PREPARED TESTIMONY

of

Ronald L. Shackelford

Office of Financial Analysis
Missouri Public Service Commission

UNION ELECTRIC COMPANY
Case Number ER 81-180

Q. Please state your name.

A. My name is Ronald L. Shackelford.

Q. What is your mailing address?

A. My mailing address is P.O. Box 360, Jefferson City, Missouri, 65102.

Q. What is your present occupation?

A. I am the Assistant Director, Utility Division, Financial Analysis, a staff group of the Missouri Public Service Commission concerned primarily with financial analysis of public utilities operating under the jurisdiction of the Missouri Public Service Commission.

Q. What is your educational background?

A. I received my Bachelor of Science Degree in Business Administration from the University of Kansas and a Master of Business Administration Degree from Lincoln University.

Q. What has been your experience in the field of public utilities?

A. I was employed for about ten years as an accountant with Kansas City Power & Light Company. For the past twelve years, I have been employed

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by the Missouri Public Service Commission and have submitted rate of return testimony in various cases for the past nine years.

Q. Have you made an analysis of a fair rate of return which, in your opinion, Union Electric Company should have the opportunity to earn in its business?

A. Yes, I have.

Q. I hand you what has been marked for purposes of identification, Staff Exhibit No. , consisting of 23 schedules titled "An Analysis of the Rate of Return for Union Electric Company, Case Number ER 81-180", and ask you if this was prepared by you or under your supervision?

A. Yes, it was.

Q. Is it true and correct to the best of your knowledge and belief?

A. Yes, it is.

Q. What are the sources of the information shown in your exhibit?

A. Moody's Investor Services, Inc., Standard & Poor's Corporation, annual reports of Union Electric Company and financial periodicals were the major data sources used in the preparation of this exhibit.

Q. After your analysis, have you formed an opinion as to the rate of return required by Union Electric Company on its jurisdictional rate base?

A. Yes. My analysis leads me to conclude that Union Electric Company should be allowed to earn 10.66 percent to 10.80 percent on an original cost net investment year-end rate base.

I. Rationale for Regulation

Q. What is your rationale for the regulation of a public utility?

A. Generally speaking, public utilities are allowed to operate as

natural monopolies. By that is meant, that a single company is allowed to provide to a specified area, service such as water, sewer, electricity, gas or telephone. If several firms were allowed to provide the same service, facilities would be duplicated, such as electric distribution lines and poles, water and gas mains, etc., which would result in higher unit costs for all firms in that particular area.

If one firm is allowed an exclusive right to serve a particular area, the possibility exists that it may reap monopolistic profits without any form of competition. In this regard, regulation acts as a proxy for the price mechanism in protecting the interest of both the consumer and the producer. Regulation accomplishes this mainly by four activities:

1. Control of entry into market areas,
2. Setting prices by the determination of revenue requirements,
3. Establishing standards relating to the quality of conditions of service, and
4. Requiring the firm to serve all applicants for service under reasonable conditions.

Q. Within this regulatory framework, what approach have you taken in determining a rate of return for Union Electric Company?

A. My approach to the determination of the recommended rate of return for Union Electric Company (UE) has been guided by the Supreme Court ruling in the Bluefield Waterworks and Improvement Company case, in which the Court ruled that the return allowance should reflect the recognition of returns generally being made at the same time and in the same part of the country on investments in other business undertakings which are accompanied by corresponding risks and uncertainties; but it has no constitutional right to profits such as are anticipated in highly profitable or speculative ventures. Because of the national scope of the capital markets and the accessibility of

market information, it is my opinion that to look only at regional returns is no longer a criterion. Additionally, the returns 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. The Bluefield case was augmented by the Hope Natural Gas case, in which the Court also stated that the return to the equity owner should be commensurate with returns on investments in other enterprises with corresponding risks, and that the return should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. The Court stated that the fixing of just and reasonable rates involves a balancing of the consumer interests. The Hope case also established what is referred to as the "end result" concept.

It is my opinion that these decisions indicate that the regulatory process should weigh the interests of both the ratepayers and the owners. And while the return allowed should be high enough to protect the financial soundness of the utility, it should not be excessive to the point of providing monopolistic profits to the owners.

Therefore, my underlying approach to the determination of a fair rate of return for Union Electric Company considers the interests of both the ratepayers and the owners.

Q. Would you please explain Schedule 2 of your exhibit?

A. Yes. Schedule 2 shows two equations. Equation 1 states that

the revenue requirements of a public utility is equal to its cost of service. Equation 2 is the same as Equation 1, with the exception that the cost of service components are shown symbolically.

Q. What part of the revenue requirements was of primary concern to you?

A. My analysis was directed toward the part of cost stated as (V-D)R. My primary interest was the determination of R, the rate of return a utility should earn on the net valuation of the property used and useful in providing service. The components of R are: The embedded cost of debt weighted by the proportion of debt of the capital structure; embedded cost of preferred stock weighted by the proportion of preferred stock in the capital structure; and the return on common equity weighted by the proportion of common equity in the capital structure. With the appropriate variables isolated in this form, it is possible to utilize a cost of capital approach in the determination of R.

Q. How is the recommended rate of return developed from this framework?

A. The purpose of this testimony is to develop the fair rate of return for the Missouri jurisdictional properties of UE under consideration in these proceedings. The findings of the Hope case suggested the return on the properties should allow for:

1. Earnings comparable to those on similar investments,
2. Maintenance of financial integrity, and
3. Ability to raise required additional capital.

The above list suggests an analysis which includes:

1. An evaluation of the capital structure of the company,
2. A determination of the embedded cost of long-term debt,
3. A determination of the embedded cost of preferred stock, if any, and
4. The determination of a return on common equity that enables the firm to maintain its financial integrity and also affords it the ability to raise additional equity capital.

II. Current and Historic Market and Economic Conditions

Q. Please discuss current and historic market and economic conditions.

A. Schedule 3 graphically presents Moody's average public utility bond yields on a monthly basis from 1972 to present. Schedule 3A lists the value for each month's yield. Yields began rising in mid-1973, peaked in late 1974, and then gradually began to decrease. In 1978, yields began rising again and peaked in March, 19[illegible], subsequently declined and then rose again.

The much higher level of bond yields since the third quarter of 1979 was partly due to actions by the Federal Reserve when it began raising the discount rate from 9 1/2 percent to 12 percent. On February 15, 1980, the discount rate was increased to 13 percent and then on May 28, June 12 and July 28, 1980 the discount rates were lowered to 12 percent, 11 percent and 10 percent respectively. On September 26, 1980, the Fed raised the discount rate to 11 percent; on November 17 it was raised to 12 percent; on December 4 it was increased to 13 percent; and on May 5, 1981, it was increased to a record high of 14 percent. These changes in the discount rate by the Fed are purposely designed to restrain excessive growth of money available and also make credit more costly to obtain in order to reduce the rate of inflation. Apparently, the Federal Reserve Board is content to let interest rates fall where they may, and is more interested in limiting the growth of money and credit. Besides the discount rate charged, the Fed can also control the supply of money and credit by purchases and sales of Federal securities. When bond yields were high in 1974, the discount rate in effect was 7 3/4 percent to 8 percent.

Another example of current and historic market conditions is the prime rate. The prime rate represents the short-term interest rate

charged by large commercial banks to their best borrowers. Schedule 4 presents the movement of the prime rate from 1972 to present and Schedule 4A lists the monthly average prime rates. Like long-term bond yields, the prime rate was at its highest in 1974, in March, 1980, reached 21 1/2 percent in December, 1980 and currently is about 20 1/2 percent.

As far as interest rates are concerned, the market currently is in an "inverse-yield curve" condition. Normally, short-term rates are lower than long-term rates due to the time risk associated with long-term maturities. Schedule 5 displays a graph which plots the prime rate and the average yield of Moody's Public Utility Bonds. It can be seen that the inverse-yield curve condition was present in late 1973 and 1974. For most of 1975, all of 1976, 1977 and most of 1978, long-term rates exceeded short-term rates until late in 1978. Since late 1978, long-term rates, with the exception of a short period in mid 1980, have been lower than short-term rates. Currently, the prime rate exceeds long-term rates. This condition reflects a very volatile market situation with investors' expectations changing rapidly.

Schedule 6 presents a plot of the movement of the rate of inflation as measured by the Consumer Price Index (CPI). The CPI attempts to provide data regarding the current cost of various consumer goods and services indexed to the cost for the same goods and services in 1967. The movement of this index is supposed to measure the rate of inflation consumers experience. But this rate of inflation is not equally experienced by all consumers.

For example, mortgage rates on conventional mortgages, food prices and energy prices significantly influence the CPI. In December, 1979, mortgage rates represented 8.7 percent of the CPI but those consumers who did

not obtain conventional financing or any home mortgage financing were not affected by this component of the CPI. Also, the mortgage rate enters the financing component of the CPI with almost a two-month lag. Home finance charges included in the June, 1980 CPI reflect the mortgage rates in effect during the first week in May, when those rates were at or near their cyclical peaks.

Food prices are a random factor that influence the overall CPI and in December, 1979 represented 17.7 percent of the CPI. In the past, food prices have added over 6 percent to the index in one month and then a couple months later, didn't contribute anything. The drought experienced in the mid-west this summer is expected to increase the price of certain foods. But consumers who change their buying habits can avoid the increased prices of certain foods by substituting other foods in their place.

Energy is another important component and in December, 1979, represented 10.3 percent of the CPI. During the first quarter of 1980 when the CPI had its most rapid rise, energy prices spurted ahead and contributed 5.4 percent of that quarter's overall 18 percent CPI change. Fuel oil, coal and bottled gas are included in the energy component of the CPI. Consumers who do not purchase fuel oil, coal or bottled gas do not experience any inflation from these elements.

In general, the CPI is a very broad measure of consumer prices and does not reflect changes in consumer consumption patterns due to changing prices. Regardless of its faults, the CPI is a much referred to measure of inflation and consequently is considered by many investors in determining their return requirements. An example of the relationship between the rate of inflation and bond yields is shown in Schedule 7. Here the average yield for

Moody's public utility bonds is plotted with the rate of inflation. As the rate of inflation increased, bond yields also increased.

Recent forecasts for the economy and the market, in general, anticipate a slowing of economic growth and decreases in the levels of interest rates. For 1980, the rate of inflation as measured by the C.P.I. averaged 13.5 percent. Argus Research is forecasting an average inflation rate for 1981 of 11.1 percent, and for 1982, 7.4 percent with quarterly forecasts of 11.7, 11.5, 9.8, and 8.5 percent for 1981 and 8.5 and 7.5 percent for the first two quarters of 1982. Paine Webber Mitchell Hutchins is predicting a 10.4 and 8.2 percent rate of inflation for 1981 and 1982 respectively, with quarterly forecasts for 1981 of 1..2, 9.4, 8.9 and 9.2 percent. In the April 27, 1981 issue of Forbes Magazine, it forecast a rate of inflation of 8 percent by year-end and long-term interest rates at 10 percent. In the April 6, 1981 issue of the Wall Street Journal, A. Gary Shilling, President of A. Gary Shilling & Co., a New York-based economic consulting firm, was recommending that, whenever possible, companies should delay borrowing plans until later this year because he expects interest rates to tumble. Mr. Gordon B. Pye, Senior Vice President of Irving Trust Co., New York, forecasted in the April 20, 1981 issue of the Wall Street Journal that the prime rate will fall to around 15 percent this summer and will sink to around 10 percent by year-end. Other economists have stated that interest rates may increase slightly in the near term and then decrease to lower levels depending upon actions of the Federal Reserve Board.

Q. Do investors view industrial and utility stocks similarly?

A. No. In general, utility stocks are priced by investors to

provide relatively higher current yields. It has not always been so, but the combination of high interest rates and capital requirements made investors change their views regarding the growth opportunities of utilities.

Stock market movements are displayed in Schedule 8 which plots the stock price indices for New York Stock Exchange's Industrials and Utilities. These New York Stock Exchange indices are much more inclusive than either the S&P 400 or the S&P 40, and consequently are more representative of what the stock market in general has done. Both indices display similar patterns but the utility index does not exhibit as much fluctuation.

Schedule 9 displays the plots of S&P's Industrial and Utility stock yields and Moody's average public utility bond yields. The yields on S&P's industrial stocks are much lower than the yields on S&P's utility stocks whereas the yields on S&P's utility stocks tend more to approximate long-term debt yields, although the utility stock yields are generally lower. This indicates the interest rate sensitivity of utility stock prices and the apparent expectation of greater capital gain potential from industrial stocks.

The interest rate sensitivity of utility stocks is further illustrated by the graph shown in Schedule 10. Moody's average public utility bond yields (reference left edge) are plotted with the average market-to-book values (M/B) for Moody's electric utilities (reference right edge). M/Bs are calculated by dividing market price per share by year-end book value per share. When bond yields increased, M/Bs decreased indicating that stock prices had been bid

lower. But they were bid lower in order to achieve stock yields that more closely approximated bond yields. Many investors are using utility stocks in their portfolios as substitutes for fixed-income securities, and consequently when bond yields increase, stock dividends must increase or stock prices must decrease in order for stock yields to be competitive to yields on fixed-income securities.

III. Union Electric Company

Q. Please briefly discuss the operations of Union Electric Company.

A. Union Electric Company and its utility subsidiaries (Missouri Edison Company, Missouri Power & Light Company and Missouri Utilities Company) furnish regulated utility services including electric, natural gas, water and steam heat to parts of eastern, central, southeastern, northeastern and northwestern Missouri as well as small portions of Illinois and Iowa. UE, the consolidated entity, is the one that common stock investors look to as far as financial results are concerned. UE, corporate only, is the entity which is of importance to this proceeding. In 1980, UE's corporate revenues were 88.6 percent of consolidated revenues and corporate operating income was 90.7 percent of consolidated operating income. As these figures indicate, UE's corporate operations dominate the consolidated results.

Currently, UE's construction program includes two nuclear generating units, one estimated for commercial operation in 1983 and a like size unit estimated for commercial operation in 1990. The estimated cost of the first unit is $1.59 billion with a total of $958 million invested through 1980. For the next two years, UE's external capital requirements will be large until the first nuclear unit begins operation. Construction expenditures will begin

increasing again in 1985 as work on the second nuclear unit continues.

At present, UE's bonds are rated BBB+ by Standard & Poor's and Baa by Moody's INvestors Service. The company received these reduced ratings just recently in late January, 1981. At the same time, Standard & Poor's lowered UE's preferred stock rating to BBB- from BBB due to the "relatively agressive use of preferred stock in the capitalization". Also, Standard & Poor's lowered the company's commercial paper rating to A-3 from A-2, "reflecting the weakening cash flow and substantial external financing requirements". Moody's Investors Service rates UE's preferred stock baa and its commercial paper P-3. According to company projections, internally generated funds as a percent of net construction expenditures should increase to 74 percent and 86 percent in 1983 and 1984 from an average of about 10 percent for 1981 and 1982.

IV. Capital Structure

Q. What capital structure have you used for Union Electric Company to develop the capitalization ratios for your recommended rate of return?

A. Before discussing the capital structure I will use for UE in computing a rate of return, it should be noted that the capital structure I will use is not consolidated but is corporate only. Also, the amount of debt I will use in UE's corporate capital structure will not agree with any published reports of the company. This is due to the fact that for regulatory purposes one reported obligation (nuclear fuel lease) has been eliminated entirely. Even though the company is unconditionally obligated to reimburse the lessor for all expenditures for nuclear fuel, interest and related costs, obligations under this lease will not become current until such time as the nuclear fuel is engaged in heat production at the company's Callaway Nuclear Plant. The other obligation shown in published reports in the amount of $60 million, re-

lates to environmental improvement series bonds of 1980. This entire amount has not been issued at present but is being issued as pollution control facilities at the company's Meramec Power Station are completed. To answer your question regarding UE's capital structure, it is my understanding that the historical test year used by the accounting staff in this case is December 31, 1980, updated for known and measurable changes to June 30, 1981, and that a true-up audit will be made after the formal hearings in the case are completed. Consequently, I have developed a pro-forma capital structure at June 30, 1981 based upon UE's actual capital structure at March 31, 1981 and adjusted for budgeted changes in debt and common equity during the three months of April, May and June, 1981. The development of this pro-forma capital structure at June 30, 1981 is shown in Schedule 11.

The increases in long-term debt reflect the additional amount of $30,000,000 of First Mortgage Bonds by July 15, 1981. When this issue of First Mortgage Bonds was sold on February 15, 1981, the agreement stipulated that the proceeds from $120,000,000 principal amount was to be received immedetiately and a delayed delivery of $30,000,000 principal amount would occur no later than July 15, 1981. Since the amount of the delayed delivery is so near the end of the known and measurable period, I decided to include this amount in the long-term debt to be outstanding.

The additional $9,000,000 in 1980 series pollution control bonds to be taken-down during the period April through June, 1981 is an estimate furnished me by the company. This particular series of pollution control bonds pertains to the company's Meramec generating station and, as the pollution control facilities are completed, bonds will be issued in like amounts. The increase in common equity is detailed in Schedule 11 and the amounts are based entirely on budgeted figures furnished to me by the company.

The resulting capitalization ratios are: 50.72% long-term debt; 13.94% preferred stock; and 35.34% common equity. As I said previously, this capital structure is subject to change pending the true-up after formal hearings have been concluded.

V. Embedded Cost of Long-Term Debt

Q. What is the embedded cost of UE's long-term debt?

A. Schedule 12 displays my computation of the embedded cost of UE's First Mortgage Bonds, Pollution Control Bonds, and intermediate term loan. The embedded cost computes to be 8.825 percent.

Q. Have you included any future financings in your embedded cost computation?

A. A $75 million issue of pollution control bonds is projected for the summer of 1981, but this will occur after the end of the known and measurable period and the cost of issuance is unknown at this time. Therefore I have not included this projected issue of debt in my embedded cost computation.

VI. Embedded Cost of Preferred and Preference Stock

Q. What is the embedded cost of UE's preferred stock?

A. Schedule 13 displays my computation of the embedded cost of UE's preferred stock. The embedded cost computes to be 7.83 percent.

Q. Have you included any future financings in your embedded cost computation?

A. No. Originally the company planned a $75 million issue of preferred stock in May, 1981, but withdrew its issuance partly because of the high dividend rate that would have to be offered and partly due to its improved cash flow conditions. It is still projected that preferred stock will be issued later in 1981 but its timing and dividend rate is unknown at this time.

VII. Cost of Common Equity

Q. How did you determine a cost for the common equity of Union Electric Company?

A. In using the cost of capital approach to determine a rate of return for the rate base of a utility, the weighted costs of capital invested (debt, preferred stock and common equity) are determined by computing the embedded costs of debt and preferred stock and estimating a cost for common equity. The embedded costs of debt and preferred stock can be determined fairly easily because these forms of capital have stated interest and dividend rates and their issuance costs are ascertainable. Common stock has no contractual dividend payments and its claim on the earnings of a firm is residual. Consequently, common stock investment is considered to have a higher risk than either debt or preferred stock and its cost should be higher than either of the former. Because common stock does not have the cost ascertainable characteristics of debt or preferred stock, its cost is estimated by the use of various approaches. To estimate a cost for the common equity of UE, I used market-related approaches and comparable earnings approaches.

Q. What market-related approaches did you use?

A. I used a discounted cash flow (DCF) approach and a multiple regression model.

Q. Please explain the discounted cash flow approach.

A. The discounted cash flow approach (DCF) is a model based upon the valid concept of the time value of money. That is, a dollar today is not worth as much in some future period and an investor will require some kind of compensation (his discount rate) for its use.

As far as the valuation of common stocks is concerned, the DCF is based upon the generally accepted financial theory that stock prices are dependent upon expected future dividends and the perceived risk of receiving those dividends. In other words, the current price of a share of stock is calculated as the present value of future dividends plus the ending price of the stock, or in other words, a stream of earnings. In order to persuade an investor to forego consumption of a dollar today for a dollar at some future time, he expects some type of compensation for allowing someone else to use his money. This is rather straightforward when one is referring to bonds and preferred stocks because the interest payments and preferred dividends are known with relative certainty. But with common stocks, the return the investor receives is the dividends he receives while he holds the stock plus the price he receives when he sells it, minus the cost of his original investment.

The formula used to estimate the investor's required return and likewise the cost of equity to the firm is:

$$k = \frac{D}{P} + g, \text{ where}$$

k = the investor's discount rate or required return,

D = the indicated dividends per share,

P = the price per share of common stock, and

g = the growth rate in dividends and earnings per share.

As the title of this approach denotes, an investor's interest lies in the cash flows he can reasonably expect to receive from his investment. Dividends are normally received quarterly and the investor knows that at any time he can sell the stock. Of course, it is difficult to imagine that any investor will hold a stock for infinity, but the DCF assumes that there is a continuous stream of income from dividends and price that is common to all investors; not just one who may have a specific time frame in mind. Therefore, the return that a company must earn is one that satisfies all potential investors.

A summary of the assumptions and relationships implied in the use of the DCF formula is as follows:

1. The formula assumes that dividends and earnings will continue to grow at the rate g in perpetuity,
2. The dividend payout will be less than 100 percent; otherwise if the firm paid out everything it earned, then the formula would suggest that the growth rate of earnings in subsequent periods would be zero, given a constant rate of return on book equity,
3. If we assume that dividends and earnings will grow at the same rate, the dividend payout ratio will remain constant,
4. If a constant growth rate is assumed, the Price/Earnings (P/E) ratio at the time of purchase and sale will be the same,
5. Implicit in the formula is that when r (the earned return) = k, the market price of the stock will equal book value.

In using the DCF approach to determine a required rate of return, what must be kept in mind is that the growth rate being estimated is a long-term rate. But many analysts only estimate growth rates for three to five years into the future. Since the discounting process is continuous, the growth rate part of the formula should be one that reasonably reflects long-run growth. Likewise, the yield portion of the DCF model should also reflect some average level market condition so that, when combined with the growth rate, a long run required return results. A particular current investor may only have an anticipated holding period for a stock of one or two years, but that investor intends to sell at the end of his holding period to another investor

who also has a definite holding period at the end of which he intends to sell to another investor, etc. Even though between different holding periods different returns may result, the DCF model's intent is to produce a long-run return that will satisfy all investors, current and prospective.

In determining the proper growth rate to use, historic growth covering long time periods should be observed for both dividends and earnings. Even though cash flows are derived from dividends, it would be illogical to use a dividend growth rate that exceeded earnings growth. Dividends cannot continue to grow faster than earnings because to do so, the dividends paid would eventually be greater than earnings. What must also be considered are changes in growth rates which can be determined from observing the direction of the raw data. If earnings' growth has decreased in recent periods, you cannot logically expect some historically computed growth rate which is higher to continue.

The dividend yield portion of the DCF also requires the use of reasonableness that reflects an average expectation; not one that may reflect a yield for a particular point in time such as a month or more when market conditions were abnormally low. To do so would be overstating that portion of the formula and result in a cost of equity capital in excess of what can reasonably be expected. Therefore, the DCF approach basically requires two values to be determined for its formula: the dividend yield portion ($\frac{D}{P}$) and the growth rate portion (g). A DCF computation of UE's cost of common equity must be tempered by judgment in order to determine a long-term earnings rate that will satisfy investor requirements.

Q. How did you arrive at the dividend yield portion of the DCF formula for UE?

A. The key to the attractiveness of most utility stocks is their yields relative to alternative returns on fixed-income investments. As the

yield requirements on fixed-income investments fluctuate, so will the yield requirements for utility stocks change. Schedule 10 displayed this relationship and indicates the interest rate sensitivity of utility stock prices. Forecasting what level long-term inte est rates may be in the future is no easy task, given the fluctuations in interest rates over the past five years. But if one assumes that the next five years may emulate some average of the past, then observations of the more recent past may lead to reasonable expectations for the future.

Although UE's recent market yield has been about 14 percent, I believe that the current price of its stock is depressed and therefore, its current yield is overstated. A more reasonable approach would be to observe the historic market yield of UE's stock and determine a yield that more accurately indicates investor appraisal for average market conditions. To provide me with an estimate of a more realistic market yield for UE's stock, I developed Schedule 14. This schedule displays the indicated dividends per share, the end-of-month market prices per share and the resulting market yield for UE's common stock for each month for the period 1979 through April, 1981. During this period, market yields for UE's stock have ranged from 9.9 percent to 14.5 percent. The average yield for 1979 was 10.73 percent; for 1979 and April, 1980 through August, 1980 was 11.14 percent; and for 1979 and 1980 averaged 11.88 percent.

Q. Why did you look only at average yields for 1979 and 1980?

A. On October 6, 1979, the Federal Reserve Board increased the discount rate to 12 percent. Looking at Schedule 14, you can see that UE's yield increased from the end of September to the end of October and remained at a relatively higher yield for the rest of 1979. On February 15, 1980, the Fed

again raised the discount rate, this time to 13 percent. The yield on UE's stock increased from the end of January, 1980 to the end of March, 1980. Late in April, 1980, the prime rate was reduced by as much as 300 basis points at some banks and other banks reduced their prime rate 250 basis points from a record high of 20 percent. Later in 1980, the discount rate continued to be increased and on May 5, 1981 was placed at a record high of 14 percent. The change in the price of UE's stock reflects these changes in interest rates.

Considering the data contained in Schedule 14, it is my opinion that with more normal market conditions the yield on UE's stock would range from about 10.73 percent to 11.88 percent. Therefore in my DCF computation, I will use dividend yields in the range of 10.73 percent to 11.88 percent to represent the $\frac{D}{P}$ portion of the DCF formula for UE.

Q. How did you arrive at the g (growth) portion of the DCF formula for UE?

A. The growth portion of the DCF formula must also be tempered with judgment as to what investors can reasonably expect. Schedule 15 displays earnings per share and dividends per share.

Earlier in my testimony, I stated that one of the assumptions of the DCF was that the payout ratio would remain constant and that earnings are also assumed to grow at some constant rate so that dividends will also grow at a similar rate. In reviewing UE's earnings per share data, it has displayed erratic up and down movements since 1970. That is, no consistent year-to-year increases. Trended and compound growth rates for the latest five-year period have averaged about 3.1 percent. A graph of UE's earnings per share is shown in Schedule 15A.

Observing UE's dividends per share, it can easily be seen that

only since 1975 has there been consistent year-to-year increases. Prior to that time, dividends remained at the same level for more than one year before they were increased. Therefore, investors would base future dividend increases on the more recent dividend policy of the company in forming expectations regarding the future. Trended and compound growth rates for the more recent period have averaged about 2.75 percent. A graph of UE's dividends per share is shown in Schedule 15B.

Q. Using the yields and growth rates you have determined for UE, what do you compute to be the company's cost of common equity based upon the DCF approach?

A. I have determined that yields in the range of 10.73 percent to 11.88 percent would be representative for the common stock of UE under more average market conditions and that growth rates from 2.75 percent to 3.1 percent would be reasonable for investors to expect. When these yields and growth rates are inserted into the DCF formula, the resulting cost of common equity computed is only applicable to internally generated equity funds. The cost of externally or market obtained equity funds is higher due to issuance costs associated with selling new common stock. In order to allow for this additional cost when common equity is market obtained, the DCF formula is adjusted as follows:

$$k = \frac{D}{P(1-F)} = g \text{ where}$$

F = percent of flotation costs

Schedule 16 displays data regarding the last five common stock issues of UE. In reviewing these costs of issuance, it appears reasonable to conclude that a flotation cost adjustment of 4 percent would be adequate to cover these costs in order to provide net proceeds from common stock issues that equal or exceed

book value per share. Using my previously determined yields and growth rates and a flotation cost adjustment of 4 percent, the following costs of common equity are computed:

$$k = \frac{.1073}{(1-.04)} = \frac{.1073}{.96} = .1118 + .0275 = .1393$$

$$k = \frac{.1073}{(1-.04)} = \frac{.1073}{.96} = .1118 + .031 = .1428$$

$$k = \frac{.1114}{(1-.04)} = \frac{.1114}{.96} = .1160 + .0275 = .1435$$

$$k = \frac{.1114}{(1-.04)} = \frac{.1114}{.96} = .1160 + .031 = .1470$$

$$k = \frac{.1188}{(1-.04)} = \frac{.1188}{.96} = .1238 + .0275 = .1513$$

$$k = \frac{.1188}{(1-.04)} = \frac{.1188}{.96} = .1238 + .031 = .1548$$

Q. Please explain your multiple regression model and the cost of common equity for UE you determined by use of this model.

A. Regression analysis is the study of the relationship of variables with the major purpose of the study to predict one of the variables based upon the other variables. In simple regression analysis, only two variables are studied. For example, an attempt might be made to predict the number of new housing starts based on the number of marriages. Intuitively, there are other factors influencing the number of new homes built such as the interest rate, employment, and income. Multiple regression analysis includes the influence of many independent variables on the one dependent variable; in this example, housing starts.

The purpose of the electric utility regression study was to determine those characteristics of electric utilities (independent variables) that investors consider most significant to them in arriving at the values

they place on electric utilities' common stocks (dependent variable). Since stock prices vary widely from one utility to another, the term used to express investors' valuation of electric utility common stocks is average market-to book value (AVMBV), which is computed by averaging the annual high and low market price per share for a stock and dividing by its year-end book common equity per share. In statistical terms then, AVMBV will be the dependent variable and all other variables will be independent variables, i.e., those variables that best explain the value of the dependent variable.

The input data for this multiple regression analysis was obtained from the Compustat II data base, Moody's Investors Service and Duff & Phelps. Besides the input data for the dependent variable, AVMBV, input data for 28 independent variables, for 79 companies for the seven years 1973 through 1979 were set up in a separate data base. In order to select those independent variables that were most significant in determining the value of the dependent variable, the stepwise regression procedure of the SAS 79 program package was used. A significance level of .01 was designated for acceptance of an independent variable. The operator has no control over which independent variables are selected for inclusion in the model; the program internally makes the mathematical tests on each variable.

The 28 independent variables and their assigned names were:

Number	Variable Name	
1	EQRAT	Common equity ratio
1	ROE	Return on year-end common equity
1	PRECOV	Pre-tax interest coverage
1	COVEXL	Pre-tax interest coverage excluding AFDC
1	PSCOV	After-tax interest and preferred dividend coverage
1	PAYOUT	Dividend payout ratio
1	EFFTAX	Effective income tax rate
1	RETCAP	Return on total capital
1	DPS5	5 year dividend per share growth
1	EPS5	5 year earnings per share growth
1	KWH5	5 year kwh growth
1	AFDPCT	Ratio of AFDC to income for common
1	LDFAC	Load factor
1	DIVCSH	Ratio of cash dividends to total cash flow
1	BKYLD	Book yield
1	RRATE	Reciprocal of Moody's Electric Utility stock yields
2	DPHI & DPLOW	Duff & Phelps regulatory ranking; high equals 1 and 2; low equals 5 and 6
1	DPSCOV	Dividends per share coverage
5	DUM1 - DUM5	Geographic location
1	DBRB	Moody's bond rating of Baa or lower and no rating
1	DBRAA	Moody's bond rating of Aaa or Aa
2	REVHI & REVLOW	Operating revenues classified as high (over $700,000) and low (under $100,000)

28 Independent Variables

Q. What were the results of the stepwise regression analysis?

A. Regressing on the dependent variable AVMBV and designating a significance level of .01, the stepwise procedure terminated its selection with the following multiple regression equation:

Variable Name	Coefficient
Y Intercept	-1.0561
PSCOV	.1265
KWH5	.4182
BKYLD	10.4136
RRATE	6.9257
DPHI	.0594
DPSCOV	.0191
DUM4	.1062
DUM5	.0642
DBRAA	.0372

In effect, this resulting equation is saying that, of the 28 independent variables tested, these nine variables are most statistically significant at the .01 significance level in explaining the value of the dependent variable, AVMBV. That is, this equation produces the "best fit" of the data for all the observed values determined to be significant. The statistic known as R-squared, the coefficient of determination, is computed to be .863, which is very high considering the number of observations tested. A R-squared of 1.0 would indicate a perfect relationship between the dependent variable and the independent variables which seldom, if ever, occurs.

Schedule 17 lists the 79 utilities and their actual average market-to-book values for 1979 in ascending order. Also are listed the predicted AVMBVs.

Q. Would you please give an example of how the predicted average market-to-book value is computed?

A. Yes. Using the appropriate data for Union Electric Company for the year 1979, the following AVMBV is predicted:

AVMBV for UE for 1979 = -1.0561 + .1265 (PSCOV) + .4182 (KWH5)
+ 10.4136 (BKYLD) + 6.9257 (RRATE)
+ .0191 (DPSCOV)

For UE for 1979 the values for the above variables were:

PSCOV = 1.68
KWH5 = .034
BKYLD = .0909
RRATE = .0967
DPSCOV = 2.30

Inserting the above values into the equation results in the following predicted AVMBV for UE for 1979 as follows:

Predicted AVMBV for UE for 1979 = -1.0561 + .1265 (1.68)
+ .4182 (.034) + 10.4136 (.0909)
+ 6.9257 (.0967) + .0191 (2.30)

Predicted AVMBV for UE for 1979 = -1.0561 + .2125 + .0142
+ .9466 + .6697 + .0439

Predicted AVMBV for UE for 1979 = .831

The actual AVMBV for UE in 1979 was .812.

Q. How is your recommended return on common equity for UE determined from the multiple regression equation?

A. The input value for the independent variable BKYLD (book yield) is computed by dividing dividends per share by book value per share. BKYLD can also be computed by multiplying return on common equity by dividend payout ratio. Likewise, BKYLD divided by dividend payout ratio equals return on common equity. So you can see the mathematical relationship that exists between BKYLD and return on common equity. Consequently, if values are assigned to the

dependent variable, AVMBV, and all the independent variables except BKYLD, the model or equation can be solved algebraically for return on common equity by dividing BKYLD by a dividend payout ratio.

Q. What values did you assign for all the variables except book yield?

A. I used the following values for UE in solving the equation:

AVMBV = 1.04
PSCOV = 1.8
KWH5 = .033
DPSCOV = 2.5
RRATE = 1/10.34%
RRATE = 1/10.63%
RRATE = 1/11.195%

Explanation of values assigned:

1. For the dependent variable AVMBV, the value 1.04 represents a target value that is intended to provide a sufficient cushion above book value so that net proceeds realized from the sales of common stock will equal or be greater than book value.

2. For PSCOV, the value assigned of 1.8 is what has been experienced by UE on average during the period 1973-79 and which can reasonably be expected by investors to be realized by UE on average in the future.

3. For KWH5, I have assigned a growth rate of 3.3 percent. Schedule 15 displays total company kwh sales for the period 1963 through 1980. There is a noticeable decrease in kwh growth rates for various periods are shown and range from 3.16% to 5.23%. Concentrating primarily on the period beginning in 1975, it would appear that a 3.3% growth would be reasonable for investors to expect.

4. DPSCOV is computed by dividing cash flow per share by dividends per share. This represents the number of times cash dividends are covered by cash income. For UE on average, a DPSCOV of 2.5 times can reasonably be expected to be experienced by the company.

5. For the variable RRATE, I examined recent yields of Moody's Electric Utilities' stocks. Schedule 18 displays these stock yields annually for the period 1970 through 1980 and monthly for the years 1979 and 1980. Annual yields have ranged from 5.7% to 12.05%. Monthly yields for 1979 and 1980 have ranged from 9.5% to 13.1% and I believe this is the time period from which values should be developed for the RRATE variable.

Earlier in my testimony I referred to the interest rate sensitivity of utility stocks. The period 1979 and 1980 dramatically reflect this relationship as well as another significant event; that being the Three Mile Island accident which occurred late in March, 1979. You will note the significant increase in stock yield in April, 1979 that resulted and then a gradually decrease thereafter until the increases in the Federal discount rates in late 1979 and early 1980; the decreasing yields from March, 1980 to mid-1980 as the discount rate was lowered; and the increase in yields that occurred in late 1980 as the discount rate was again increased.

At the bottom of Schedule 18 I have computed average yields for three different time periods that I believe reflect normal market conditions during the period 1979 and 1980. Those average yields are 10.34%, 10.63% and 11.195%. These three yields are the ones I will use as assigned values for the variable RRATE.

Values for the other variables found significant by the regression would be zero, as far as UE is concerned. For example, UE does not have a Moody's bond rating of Aaa or Aa; Missouri does not have a regulatory ranking of 1 or 2; and UE does not geographically operate in areas 4 or 5.

Q. Using your assigned values for the variables applicable to UE, explain how a return on common equity is derived.

A. Lines 1 through 7 of Schedule 19 display the mathematical calculations using my assigned values for the independent variables relevant to UE. Column 2 is the coefficient term and Column 3 is the assigned value. Columns 4, 5 and 6 display the result of multiplying Column 2 times Column 3. Line 8 is the total products of the independent variables using three stock yields. Line 10, Columns 4, 5 and 6 is the algebraic value that results from combining the total values of the independent variable with the dependent variable, AVMBV. The figures on line 10 are then divided by the BKYLD coefficient to solve for its value, or required book yield as shown on line 12. The next procedure is to divide the required book yield (line 12) by an appropriate payout ratio. For the period 1973 through 1979, the 79 companies'

payout ratio averaged about 73 percent. According to an electric utility industry report by Salomon Brothers, dated April 14, 1981, the average payout ratio of 100 electric utilities was 79 percent. Since investors require a high current yield, it is important that officers of electric utilities recognize this desire and provide a dividend that will maximize the value of their common stock. On average, a dividend payout ratio from 75 percent to 77.5 percent would appear to be appropriate for the industry to fulfill desires of investors and at the same time, provide sufficient coverage for the cash dividend.

Line 14 of Schedule 19 reflects the resulting required returns on common equity using payout ratios of 75 percent and 77.5 percent. These range from 14.09 percent to 15.21 percent, depending upon the payout ratio used and the stock yield reciprocal used.

Q. How did you conduct your comparable earnings analysis?

A. From the 79 electric utilities used in the regression analysis, I selected those companies that never experienced average market-to-book values less than 90 percent during the period 1973 through 1979. Eleven of the 79 companies met this criterion. Averages for each year were computed for AVMBV, ROE, BKYLD, PAYOUT, EQRAT, PSCOV and DPSCOV. This data is displayed in Schedule 20, as well as the same data for UE.

For the eleven company group, AVMBVs averaged less than one only in the year 1979 and, even in that year, it was only slightly less than one, indicating that, on average, these eleven companies had the opportunity to sell common stock above book value during the entire period. If 1980 data were available, I suspect that AVMBVs would ve lower due to the poorer market conditions that existed. During the same period, ROEs averaged 12.5 percent and ranged from 11.7 percent to 13.2 percent; BKYLDs averaged 9.6 percent and

ranged from 9.4 percent to 9.8 percent; PAYOUTs averaged 76 percent and ranged from 70 percent to 83 percent; EQRATs averaged 34 percent and ranged from 32 percent to 36 percent; PSCOVs averaged about 2 times and ranged from 1.9 to 2.3 times; and DPSCOVs averaged 2.6 times and ranged from 2.3 to 2.8 times.

In comparison, the AVMBVs for UE averaged 90 percent for the period 1973 through 1979 and, with 1980 included, averaged 88 percent, indicating that UE had few opportunities to issue common stock above book value except possibly in 1973 and 1977. For UE, ROEs averaged 10.4 percent and, including 1980, averaged 10.6 percent with ranges from 8.1 percent to 12 percent; BKYLDs averaged 8.7 percent and ranged from 8.3 percent to 9.4 percent; PAYOUTs averaged 79 percent and 78 percent respectively with ranges from 70 percent to 93 percent; EQRATs averaged 31.4 percent and 31.8 percent respectively and ranged from 29 percent to 34.4 percent; PSCOVs averaged 1.7 times and ranged from 1.53 to 1.86; DPSCOVs averaged about 2.5 times and ranged from 2.0 to 2.9 times.

Why have these eleven utilities, on average, received better market appraisal of their common stocks than has UE? Comparing the six financial ratios of the eleven utilities with those of UE does reflect certain significant differences, those being ROE, BKYLD and PSCOV.

The ROEs of UE have averaged about 200 basis points less than those of the eleven companies. This is probably a contributing factor to UE's lower AVMBVs, not so much by itself, but because the lower returns have constrained UE's ability to increase dividends and thereby increase BKYLD, which has averaged about 100 basis points less. A utility's ability to maintain a high dividend policy, i.e., one that provides a yield competitive with fixed income securities and one that provides annual increases to maintain that

high dividend policy results in more favorable investor valuation in good markets and helps support a utility's stock price at a comparatively higher level in poor markets.

The PSCOVs of the eleven utilities have averaged more than UE primarily because of the higher level of ROE. The DPSCOV of UE has averaged about the same as those of the eleven utilities but this is primarily due to UE's lower dividend policy. On average, the EQRATs of UE have lower than those of the eleven utilities but apparently UE has striven to maintain a higher equity ratio in recent years.

The average PAYOUTs of UE and the eleven utility group are very close for the period. But UE's payouts are a result of lower ROEs and not a result of a higher dividend policy which is representative of the eleven utility group. In summary, it appears that the more highly valued electric utilities exhibit:

1. Payout ratios in the range of 75 to 80 percent,
2. High book yields, indicating a high dividend policy, and
3. On average, returns on common equity in the low 13 percent range would help support a utility's stock price but returns in the upper teens are not necessarily required.

Q. Did you perform any other comparable earnings analysis?

A. Yes. I also reviewed the average historic earnings and market values of two groups of non-regulated firms; the S&P 400 Industrials and Compustat Industrials. No attempt was made to select companies of comparable risk to UE, the primary purpose was to compare the reasonableness of returns obtained from other approaches with returns earned in general in the non-regulated sector. The data for these two groups of non-regulated firms were taken from the Compustat II Industrial data base. Returns on year-end common equity

were computed for each company and then a simple arithmetic average was calculated for the composite. The average market to book value was computed by dividing the average of the high and low market price per share by the year-end book value per share for each company, and then a simple arithmetic average was calculated for each composite.

Schedule 21 displays the average market to book values (AVMBV) and the returns on year end common equity (ROE) for the total Compustat Industrial file and also for those companies included in the S&P 400. These two groups were also subdivided into a non-oil component group and an oil component group because of the influence the oil component group has had on stock price indices such as the S&P 400. Last year, Salomon Brothers published data that illustrated the weighting effect the oil component companies had on the S&P 400 index. It was as follows:

Market Values of the Oil and Non-oil Sectors of the S&P 400 (Dollars in Billions)

	2Q79	3Q79	4Q79	1Q80	2Q80	Change
Oil	$134.1	$154.3	$161.3	$174.3	$197.1	47.0%
Non-oil	441.1	464.1	453.0	415.5	459.3	4.1
S&P 400	$575.2	$618.4	$614.3	$589.8	$656.4	14.1%

The oil component includes about 30 companies or 7 1/2 percent of the total 400 companies that make up the S&P 400 but, at the second quarter of 1980, the oil component represented 30 percent of the total market value. For the year shown, the S&P 400 was up 14 percent, or $81.2 billion in total market value, with 78 percent of the improvement being provided by the oil component. On a nine-month basis, the "market" as measured by the S&P 400 excluding the oil component, was actually down, while the total S&P 400 average

was up 6.1 percent, indicating that more than 100 percent of the market gain during this time period was accounted for by the oil component of the index.

Referring to Schedule 21, for the period 1970 through 1979, returns on equity have increased and average market to book values have decreased, but they still remain at a level well above book value. Returns for the S&P 400 have been higher than the Compustat Industrials due primarily to the inclusion of larger and more well established companies. Average market to book values have also been higher for the S&P 400.

Since 1973, the returns earned by the oil component companies have increased the total returns from 10 to 40 basis points. When the oil component companies are excluded, returns on equity for the S&P 400 have ranged from the mid 13 percent to the mid 14 percent in recent years with average market to book values well over book value. Returns on equity for the Compustat Industrials, excluding oil, have been materially lower except for the year 1979 and average market to book values have also been lower but still well above book value.

Q. What has your analysis indicated regarding a return on common equity for UE?

A. My DCF analysis indicated a range of returns on equity from about 13.93 percent to 15.48 percent. My regression analysis indicated returns in the range of 14.09 percent to 15.21 percent; the average of the high and low returns from the DCF and regression analyses computes to a range of 14.4 percent to 14.8 percent. The comparable analysis of eleven more highly valued electric utilities indicates that earned returns of about 13. 2 percent would support stock prices in excess of book value during most market conditions, although this analysis also indicated that other financial ratios should be

exhibited by the company in addition to the return on equity. Lastly, the non-adjusted risk returns earned in the non-regulated sector, although higher than the eleven electric utilities, indicate that returns in the 14 percent to 15 percent range are reasonable. Therefore, I conclude that returns on equity in the range of 14.4 percent to 14.8 percent represent a fair and reasonable estimate of the cost of common equity for UE.

Q. Based upon your returns on common equity of 14.4 percent to 14.8 percent, what are your resulting recommended rates of return?

A. Schedule 22 displays the resulting rates of return using returns on common equity of 14.4 percent, 14.6 percent and 14.8 percent. They compute to be 10.66 percent, 10.73 percent and 10.80 percent based upon the pro forma capital structure and the embedded costs of long-term debt and preferred stock of UE at June 30, 1981.

Q. Would you please relate your recommended rates of return of 10.66 percent, 10.73 percent and 10.80 percent to an appropriate rate base?

A. My recommended rates of return should be applied to a jurisdictional original cost rate base. If a rate base other than original cost is used, then my recommended rates of return would have to be adjusted to produce the same dollars as calculated using an original cost rate base.

Q. What is the relationship between the rates of return you have computed in your Schedule 22 and UE's overall cost of capital?

A. The rates of return shown in my Schedule 22 include UE's pre-tax cost of long-term debt and are computed in this way because of the use of the revenue requirement formula shown in Schedule 2 where the rate of return is an amount designed to cover pre-tax interest charges and a return for the common stockholders. Included in operating expenses are income taxes

that reflect the deductibility of interest expense.

However, the actual overall cost of capital to UE is on the basis of each capital component's after-tax cost. Since interest charges are deductible for income tax purposes, the tax savings due to the interest charges should be shown as a deduction from capital costs. The result is an overall cost of capital that reflects debt costs less its related tax savings. Schedule 23 shows the computation of UE's overall cost of capital that reflects this tax saving. The tax factor of .51537 is the reciprocal of the effective tax rate of .48463 . The computed overall costs of capital of 8.49 percent 8.56 percent, and 8.63 percent reflect the after-tax weighted costs of all the capital components of UE.

Q. Will Union Electric Company be able to carry out its projected annual financings of external capital?

A. In order for UE to issue additional bonds and preferred stock, it must meet certain tests under its Mortgage Indenture and its Articles of Incorporation. There are no specific requirements or tests that must be met in order for UE to sell common stock.

For the issuance of bonds, the most restrictive requirement is the earnings coverage test or the minimum number of times net earnings must be greater than interest charges on bonds outstanding and then being issued. In February, 1981, UE issued $150 million of First Mortgage Bonds at an interest rate of 15 3/8 percent. In calculating the earnings coverage test for this issue, the company used earnings for the twelve months ended November 30, 1980, which complied with one of the requirements of using any 12 consecutive months within the 15 months preceding issue. At that time, the coverage was 3.23 times, excluding interest on the proposed issue, and was sufficient to allow UE to issue an additional $356M

of bonds at 15 3/8 percent and still meet the minimum coverage test of two times. Including interest on the $150 million proposed issue, coverage was about 2.6 times. At March 31, 1981, coverage under the indenture was about 2.5 times, excluding interest on $30 million of bonds to be taken down later, and was about 2.4 times including the interest on the $30 million of bonds.

UE's scheduled debt financing for the remainder of 1981 has changed from what was originally planned. A $75 million issue of Pollution Control Bonds is now planned for the summer of 1981. This is in addition to the originally planned amount of $200 million. If we assume that the corporate earnings level at March 31, 1981 will continue and we also assume a 12 per cent interest rate on the pollution control bond issue, then pro forma coverage under the indenture will be about ? . times which easily exceeds the minimum coverage test of two times and thus will enable UE to issue these bonds.

Beyond 1981, it becomes difficult to estimate what UE's coverages will be and consequently whether it will be able to carry out its projected bond financings. Unknown variables such as the revenue increase to be awarded in this case and the future level of interest rates would affect future coverage computations of UE debt issues. In 1982, the amount of bonds projected to be issued which would require a coverage test is $75 million. This is $150 million less than 1981. $100 million in bonds are projected to be issued in 1983 and none in 1984.

To issue additional preferred stock, UE must comply with a coverage test under its Articles of Incorporation. This test requires that net earnings for a period of 12 consecutive months within 15 months preceding such sale be at least 2 1/2 times the annual dividend requirements on its preferred

stock then outstanding and to be issued. In May, 1981, UE originally planned to issue $75 million of preferred stock but withdrew that proposed issue partly due to the high dividend rate that would have been required (about 17 percent) and partly due to a temporary improved cash flow condition. Although this preferred stock issue has currently been postponed to October, 1981, the possibility exists that it may be delayed until sometime in 1982.

At March 31, 1981, preferred dividend coverage was 4.8 times. Assuming $75 million of preferred stock was issued at a dividend rate of 17 percent, pro forma dividend coverage would have been 3.35 times. If we assume a continuation of the current earnings level and also assume that $75 million of pollution control bonds will be issued at a 12 percent interest rate, then preferred dividend coverage would be about 4.5 times or still sufficient to issue $75 million of preferred stock at a dividend rate of 17 percent.

To summarize, it appears that UE will be able to complete its bond and preferred stock financings for the remainder of 1981. Beyond 1981, there are assumptions that would have to be made regarding tariffs that would be in effect and the level of investors' required yields on debt and preferred stock.

Q. Does this conclude your prepared testimony?

A. Yes, it does.

STAFF EXHIBIT _____

An Analysis of the Rate of Return for

UNION ELECTRIC COMPANY
Case Number ER 81-180

Office of Financial Analysis
Missouri Public Service Commission

May, 1981

Schedule 1

List of Schedules

Schedule No.	Description
2	Public Utility Revenue Requirements or Cost of Service
3	Average Yield on Moody's Public Utility Bonds (Graph)
3A	Average Yield on Moody's Public Utility Bonds
4	Average Prime Rate (Graph)
4A	Average Prime Rate
5	Average Yield on Moody's Public Utility Bonds and Prime Rate (Graph)
5A	Average Yield on Moody's Public Utility Bonds and Prime Rate
6	Rate of Inflation (Graph)
6A	Rate of Inflation
7	Moody's Average Public Utility Bond Yield and Rate of Inflation (Graph)
8	New York Stock Exchange Stock Price Indices (Graph)
9	Moody's Average Public Utility Bond Yields, S&P's Industrials and Utilities Stock Yields (Graph)
10	Moody's Electrics Market-to-Book Value and Average Yield on Utility Bonds (Graph)
11	Pro Forma Capital Structure, June 30, 1981
12	Embedded Cost of Long-Term Debt
13	Embedded Cost of Preferred Stock
14	Common Stock Yields
15	Increase and Growth in Earnings, Dividends and KWHs

SCHEDULE 2

Public Utility Revenue Requirements
or
Cost of Service

The formula for the revenue requirements of a public utility may be stated as:

Revenue Requirement = Cost of Service

or

$$RR = O + (V - D)R$$

The symbols in the second equation represent the following factors:

RR = Revenue Requirement

O = Operating Cost, including depreciation expense and taxes

V = Gross Valuation of the property serving the public

D = Accrued Depreciation

(V-D) = Rate Base (net valuation)

(V-D)R = Return Amount, or earnings allowed on the rate base

R = iL + dP + kE (a percentage)

L = Proportion of debt in capital structure

i = Embedded Interest rate

P = Proportion of preferred stock in the capital structure

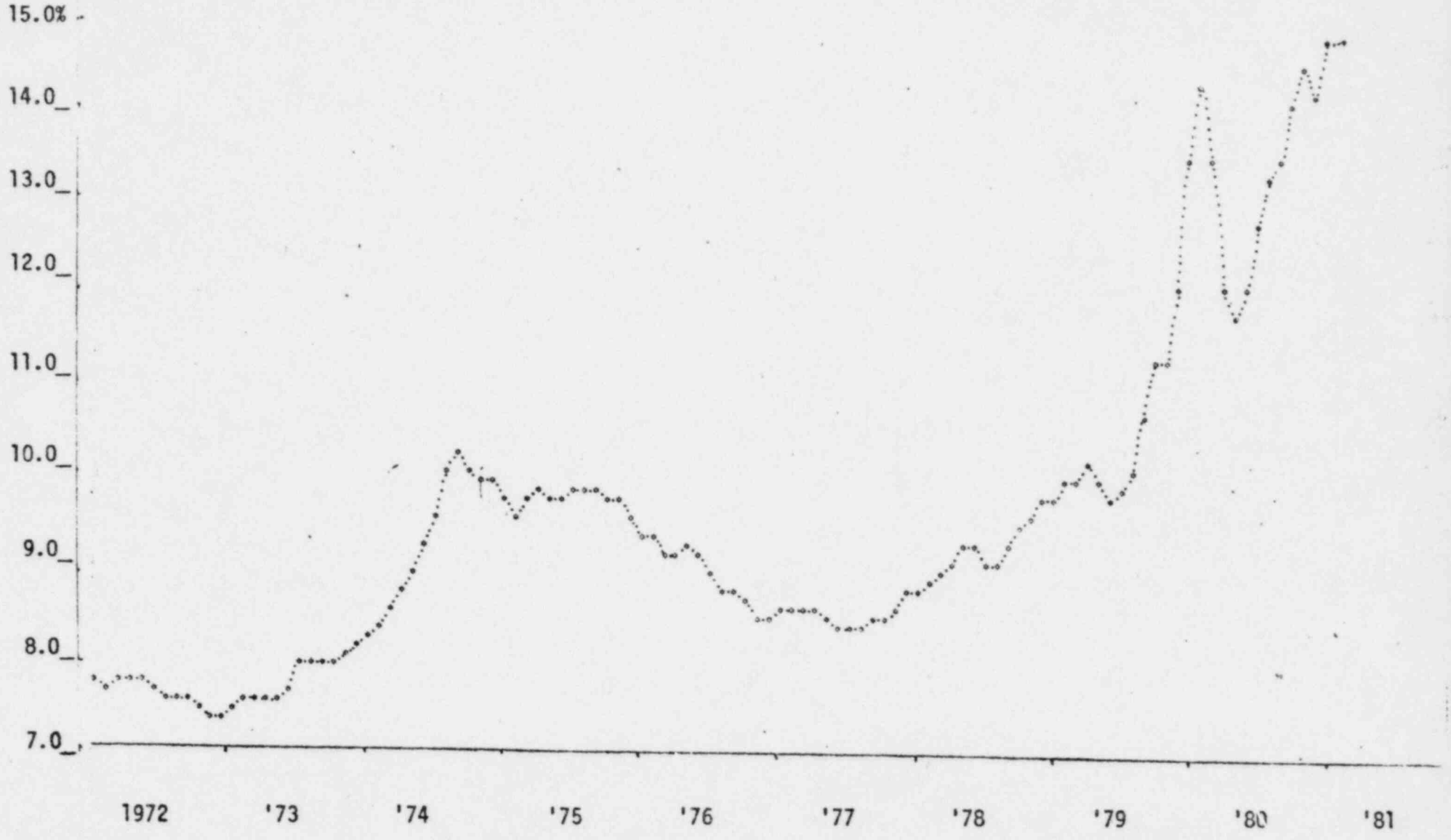
d = Embedded cost of preferred

E = Proportion of Equity in the capital structure

k = Rate of return on equity

Schedule 3

Average Yield on Moody's Public Utility Bonds

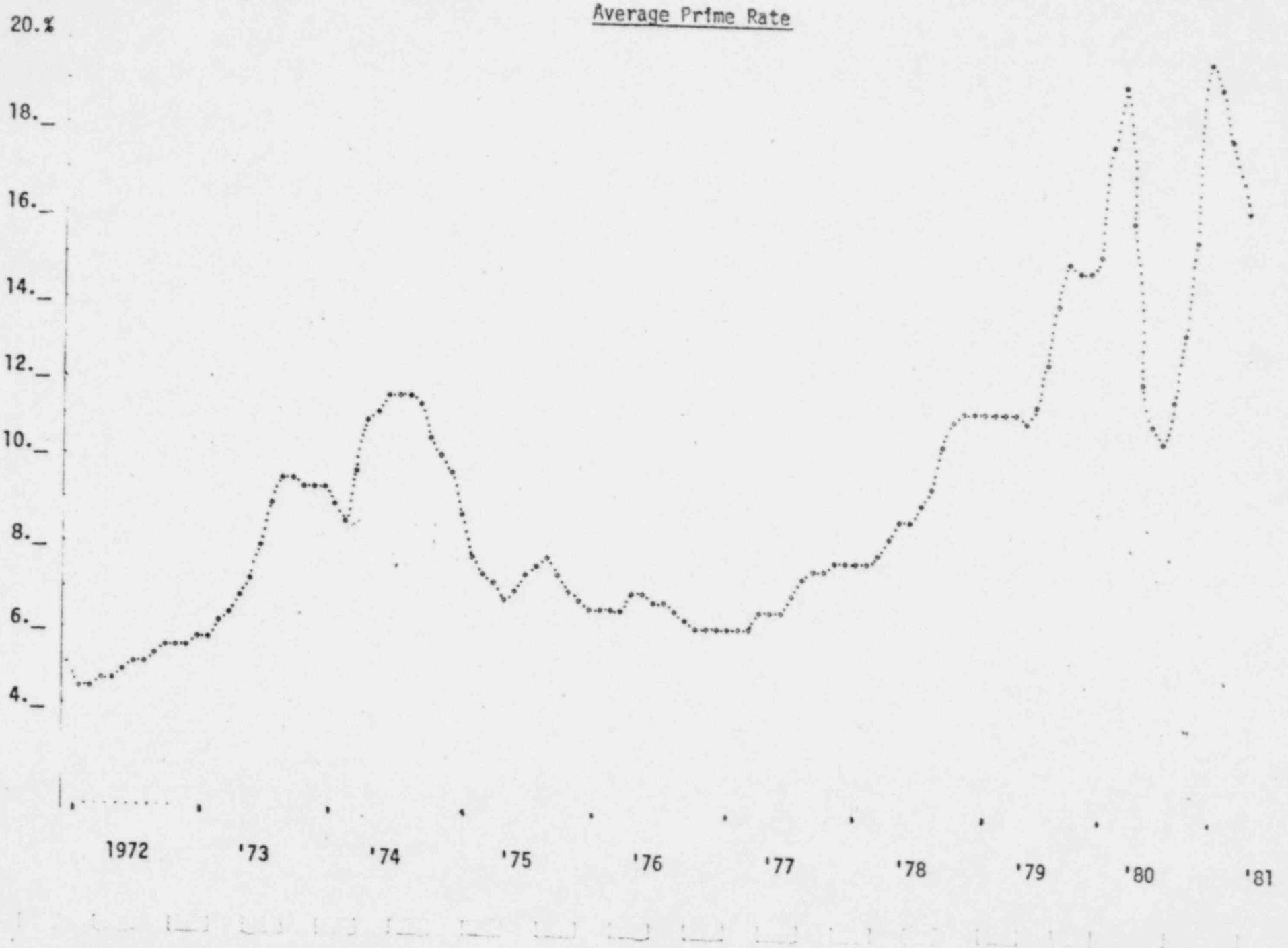


Schedule 3A

Average Yield on Moody's Public Utility Bonds
January, 1972 to Present

Month/Year	Average Yield	Month/Year	Average Yield
Jan/1972	7.85	Jan/1977	8.59
Feb	7.84	Feb	8.63
Mar	7.81	Mar	8.66
Apr	7.87	Apr	8.65
May	7.88	May	8.64
Jun	7.83	Jun	8.53
Jul	7.80	Jul	8.48
Aug	7.69	Aug	8.47
Sep	7.63	Sep	8.43
Oct	7.63	Oct	8.56
Nov	7.55	Nov	8.61
Dec	7.48	Dec	8.65
Jan/1973	7.51	Jan/1978	8.87
Feb	7.61	Feb	8.90
Mar	7.64	Mar	8.93
Apr	7.64	Apr	9.05
May	7.63	May	9.19
Jun	7.69	Jun	9.33
Jul	7.81	Jul	9.38
Aug	8.06	Aug	9.21
Sep	8.09	Sep	9.17
Oct	8.04	Oct	9.37
Nov	8.11	Nov	9.58
Dec	8.17	Dec	9.67
Jan/1974	8.27	Jan/1979	9.85
Feb	8.33	Feb	9.84
Mar	8.44	Mar	10.02
Apr	8.68	Apr	10.05
May	8.86	May	10.23
Jun	9.09	Jun	10.04
Jul	9.35	Jul	9.90
Aug	9.70	Aug	9.97
Sep	10.11	Sep	10.19
Oct	10.31	Oct	10.71
Nov	10.12	Nov	11.37
Dec	10.02	Dec	11.35
Jan/1975	10.10	Jan/1980	12.12
Feb	9.83	Feb	13.48
Mar	9.67	Mar	14.33
Apr	9.88	Apr	13.50
May	9.93	May	12.17
Jun	9.81	Jun	11.87
Jul	9.81	Jul	12.12
Aug	9.93	Aug	12.82
Sep	9.98	Sep	13.29
Oct	9.94	Oct	13.53
Nov	9.83	Nov	14.07
Dec	9.87	Dec	14.88
Jan/1976	9.68	Jan/1981	14.22
Feb	9.50	Feb	14.84
Mar	9.43	Mar	14.86
Apr	9.27		
May	9.31		
Jun	9.36		
Jul	9.26		
Aug	9.07		
Sep	8.91		
Oct	8.83		
Nov	8.77		
Dec	8.61		

Schedule 4


Average Prime Rate
20.%
18._
16._
14._
12._
10._
8._
6._
4._
1972
'73
'74
'75
'76
'77
'78
'79
'80
'81

Schedule 4A

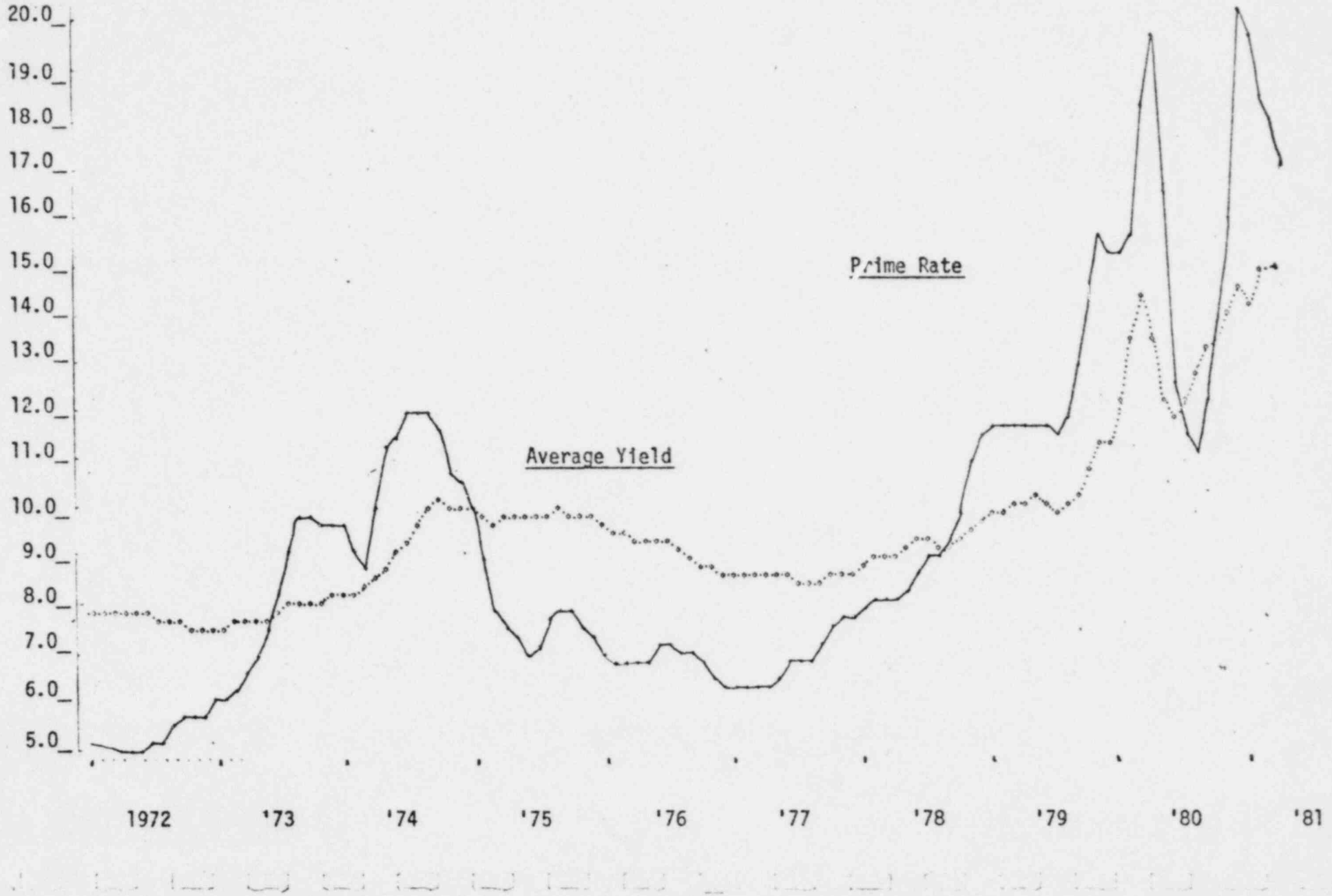
AVERAGE PRIME RATE

Month/Year	Prime Rate
Jan/1972	5.18%
Feb	4.75
Mar	4.75
Apr	4.98
May	5.00
Jun	5.04
Jul	5.25
Aug	5.27
Sep	5.50
Oct	5.73
Nov	5.75
Dec	5.79
Jan/1973	6.00
Feb	6.02
Mar	6.30
Apr	6.60
May	7.01
Jun	7.49
Jul	8.30
Aug	9.23
Sep	9.86
Oct	9.94
Nov	9.75
Dec	9.75
Jan/1974	9.73
Feb	9.21
Mar	8.83
Apr	10.02
May	11.25
Jun	11.54
Jul	11.98
Aug	12.00
Sep	12.00
Oct	11.68
Nov	10.83
Dec	10.50
Jan/1975	10.05
Feb	8.96
Mar	7.93
Apr	7.50
May	7.40
Jun	7.07
Jul	7.15
Aug	7.66
Sep	7.88
Oct	7.96
Nov	7.53
Dec	7.26
Jan/1976	7.00
Feb	6.75
Mar	6.75
Apr	6.75
May	6.75
Jun	7.20
Jul	7.25
Aug	7.01
Sep	7.00
Oct	6.78
Nov	6.50
Dec	6.35

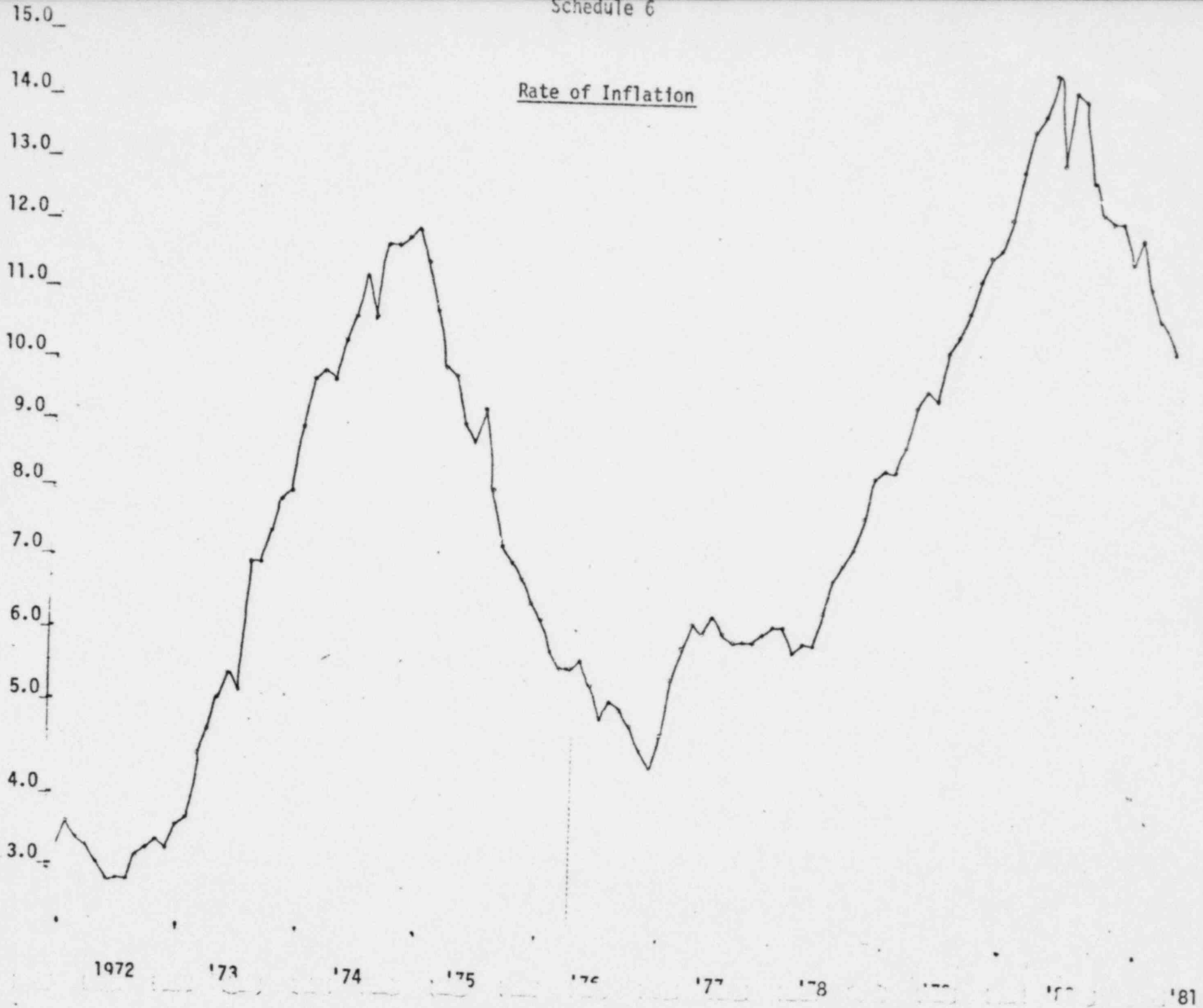
Month/Year	Prime Rate
Jan/1977	6.25%
Feb	6.25
Mar	6.25
Apr	6.25
May	6.41
Jun	6.75
Jul	6.75
Aug	6.83
Sep	7.13
Oct	7.52
Nov	7.75
Dec	7.75
Jan/1978	7.93
Feb	8.00
Mar	8.00
Apr	8.00
May	8.27
Jun	8.63
Jul	9.00
Aug	9.01
Sep	9.41
Oct	9.94
Nov	10.94
Dec	11.56
Jan/1979	11.75
Feb	11.75
Mar	11.75
Apr	11.75
May	11.64
Jun	11.75
Jul	11.75
Aug	12.25
Sep	13.25
Oct	15.25
Nov	15.25
Dec	15.00
Jan/1980	15.25
Feb	15.63
Mar	18.31
Apr	19.77
May	16.57
Jun	12.63
Jul	11.48
Aug	11.12
Sep	12.23
Oct	13.79
Nov	16.06
Dec	20.35
Jan/1981	19.75
Feb	19.43
Mar	17.25

Schedule 5

Average Yield on Moody's Public Utility Bonds and Prime Rate



Schedule 6


Rate of Inflation
15.0
14.0
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
1972
'73
'74
'75
'76
'77
'78
'79
'81

Schedule 6A

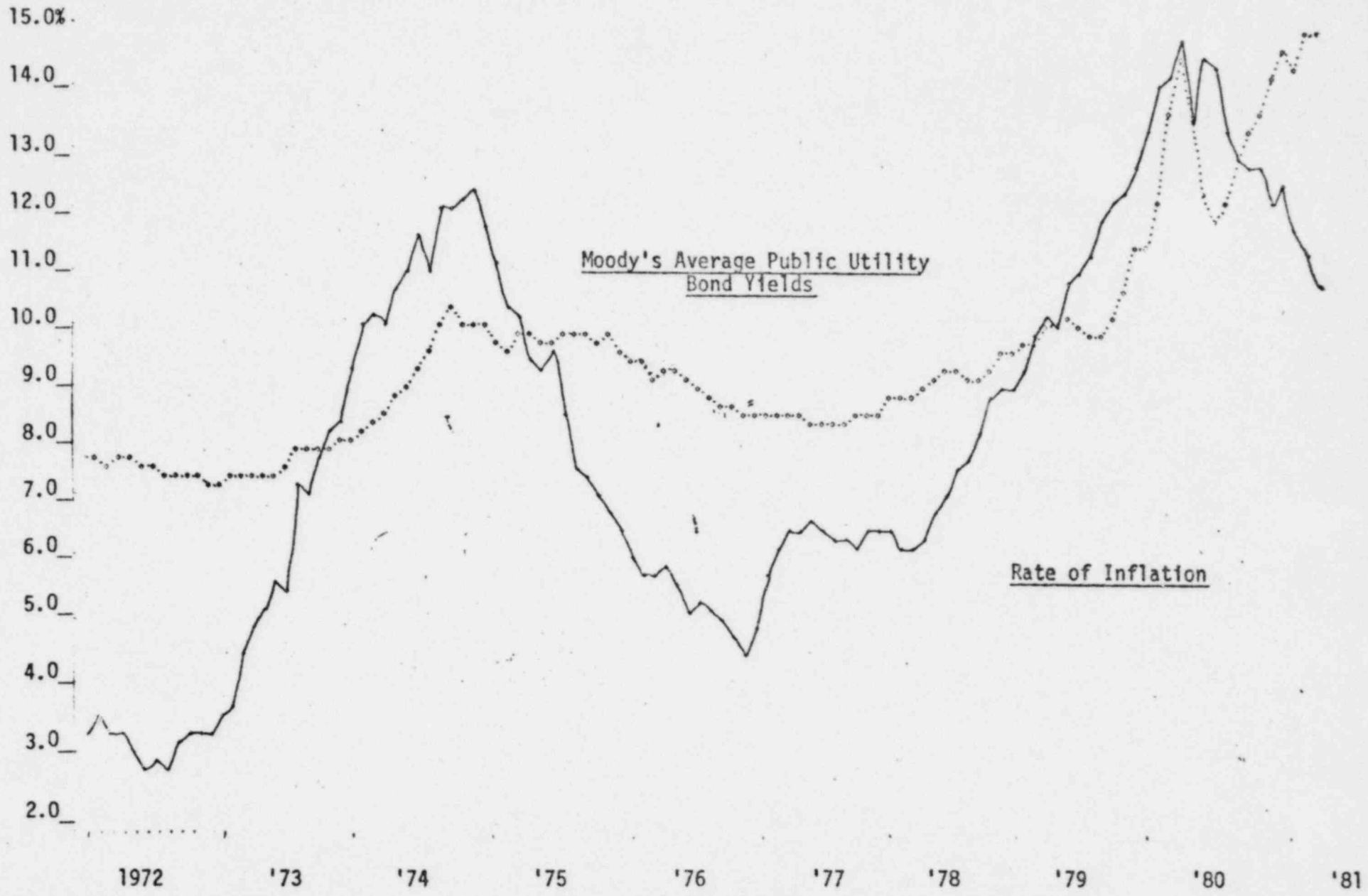
RATE OF INFLATION

Month/Year	Inflation Rate
Jan/1972	3.40
Feb	3.70
Mar	3.50
Apr	3.40
May	3.20
Jun	2.90
Jul	3.00
Aug	2.90
Sep	3.30
Oct	3.40
Nov	3.50
Dec	3.40
Jan/1973	3.70
Feb	3.90
Mar	4.70
Apr	5.10
May	5.50
Jun	5.90
Jul	5.70
Aug	7.50
Sep	7.40
Oct	7.90
Nov	8.40
Dec	8.50
Jan/1974	9.40
Feb	10.00
Mar	10.20
Apr	10.10
May	10.60
Jun	11.00
Jul	11.50
Aug	11.00
Sep	12.00
Oct	12.00
Nov	12.10
Dec	12.20
Jan/1975	11.70
Feb	11.10
Mar	10.30
Apr	10.20
May	9.50
Jun	9.30
Jul	9.70
Aug	8.60
Sep	7.80
Oct	7.60
Nov	7.30
Dec	7.00
Jan/1976	6.80
Feb	6.30
Mar	6.10
Apr	6.10
May	6.20
Jun	5.90
Jul	5.40
Aug	5.60
Sep	5.50
Oct	5.30
Nov	5.00
Dec	4.80

Month/Year	Inflation Rate
Jan/1977	5.20
Feb	6.00
Mar	6.40
Apr	6.80
May	6.70
Jun	6.90
Jul	6.70
Aug	6.60
Sep	6.60
Oct	6.50
Nov	6.70
Dec	6.80
Jan/1978	6.80
Feb	6.40
Mar	6.50
Apr	6.60
May	7.00
Jun	7.40
Jul	7.70
Aug	7.90
Sep	8.30
Oct	8.90
Nov	9.00
Dec	9.03
Jan/1979	9.35
Feb	9.93
Mar	10.17
Apr	10.00
May	10.76
Jun	10.90
Jul	11.28
Aug	11.77
Sep	12.09
Oct	12.19
Nov	12.62
Dec	13.30
Jan/1980	13.92
Feb	14.15
Mar	14.68
Apr	13.38
May	14.39
Jun	14.31
Jul	13.77
Aug	12.30
Sep	12.67
Oct	12.64
Nov	12.66
Dec	12.40
Jan/1981	11.70
Feb	11.30
Mar	10.60

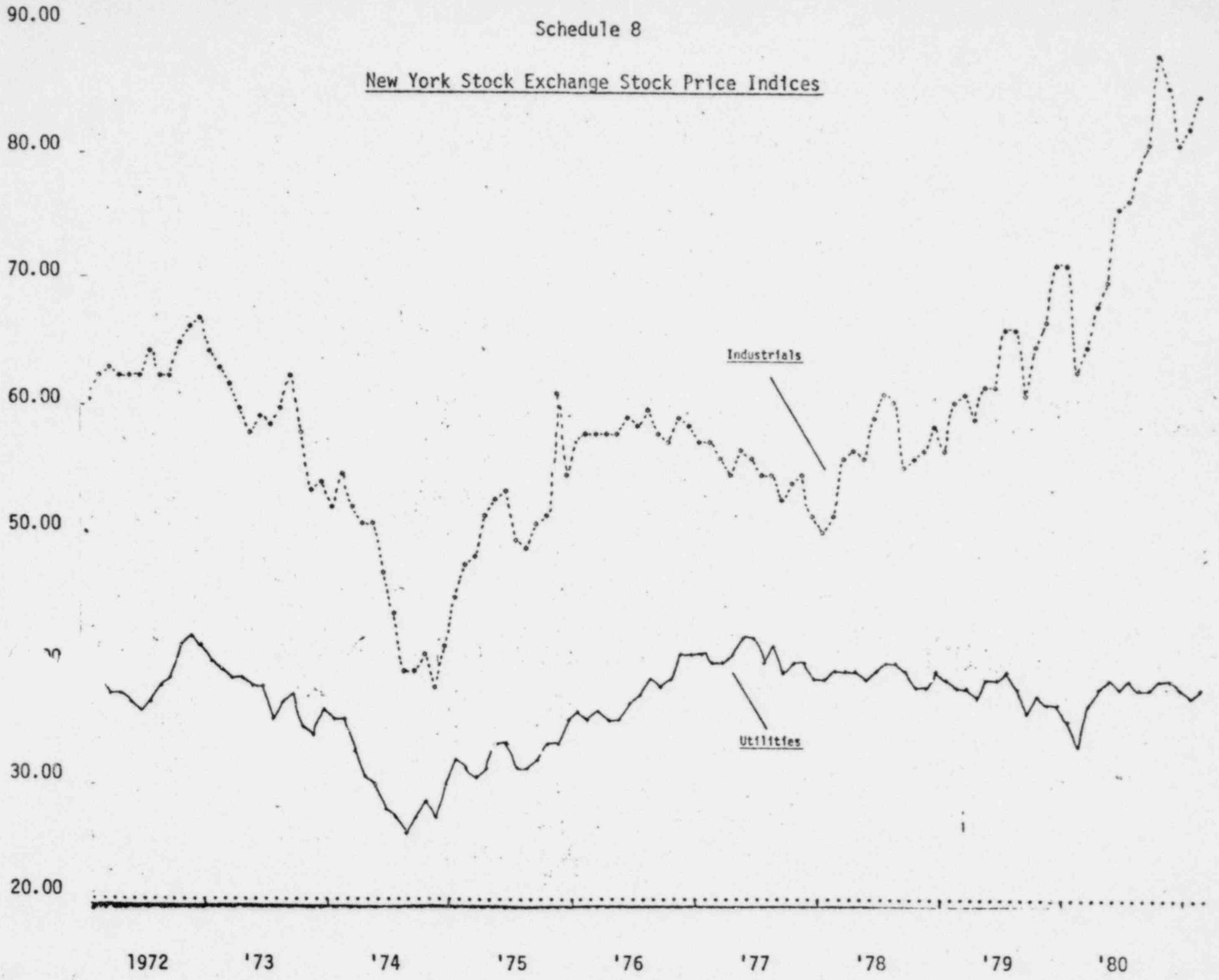
Schedule 7

Moody's Average Public Utility Bond Yield and Rate of Inflation



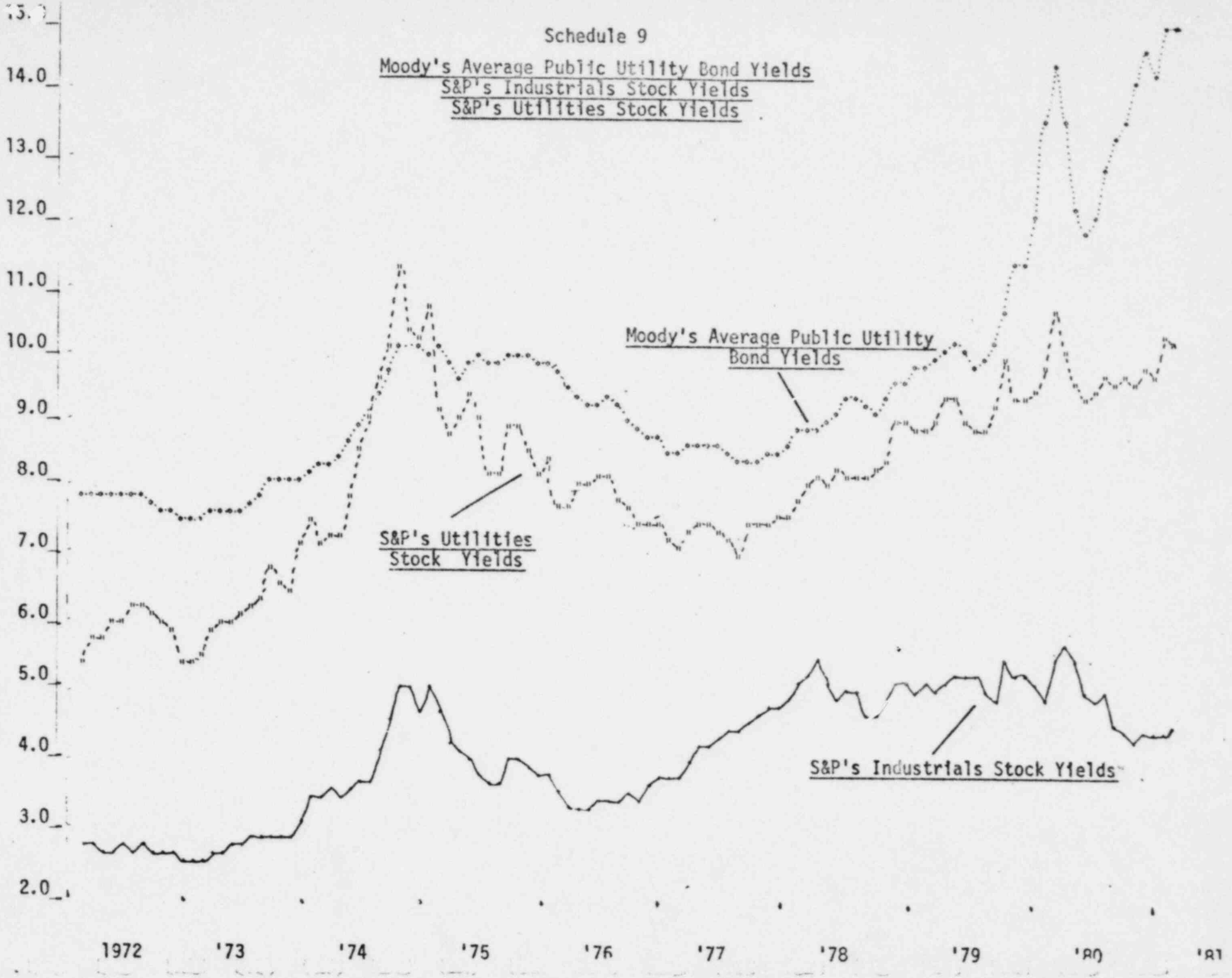
Schedule 8

New York Stock Exchange Stock Price Indices



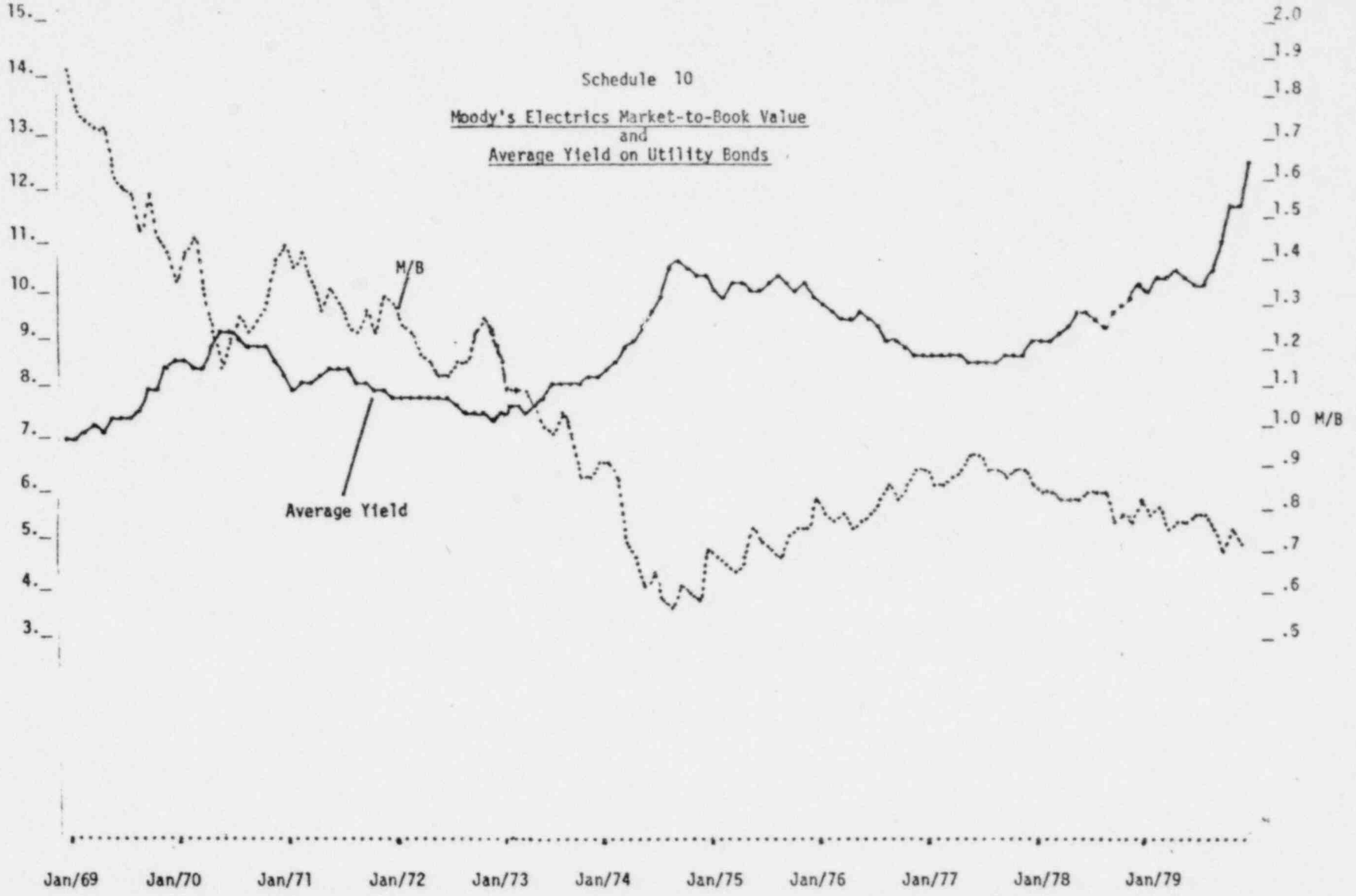
Schedule 9

Moody's Average Public Utility Bond Yields
S&P's Industrials Stock Yields
S&P's Utilities Stock Yields



Schedule 10

Moody's Electrics Market-to-Book Value
and
Average Yield on Utility Bonds



Schedule 11

UNION ELECTRIC COMPANY
Case Number ER 81-180

Pro Forma Capital Structure, June 30, 1981

Capital Component	Amount at 3/31/1981	Increase Apr, May, Jun '81	Pro Forma 6/30/1981	Ratios
Long-term debt	$ 1,354,148,990	$ 39,000,000(1)	$ 1,393,148,990	.5072
Preferred stock	383,084,500	-	383,084,500	.1394
Common equity	952,801,057	17,851,000(2)	970,652,057	.3534
	$ 2,690,034,547	$ 56,851,000	$ 2,746,885,547	1.0000

(1) Increase in long-term debt:

Take-down of additional pollution control bonds, series 1980	$ 9,000,000
Take-down of remaining 1st Mort. Bonds issued in February'81	30,000,000
Total	$ 39,000,000

(2) Increase in common equity:

Net increase in retained earnings	$ 12,959,600
Stockholder dividend reinvestment plan	4,891,400
Total	$ 17,851,000

Schedule 12

UNION ELECTRIC COMPANY
Case Number ER 81-180

Embedded Cost of Long-Term Debt

First Mortgage Bonds	1. Principal Amt. of Debt Issue	2. Net Proceeds	3. Annualized Int. on Principal Issued	4. Cost (3÷2)	5. Currently Outstanding	6. Current Annualized Cost (4x5)
3 1/4% Series due 5/1/82	30,000,000	30,271,010	975,000	.03221	30,000,000	966,300
3 3/4% Series due 7/1/86	40,000,000	40,484,836	1,500,000	.03705	40,000,000	1,482,000
4 3/8% Series due 3/1/88	35,000,000	35,457,500	1,531,250	.04319	35,000,000	1,511,650
4 3/4% Series due 9/1/90	50,000,000	50,166,357	2,375,000	.04734	50,000,000	2,367,000
4 3/4% Series due 7/1/91	30,000,000	30,150,868	1,425,000	.04726	30,000,000	1,417,800
4 1/2% Series due 11/1/93	30,000,000	30.071,783	1,350,000	.04489	30,000,000	1,346,700
4 1/2% Series due 4/1/95	35,000,000	34,907,360	1,575,000	.04512	35,000,000	1,579,200
5 1/2% Series due 5/1/96	30,000,000	30,463,820	1,650,000	.05416	30,000,000	1,624,800
5 1/2% Series due 3/1/97	40,000,000	40,154,749	2,200,000	.05479	40,000,000	2,191,600
7% Series due 4/1/98	50,000,000	50,488,435	3,500,000	.06932	50,000,000	3,466,000
7 3/8% Series due 5/1/99	35,000,000	35,134,009	2,581,250	.07347	35,000,000	2,571,450
8 1/4% Series due 10/1/99	40,000,000	40,152,450	3,300,000	.08219	40,000,000	3,287,600
9% Series due 4/1/00	60,000,000	60,234,864	5,400,000	.08965	60,000,000	5,379,000
7 7/8% Series due 1/1/01	50,000,000	50,115,832	3,937,500	.07857	50,000,000	3,928,500
7 5/8% Series due 4/1/01	50,000,000	50,360,503	3,812,500	.07570	50,000,000	3,785,000
8 1/8% Series due 10/1/01	60,000,000	60,327,647	4,875,000	.08081	60,000,000	4,848,600
8 3/8% Series due 2/1/04	70,000,000	70,516,283	5,862,500	.08314	70,000,000	5,819,800
10 1/2% Series due 3/1/05	70,000,000	69,196,999	7,350,000	.10622	70,000,000	7,435,400
8 7/8% Series due 9/1/06	70,000,000	68,744,806	6,212,500	.09037	70,000,000	6,325,900
5.8% Series due 11/1/05	27,085,000	26,430,920	1,570,930	.05944	27,085,000	1,609,932
8 5/8% Series due 12/1/07	60,000,000	59,074,154	5,175,000	.08760	60,000,000	5,256,000
9.35% Series due 8/1/08	55,000,000	54,701,468	5,142,500	.09401	55,000,000	5,170,550
9.95% Series due 11/8/99	100,000,000	99,657,576	9,950,000	.09984	100,000,000	9,984,000
15 3/8% Series due 2/1/91	150,000,000	148,475,000(1)	23,062,500	.1553	150,000,000	23,295,000
Total First Mortgage Bonds					$1,267,085,000	$106,649,782
Pollution Control Bonds						
1974 Series due 1989 to 2004	16,500,000	16,050,861	1,002,500	.06246	16,500,000	1,030,590
1980 Series due 2000 to 2010(2)	60,000,000			.0986	34,563,990	3,408,009
Total Pollution Control Bonds					$ 51,063,990	$ 4,438,599
Intermediate Term Loan						
Due 12/31/85 (3)	75,000,000			.1581	$ 75,000,000	$ 11,857,500
Total Long-Term Debt					$1,393,148,990	$122,945,881
		Embedded Cost	8.825%			

(1) Estimated
(2) Average effective rate
(3) Average rate for 1980, 15 81% 219-A F.P.C form No 1

Schedule 13

UNION ELECTRIC COMPANY
Case Number ER 81-180

Embedded Cost of Preferred Stock

Preferred Stock	1. Par or stated value/share	2. Annual Dividends	3. Net Proceeds	4. Cost (2÷3)	5. Amount Outstanding	6. Annual Cost (4*5)
$2.72 series	$ 25.00	$ 3,916,800	$ 34,402,559	.11385	$ 36,000,000	$ 4,098,600
7.44 series	100.00	4,092,000	54,300,237	.0754	55,000,000	4,147,000
8.00 series of 1971	97.50	3,400,000	40,757,116	.0834	41,437,500	3,455,888
8.00 series of 1969	92.25	2,800,000	31,823,136	.0880	32,287,500	2,841,300
6.40 series	100.00	1,920,000	29,570,820	.0649	30,000,000	1,947,000
4.56 series	100.00	912,000	19,968,367	.0457	20,000,000	914,000
4.50 series	100.00	961,178	21,744,206	.0442	21,359,500	944,090
4.00 series	100.00	600,000	15,057,104	.0398	15,000,000	597,000
3.70 series	100.00	148,000	4,000,604	.0370	4,000,000	148,000
3.50 series	100.00	455,000	13,657,228	.0333	13,000,000	432,900
2.125 series	25.00	3,400,000	38,464,179	.0884	40,000,000	3,536,000
4.60 series	50.00	6,900,000	74,621,888	.0925	75,000,000	6,937,500
Total					$ 383,084,500	$ 29,999,278
			Embedded Cost			7.83%

Schedule 14

UNION ELECTRIC COMPANY
Case Number ER 81-180

Common Stock Yields

Mo/Year	(1) Indicated DPS	(2) Price E.O.M.	(3) Dividend Yield (1÷2)
Jan/79	1.44	$ 14.625	9.85%
Feb	"	14.25	10.11
Mar	"	13.75	10.47
Apr	"	13.50	10.67
May	"	14.00	10.29
Jun	"	13.75	10.47
Jul	"	13.872	10.38
Aug	"	14.125	10.19
Sep	"	13.75	10.47
Oct	"	12.00	12.00
Nov	"	12.125	11.88
Dec	"	12.00	12.00
Jan/80	"	11.50	12.52
Feb	"	10.75	13.40
Mar	"	10.00	14.40
Apr	"	11.50	12.52
May	"	12.75	11.29
Jun	"	12.25	11.76
Jul	1.52	12.00	12.67
Aug	"	12.25	12.41
Sep	"	11.50	13.22
Oct	"	10.75	14.14
Nov	"	10.625	14.31
Dec	"	10.875	13.98
Jan/81	"	11.00	13.82
Feb	"	11.00	13.82
Mar	"	10.875	13.98
Apr	"	10.50	14.48
Average			
1979			10.73%
1979 plus 4/80 thru 8/80			11.14
1979 and 1980			11.88

Year	(4) (5) Average E.O.M. Dividend Yield
1974	11.04%
1975	10.60
1976	9.02
1977	8.72
1978	9.70
1979	10.73
1980	13.03

Schedule 15

UNION ELECTRIC COMPANY
Case Number ER 81-180

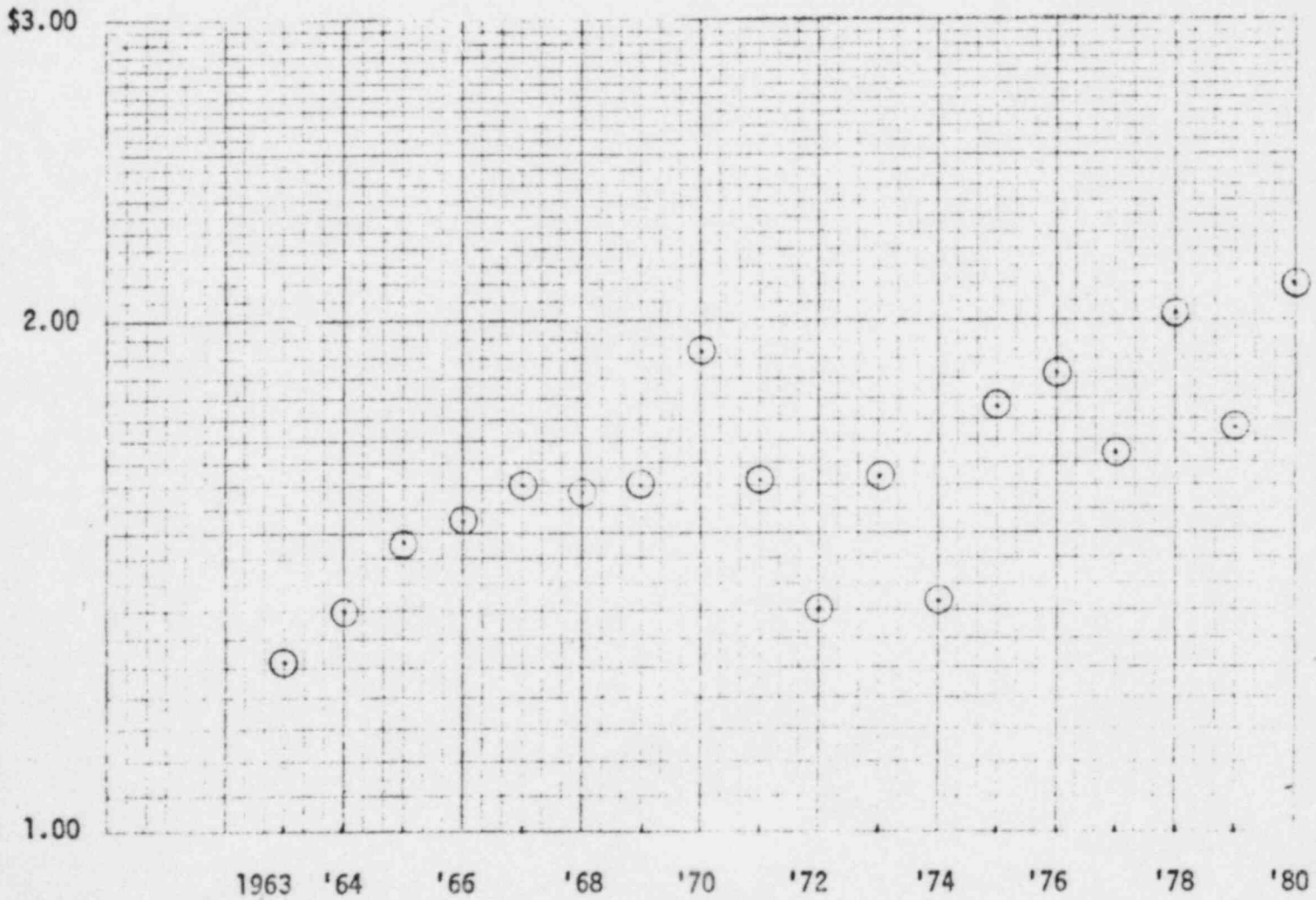
Increase and Growth in Earnings, Dividends and KWHs

	E.P.S.		D.P.S.		(KWH (000,000)	
	Amount	Increase (Decrease)	Amount	Increase	Amount	Increase (Decrease)
1963	$ 1.26	-	$ .99	-	10,407	-
1964	1.35	7.14%	1.03	4.04%	11,337	8.94%
1965	1.48	9.63	1.12	8.74	12,325	8.71
1966	1.53	3.38	1.14	1.79	13,707	11.21
1967	1.60	4.58	1.20	5.26	14,271	4.11
1968	1.59	(0.63)	1.20	0	15,466	8.87
1969	1.60	.63	1.20	0	16,709	8.04
1970	1.92	20.00	1.26	5.00	17,53[illegible]	4.94
1971	1.61	(16.15)	1.28	1.59	18,474	5.36
1972	1.35	(16.15)	1.28	0	19,350	4.74
1973	1.62	20.00	1.28	0	20,289	4.85
1974	1.37	(15.43)	1.28	0	20,246	(0.21)
1975	1.78	29.93	1.28	0	20,944	3.45
1976	1.86	4.49	1.34	4.69	21,359	1.98
1977	1.67	(10.22)	1.36	1.49	23,081	8.06
1978	2.01	20.36	1.40	2.94	23,517	1.89
1979	1.73	(12.94)	1.44	2.86	23,689	0.73
1980	**2.10**	**21.14**	**1.48**	**2.78**	**24,795**	**4.67**
Trended Growth						
1963-80		1.86%		1.91%		4.86%
1971-80		3.54		1.70		3.16
1976-80		2.78		2.56		3.24
Average Annual Compound Growth						
1963-80		3.05%		2.39%		5.23%
1970-80		.90		1.62		3.53
1975-80		3.36		2.95		3.43

Schedule 15A

UNION ELECTRIC COMPANY
Case Number ER 81-180

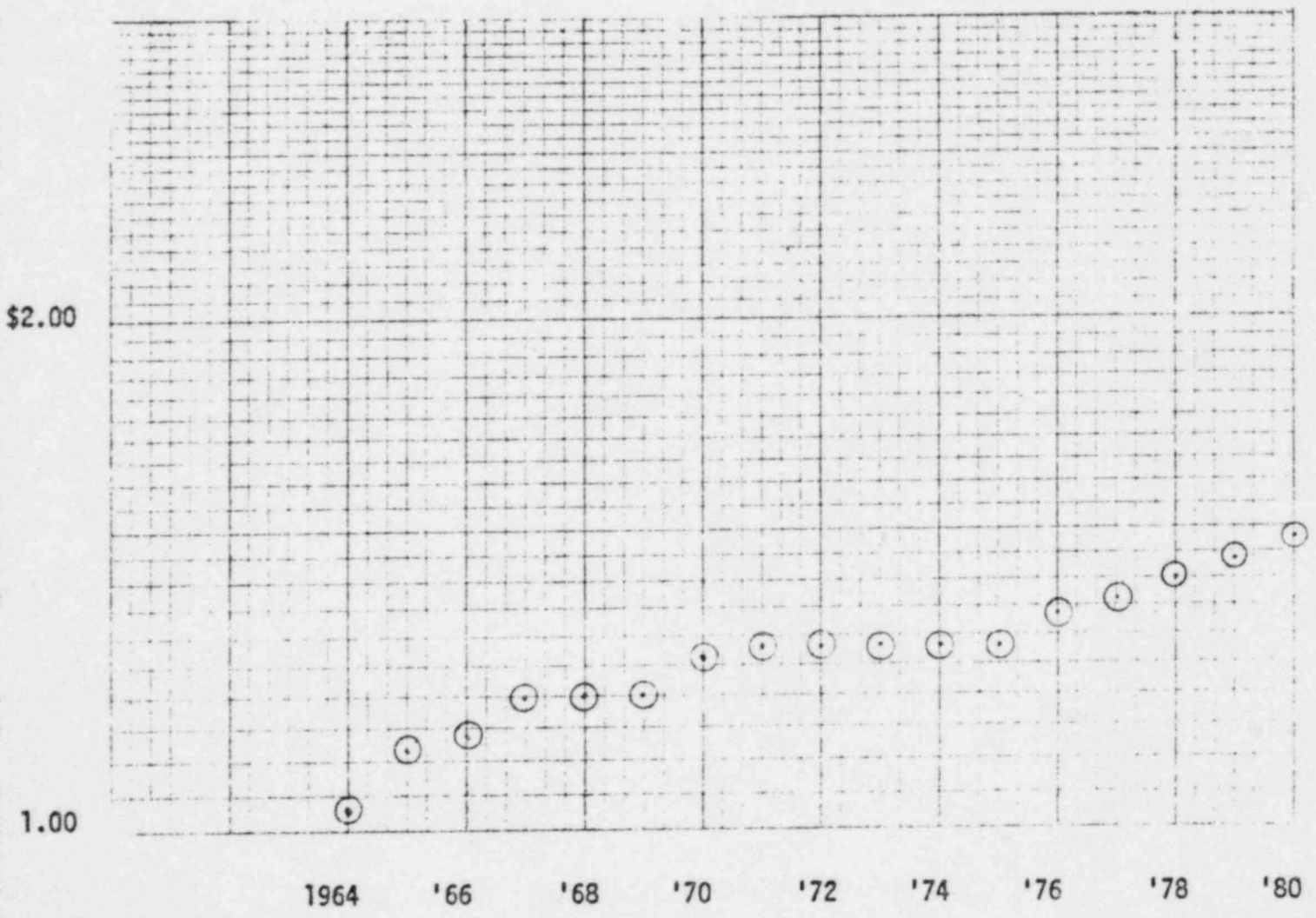
Earnings Per Share



Schedule 15B

UNION ELECTRIC COMPANY
Case Number ER 81-180

Dividends Per Share



Schedule 16

UNION ELECTRIC COMPANY
Case Number ER 81-180

Results of Common Stock Issues Since 1975

(1) Date of Issue	(2) Price to Public Per Share	(3) Less: Underwriters' Compensation Per Share	(4) Less: Other Expenses Per Share	(5) Proceeds to Company Per Share	(6) Book Value Per Share(b)	(7) Flotation Costs as a % of Book Value
12/4/75 (a)	12.875	.53	.045	12.30	15.13	3.80
3/22/77 (a)	15.50	.50	.034	14.966	15.32	3.49
9/19/78 (a)	15.00	.48	.045	14.475	16.05	3.27
12/11/79 (a)	11.625	.44	.032	11.153	16.09	2.93
12/9/80 (a)	10.625	.49	.041	10.094	16.20	3.28
					Average	3.35

(a) Number of shares sold:

1975 = 3.700,000
1977 = 5,000,000
1978 = 4,000,000
1979 = 5,500,000
1980 = 5,500,000

(b) At end of month preceding sale

1979 Actual and Predicted Market-to-Book Values - 79 Electric Utilities

	Company	Actual	Predicted
1	Boston Edison Company	.620	.606
2	Duquesne Light Company	.653	.649
3	Virginia Electric & Power	.670	.640
4	Detroit Edison Company	.684	.679
5	Central Hudson Gas & Electric	.704	.674
6	Southern Califirnia Edison Co.	.739	.834
7	United Illuminating Company	.752	.775
8	Pennsylvania Power & Light	.752	.747
9	Public Service Electric & Gas	.754	.800
10	Consumers Power Company	.756	.731
11	New York State Electric & Gas	.760	.754
12	Gulf States Utilities Company	.764	.887
13	Interstate Power Company	.766	.768
14	Kansas City Power & Light	.769	.732
15	Florida Power & Light	.772	.790
16	Kansas Power & Light	.778	.860
17	Baltimore Gas & Electric	.783	.819
18	Pacific Gas and Electric	.784	.836
19	Potomac Electric Power	.786	.785
20	Carolina Power & Light	.789	.870
21	Niagara Mohawk Power	.790	.777
22	St. Joseph Light & Power	.793	.745
23	Iowa Electric Light & Power	.795	.776
24	Florida Power Corporation	.799	.869
25	Wisconsin Electric Power	.806	.860
26	Public Service Co. of New Hampshire	.807	.854
27	Northern Indiana Public Service	.810	.852
28	Delmarva Power & Light	.811	.834
29	Union Electric Company	.812	.832
30	Central Illinois Light	.812	.839
31	Orange & Rockland Utilities	.814	.842
32	Kentucky Utilities Company	.814	.822
33	Idaho Power Company	.815	.811
34	Philadelphia Electric Company	.816	.837
35	Iowa Southern Utilities Co.	.820	.818
36	Commonwealth Edison	.822	.792
37	San Diego Gas & Electric	.825	.830
38	Louisville Gas & Electric	.830	.826
39	Madison Gas & Electric Co.	.831	.922
40	Sierra Pacific Power Co.	.832	.858

Schedule 17

1979 Actual and Predicted Market-to-Book Values - 79 Electric Utilities

	Company	Actual	Predicted
41	Duke Power Company	.834	.906
42	Dayton Power & Light	.837	.847
43	Kansas Gas & Electric	.839	.816
44	Arizona Public Service Co.	.840	.857
45	Central Maine Power Company	.842	.879
46	Toledo Edison Company	.844	.821
47	Southern Indiana Gas & Electric	.847	.804
48	Long Island Lighting	.847	.842
49	Empire District Electric Co.	.856	.900
50	Otter Tail Power Company	.856	.833
51	Atlantic City Electric	.858	.855
52	Puget Sound Power & Light	.868	.900
53	Northern States Power-Mn	.869	.926
54	Washington Water Power	.873	.907
55	Public Service Co. of New Mexico	.873	.997
56	So. Carolina Electric & Gas	.876	.879
57	Columbus & Southern Ohio	.877	.939
58	Iowa Resources Inc.	.878	.995
59	Northwestern Public Service Co.	.879	.864
60	Public Service Co. of Colorado	.880	.959
61	Minnesota Power & Light	.881	.849
62	Cleveland Electric Illuminating	.884	.921
63	Wisconsin Public Service	.886	.986
64	Portland General Electric Co.	.894	.931
65	Central Illinois Public Service	.912	.957
66	Iowa Public Service Company	.916	.890
67	Cincinnati Gas & Electric	.921	.946
68	Pacific Power & Light	.925	.949
69	Illinois Power Company	.926	1.029
70	Indianapolis Power & Light	.932	1.004
71	Oklahoma Gas & Electric	.936	.989
72	Ohio Edison Company	.941	.993
73	Wisconsin Power & Light	.946	1.009
74	El Paso Electric Company	.958	1.070
75	Tampa Electric Company	.969	.941
76	Utah Power & Light	.982	1.019
77	Public Service Co. of Indiana	.991	1.045
78	Tucson Electric Power Company	1.006	1.006
79	Southwestern Public Service Co.	1.324	1.457

Schedule 18

UNION ELECTRIC COMPANY
Case Number ER 81-180

Moody's Electric Utilities - Common Stock Yields

1970	5.94%	
1971	5.70	
1972	6.07	
1973	7.04	
1974	10.01	
1975	9.70	
1976	8.62	
1977	8.20	
1978	9.14	
1979	10.34	
1980	12.65	
Jan/79	9.49	
Feb	9.77	
Mar	9.88	
Apr	10.50	TMI
May	10.22	
Jun	10.16	
Jul	10.13	
Aug	10.09	
Sep	10.55	Fed discount rate increased to 11%
Oct	11.32	Fed discount rate increased to 12%
Nov	10.68	
Dec	11.24	
Jan/80	11.82	
Feb	13.06	Fed discount rate increased to 13%
Mar	13.00	
Apr	11.43	
May	11.21	Fed discount rate decreased to 12%
Jun	10.95	Fed discount rate decreased to 11%
Jul	11.40	Fed discount rate decreased to 10%
Aug	11.70	
Sep	12.26	Fed discount rate increased to 11%
Oct	12.64	
Nov	12.89	Fed discount rate increased to 12%
Dec	12.26	Fed discount rate increased to 13%
Jan/81	12.84	
Feb	13.02	
Mar	12.55	
Apr	12.92	

Average

1979	10.34%
1979 and 4/80-8/80	10.63
1979-1980	11.195

Schedule 19

UNION ELECTRIC COMPANY
Case Number ER 81-180

Computed Returns on Common Equity
Using the Electric Utility Regression Model

	(1)	(2)	(3)	(4)	(5)	(6)
				Computed Values Using Stock Yields (RRATE) of:		
	Variable Name	Coefficient	Assigned Value	(1+10.34%)	(1+10.63%)	(1+11.195%)
1.	Y Intercept	-1.0561	constant term	-1.0561	-1.0561	-1.0561
2.	PSCOV	.1265	1.8	.2277	.2277	.2277
3.	KWH5	.4182	.033	.0138	.0138	.0138
4.	RRATE	6.9257	.0967	.6697	-	-
5.	RRATE	6.9257	.0941	-	.6517	-
6.	RRATE	6.9257	.0893	-	-	.6185
7.	DPSCOV	.0191	2.5	.0478	.0478	.0478
8.	Total of assigned independent variables			- .0971	- .1151	- .1483
9.	Dependent variable, AVMBV			1.04	1.04	1.04
10.	Total of assigned variables			1.1371	1.1551	1.1883
11.	Book yield coefficient			10.4136	10.4136	10.4136
12.	Required book yield (10÷11)			.1092	.1109	.1141
13.	Dividend payout ratio			.775-.75	.775-.75	.775-.75
14.	Required return on equity (12÷13)			.1409-.1456	.1431-.1479	.1472-.1521

Schedule 20

UNION ELECTRIC COMPANY
Case Number ER 81-180

Selected Financial Ratios - Eleven Electric Utilities and UE

Eleven Electric Utilities

Year	AVMBV	ROE	BKYLD	PAYOUT	EQRAT	PSCOV	DPSCOV
1973	1.436	.1318	.0952	.704	.351	2.325	2.566
1974	1.107	.1225	.0960	.789	.319	2.024	2.331
1975	1.090	.1212	.0964	.760	.331	1.949	2.623
1976	1.229	.1259	.0952	.735	.341	1.994	2.789
1977	1.229	.1317	.0943	.711	.343	2.049	2.735
1978	1.106	.1168	.0963	.827	.357	1.939	2.602
1979	.979	.122	.0979	.799	.358	1.943	2.356
Average	1.168	.1247	.0959	.761	.343	2.032	2.572

Union Electric Company

	AVMBV	ROE	BKYLD	PAYOUT	EQRAT	PSCOV	DPSCOV
1973	1.032	.1051	.0828	.788	.297	1.747	2.218
1974	.848	.0808	.0868	.928	.287	1.531	2.012
1975	.780	.1088	.0854	.714	.306	1.706	2.156
1976	.919	.1191	.0865	.722	.303	1.779	2.843
1977	1.004	.1023	.0867	.816	.324	1.727	2.918
1978	.895	.1156	.0868	.698	.344	1.858	2.826
1979	.812	.0978	.0909	.829	.338	1.683	2.303
Average	.899	.1042	.0866	.785	.314	1.719	2.468
1980	.716	.1196	.0936	.705	.342	1.773	2.093
Average	.876	.1061	.0874	.775	.318	1.726	2.421

Schedule 21

UNION ELECTRIC COMPANY
Case Number ER 81 - 180

Average Market-to-Book Values and Returns on Common Equity

Non-regulated Firms

Compustat Industrials

Year	All Companies No.	AVMBV	ROE	Excl. Oil Component No.	AVMBV	ROE	Oil Component No.	AVMBV	ROE
1970	(761)	1.95	.095	(723)	1.97	.094	(38)	1.62	.107
1971	(776)	2.17	.093	(738)	2.18	.093	(38)	1.90	.100
1972	(786)	2.36	.110	(745)	2.38	.110	(41)	2.13	.104
1973	(794)	1.85	.114	(751)	1.83	.113	(43)	2.14	.133
1974	(797)	1.20	.114	(753)	1.18	.110	(44)	1.55	.174
1975	(798)	1.13	.103	(753)	1.12	.100	(45)	1.33	.148
1976	(803)	1.26	.104	(758)	1.25	.101	(45)	1.35	.149
1977	(800)	1.18	.126	(755)	1.18	.125	(45)	1.34	.141
1978	(804)	1.15	.129	(759)	1.15	.128	(45)	1.20	.141
1979	(806)	1.17	.143	(761)	1.15	.139	(45)	1.45	.209
Mean									
70-79		1.54	.113		1.54	.111		1.60	.141
75-79		1.18	.121		1.17	.119		1.33	.158

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1970	(384)	2.22	.111	(359)	2.27	.111	(25)	1.44	.106
1971	(389)	2.44	.106	(364)	2.49	.107	(25)	1.70	.096
1972	(393)	2.62	.114	(365)	2.67	.115	(28)	1.88	.103
1973	(393)	2.20	.135	(365)	2.21	.135	(28)	2.04	.125
1974	(393)	1.44	.136	(365)	1.44	.133	(28)	1.48	.172
1975	(397)	1.35	.123	(369)	1.36	.122	(28)	1.31	.143
1976	(398)	1.47	.135	(370)	1.48	.134	(28)	1.37	.148
1977	(396)	1.32	.135	(368)	1.31	.134	(28)	1.38	.139
1978	(397)	1.26	.139	(369)	1.27	.139	(28)	1.18	.135
1979	(397)	1.24	.150	(369)	1.23	.146	(28)	1.37	.192
Mean									
70-79		1.76	.128		1.77	.128		1.52	.136
75-79		1.33	.136		1.33	.135		1.32	.151

Schedule 22

UNION ELECTRIC COMPANY
Case Number ER 81-180

Rates of Return Using Returns on Common Equity of 14.4%, 14.6% and 14.8%

	Capital Ratios	Embedded Cost	Weighted Cost Using Returns on Equity of: 14.4%	14.6%	14.8%
Long-term debt	50.72%	.08825	4.48%	4.48%	4.48%
Preferred Stock	13.94	.0783	1.09	1.09	1.09
Common equity	35.34		5.09	5.16	5.23
Totals	100.00%		10.66%	10.73%	10.80%

Schedule 23

UNION ELECTRIC COMPANY
Case Number ER 81-180

Overall Cost of Capital

	Capital Ratio	Embedded Cost	Pre-Tax Weighted Cost	Tax Factor	Weighted Overall Cost of Capital Using Returns on Equity of: 14.4%	14.6%	14.8%
Long-term debt	50.72%	8.825%	4.48%	.51537	2.31%	2.31%	2.31%
Preferred stock	13.94	7.83	1.09	1.00000	1.09	1.09	1.09
Common equity	35.34			1.00000	5.09	5.16	5.23
	100.00%				8.49%	8.56%	8.63%