43.00%	42.00%	44.00%	44.00%
*DPL INCORPORATED	79.00%	0.00%	2186.60	1009.60	A	44.00%	48.00%	49.00%	50.00%
ILLONOIS POWER	81.00%	25.00%	3848.10	1488.10	BBB+	33.00%	35.00%	35.00%	38.00%

	% REV. ELEC.	% CAPACITY NUCLEAR	TOTAL CAPITAL $MIL	TOTAL REV. $MIL	S&P BOND RATING	COMMON EQUITY RATIO '89	'90	'91	'92^
ELEC. UTILITY (CENTRAL)									
*INTERSTATE PWR. CO.	83.00%	0.00%	433.50	289.00	A+	43.00%	44.00%	47.00%	45.00%
*IPALCO ENTERPRISES	95.00%	0.00%	1408.50	642.20	AA	50.00%	54.00%	54.00%	56.00%
*KU ENERGY CORP.	100.00%	0.00%	1157.50	583.00	AA	52.00%	53.00%	55.00%	50.00%
*LG&E ENERGY CORP.	71.00%	0.00%	1546.40	753.00	AA	43.00%	44.00%	45.00%	45.00%
NORTHERN STATES PW	86.00%	31.00%	3296.70	2186.70	AA	47.00%	47.00%	48.00%	51.00%
*OTTER TAIL POWER	96.00%	0.00%	342.70	190.50	AA–	52.00%	51.00%	46.00%	48.00%
PSI RESOURCES	100.00%	0.00%	1457.20	1091.40	BBB+	39.00%	43.00%	47.00%	43.00%
*SO. INDIANA G&E	82.00%	0.00%	554.30	312.30	AA	47.00%	47.00%	47.00%	48.00%
*S.W. PUBLIC SERVICE	100.00%	0.00%	1286.60	735.40	AA	48.00%	50.00%	52.00%	52.00%
WISCONSIN ENERGY	84.00%	27.00%	2760.00	1545.50	AA+	52.00%	53.00%	56.00%	55.00%
WISCONSIN P.S.	76.00%	15.00%	787.70	625.10	AA+	54.00%	53.00%	51.00%	51.00%
ELEC. UTILITY (WEST)									
IDAHO POWER	100.00%	0.00%	1417.10	490.90	A+	47.00%	46.00%	45.00%	40.00%
PORTLAND GENERAL	100.00%	5.00%	1891.30	891.60	A–	45.00%	42.00%	43.00%	38.00%
PUGET SOUND P&L	100.00%	0.00%	2362.90	984.70	A–	43.00%	42.00%	44.00%	43.00%
AVERAGE:	91.23%		2216.89	1130.76		44.26%	44.06%	45.29%	45.49%

^ As of October, 1992

* Denotes Companies used in Rate of Return Analysis

SOURCE: C.A. TURNER UTILITY REPORTS

SELECTION CRITERIA:

PUBLICLY TRADED
COVERED BY VALUE LINE
NO MISSOURI REGULATED OPERATIONS
% REVENUES ELECTRIC > 70%
NO DIVERSIFIED OR NON-REGULATED OPERATIONS
TOTAL CAPITAL LESS THAN $6,000 (MIL)
TOTAL REVENUE LESS THAN $3,500 (MIL)
S&P BOND RATING BBB+ OR GREATER

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MISSOURI PUBLIC SERVICE

ELECTRIC & ELECTRIC/GAS UTILITY INDUSTRY
EQUITY RATIO ANALYSIS

COMPANY:	% Revenue Electric	Total Capital $Mil	Operating Revenue $Mil	S&P Bond Rating	'89	'90	'91	'92	'93^	
Cipsco Inc.	81.00%	1206.60	739.90	AA+	51.00%	50.00%	51.00%	52.00%	52.00%	
Central La. Elec.	100.00%	664.00	351.60	A	43.00%	45.00%	47.00%	42.00%	52.00%	
Cincinnati G&E	75.00%	3848.00	1553.40	BBB+	43.00%	42.00%	44.00%	44.00%	44.00%	
DPL Inc.	79.00%	2171.80	1034.40	A	44.00%	48.00%	49.00%	50.00%	47.00%	
Interstate Pwr.Co.	81.00%	441.90	285.30	A+	43.00%	44.00%	47.00%	45.00%	43.00%	
Ipalco Enterprises	95.00%	1426.30	633.20	AA	50.00%	54.00%	54.00%	55.00%	55.00%	
KU Energy Corp.	100.00%	1106.10	576.30	AA	52.00%	53.00%	55.00%	50.00%	53.00%	
LG&E Energy Corp.	67.00%	1546.90	834.70	AA	43.00%	44.00%	45.00%	45.00%	46.00%	
Otter Tail Pwr.	85.00%	371.60	209.50	AA-	52.00%	51.00%	46.00%	45.00%	44.00%	
So.Indiana G&E	79.00%	560.80	305.90	AA	47.00%	47.00%	47.00%	48.00%	48.00%	
S.W. Public Service	100.00%	1305.50	757.40	AA	48.00%	50.00%	52.00%	52.00%	52.00%	
AVERAGE:	85.64%	1331.77	661.96		46.91%	48.00%	48.82%	48.00%	48.73%	48.09%
SELECTION CRITERIA:			STD.DEVIATION		3.68%	3.77%	3.51%	3.91%	4.02%	3.84%

Publicly Traded
No Missouri Regulated Operations
No Nuclear Operations
% Revenue Electric > 70%
Covered by Value Line (Central Industry)
No Significant Diversified or Non-Regulated Operations
Total Capital Less than $6000(mil)
Total Revenues Less than $3500(mil)
S&P Bond Rating BBB+ Or Greater

AVERAGE '89-93 EQUITY RATIO RANGE
(PLUS OR MINUS ONE STD.DEV.) 44.25% - 51.93%

SOURCE: CA TURNER UTILITY REPORTS, APRIL 1993.

Schedule 4

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MISSOURI PUBLIC SERVICE

ELECTRIC AND ELECTRIC/GAS UTILITY INDUSTRY
PREFERRED STOCK RATIO AND COST RATE ANALYSIS

COMPANY:	*TOTAL CAPITAL ($MIL)	^PREF'D STOCK ($MIL)	PREF'D STOCK RATIO	^PREF'D STOCK DIVIDENDS ($MIL)	AVE.COST OF PREF'D STOCK
Cipsco Inc.	$1,206.60	$65.00	5.39%	$3.80	5.85%
Central La.Elec.	664.00	10.10	1.52%	0.40	3.96%
Cincinatti G&E	3848.00	330.00	8.58%	26.00	7.88%
DPL Inc.	2171.80	121.40	5.59%	9.40	7.74%
Interstate Pwr.	441.90	35.30	7.99%	2.90	8.22%
Ipalco Enterprises	1426.30	51.90	3.64%	3.20	6.17%
KU Energy Corp.	1106.10	40.00	3.62%	2.50	6.25%
LG&E Energy Corp.	1546.90	116.70	7.54%	6.30	5.40%
Otter Tail Pwr.	371.60	38.80	10.44%	2.30	5.93%
So.Indiana G&E	560.80	19.60	3.50%	1.30	6.63%
S.W. Public Serv.	1305.50	98.00	7.51%	7.20	7.35%
AVERAGE		$84.25	5.94%	$5.94	6.49%
LESS: 5% ANNUAL COSTS		$4.21			
TOTAL:		$80.04			
		EMBEDDED COST RATE:		$5.94/$80.04	7.42%

* SOURCE: C.A. Turner Utility Reports, April 1993.

^ SOURCE: The Value Line Investment Survey, April 16, 1993.

Schedule 5

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MISSOURI PUBLIC SERVICE

COST OF PREFERENCE STOCK
SEPTEMBER 30, 1992

	Dividend Rate	Stated Value of Issue	Commissions, Costs & Premiums(1)	Net Proceeds	Outstanding Preference Stock	Annual Costs	Weighted Cost of Preference Stock
$2.05 Series, 1,000,000 shares outstanding	8.20%	$25,000,000	$2,547,500	$22,452,500	$25,000,000	$2,050,000	9.13%

(1) Includes underwriter's commissions, issuance expense, and premium for the sale of preference stock.

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MISSOURI PUBLIC SERVICE

COST OF LONG-TERM DEBT; MARCH 31, 1993

	Issue Date	Due Date	Interest Rate	Amount Outstanding	Issue Costs	Net Proceeds	Annual Interest	Cost of Money
Long-Term Debt issued prior to the formation of UtiliCorp								
Series N	03/15/67	03/15/97	6.000%	8,000,000	58,240	7,941,760	480,000	6.044%
Series X	04/15/72	04/15/02	7.875%	5,000,000	14,561	4,985,439	393,750	7.898%
Series Y	04/01/73	04/01/98	7.950%	9,000,000	12,436	8,987,564	715,500	7.961%
Series AA	09/01/76	09/01/96	9.250%	1,989,000	38,380	1,950,620	183,983	9.432%
Series CC	04/01/78	04/01/03	8.625%	9,500,000	79,731	9,420,269	819,375	8.698%
Unsecured P.P.		10/10/99	9.210%	12,500,000	6,782	12,493,218	1,151,250	9.215%
Pledged in Support of Pollution Control Bonds:								
Series BB	07/01/77	07/01/02	6.200%	4,000,000	109,194	3,890,806	248,000	6.374%
Series GG	11/01/83	11/01/95	5.392%	1,250,000	0	1,250,000	67,400	5.392%
Wamego Ser. 1985	11/15/84	11/15/14	2.872%	7,300,000	253,668	7,046,332	209,656	2.975%
Total:				58,539,000	572,992	57,966,008	4,268,914	7.365%
Long-Term Debt issued subsequent to the formation of UtiliCorp								
Series 1 GM BDS	10/15/88	10/15/98	9.875%	63,500,000	775,402	62,724,598	6,270,625	9.997%
Debentures	07/24/86	07/01/11	6.625%	16,369,000	874,739	15,494,261	1,084,446	6.999%
Unsecured P.P.	10/11/89	10/10/99	9.210%	50,000,000	29,458	49,970,542	4,605,000	9.215%
Senior Notes	12/05/90	12/01/95	9.300%	125,000,000	954,277	124,045,723	11,625,000	9.372%
Senior Notes	12/05/90	12/01/20	10.500%	125,000,000	2,365,527	122,634,473	13,125,000	10.703%
Senior Notes	11/25/91	11/15/21	9.000%	150,000,000	3,017,108	146,982,892	13,500,000	9.185%
Senior Notes	01/29/92	01/15/07	8.200%	130,000,000	1,366,065	128,633,935	10,660,000	8.287%
Senior Notes	03/03/93	03/01/23	8.000%	125,000,000	1,955,000	123,045,000	10,000,000	8.127%
AG SW SR Notes	10/16/92	09/15/02	8.290%	100,000,000	1,808,332	98,191,668	8,290,000	8.443%
Total:				884,869,000	13,145,908	871,723,092	79,160,071	9.081%

SOURCE: OPC DATA REQUESTS 704 &705.

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MISSOURI PUBLIC SERVICE; CASE #GR-93-172

EMBEDDED COST OF LONG-TERM DEBT
MARCH 31, 1993

	COMPANY PROPOSED RATE BASE (ER-93-37)	$495,288,345	
	COMPANY PROPOSED RATE BASE (GR-93-172)	$49,579,551	
	TOTAL RATE BASE:	$544,867,896	(1)
X	% LONG-TERM DEBT IN CAPITAL STRUCTURE	49.81%	(2)
EQUALS:	$ LONG-TERM DEBT IN CAPITAL STRUCTURE	$271,398,699	(3)
	$ LONG-TERM DEBT IN CAPITAL STRUCTURE	$271,398,699	
LESS	L-T DEBT ISSUED BY MOPUB PRIOR TO FORMATION OF UTILICORP UNITED	$58,539,000	(4)
EQUALS:	$ L-T DEBT IN MOPUB'S CAPITAL STRUCTURE: ISSUED BY UTILICORP SUBSEQUENT TO FORMATION OF UTILICORP UNITED	$212,859,699	(5)
(4)/(3)	% L-T DEBT IN CAPITAL STRUCTURE ISSUED BEFORE THE FORMATION OF UTILICORP UNITED	21.569%	(6)
(5)/(3)	% L-T DEBT IN CAPITAL STRUCTURE ISSUED SUBSEQUENT TO THE FORMATION OF UTILICORP UNITED	78.431%	(7)
PAGE 1	EMBEDDED COST OF L-T DEBT ISSUED BY MOPUB PRIOR TO THE FORMATION OF UTILICORP UNITED	7.365%	(8)
PAGE 1	EMBEDDED COST OF L-T DEBT ISSUED BY UTILICORP UNITED SUBSEQUENT TO THE FORMATION OF UTILICORP UNITED	9.081%	(9)
(6)*(8)+(7)*(9)	OVERALL COST OF L-T DEBT FOR MISSOURI PUBLIC SERVICE	8.711%	

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CIPSCO, INCORPORATED

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.96	$1.67	$16.60	0.148		
-1987-	1.88	1.88	16.78	0.000		
-1988-	2.35	1.75	17.38	0.255	13.50%	3.45%
-1989-	1.91	1.79	17.52	0.063	10.90%	0.68%
-1990-	1.92	1.83	17.63	0.047	10.00%	0.47%
-1991-	2.11	1.87	17.86	0.114	11.80%	1.34%
-1992-	2.13	1.91	18.08	0.103	11.80%	1.22%
Compound Gr. Rate: '86-90	-0.51%	2.31%	1.52%		Ave. Internal Growth (br):	1.43%
'87-91	2.93%	-0.13%	1.57%		ADD: ^External Growth (sv):	0.15%
'88-92	-2.43%	2.21%	0.99%		Historic "br + sv" Gr.	1.58%
Compound Gr. Rate: AVERAGE	0.00%	1.46%	1.36%			
Value Line Historic Gr.	1.75%	2.00%	2.00%			

				RETENTION	EQUITY	GROWTH
PROJ'D DATA	EPS	DPS	BVPS	RATIO (b)	RETURN (r)	(b*r)
-1993- EST'D	$2.25	$1.95		0.133	12.00%	1.60%
-1994- EST'D	2.30	1.99		0.135	12.50%	1.68%
'96-98 EST'D	2.60	2.17		0.165	13.00%	2.15%
Value Line Proj'd Growth	4.00%	2.50%	2.00%		'96-98 Est'd Growth (br):	2.15%
I/B/E/S Proj'd Growth	2.60%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	3.30%	2.50%	2.00%		Projected "br + sv" Gr	2.30%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

CENTRAL LA. ELECTRIC

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.61	$1.04	$11.97	0.354		
-1987-	1.76	1.07	12.46	0.392		
-1988-	1.80	1.15	13.12	0.361	13.70%	4.95%
-1989-	1.78	1.21	13.74	0.320	12.90%	4.13%
-1990-	1.85	1.27	14.33	0.314	12.90%	4.04%
-1991-	1.92	1.33	14.84	0.307	13.00%	3.99%
-1992-	1.93	1.37	15.38	0.290	12.50%	3.63%
Compound Gr. Rate: '86-90	3.53%	5.12%	4.60%		Ave. Internal Growth (br):	4.15%
'87-91	2.20%	5.59%	4.47%		ADD: ^External Growth (sv):	0.15%
'88-92	1.76%	4.47%	4.05%		Historic "br + sv" Gr.	4.30%
Compound Gr. Rate: AVERAGE	2.50%	5.06%	4.37%			
Value Line Historic Gr.	2.50%	5.50%	5.25%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.85	$1.41		0.238	11.50%	2.74%
-1994- EST'D	1.90	1.45		0.237	12.00%	2.84%
'96-98 EST'D	2.00	1.57		0.215	12.00%	2.58%
Value Line Proj'd Growth	1.00%	3.00%	2.50%		'96-98 Est'd Growth (br):	2.58%
I/B/E/S Proj'd Growth	3.50%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	2.25%	3.00%	2.50%		Projected "br + sv" Gr	2.73%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

CINCINNATI GAS & ELEC.

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$2.25	$1.44	$13.41	0.360		
-1987-	2.71	1.45	13.66	0.465		
-1988-	2.88	1.49	15.29	0.483	18.00%	8.69%
-1989-	2.89	1.53	16.71	0.471	17.10%	8.05%
-1990-	2.75	1.60	17.91	0.418	15.20%	6.36%
-1991-	2.21	1.65	18.70	0.253	11.50%	2.91%
-1992-	2.04	1.65	19.16	0.191	10.60%	2.03%
Compound Gr. Rate: '86-90	5.14%	2.67%	7.50%		Ave. Internal Growth (br):	5.61%
'87-91	-4.97%	3.28%	8.17%		ADD: ^External Growth (sv):	0.15%
'88-92	-8.26%	2.58%	5.80%		Historic "br + sv" Gr.	5.76%
Compound Gr. Rate: AVERAGE	-2.70%	2.84%	7.16%			
Value Line Historic Gr.	5.00%	1.75%	4.50%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.15	$1.66		0.228	11.00%	2.51%
-1994- EST'D	2.25	1.68		0.253	11.00%	2.79%
'96-98 EST'D	2.65	1.84		0.306	11.50%	3.52%
Value Line Proj'd Growth	2.00%	2.50%	3.50%		'96-98 Est'd Growth (br):	3.52%
I/B/E/S Proj'd Growth	2.20%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	2.10%	2.50%	3.50%		Projected "br + sv" Gr	3.67%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

DPL, INCORPORATED

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.36	$0.89	$8.48	0.346		
-1987-	1.60	0.92	8.72	0.425		
-1988-	1.34	0.96	9.09	0.284	14.70%	4.17%
-1989-	1.45	1.00	9.84	0.310	13.60%	4.22%
-1990-	1.49	1.04	10.31	0.302	14.30%	4.32%
-1991-	1.15	1.08	10.38	0.061	11.10%	0.68%
-1992-	1.34	1.08	9.66	0.194	13.90%	2.70%
Compound Gr. Rate: '86-90	2.31%	3.97%	5.01%		Ave. Internal Growth (br):	3.22%
'87-91	-7.92%	4.09%	4.45%		ADD: ^External Growth (sv):	0.15%
'88-92	0.00%	2.99%	1.53%			
Compound Gr. Rate: AVERAGE	-1.87%	3.68%	3.66%		Historic "br + sv" Gr.	3.37%
Value Line Historic Gr.	0.25%	3.25%	3.25%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.40	$1.12		0.200	14.00%	2.80%
-1994- EST'D	1.45	1.16		0.200	14.00%	2.80%
'96-98 EST'D	1.65	1.28		0.224	14.50%	3.25%
Value Line Proj'd Growth	3.50%	3.00%	2.00%		'96-98 Est'd Growth (br):	3.25%
I/B/E/S Proj'd Growth	4.40%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	3.95%	3.00%	2.00%		Projected "br + sv" Gr	3.40%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

INTERSTATE POWER CO.

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$2.05	$1.95	$19.62	0.049		
-1987-	2.00	1.96	18.55	0.020		
-1988-	2.11	1.96	18.70	0.071	11.30%	0.80%
-1989-	2.73	2.00	19.43	0.267	14.10%	3.77%
-1990-	2.56	2.00	20.00	0.219	12.80%	2.80%
-1991-	2.84	2.04	20.80	0.282	13.70%	3.86%
-1992-	1.74	2.08	20.46	-0.195	8.50%	0.00%
Compound Gr. Rate: '86-90	5.71%	0.63%	0.48%		Ave. Internal Growth (br):	2.25%
'87-91	9.16%	1.01%	2.90%		ADD: ^External Growth (sv):	0.15%
'88-92	-4.71%	1.50%	2.27%			
Compound Gr. Rate: AVERAGE	3.39%	1.05%	1.89%		Historic "br + sv" Gr.	2.40%
Value Line Historic Gr.	3.75%	1.75%	1.00%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.90	$2.08		-0.095	9.50%	0.00%
-1994- EST'D	2.00	2.08		-0.040	10.00%	0.00%
'96-98 EST'D	2.75	2.24		0.185	13.00%	2.41%
Value Line Proj'd Growth	2.50%	1.50%	1.00%		'96-98 Est'd Growth (br):	2.41%
I/B/E/S Proj'd Growth	1.80%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	2.15%	1.50%	1.00%		Projected "br + sv" Gr	2.56%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

IPALCO ENTERPRISES

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.97	$1.52	$16.49	0.228		
-1987-	2.38	1.81	17.06	0.239		
-1988-	2.64	1.64	18.06	0.379	14.60%	5.53%
-1989-	2.54	1.72	18.88	0.323	13.50%	4.36%
-1990-	2.58	1.80	19.66	0.302	13.10%	3.96%
-1991-	2.72	1.88	20.50	0.309	13.30%	4.11%
-1992-	2.35	1.96	20.92	0.166	11.20%	1.86%
Compound Gr. Rate: '86-90	6.98%	4.32%	4.49%		Ave. Internal Growth (br):	3.96%
'87-91	3.39%	0.95%	4.70%		ADD: ^External Growth (sv):	0.15%
'88-92	-2.87%	4.56%	3.74%		Historic "br + sv" Gr.	4.11%
Compound Gr. Rate: AVERAGE	2.50%	3.28%	4.31%			
Value Line Historic Gr.	4.25%	3.75%	5.00%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.70	$2.04		0.244	12.50%	3.06%
-1994- EST'D	3.05	2.12		0.305	13.50%	4.12%
'96-98 EST'D	3.25	2.36		0.274	12.00%	3.29%
Value Line Proj'd Growth	4.00%	4.00%	5.00%		'96-98 Est'd Growth (br):	3.29%
I/B/E/S Proj'd Growth	3.90%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	3.95%	4.00%	5.00%		Projected "br + sv" Gr	3.44%

SOURCE: The Value Line Investment Survey

KU ENERGY CORPORATION

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.43	$1.26	$12.06	0.119		
-1987-	1.88	1.29	12.42	0.314		
-1988-	1.94	1.34	13.01	0.309	14.90%	4.61%
-1989-	2.02	1.40	13.94	0.307	14.50%	4.45%
-1990-	1.97	1.46	14.45	0.259	13.70%	3.55%
-1991-	2.13	1.50	15.02	0.296	14.20%	4.20%
-1992-	1.96	1.56	15.42	0.204	12.70%	2.59%
Compound Gr. Rate: '86-90	8.34%	3.75%	4.62%		Ave. Internal Growth (br):	3.88%
'87-91	3.17%	3.84%	4.87%		ADD: ^External Growth (sv):	0.15%
'88-92	0.26%	3.87%	4.34%			
Compound Gr. Rate: AVERAGE	3.92%	3.82%	4.61%		Historic "br + sv" Gr.	4.03%
Value Line Historic Gr.	5.75%	3.50%	4.00%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.05	$1.60		0.220	13.00%	2.85%
-1994- EST'D	2.15	1.66		0.228	13.00%	2.96%
'96-98 EST'D	2.55	1.80		0.294	14.00%	4.12%
Value Line Proj'd Growth	4.00%	3.00%	3.50%		'96-98 Est'd Growth (br):	4.12%
I/B/E/S Proj'd Growth	2.90%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	3.45%	3.00%	3.50%		Projected "br + sv" Gr	4.27%

SOURCE: The Value Line Investment Survey

LG&E ENERGY CORP.

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$2.17	$1.71	$17.36	0.212		
-1987-	2.23	1.75	17.96	0.215		
-1988-	2.47	1.79	18.70	0.275	13.10%	3.61%
-1989-	2.13	1.83	19.09	0.141	11.10%	1.56%
-1990-	2.30	1.87	20.22	0.187	11.30%	2.11%
-1991-	2.57	1.92	20.90	0.253	12.30%	3.11%
-1992-	2.34	1.98	21.20	0.154	11.00%	1.69%
Compound Gr. Rate: '86-90	1.47%	2.26%	3.89%		Ave. Internal Growth (br):	2.42%
'87-91	3.61%	2.34%	3.86%		ADD: ^External Growth (sv):	0.15%
'88-92	-1.34%	2.55%	3.19%			
Compound Gr. Rate: AVERAGE	1.24%	2.39%	3.65%		Historic "br + sv" Gr.	2.57%
Value Line Historic Gr.	2.75%	2.75%	3.25%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.60	$2.04		0.215	11.50%	2.48%
-1994- EST'D	2.80	2.10		0.250	12.00%	3.00%
'96-98 EST'D	3.25	2.30		0.292	12.50%	3.65%
Value Line Proj'd Growth	5.00%	3.00%	4.00%		'96-98 Est'd Growth (br):	3.65%
I/B/E/S Proj'd Growth	2.70%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	3.85%	3.00%	4.00%		Projected "br + sv" Gr	3.80%

SOURCE: The Value Line Investment Survey

OTTER TAIL POWER CO.

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.79	$1.42	$12.96	0.207		
-1987-	1.71	1.46	13.10	0.146		
-1988-	1.92	1.48	13.55	0.229	14.20%	3.25%
-1989-	1.94	1.52	13.83	0.216	14.10%	3.05%
-1990-	1.99	1.56	13.74	0.216	14.70%	3.18%
-1991-	2.15	1.60	14.25	0.256	15.10%	3.86%
-1992-	2.17	1.64	14.71	0.244	14.70%	3.59%
Compound Gr. Rate: '86-90	2.68%	2.38%	1.47%		Ave. Internal Growth (br):	3.39%
'87-91	5.89%	2.32%	2.13%		ADD: ^External Growth (sv):	0.15%
'88-92	3.11%	2.60%	2.07%			
Compound Gr. Rate: AVERAGE	3.89%	2.43%	1.89%		Historic "br + sv" Gr.	3.54%
Value Line Historic Gr.	3.50%	3.00%	1.75%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.20	$1.68		0.236	14.50%	3.43%
-1994- EST'D	2.30	1.75		0.239	14.50%	3.47%
'96-98 EST'D	2.85	2.05		0.281	16.00%	4.49%
Value Line Proj'd Growth	5.00%	4.00%	4.00%		'96-98 Est'd Growth (br):	4.49%
I/B/E/S Proj'd Growth	2.70%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	3.85%	4.00%	4.00%		Projected "br + sv" Gr	4.64%

SOURCE: The Value Line Investment Survey

SOUTHERN INDIANA G&E

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.79	$1.10	$12.66	0.385		
-1987-	1.92	1.19	12.72	0.380		
-1988-	2.22	1.28	14.17	0.423	15.40%	6.52%
-1989-	2.11	1.35	14.92	0.360	13.90%	5.01%
-1990-	2.27	1.43	14.55	0.370	14.90%	5.51%
-1991-	2.37	1.50	15.37	0.367	14.40%	5.29%
-1992-	2.26	1.56	17.12	0.310	13.20%	4.09%
Compound Gr. Rate: '86-90	6.12%	6.78%	3.54%		Ave. Internal Growth (br):	5.28%
'87-91	5.41%	5.96%	4.84%		ADD: ^External Growth (sv):	0.15%
'88-92	0.45%	5.07%	4.84%			
Compound Gr. Rate: AVERAGE	3.99%	5.94%	4.41%		Historic "br + sv" Gr.	5.43%
Value Line Historic Gr.	5.50%	7.25%	5.00%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.20	$1.61		0.268	12.50%	3.35%
-1994- EST'D	2.30	1.66		0.278	12.50%	3.48%
'96-98 EST'D	2.65	1.85		0.302	13.00%	3.92%
Value Line Proj'd Growth	3.50%	4.00%	3.50%		'96-98 Est'd Growth (br):	3.92%
I/B/E/S Proj'd Growth	3.50%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	2.50%	3.50%	4.50%		Projected "br + sv" Gr	4.07%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

S.W. PUBLIC SERVICE

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$2.36	$2.02	$14.82	0.144		
-1987-	2.18	2.12	14.88	0.028		
-1988-	2.50	2.12	15.26	0.152	16.40%	2.49%
-1989-	2.45	2.20	15.51	0.102	15.80%	1.61%
-1990-	2.38	2.20	16.04	0.076	14.80%	1.12%
-1991-	2.63	2.20	16.47	0.163	16.00%	2.62%
-1992-	2.34	2.20	16.61	0.060	14.10%	0.84%
Compound Gr. Rate: '86-90	0.21%	2.16%	2.00%		Ave. Internal Growth (br):	1.74%
'87-91	4.80%	0.93%	2.57%		ADD: ^External Growth (sv):	0.15%
'88-92	-1.64%	0.93%	2.14%			
Compound Gr. Rate: AVERAGE	1.12%	1.34%	2.24%		Historic "br + sv" Gr.	1.89%
Value Line Historic Gr.	1.50%	3.25%	3.50%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.45	$2.20		0.102	14.50%	1.48%
-1994- EST'D	2.55	2.20		0.137	15.00%	2.06%
'96-98 EST'D	2.75	2.28		0.171	15.00%	2.56%
Value Line Proj'd Growth	2.00%	0.50%	2.00%		'96-98 Est'd Growth (br):	2.56%
I/B/E/S Proj'd Growth	1.90%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	1.95%	0.50%	2.00%		Projected "br + sv" Gr	2.71%

SOURCE: The Value Line Investment Survey

MISSOURI PUBLIC SERVICE; CASE #GR-93-172

DISCOUNTED CASH FLOW GROWTH PARAMETERS
FOR THE ELECTRIC/ELECTRIC-GAS UTILITY INDUSTRY

		AVERAGE ANNUAL COMPOUND HISTORIC GROWTH			VALUE LINE HISTORIC GROWTH				PROJECTED GROWTH		
COMPANY:	"br + sv" '88-92	EPS	DPS	BVPS	EPS	DPS	BVPS	"br + sv" projct'd	EPS	DPS	BVPS
CIPSCO INC.	2.50% *	2.50% *	2.50% *	2.50% *	2.50% *	2.50% *	2.50% *	2.30%	3.30%	2.50%	2.00%
CTRL.LA.ELEC.	4.30%	2.50%	5.06%	4.37%	2.50%	5.50%	5.25%	2.73%	2.25%	3.00%	2.50%
CINCINNATI G&E	5.76%	2.50% *	2.84%	7.16%	5.00%	2.50% *	4.50%	3.67%	2.10%	2.50%	3.50%
DPL INC.	3.37%	2.50% *	3.68%	3.66%	2.50% *	3.25%	3.25%	3.40%	3.95%	3.00%	2.00%
INTERSTATE PWR.	2.50% *	3.39%	2.50% *	2.50% *	3.75%	2.50% *	2.50% *	2.56%	2.15%	1.50%	1.00%
IPALCO ENT.	4.11%	2.50%	3.28%	4.31%	4.25%	3.75%	5.00%	3.44%	3.95%	4.00%	5.00%
KU ENERGY	4.03%	3.92%	3.82%	4.61%	5.75%	3.50%	4.00%	4.27%	3.45%	3.00%	3.50%
LG&E CORP.	2.57%	2.50% *	2.50% *	3.65%	2.75%	2.75%	3.25%	3.80%	3.85%	3.00%	4.00%
OTTER TAIL PWR.	3.54%	3.89%	2.50% *	2.50% *	3.50%	3.00%	2.50% *	4.64%	3.85%	4.00%	4.00%
SO. INDIANA G&E	5.43%	3.99%	5.94%	4.41%	5.50%	7.25%	5.00%	4.07%	2.50%	3.50%	4.50%
S.W. PUBLIC SERV.	2.50% *	2.50% *	2.50% *	2.50% *	2.50% *	3.25%	3.50%	2.71%	1.95%	0.50%	2.00%
AVERAGE:	3.69%	2.97%	3.37%	3.83%	3.68%	3.61%	3.75%	3.42%	3.03%	2.77%	3.09%

* Indicates historic growth rate parameters that originally fell below 2.50 percent but have subsequently been raised to a minimum of 2.50 percent.

MISSOURI PUBLIC SERVICE; CASE #GR-93-172

DISCOUNTED CASH FLOW GROWTH PARAMETERS
FOR THE ELECTRIC/ELECTRIC-GAS UTILITY INDUSTRY

		AVERAGE ANNUAL COMPOUND HISTORIC GROWTH			VALUE LINE HISTORIC GROWTH				PROJECTED GROWTH		
COMPANY:	"br + sv" '88-92	EPS	DPS	BVPS	EPS	DPS	BVPS	"br + sv" projct'd	EPS	DPS	BVPS
CIPSCO INC.	1.58%	0.00%	1.46%	1.36%	1.75%	2.00%	2.00%	2.30%	3.30%	2.50%	2.00%
CTRL.LA.ELEC.	4.30%	2.50%	5.06%	4.37%	2.50%	5.50%	5.25%	2.73%	2.25%	3.00%	2.50%
CINCINNATI G&E	5.76%	-2.70%	2.84%	7.16%	5.00%	1.75%	4.50%	3.67%	2.10%	2.50%	3.50%
DPL INC.	3.37%	-1.87%	3.68%	3.66%	0.25%	3.25%	3.25%	3.40%	3.95%	3.00%	2.00%
INTERSTATE PWR.	2.40%	3.39%	1.05%	1.89%	3.75%	1.75%	1.00%	2.56%	2.15%	1.50%	1.00%
IPALCO ENT.	4.11%	2.50%	3.28%	4.31%	4.25%	3.75%	5.00%	3.44%	3.95%	4.00%	5.00%
KU ENERGY	4.03%	3.92%	3.82%	4.61%	5.75%	3.50%	4.00%	4.27%	3.45%	3.00%	3.50%
LG&E CORP.	2.57%	1.24%	2.39%	3.65%	2.75%	2.75%	3.25%	3.80%	3.85%	3.00%	4.00%
OTTER TAIL PWR.	3.54%	3.89%	2.43%	1.89%	3.50%	3.00%	1.75%	4.64%	3.85%	4.00%	4.00%
SO. INDIANA G&E	5.43%	3.99%	5.94%	4.41%	5.50%	7.25%	5.00%	4.07%	2.50%	3.50%	4.50%
S.W. PUBLIC SERV.	1.89%	1.12%	1.34%	2.24%	1.50%	3.25%	3.50%	2.71%	1.95%	0.50%	2.00%
AVERAGE:	3.54%	1.64%	3.03%	3.60%	3.32%	3.43%	3.50%	3.42%	3.03%	2.77%	3.09%

TUCK-DIRECT
GR-93-172

MISSOURI PUBLIC SERVICE

NATURAL GAS COMPARABLE COMPANIES

COMPANY:	% Revenue Gas	Total Capital $Mil	Total Revenue $Mil	S&P Bond Rating
Atlanta Gas Light	100.00%	$1,071.3	$1,028.5	A-
Bay State Gas	100.00%	382.9	372.8	A
Brooklyn Union	96.00%	1361.0	1111.0	A
Cascade Nat'l Gas	100.00%	153.8	152.5	BBB
Conn. Energy	100.00%	226.3	211.5	A-
Conn. Nat'l Gas	89.00%	252.6	249.2	A-
Energen Corp.	94.00%	247.0	336.7	A+
Indiana Energy Inc.	100.00%	414.3	432.5	AA-
Laclede Gas Co.	100.00%	345.9	431.9	AA-
New Jersey Res's	95.00%	520.3	435.9	A
N.W. Nat'l Gas	95.00%	560.0	274.4	A
Piedmont Nat'l Gas	100.00%	539.9	459.9	A
South Jersey Ind.	78.00%	310.1	316.7	N/A
Washington Gas	100.00%	908.3	788.8	AA-
AVERAGE:	96.21%	521.0	471.6	

SOURCE: C.A. TURNER UTILITY REPORTS, APRIL 1993

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TUCK-DIRECT
GR-93-172

ATLANTA GAS LIGHT CO.

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.67	$1.40	$15.18	0.162		
-1987-	2.04	1.60	15.78	0.216		
-1988-	2.25	1.76	17.44	0.218	12.00%	2.61%
-1989-	1.90	1.88	17.66	0.011	10.60%	0.11%
-1990-	2.02	1.96	17.93	0.030	11.20%	0.33%
-1991-	2.07	2.04	18.84	0.014	10.80%	0.16%
-1992-	2.26	2.06	19.57	0.088	11.40%	1.01%
Compound Gr. Rate: '86-90	4.87%	8.78%	4.25%		Ave. Internal Growth (br):	0.84%
'87-91	0.37%	6.26%	4.53%		ADD: ^External Growth (sv):	0.15%
'88-92	0.11%	4.01%	2.92%			
Compound Gr. Rate: AVERAGE	1.78%	6.35%	3.90%		Historic "br + sv" Gr.	0.99%
Value Line Historic Gr.	4.25%	8.50%	4.25%			

				RETENTION	EQUITY	GROWTH
PROJ'D DATA	EPS	DPS	BVPS	RATIO (b)	RETURN (r)	(b*r)
-1993- EST'D	$2.25	$2.08		0.076	11.50%	0.87%
-1994- EST'D	2.40	2.12		0.117	11.50%	1.34%
'96-98 EST'D	2.70	2.32		0.141	12.00%	1.69%
Value Line Proj'd Growth	4.00%	2.50%	4.00%		'96-98 Est'd Growth (br):	1.69%
I/B/E/S Proj'd Growth	5.80%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	4.90%	2.50%	4.00%		Projected "br + sv" Gr.	1.84%

SOURCE: The Value Line Investment Survey

BAY STATE GAS CO.

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.49	$0.91	$10.02	0.389		
-1987-	1.61	1.00	10.66	0.379		
-1988-	1.72	1.07	11.33	0.378	15.10%	5.71%
-1989-	1.81	1.16	12.81	0.359	12.90%	4.63%
-1990-	1.78	1.24	13.42	0.303	13.10%	3.97%
-1991-	1.32	1.31	13.60	0.008	9.60%	0.07%
-1992-	1.41	1.36	14.90	0.035	8.80%	0.31%
Compound Gr. Rate: '86-90	4.55%	8.04%	7.58%		Ave. Internal Growth (br):	2.94%
'87-91	-4.84%	6.98%	6.28%		ADD: ^External Growth (sv):	0.15%
'88-92	-4.85%	6.18%	7.09%			
Compound Gr. Rate: AVERAGE	-1.71%	7.07%	6.98%		Historic "br + sv" Gr.	3.09%
Value Line Historic Gr.	2.50%	6.25%	5.25%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.80	$1.40		0.222	11.00%	2.44%
-1994- EST'D	1.90	1.44		0.242	11.50%	2.78%
'96-98 EST'D	2.45	1.65		0.327	13.00%	4.24%
Value Line Proj'd Growth	8.50%	4.00%	5.00%		'96-98 Est'd Growth (br):	4.24%
I/B/E/S Proj'd Growth	6.00%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	7.25%	4.00%	5.00%		Projected "br + sv" Gr	4.39%

SOURCE: The Value Line Investment Survey

BROOKLYN UNION GAS CO.

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$2.35	$1.62	$17.29	0.311		
-1987-	2.43	1.66	18.29	0.317		
-1988-	2.49	1.72	19.16	0.309	12.80%	3.96%
-1989-	2.52	1.78	20.04	0.294	12.40%	3.64%
-1990-	2.43	1.84	20.53	0.243	11.70%	2.84%
-1991-	2.18	1.90	21.56	0.128	9.50%	1.22%
-1992-	2.02	1.94	21.83	0.040	9.10%	0.36%
Compound Gr. Rate: '86-90	0.84%	3.23%	4.39%		Ave. Internal Growth (br):	2.40%
'87-91	-2.68%	3.43%	4.20%		ADD: ^External Growth (sv):	0.15%
'88-92	-5.10%	3.05%	3.32%		Historic "br + sv" Gr.	2.55%
Compound Gr. Rate: AVERAGE	-2.31%	3.24%	3.97%			
Value Line Historic Gr.	-0.50%	4.00%	4.25%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.55	$1.98		0.224	11.50%	2.57%
-1994- EST'D	2.70	2.03		0.248	11.50%	2.85%
'96-98 EST'D	3.15	2.20		0.302	12.00%	3.62%
Value Line Proj'd Growth	6.00%	2.50%	3.50%		'96-98 Est'd Growth (br):	3.62%
I/B/E/S Proj'd Growth	5.30%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	5.65%	2.50%	3.50%		Projected "br + sv" Gr	3.77%

SOURCE: The Value Line Investment Survey

CASCADE NATURAL GAS

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$0.24	$1.28	$11.40	-4.333		
-1987-	0.96	1.28	11.17	-0.333		
-1988-	1.26	1.28	11.19	-0.016	11.20%	0.00%
-1989-	1.93	1.28	11.94	0.337	16.10%	5.42%
-1990-	1.89	1.31	12.49	0.307	15.00%	4.60%
-1991-	1.71	1.35	12.95	0.211	13.10%	2.76%
-1992-	0.91	1.40	13.60	-0.538	11.50%	0.00%
Compound Gr. Rate: '86-90	67.52%	0.58%	2.31%		Ave. Internal Growth (br):	2.56%
'87-91	15.53%	1.34%	3.77%		ADD: ^External Growth (sv):	0.15%
'88-92	-7.81%	2.27%	5.00%			
Compound Gr. Rate: AVERAGE	25.08%	1.40%	3.69%		Historic "br + sv" Gr.	2.71%
Value Line Historic Gr.	3.50%	2.25%	0.75%			

				RETENTION	EQUITY	GROWTH
PROJ'D DATA	EPS	DPS	BVPS	RATIO (b)	RETURN (r)	(b*r)
-1993- EST'D	$1.75	$1.44		0.177	12.00%	2.13%
-1994- EST'D	1.90	1.48		0.221	11.50%	2.54%
'96-98 EST'D	3.20	1.90		0.406	17.00%	6.91%
Value Line Proj'd Growth	7.50%	2.50%	6.00%		'96-98 Est'd Growth (br):	6.91%
I/B/E/S Proj'd Growth	6.00%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	6.75%	2.50%	6.00%		Projected "br + sv" Gr	7.06%

SOURCE: The Value Line Investment Survey

CONNECTICUT ENERGY

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.16	$1.12	$11.03	0.034		
-1987-	1.39	1.12	11.44	0.194		
-1988-	1.49	1.17	12.04	0.215	11.90%	2.56%
-1989-	1.28	1.20	12.14	0.063	10.40%	0.65%
-1990-	1.12	1.23	11.91	-0.098	9.30%	0.00%
-1991-	1.38	1.24	12.49	0.101	10.20%	1.03%
-1992-	1.43	1.26	12.80	0.119	11.00%	1.31%
Compound Gr. Rate: '86-90	-0.87%	2.37%	1.94%		Ave. Internal Growth (br):	1.11%
'87-91	-0.18%	2.58%	2.22%		ADD: ^External Growth (sv):	0.15%
'88-92	-1.02%	1.87%	1.54%			
Compound Gr. Rate: AVERAGE	-0.69%	2.27%	1.90%		Historic "br + sv" Gr.	1.26%
Value Line Historic Gr.	1.75%	3.00%	2.50%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.60	$1.28		0.200	12.00%	2.40%
-1994- EST'D	1.70	1.32		0.224	12.00%	2.68%
'96-98 EST'D	2.00	1.50		0.250	12.50%	3.13%
Value Line Proj'd Growth	7.50%	3.00%	4.00%		'96-98 Est'd Growth (br):	3.13%
I/B/E/S Proj'd Growth	7.50%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	7.50%	3.00%	4.00%		Projected "br + sv" Gr	3.28%

SOURCE: The Value Line Investment Survey

CONNECTICUT NATURAL GAS

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.57	$1.30	$10.52	0.172		
-1987-	1.62	1.33	11.50	0.179		
-1988-	1.46	1.36	11.90	0.068	12.20%	0.84%
-1989-	1.60	1.36	12.49	0.150	12.20%	1.83%
-1990-	1.51	1.37	12.77	0.093	11.70%	1.08%
-1991-	1.44	1.40	12.77	0.028	11.20%	0.31%
-1992-	1.75	1.44	13.26	0.177	13.00%	2.30%
Compound Gr. Rate: '86-90	-0.97%	1.32%	4.96%		Ave. Internal Growth (br):	1.27%
'87-91	-2.90%	1.29%	2.65%		ADD: ^External Growth (sv):	0.15%
'88-92	4.63%	1.44%	2.74%			
Compound Gr. Rate: AVERAGE	0.25%	1.35%	3.45%		Historic "br + sv" Gr.	1.42%
Value Line Historic Gr.	0.75%	2.75%	3.75%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.65	$1.46		0.115	11.50%	1.32%
-1994- EST'D	1.85	1.50		0.189	12.50%	2.36%
'96-98 EST'D	2.15	1.66		0.228	13.00%	2.96%
Value Line Proj'd Growth	5.50%	3.00%	4.50%		'96-98 Est'd Growth (br):	2.96%
I/B/E/S Proj'd Growth	3.50%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	4.50%	3.00%	4.50%		Projected "br + sv" Gr	3.11%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

ENERGEN CORPORATION

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$0.81	$0.70	$9.30	0.136		
-1987-	1.41	0.73	10.04	0.482		
-1988-	1.67	0.78	11.19	0.533	14.30%	7.62%
-1989-	1.19	0.84	11.68	0.294	9.80%	2.88%
-1990-	1.35	0.91	12.21	0.326	10.90%	3.55%
-1991-	1.42	0.96	12.07	0.324	11.60%	3.76%
-1992-	1.54	1.01	12.75	0.344	12.10%	4.16%
Compound Gr. Rate: '86-90	13.62%	6.78%	7.04%		Ave. Internal Growth (br):	4.40%
'87-91	0.18%	7.09%	4.71%		ADD: ^External Growth (sv):	0.15%
'88-92	-2.01%	6.67%	3.32%			
Compound Gr. Rate: AVERAGE	3.93%	6.85%	5.02%		Historic "br + sv" Gr.	4.55%
Value Line Historic Gr.	5.00%	6.50%	4.75%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.75	$1.05		0.400	13.00%	5.20%
-1994- EST'D	1.85	1.09		0.411	13.00%	5.34%
'96-98 EST'D	2.20	1.25		0.432	13.00%	5.61%
Value Line Proj'd Growth	7.50%	4.50%	5.50%		'96-98 Est'd Growth (br):	5.61%
I/B/E/S Proj'd Growth	7.00%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	7.25%	4.50%	5.50%		Projected "br + sv" Gr	5.76%

SOURCE: The Value Line Investment Survey

INDIANA ENERGY INC.

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.39	$1.03	$10.85	0.259		
-1987-	1.29	1.06	11.31	0.178		
-1988-	1.83	1.11	11.99	0.393	15.20%	5.98%
-1989-	1.92	1.21	12.71	0.370	15.30%	5.66%
-1990-	1.90	1.30	14.67	0.316	10.90%	3.44%
-1991-	1.67	1.38	14.95	0.174	11.20%	1.94%
-1992-	1.74	1.44	15.33	0.172	11.30%	1.95%
Compound Gr. Rate: '86-90	8.13%	5.99%	7.83%		Ave. Internal Growth (br):	3.79%
'87-91	6.67%	6.82%	7.22%		ADD: ^External Growth (sv):	0.15%
'88-92	-1.25%	6.72%	6.34%			
Compound Gr. Rate: AVERAGE	4.51%	6.51%	7.13%		Historic "br + sv" Gr.	3.94%
Value Line Historic Gr.	5.00%	6.50%	6.25%			

				RETENTION	EQUITY	GROWTH
PROJ'D DATA	EPS	DPS	BVPS	RATIO (b)	RETURN (r)	(b*r)
-1993- EST'D	$2.10	$1.50		0.286	12.50%	3.57%
-1994- EST'D	2.35	1.56		0.336	13.00%	4.37%
'96-98 EST'D	2.95	1.85		0.373	14.00%	5.22%
Value Line Proj'd Growth	9.00%	4.50%	6.00%		'96-98 Est'd Growth (br):	5.22%
I/B/E/S Proj'd Growth	7.30%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	8.15%	4.50%	6.00%		Projected "br + sv" Gr	5.37%

SOURCE: The Value Line Investment Survey

LACLEDE GAS COMPANY

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$3.74	$1.90	$21.09	0.492		
-1987-	2.88	2.12	21.95	0.264		
-1988-	3.14	2.20	22.89	0.299	13.70%	4.10%
-1989-	2.90	2.30	23.49	0.207	12.40%	2.57%
-1990-	2.16	2.36	23.49	-0.093	9.20%	0.00%
-1991-	2.56	2.40	23.65	0.063	10.80%	0.68%
-1992-	2.33	2.40	23.58	-0.030	9.90%	0.00%
Compound Gr. Rate: '86-90	-12.82%	5.57%	2.73%		Ave. Internal Growth (br):	1.47%
'87-91	-2.90%	3.15%	1.88%		ADD: ^External Growth (sv):	0.15%
'88-92	-7.19%	2.20%	0.75%			
Compound Gr. Rate: AVERAGE	-7.64%	3.64%	1.79%		Historic "br + sv" Gr.	1.62%
Value Line Historic Gr.	-2.00%	6.50%	3.50%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.85	$2.44		0.144	12.00%	1.73%
-1994- EST'D	3.15	2.60		0.175	12.50%	2.18%
'96-98 EST'D	4.00	3.00		0.250	14.00%	3.50%
Value Line Proj'd Growth	4.50%	2.50%	3.00%		'96-98 Est'd Growth (br):	3.50%
I/B/E/S Proj'd Growth	N/A				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	4.50%	2.50%	3.00%		Projected "br + sv" Gr	3.65%

SOURCE: The Value Line Investment Survey

NEW JERSEY RESOURCES

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$0.69	$1.13	$8.61	-0.638		
-1987-	1.27	1.20	10.73	0.055		
-1988-	1.59	1.28	12.40	0.195	11.20%	2.18%
-1989-	1.45	1.36	13.64	0.062	9.10%	0.56%
-1990-	0.97	1.44	13.27	-0.485	7.20%	0.00%
-1991-	0.83	1.50	12.85	-0.807	6.30%	0.00%
-1992-	1.64	1.52	14.16	0.073	10.20%	0.75%
Compound Gr. Rate: '86-90	8.89%	6.25%	11.42%		Ave. Internal Growth (br):	0.70%
'87-91	-10.09%	5.74%	4.61%		ADD: ^External Growth (sv):	0.15%
'88-92	0.78%	4.39%	3.37%			
Compound Gr. Rate: AVERAGE	-0.14%	5.46%	6.47%		Historic "br + sv" Gr.	0.85%
Value Line Historic Gr.	0.50%	6.00%	6.25%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.80	$1.56		0.133	12.00%	1.60%
-1994- EST'D	2.10	1.64		0.219	13.50%	2.96%
'96-98 EST'D	2.35	1.90		0.191	12.50%	2.39%
Value Line Proj'd Growth	11.00%	4.00%	4.50%		'96-98 Est'd Growth (br):	2.39%
I/B/E/S Proj'd Growth	8.30%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	9.65%	4.00%	4.50%		Projected "br + sv" Gr	2.54%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

NORTHWEST NATURAL GAS

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.74	$1.53	$15.65	0.121		
-1987-	1.80	1.56	16.38	0.133		
-1988-	2.00	1.57	16.87	0.215	11.80%	2.54%
-1989-	2.37	1.61	18.06	0.321	12.40%	3.98%
-1990-	2.43	1.65	18.91	0.321	12.80%	4.11%
-1991-	1.01	1.69	18.35	-0.673	5.50%	0.00%
-1992-	1.11	1.72	18.75	-0.550	5.50%	0.00%
Compound Gr. Rate: '86-90	8.71%	1.91%	4.84%		Ave. Internal Growth (br):	2.12%
'87-91	-13.45%	2.02%	2.88%		ADD: ^External Growth (sv):	0.15%
'88-92	-13.69%	2.31%	2.68%			
Compound Gr. Rate: AVERAGE	-6.14%	2.08%	3.47%		Historic "br + sv" Gr.	2.27%
Value Line Historic Gr.	1.00%	3.25%	3.75%			

				RETENTION	EQUITY	GROWTH
PROJ'D DATA	EPS	DPS	BVPS	RATIO (b)	RETURN (r)	(b*r)
-1993- EST'D	$2.45	$1.75		0.286	12.50%	3.57%
-1994- EST'D	2.50	1.79		0.284	12.50%	3.55%
'96-98 EST'D	2.80	1.95		0.304	12.50%	3.79%
Value Line Proj'd Growth	5.50%	2.50%	3.00%		'96-98 Est'd Growth (br):	3.79%
I/B/E/S Proj'd Growth	5.70%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	5.60%	2.50%	3.00%		Projected "br + sv" Gr	3.94%

SOURCE: The Value Line Investment Survey

PIEDMONT NATURAL GAS

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$0.77	$0.60	$6.99	0.221		
-1987-	1.10	0.65	7.49	0.409		
-1988-	1.19	0.72	8.25	0.395	13.40%	5.29%
-1989-	1.21	0.79	8.73	0.347	13.70%	4.76%
-1990-	1.22	0.83	9.15	0.320	13.10%	4.19%
-1991-	0.89	0.87	9.65	0.022	8.60%	0.19%
-1992-	1.40	0.91	10.27	0.350	13.30%	4.65%
Compound Gr. Rate: '86-90	12.19%	8.45%	6.96%		Ave. Internal Growth (br):	3.82%
'87-91	-5.16%	7.56%	6.54%		ADD: ^External Growth (sv):	0.15%
'88-92	4.15%	6.03%	5.63%			
Compound Gr. Rate: AVERAGE	3.73%	7.35%	6.38%		Historic "br + sv" Gr.	3.97%
Value Line Historic Gr.	6.25%	7.50%	6.75%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.45	$0.95		0.345	13.50%	4.66%
-1994- EST'D	1.55	1.00		0.355	13.50%	4.79%
'96-98 EST'D	2.15	1.30		0.395	15.50%	6.13%
Value Line Proj'd Growth	9.00%	6.50%	4.00%		'96-98 Est'd Growth (br):	6.13%
I/B/E/S Proj'd Growth	7.70%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	8.35%	6.50%	4.00%		Projected "br + sv" Gr	6.28%

SOURCE: The Value Line Investment Survey

TUCK-DIRECT
GR-93-172

SOUTH JERSEY INDUSTRIES

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$1.28	$1.24	$12.02	0.031		
-1987-	1.57	1.26	12.42	0.197		
-1988-	1.88	1.29	13.24	0.314	13.70%	4.30%
-1989-	1.66	1.36	13.49	0.181	12.20%	2.20%
-1990-	1.33	1.40	13.58	-0.053	9.50%	0.00%
-1991-	1.27	1.41	13.53	-0.110	9.40%	0.00%
-1992-	1.61	1.41	13.80	0.124	11.50%	1.43%
Compound Gr. Rate: '86-90	0.96%	3.08%	3.10%		Ave. Internal Growth (br):	1.59%
'87-91	-5.16%	2.85%	2.16%		ADD: ^External Growth (sv):	0.15%
'88-92	-3.80%	2.25%	1.04%			
Compound Gr. Rate: AVERAGE	-2.67%	2.73%	2.10%		Historic "br + sv" Gr.	1.74%
Value Line Historic Gr.	0.25%	3.50%	2.75%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$1.70	$1.43		0.159	11.50%	1.83%
-1994- EST'D	1.85	1.47		0.205	12.00%	2.46%
'96-98 EST'D	2.15	1.65		0.233	12.50%	2.91%
Value Line Proj'd Growth	6.00%	2.00%	3.00%		'96-98 Est'd Growth (br):	2.91%
I/B/E/S Proj'd Growth	4.00%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	5.00%	2.00%	3.00%		Projected "br + sv" Gr	3.06%

SOURCE: The Value Line Investment Survey

WASHINGTON GAS LIGHT

DISCOUNTED CASH FLOW GROWTH PARAMETERS

	COMPOUND GROWTH			RETENTION GROWTH		
HISTORIC DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1986-	$2.29	$1.76	$18.24	0.231		
-1987-	2.27	1.80	18.80	0.207		
-1988-	2.52	1.88	19.91	0.254	11.40%	2.90%
-1989-	2.43	1.94	19.71	0.202	12.00%	2.42%
-1990-	2.51	2.02	20.33	0.195	12.30%	2.40%
-1991-	2.28	2.09	19.26	0.083	11.70%	0.97%
-1992-	2.53	2.13	20.31	0.158	11.70%	1.85%
Compound Gr. Rate: '86-90	2.32%	3.50%	2.75%		Ave. Internal Growth (br):	2.11%
'87-91	0.11%	3.81%	0.61%		ADD: ^External Growth (sv):	0.15%
'88-92	0.10%	3.17%	0.50%			
Compound Gr. Rate: AVERAGE	0.84%	3.49%	1.28%		Historic "br + sv" Gr.	2.26%
Value Line Historic Gr.	2.25%	4.00%	2.25%			

PROJ'D DATA	EPS	DPS	BVPS	RETENTION RATIO (b)	EQUITY RETURN (r)	GROWTH (b*r)
-1993- EST'D	$2.75	$2.17		0.211	12.50%	2.64%
-1994- EST'D	2.85	2.22		0.221	12.50%	2.76%
'96-98 EST'D	3.15	2.40		0.238	12.50%	2.98%
Value Line Proj'd Growth	4.50%	2.50%	3.50%		'96-98 Est'd Growth (br):	2.98%
I/B/E/S Proj'd Growth	4.40%				ADD: ^External Growth (sv):	0.15%
AVERAGE Proj'd Growth	4.45%	2.50%	3.50%		Projected "br + sv" Gr	3.13%

SOURCE: The Value Line Investment Survey

MISSOURI PUBLIC SERVICE; CASE #GR-93-172

DISCOUNTED CASH FLOW GROWTH PARAMETERS
FOR THE GAS DISTRIBUTION INDUSTRY

		AVERAGE ANNUAL COMPOUND HISTORIC GROWTH			VALUE LINE HISTORIC GROWTH				PROJECTED GROWTH		
COMPANY:	"br + sv" '87-91	EPS	DPS	BVPS	EPS	DPS	BVPS	"br + sv" projct'd	EPS	DPS	BVPS
Atlanta Gas Light	2.50% *	2.50% *	6.35%	3.90%	4.25%	8.50%	4.25%	1.84%	4.90%	2.50%	4.00%
Bay State Gas	3.09%	2.50% *	7.07%	6.98%	2.50%	6.25%	5.25%	4.39%	7.25%	4.00%	5.00%
Brooklyn Union	2.55%	2.50% *	3.24%	3.97%	2.50% *	4.00%	4.25%	3.77%	5.65%	2.50%	3.50%
Cascade Nat'l Gas	2.71%	25.08% ^	2.50% *	3.69%	3.50%	2.50% *	2.50% *	7.06%	6.75%	2.50%	6.00%
Conn. Energy	2.50% *	2.50% *	2.50% *	2.50% *	2.50% *	3.00%	2.50%	3.28%	7.50%	3.00%	4.00%
Conn. Nat'l Gas	2.50% *	2.50% *	2.50% *	3.45%	2.50% *	2.75%	3.75%	3.11%	4.50%	3.00%	4.50%
Energen Corp.	4.55%	3.93%	6.85%	5.02%	5.00%	6.50%	4.75%	5.76%	7.25%	4.50%	5.50%
Indiana Energy Inc.	3.94%	4.51%	6.51%	7.13%	5.00%	6.50%	6.25%	5.37%	8.15%	4.50%	6.00%
Laclede Gas Co.	2.50% *	2.50% *	3.64%	2.50% *	2.50% *	6.50%	3.50%	3.65%	4.50%	2.50%	3.00%
New Jersey Res's	2.50% *	2.50% *	5.46%	6.47%	2.50% *	6.00%	6.25%	2.54%	9.65%	4.00%	4.50%
N.W. Nat'l Gas	2.50% *	2.50% *	2.50% *	3.47%	2.50% *	3.25%	3.75%	3.94%	5.60%	2.50%	3.00%
Peidmont Nat'lGas	3.97%	3.73%	7.35%	6.38%	6.25%	7.50%	6.75%	6.28%	8.35%	6.50%	4.00%
South Jersey Ind.	2.50% *	2.50% *	2.73%	2.50% *	2.50% *	3.50%	2.75%	3.06%	5.00%	2.00%	3.00%
Washington Gas	2.50% *	2.50% *	3.49%	2.50% *	2.50% *	4.00%	2.50% *	3.13%	4.45%	2.50%	3.50%
AVERAGE:	2.91%	2.86%	4.48%	4.32%	3.32%	5.05%	4.21%	4.08%	6.39%	3.32%	4.25%

* Indicates historic growth rate parameters that originally fell below 2.50 percent but have subsequently been raised to a minimum growth rate of 2.50 percent.

^ Not included in calculation.

MISSOURI PUBLIC SERVICE; CASE #GR-93-172

DISCOUNTED CASH FLOW GROWTH PARAMETERS
FOR THE GAS DISTRIBUTION INDUSTRY

		AVERAGE ANNUAL COMPOUND HISTORIC GROWTH			VALUE LINE HISTORIC GROWTH				PROJECTED GROWTH		
COMPANY:	"br + sv" '87-91	EPS	DPS	BVPS	EPS	DPS	BVPS	"br + sv" project'd	EPS	DPS	BVPS
Atlanta Gas Light	0.99%	1.78%	6.35%	3.90%	4.25%	8.50%	4.25%	1.84%	4.90%	2.50%	4.00%
Bay State Gas	3.09%	-1.71%	7.07%	6.98%	2.50%	6.25%	5.25%	4.39%	7.25%	4.00%	5.00%
Brooklyn Union	2.55%	-2.31%	3.24%	3.97%	-0.50%	4.00%	4.25%	3.77%	5.65%	2.50%	3.50%
Cascade Nat'l Gas	2.71%	25.08%	1.40%	3.69%	3.50%	2.25%	0.75%	7.06%	6.75%	2.50%	6.00%
Conn. Energy	1.26%	-0.69%	2.27%	1.90%	1.75%	3.00%	2.50%	3.28%	7.50%	3.00%	4.00%
Conn. Nat'l Gas	1.42%	0.25%	1.35%	3.45%	0.75%	2.75%	3.75%	3.11%	4.50%	3.00%	4.50%
Energen Corp.	4.55%	3.93%	6.85%	5.02%	5.00%	6.50%	4.75%	5.76%	7.25%	4.50%	5.50%
Indiana Energy Inc.	3.94%	4.51%	6.51%	7.13%	5.00%	6.50%	6.25%	5.37%	8.15%	4.50%	6.00%
Laclede Gas Co.	1.62%	-7.64%	3.64%	1.79%	-2.00%	6.50%	3.50%	3.65%	4.50%	2.50%	3.00%
New Jersey Res's	0.85%	-0.14%	5.46%	6.47%	0.50%	6.00%	6.25%	2.54%	9.65%	4.00%	4.50%
N.W. Nat'l Gas	2.27%	-6.14%	2.08%	3.47%	1.00%	3.25%	3.75%	3.94%	5.60%	2.50%	3.00%
Peidmont Nat'lGas	3.97%	3.73%	7.35%	6.38%	6.25%	7.50%	6.75%	6.28%	8.35%	6.50%	4.00%
South Jersey Ind.	1.74%	-2.67%	2.73%	2.10%	0.25%	3.50%	2.75%	3.06%	5.00%	2.00%	3.00%
Washington Gas	2.26%	0.84%	3.49%	1.28%	2.25%	4.00%	2.25%	3.13%	4.45%	2.50%	3.50%
AVERAGE:	2.37%	1.34%	4.27%	4.11%	2.18%	5.04%	4.07%	4.08%	6.39%	3.32%	4.25%

TUCK-DIRECT
GR-93-172

MISSOURI PUBLIC SERVICE

CALCULATION OF EXPECTED DIVIDEND YIELDS

Elec/Gas Co.'s	(1) 12-Week Average Stock Price 2/05-4/23/93	(2) Current Annual Div. Per Share^	(3) Curr.Ann'l Div.Plus Gr.Factor D(1+.5g)	(4) Expected Dividend Yield (#3/#1)	(5) Value Line's Projct'd Div.Yield
Cipsco Inc.	$32.28	$1.92	$1.96	6.06%	5.90%
Central La.Elec.	25.24	1.38	1.41	5.57%	5.50%
Cincinnati G&E	26.21	1.66	1.69	6.45%	6.30%
DPL Inc.	20.45	1.12	1.14	5.58%	5.70%
Interstate Pwr.	31.98	2.08	2.12	6.62%	6.50%
Ipalco Enterprises	38.18	2.04	2.08	5.44%	5.40%
KU Energy Corp.	30.10	1.60	1.63	5.41%	5.40%
LG&E Energy Corp.	38.26	2.01	2.05	5.35%	5.40%
Otter Tail Pwr.	37.57	1.68	1.71	4.55%	4.10%
So.Indiana G&E	34.07	1.61	1.64	4.81%	4.60%
S.W. Public Serv.	32.25	2.20	2.24	6.95%	6.90%
AVERAGE DIVIDEND YIELD:				5.71%	5.61%
Gas Distr. Co's					
Atlanta Gas Light	$40.67	$2.08	$2.13	5.24%	5.00%
Bay State Gas	27.51	1.38	1.41	5.14%	5.10%
Brooklyn Union Gas	38.34	1.98	2.03	5.29%	5.00%
Cascade Nat'l Gas	24.53	1.42	1.46	5.93%	5.70%
Connecticut Energy	24.57	1.28	1.31	5.34%	5.10%
Conn. Nat'l Gas	29.07	1.44	1.48	5.08%	5.00%
Energen Corp.	21.96	1.04	1.07	4.86%	4.60%
Indiana Energy	32.63	1.48	1.52	4.65%	4.50%
Laclede Gas	42.83	2.44	2.50	5.84%	5.50%
New Jersey Res's	26.66	1.52	1.56	5.85%	5.90%
N.W.Nat'l Gas	31.22	1.72	1.76	5.65%	5.70%
Piedmont Nat'l Gas	21.87	0.98	1.00	4.59%	4.50%
S.Jersey Ind.	24.70	1.44	1.48	5.98%	5.80%
Wash.Gas Light	41.80	2.14	2.19	5.25%	5.10%
AVERAGE DIVIDEND YIELD:				5.34%	5.18%

^C.A. TURNER UTILITY REPORTS

Schedule 12

TUCK-DIRECT
GR-93-172

MISSOURI PUBLIC SERVICE

MARKET PRICE-TO-BOOK RATIOS FOR
THE ELECTRIC/GAS AND GAS DISTRIBUTION IND.'S

ELECTRIC/GAS UTILITIES

COMPANY:	'93*	'94*	'96-98*	Mkt-to-Book Ratio^
Cipsco Inc.	12.00%	12.50%	13.00%	184
Central La.Elec.	11.50%	12.00%	12.00%	168
Cincinnati G&E	11.00%	11.00%	11.50%	141
DPL Inc.	14.00%	14.00%	14.50%	212
Interstate Pwr.	9.50%	10.00%	13.00%	158
Ipalco Enterprises	12.50%	13.50%	12.00%	184
KU Energy Corp.	13.00%	13.00%	14.00%	201
LG&E Energy Corp.	11.50%	12.00%	12.50%	183
Otter Tail Pwr.	14.50%	14.50%	16.00%	267
So.Indiana G&E	12.50%	12.50%	13.00%	201
S.W. Public Serv.	14.50%	15.00%	15.00%	191
AVERAGE:	12.41%	12.73%	13.32%	190

NAT'L GAS DISTRIBUTION CO.'S

COMPANY:	'93*	'94*	'96-98*	Mkt-to-Book Ratio^
Atlanta Gas Light	11.50%	11.50%	12.00%	204
Bay State Gas	10.00%	11.50%	13.00%	177
Brooklyn Union Gas	11.50%	11.50%	12.00%	172
Cascade Nat'l Gas	12.00%	11.50%	17.00%	186
Connecticut Energy	12.00%	12.00%	12.50%	195
Conn. Nat'l Gas	11.50%	12.50%	13.00%	209
Energen Corp.	13.00%	13.00%	13.00%	179
Indiana Energy	12.50%	13.00%	14.00%	206
Laclede Gas	12.00%	12.50%	14.00%	185
New Jersey Res's	12.00%	13.50%	12.50%	204
N.W. Nat'l Gas	12.50%	12.50%	12.50%	187
Piedmont Nat'l Gas	13.50%	13.50%	15.50%	116
S.Jersey Ind.	11.50%	12.00%	12.50%	178
Wash. Gas Light	12.00%	12.50%	12.50%	196
AVERAGE:	11.96%	12.36%	13.29%	185

* Value Line Investment Survey.
^ C.A. Turner Utility Reports.

Schedule 13

TUCK-DIRECT
GR-93-172

MISSOURI PUBLIC SERVICE

MARKET-TO-BOOK COST OF EQUITY
FOR THE ELECTRIC/GAS "COMPARABLE" COMPANIES

Electric/Gas Co.'s	ROE	* (1-b)	/ (M/B)	+ g	= k ^
Cipsco Inc.	12.00%	0.87	1.84	2.50%	8.15%
Central La.Elec.	11.50%	0.76	1.68	4.94%	10.15%
Cincinnati G&E	11.00%	0.77	1.41	4.83%	10.85%
DPL Inc.	14.00%	0.80	2.12	3.46%	8.74%
Interstate Pwr.	9.50%	1.09	1.58	2.50%	NMF
Ipalco Enterprises	12.50%	0.76	1.84	4.03%	9.16%
KU Energy Corp.	13.00%	0.78	2.01	4.06%	9.10%
LG&E Energy Corp.	11.50%	0.78	1.83	3.20%	8.13%
Otter Tail Pwr.	14.50%	0.76	2.67	2.75%	6.90%
So.Indiana G&E	12.50%	0.73	2.01	5.83%	10.38%
S.W. Public Serv.	14.50%	0.90	1.91	2.88%	9.69%
AVERAGE:					9.13%

Electric/Gas Co.'s	ROE	* (1-b)	/ (M/B)	+ g	= k ^
Cipsco Inc.	13.00%	0.83	1.84	2.50%	8.40%
Central La.Elec.	12.00%	0.79	1.68	4.94%	10.54%
Cincinnati G&E	11.50%	0.69	1.41	4.83%	10.49%
DPL Inc.	14.50%	0.78	2.12	3.46%	8.76%
Interstate Pwr.	13.00%	0.81	1.58	2.50%	9.20%
Ipalco Enterprises	12.00%	0.73	1.84	4.03%	8.76%
KU Energy Corp.	14.00%	0.71	2.01	4.06%	8.97%
LG&E Energy Corp.	12.50%	0.71	1.83	3.20%	8.03%
Otter Tail Pwr.	16.00%	0.72	2.67	2.75%	7.06%
So.Indiana G&E	13.00%	0.70	2.01	5.83%	10.35%
S.W. Public Serv.	15.00%	0.83	1.91	2.88%	9.39%
AVERAGE:					9.09%

* Equity Returns and Retention Ratios Based on Value Line current year projections.
^ Equity Returns and Retention Ratios Based on Value Line 3-5 year projections.
Growth = Average of: hist'c book value per share gr. and Value Line's hist'c div. gr.

MISSOURI PUBLIC SERVICE

MARKET-TO-BOOK COST OF EQUITY
FOR THE LDC "COMPARABLE" COMPANIES

LDC "Comparables"	ROE	* (1-b)	/ (M/B)	+ g	= k *
Atlanta Gas Light	11.50%	0.92	2.04	4.44%	9.65%
Bay State Gas	11.00%	0.78	1.77	5.47%	10.30%
Brooklyn Union Gas	11.50%	0.78	1.72	3.98%	9.17%
Cascade Nat'l Gas	12.00%	0.82	1.86	4.70%	10.01%
Connecticut Energy	12.00%	0.80	1.95	4.20%	9.12%
Conn. Nat'l Gas	11.50%	0.88	2.09	4.03%	8.90%
Energen Corp.	13.00%	0.60	1.79	6.00%	10.36%
Indiana Energy	12.50%	0.71	2.06	6.13%	10.46%
Laclede Gas	12.00%	0.86	2.04	4.29%	9.32%
New Jersey Res's	12.00%	0.87	1.89	5.55%	11.05%
N.W. Nat'l Gas	12.50%	0.71	1.87	3.82%	8.59%
Piedmont Nat'l Gas	13.50%	0.66	2.15	7.16%	11.27%
S.Jersey Ind.	11.50%	0.84	1.78	3.39%	8.82%
Wash. Gas Light	12.50%	0.79	1.96	3.52%	8.55%
AVERAGE:					9.68%

LDC "Comparables"	ROE	* (1-b)	/ (M/B)	+ g	= k ^
Atlanta Gas Light	12.00%	0.86	2.04	4.44%	9.49%
Bay State Gas	13.00%	0.67	1.77	5.47%	10.42%
Brooklyn Union Gas	12.00%	0.70	1.72	3.98%	8.85%
Cascade Nat'l Gas	17.00%	0.59	1.86	4.70%	10.13%
Connecticut Energy	12.50%	0.75	1.95	4.20%	9.00%
Conn. Nat'l Gas	13.00%	0.77	2.09	4.03%	8.83%
Energen Corp.	13.00%	0.57	1.79	6.00%	10.13%
Indiana Energy	14.00%	0.63	2.06	6.13%	10.39%
Laclede Gas	14.00%	0.75	2.04	4.29%	9.43%
New Jersey Res's	12.50%	0.81	1.89	5.55%	10.90%
N.W. Nat'l Gas	12.50%	0.70	1.87	3.82%	8.48%
Piedmont Nat'l Gas	15.50%	0.60	2.15	7.16%	11.52%
S.Jersey Ind.	12.50%	0.77	1.78	3.39%	8.78%
Wash. Gas Light	12.50%	0.76	1.96	3.52%	8.38%
AVERAGE:					9.62%

* Equity Returns and Retention Ratios Based on Value Line current year projections.
^ Equity Returns and Retention Ratios Based on Value Line 3-5 year projections.
Growth = Average of: hist.div.gr., proj'd retention gr., proj'd EPS gr., and proj'd DPS gr.

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MISSOURI PUBLIC SERVICE

CAPITAL STRUCTURE & CAPITAL COSTS

CAPITAL COMPONENT:	PERCENT OF TOTAL	COST RATE	WEIGHTED AVERAGE COST RATE
COMMON STOCK	44.25%	10.20%	4.51%
PREFERENCE STOCK	5.94%	9.13%	0.54%
LONG-TERM DEBT	49.81%	8.71%	4.34%
TOTAL:	100.00%		9.39%