

UNION ELECTRIC COMPANY

DOCKET NO. ER-81-180

DIRECT TESTIMONY OF JERRE E. BIRDSONG

Q. Please state your name, address and position with Union Electric Company.

A. My name is Jerre E. Birdsong, and I reside in St. Louis County, Missouri. My position at Union Electric Company is that of economist. In this position I am responsible for conducting economic, financial, and statistical studies for the company, including those related to its rate case activities.

Q. Please describe your educational background.

A. I received a Bachelor of Arts degree in Economics and Mathematics from Southwestern at Memphis in 1976 and a Master of Science degree in Management from Purdue University in 1977. My area of concentration in the Master's program was Managerial Applications of Mathematical Modeling. I was inducted into Phi Beta Kappa in April, 1976.

Q. Do you have any professional affiliations?

A. Yes, I do. I am a member of the National Association of Business Economists, its St. Louis Gateway Chapter, the National Society of Rate of Return Analysts, and the Financial Management Association.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to arrive at a fair rate of return on the retail operations of the electric utility function of Union Electric Company in the state of Missouri. To this end, I have determined the cost of capital for the Company utilizing quantitative and qualitative analyses of historical and forward-looking data.

Q. What is the primary standard for determining a fair rate of return?

A. The primary standard for determining a fair rate of return is the cost of capital. Based on this cost, the rate of return that is established must enable the Company to:

1. Maintain the financial integrity of its existing invested capital;
2. Maintain its credit standing; and
3. Attract sufficient capital on competitive terms to meet the needs of its customers.

Inherent in this relationship is the premise that return to the equity owners, those exposed to the greatest business risk, should be commensurate with returns on investments in other enterprises having corresponding risks and uncertainties. Since the Company must openly compete in financial markets for the use of the available funds provided by investors, Union Electric must earn, as an

absolute minimum, its cost of capital as determined by the returns on investments in other enterprises having corresponding risks and uncertainties in order to satisfy the demands of its customers.

If the Company's rate of return fails to cover its cost of capital, its financial position will deteriorate. This deterioration will appear as a lack of flexibility in the Company's financing plans and higher financing costs. For example, if the Company fails to earn its cost of capital, it may be unable to meet the indenture requirements of its outstanding long term debt. Then, the Company would be precluded from raising funds in the bond market, and its only source of external capital would be equity capital. This will necessarily result in higher financing costs. These higher costs, which result from the failure of the Company to earn its cost of capital and from the subsequent inflexibility of financing alternatives, would be borne by the customers of Union Electric Company. If uncorrected, this deterioration would discourage all investment in the Company, regardless of cost. The Company would then be prevented from adequately and efficiently serving the energy needs of its customers at any price.

Q. Why must the cost of capital be determined by returns on investments in other enterprises having corresponding risks and uncertainties?

A. Investors in the common stocks of electric utilities have the alternative of placing their funds in many other investments. If the returns offered by industrial or government securities are more attractive to investors than those offered by electric utilities in light of the risks, then the other industrials or government will receive the use of the funds -- to the exclusion of electric utilities. In other words, investors compare the returns they can expect to receive from placing their funds in any other investment. Then, they choose that investment which best rewards them for the corresponding risks and uncertainties. No one will be prompted to invest in electric utilities simply because the industry needs the funds. The only way to insure that the Company obtains its necessary funds is for it to earn a return which compensates investors for their incurred risks.

If the cost of capital is determined by considering only other electric utilities as comparable to Union Electric, many of the alternatives considered by investors will be ignored. Thus, the cost of capital to Union Electric would be misstated, and the Company would not have an opportunity to earn its fair rate of return.

Q. What exhibits are you sponsoring?

A. I am sponsoring Exhibits ____ (JEB-1) through ____ (JEB-6).

Q. Were Exhibits ____ (JEB-1) through ____ (JEB-6) prepared by you or under your direction and supervision?

A. Yes, they were.

Q. Please describe generally Exhibits ____ (JEB-1) through ____ (JEB-6).

A. Exhibits ____ (JEB-1) through ____ (JEB-6) present the statistical data used in the determination of the Company's cost of capital and fair rate of return.

Q. What methods did you use in arriving at the cost of capital for Union Electric Company?

A. I have determined the cost of capital for Union Electric based upon its historical cost of long-term debt and preferred stock and a discounted cash flow (DCF) analysis of its equity requirements.

Q. What capital structure have you used in your cost of capital determination?

A. I have used a capital structure consisting of 48.15 percent long-term debt, 15.78 percent preferred stock, and 36.07 percent common equity. This is the pro forma capital structure for Union Electric Company at September 30, 1981. Pro forma adjustments include the sale of \$100 million of long term debt, \$60 million of preferred stock, and \$66 million of common stock. However, the Company's present financing plans are to sell \$150 million of mortgage bonds in February 1981 and \$75 million of preferred stock in

May. In addition, the Company received \$56 million from its sale of common stock in December 1980 and expects to receive \$72 million from a sale of common stock in the fall of 1981.

Q. What is the embedded cost of the long-term debt portion of the capital structure?

A. Based on figures contained in Exhibit _____ (JEB-1), I have determined this cost to be 8.20 percent.

Q. What is the embedded cost of the preferred stock component of Union Electric's capital structure?

A. The embedded cost of preferred stock is 8.47 percent, as shown on Exhibit _____ (JEB-2).

Q. What basic methods did you use to determine the cost of equity?

A. I have used a combination of the comparative earnings and the discounted cash flow approaches in determining the equity return portion of my recommendation.

The comparative earnings approach is a direct reflection of one of the traditional regulatory standards of a fair return set forth in the Hope and Bluefield Supreme Court cases -- that the return allowed to investors be comparable to that being earned on investments in other business undertakings with corresponding risks and uncertainties.

At the heart of this approach is the undisputed principle that investments of high risk must generally yield

high average returns in order to maintain financial integrity, while investments of low risk can yield relatively low average returns. The relationship between risk and return is undoubtedly recognized by all investors, whether or not they are familiar with more sophisticated theories of investment analysis. Those who choose to invest their money in a passbook savings account, for example, normally realize that their return will be lower than that which is potentially available from investing in the gold market. The lower return, of course, is compensated for by the fact that passbook savings involve almost no risk to the investor. On the other hand, those who invest in gold do so recognizing that they are subject to relatively higher risks, but with potentially higher returns as well.

The trade-off between risk and return is insured by the continuous fluctuations in the price and return of all potential investments. For example if stockholders in a certain company were earning a return of 20%, and if the investment in that company suddenly became more risky, other things being equal, the price per share for the stock in that company would be bid down on the stock exchange. Potential investors would refuse to buy at the old higher price, because the return of 20% would no longer adequately compensate them for the higher risk. However, when the price per share does decline in response to the higher risk,

the new investor will earn a higher return because his initial investment is at a lower price per share. The market place in effect provides a general equilibrium between risk and return for all investments by allowing stock prices to fluctuate. Thus the potential investor receives an appropriate return at whatever level of risk he chooses to invest. Unfortunately, the existing stockholder (past investor) is harmed by the decline in market price.

Q. What steps are involved in applying the comparable earnings approach in this proceeding?

A. The allowed return on equity for a regulated public utility should be set equal to that which is earned from investments of comparable risk. It therefore follows that the first step in setting the appropriate return for Union Electric is to determine which other investments are of comparable risk to an investment in Union Electric common equity. The second step is to use DCF analysis to calculate the return which is required by the investors of this comparable set of companies. Then, by setting the allowed return for Union Electric equal to the DCF return of the comparable group, the Union Electric stockholder would be allowed the same return which is required from alternative investments of comparable risk.

However, it is common knowledge that a utility seldom earns the return that it is actually allowed in a

rate case. For example, Union Electric has not earned its allowed rate of return since 1970. In the years 1971-1980, Union Electric's earnings have averaged about 170 basis points below that authorized by the Missouri Public Service Commission. In those years, the Company's earnings have been as much as 350-400 basis points below the authorized rate of return.

Therefore, by setting the utility's allowed rate of return equal to that which is actually required by its investors, the result is almost always a return which is substantially lower than that which adequately compensates them for the risks they incur.

It should be noted that if the investment in a particular public utility stock is in fact of relatively low risk, under this approach the group of companies determined to be comparable will also have the same relatively low risks. This comparable group would require a relatively low return in light of their low risks, and thus the result would appropriately be a relatively low rate of return for the utility.

Q. How did you measure risk in finding the group comparable to Union Electric?

A. This process is relatively simple once it is recognized what investors consider as the "risk" of their investment. Using my earlier example, the passbook savings

account is generally considered to be almost risk-free because the investor knows exactly how much his investment will earn in the future. His "expected" return on his savings is equal to the stated rate of interest, and virtually without exception the actual return paid by the bank will in fact equal the investor's expected rate of return. The lack of risk, in other words, exists by the fact that the actual return does not vary from the investor's expected return.

One investing in gold also has some "expected" return. However, the actual return for any particular investor at any given time will depend upon whether the price of gold rises or falls, and by how much. This fluctuation in turn depends upon a variety of other factors which cannot be accurately forecast, and thus the actual return on the investment could be significantly higher or lower than the expected return. This greater variation or spread in actual returns for gold is in effect what makes this a more risky investment than the passbook savings account. If the return on gold could be guaranteed to always equal its expected return in the future, it too would be risk-free. Then, just as the stock exchanges provide a general equilibrium between risk and return for common stock equities, the gold market would insure that the price of gold would stabilize and the expected return would be

lowered to a level comparable to other risk-free investments.

The risk of investing in common stock is likewise caused by the expected variability of its rates of return and is reflected in the volatility of its price per share. For common stocks the total variance, or risk, is actually a product of two separate parts. First, there are factors which affect the price of all common stocks on the market, and thus cause variability in the returns received by holders of all such investments. This variability is termed systematic risk. Second, there is a variance in returns caused by factors unique to a given company. This second cause of variability in the return is termed unsystematic risk. In combination, the systematic and unsystematic risk cause a variance in the actual rates of return from the investor's expected rate of return. As with the savings account and gold investment, the greater the variation in actual returns from the expected return, the greater is the risk of that investment to the stockholder.

It follows from the above that the relative risk of a common stock investment is equivalent to the relative variance of the actual rates of return from the expected rate of return. Furthermore, companies with equal or nearly equal variances in return have stock prices that fluctuate similarly and can be considered of comparable risk.

Therefore, the process of finding companies which are similar to Union Electric in terms of risk can be undertaken by finding the group of companies which have stock price fluctuations which are similar to those of Union Electric.

Q. What specific measures of variability did you use in measuring risk?

A. Several investment firms regularly publish measures of risk, based upon variability of stock prices. The investment community has developed a high regard for the analytical services provided by the Value Line Investment Survey, and I have therefore used their risk measures "beta" and "safety", to select the comparable set of companies. Specifically, I used the Value Line data to develop a range around the beta and safety of Union Electric, and companies having a beta and safety within this range must be comparable to Union Electric.

Q. What is the Value Line Investment Survey?

A. The Value Line Investment Survey contains reports of financial data and evaluations of the future performance of 1700 companies. Each company is evaluated at least once every quarter, possibly making Value Line the broadest continuing coverage of common stock equities available. The 1700 stocks evaluated by Value Line account for about 96% of the trading volume on all stock exchanges in the United States.

The evaluations made in the Value Line Investment Survey are widely available to the public since it is the largest of all investment advisory services. It has twice as many subscribers as its nearest competitor -- Standard and Poor's. Subscribers include private investors, professional analysts, investment institutions, universities and public libraries. All of the data I have utilized from the Value Line Investment Survey is readily available to almost all investors in the Union Electric service area since it appears in the St. Louis Public Library, St. Louis County Public Library and many smaller public libraries such as Kirkwood and Webster Groves.

Q. What specifically are betas and safety ranks, and how are they calculated by Value Line?

A. Betas measure the systematic risk of a stock and are determined by the sensitivity of the stock's price to overall fluctuations in the New York Stock Exchange Composite average. For example, a beta of 1.0 indicates that the stock price tends to rise or fall proportionately with the composite of all stocks on the New York Exchange. Union Electric stock has a beta of 0.55 which indicates that Union Electric's stock price fluctuates less than the composite average. A stock with a beta greater than 1.0 denotes greater price fluctuations of that stock than those of the composite average. Thus, the beta of a stock is a

measure of the risk which is inherent in including that stock in a diversified portfolio. It is calculated from a least-squares regression analysis between weekly percent changes in the price of a stock and weekly percent changes in the NYSE average over a five year period.

Safety ranks measure the total risk (systematic and unsystematic) and reflect the potential risk associated with individual common stocks rather than large portfolios. They range from 1 (safest) to 5 (riskiest) and are based upon the standard deviation of weekly price changes over the last five years adjusted for trend, company size, company's penetration of its markets, product market volatility, degree of financial leverage, earnings quality, and overall condition of the balance sheet.

It is important to consider both measures of risk since the beta measure is relevant to stockholders who have large diversified portfolios and the safety measure is relevant to the small, undiversified investor.

Q. How did you utilize the beta and safety of Union Electric Company to select a set of comparable companies?

A. I developed a range for each of the risk measures by computing the standard deviation of each measure for the electric utility industry. The standard deviation gives information about how much the risk measures can

change before its variation becomes atypical of the electric utility industry. For the second quarter of 1980, the betas of the 97 electric utilities reported by Value Line (excluding Union Electric) had a standard deviation of 0.07. When this standard deviation was used to bracket Union Electric's beta of 0.55, the range of 0.48 to 0.62 was obtained. Since Value Line reports their betas to the nearest 0.05, the range for the betas was rounded to 0.50-0.60.

The same process was performed for the safety ranks and a standard deviation of 0.63 was calculated for the electric utility industry. The range of 1.37 to 2.63 was obtained by bracketing the standard deviation around Union Electric's safety ranking of 2. In order for the rounding to be consistent with that used by Value Line, the range was rounded to the nearest whole numbers of 1-3. The betas and safety ranks for the electric utility industry are shown as Exhibit _____ (JEB-3).

I then returned to the Value Line Investment Survey and selected all companies whose betas and safeties fall within my established ranges. This method produced 100 companies which have consistently over time performed comparably to Union Electric. The companies, 51 electric utilities, 13 companies in the natural gas industry, 7 companies in the telecommunications industry, one water

company, and 23 other firms, are listed in Exhibit ____
(JEB-4).

Q. Having determined the set of comparable companies, how did you apply the DCF methodology in determining their required rate of return?

A. The DCF formula for the required return on raising additional common equity is

$$R = \frac{D}{P} + G$$

where R = required return on raising additional
 common equity,
 D = expected dividends per share in the coming
 year,
 P = market price per share in the present
 year,
 G = growth rate in expected future dividends.

The DCF return, R, is the rate at which investors are discounting the future dollars they expect to receive from holding the stock. It is based upon the premise that investors decide how much they are willing to pay for a share of common stock by estimating the cash they expect to receive from holding (and ultimately selling) that share of stock. Then, the expected cash inflows are discounted because of two factors -- the time value of money and the riskiness of the cash flow. This rate at which investors are discounting the future income streams is the return required in order to induce them to make the investment.

Thus, the DCF methodology is forward looking and requires an assessment of investor expectations.

In order to calculate the DCF return for each of the comparable companies, I again used the Value Line Investment Survey. The average of the high and low market price per share of common stock during 1979 was used for P, the 1977-79 to 1982-84 Value Line estimate of annual growth rate in dividends for G, and the dividends per share paid during 1979 increased by the above growth rate were used for D. The cost of raising additional common equity for Union Electric Company is equal to the average DCF return of the 100 companies of comparable risk. As shown on Page 3 of Exhibit ____ (JEB-4), the average DCF return for the 100 comparable companies is 15.60%.

Q. Should the average DCF return of 15.60% be used in determining Union Electric Company's embedded cost of capital?

A. No, it should not. The DCF return is widely used and generally accepted as an appropriate tool for determining the cost of equity capital in rate proceedings. However, insufficient attention has been given to the form in which it should be applied in this context.

The DCF return is valid for evaluating the returns required by investors seeking to make new purchases in the equity market. Therefore, companies need to earn that

return on their incremental investments. This is not possible when the DCF return is applied to the net original cost of their existing investments unless the net original cost is equal to its present market value. That is, the DCF return should not be applied to the book value of a firm unless its book value is equal to its market price.

In the management and regulation of utilities, the allowed rate of return will be multiplied by the book value of the utility's assets in order to determine the allowable revenue. Thus, in order to calculate the required rate of return on the book value of the Company's common equity, the DCF return must be adjusted by its market-to-book ratio. If the yield portion of the DCF return is multiplied by the company's market-to-book ratio, the resulting adjusted DCF return is the embedded cost of equity. This is the return which is implicitly required by investors on the book value of the securities and which will insure that the actual DCF return is earned on incremental investments.

Q. What required return on common equity did you derive from your analysis?

A. My analysis on Exhibit ____ (JEB-5) shows that the average DCF return for the comparable companies, adjusted by their market-to-book ratios, is 15.11%. When an allowance for flotation costs of 4% is made, the result is a

required rate of return of 15.47%. I have rounded this return to 15.50% for use in this case.

Q. Are the 100 companies listed in Exhibit ____ (JEB-5) the only companies which were in your ranges for beta and safety in the second quarter of 1980?

A. No, Southeastern Public Service Company had a beta of .50 and a safety of 3 in the second quarter of 1980. Yet, I did not include it in my set of comparable companies because it paid no dividends during 1979. If a company pays no dividends, the DCF formulation does not yield a unique number which can be used as the company's cost of capital. Because Southeastern Public Service Company's cost of capital cannot be uniquely determined, I have eliminated it from consideration as a comparable company.

Q. What is your recommendation for the overall rate of return that should be allowed on net original cost rate base in this case?

A. Exhibit ____ (JEB-6) shows that weighting the previously determined costs of the three types of securities (debt, preferred and common stock) by the portion of each type of security in Union Electric's capital structure results in an overall cost of capital of 10.88 percent.

UNION ELECTRIC COMPANY

EXHIBIT _____ (JEB-1) TO (JEB-6)

WITNESS: BIRDSONG

MO.P.S.C. CASE NO. ER-81-180

UNION ELECTRIC COMPANY - CORPORATE
COST OF LONG TERM DEBT PRO FORMA AT 9/30/81

LONG TERM DEBT	DATE OF SALE	DISCOUNT OR (PREMIUM)	EXPENSE	NET PROCEEDS	% OF PRINCIPAL AMOUNT	COST OF LONG TERM DEBT	PRINCIPAL AMOUNT ISSUED AND OUTSTANDING 9/30/81	AMOUNT COST
FIRST MORTGAGE BONDS								
3-1/4%, 1982	Apr. 1952	34,270	\$151,600	\$30,271,010	\$100.90	3.20%	\$ 7,000,000	\$ 960,000
3-3/4%, 1986	July 1956	(655,600)	170,764	40,484,836	101.21	3.68	40,000,000	1,472,000
4-3/8%, 1988	Mar. 1958	(608,963)	151,465	35,457,500	101.31	4.30	35,000,000	1,505,000
4-3/4%, 1990	Sep. 1960	(744,500)	198,143	50,166,357	100.33	4.73	50,000,000	2,365,000
4-3/4%, 1991	July 1961	(272,700)	121,832	30,150,868	100.50	4.72	30,000,000	1,416,000
4-1/2%, 1993	Nov. 1963	(188,700)	116,217	30,271,783	100.24	4.49	30,000,000	1,347,000
4-1/2%, 1995	Apr. 1965	(28,000)	120,640	34,907,360	99.74	4.52	35,000,000	1,582,000
5-1/2%, 1996	May 1966	(54,800)	77,980	30,465,820	101.55	5.40	30,000,000	1,620,000
5-1/2%, 1997	Mar. 1967	(239,600)	80,851	40,151,749	100.39	5.47	40,000,000	2,188,000
7%, 1998	Mar. 1968	(575,500)	86,555	50,488,525	103.98	6.92	50,000,000	3,460,000
7-3/8%, 1999	May 1969	(220,850)	86,841	35,134,009	100.38	7.34	35,000,000	2,569,000
8-1/4%, 1999	Oct. 1969	(240,000)	87,550	40,152,450	100.38	8.22	40,000,000	3,288,000
9%, 2000	Apr. 1970	(347,940)	113,076	60,234,864	100.39	8.96	60,000,000	5,376,000
7-7/8%, 2001	Jan. 1971	(210,000)	54,168	50,115,832	100.23	7.86	50,000,000	4,930,000
7-5/8%, 2001	Apr. 1971	(450,000)	89,497	50,360,503	100.72	7.56	50,000,000	3,780,000
8-1/8%, 2001	Sep. 1971	(429,000)	101,353	60,327,647	100.55	8.08	60,000,000	4,848,000
8-3/8%, 2004	Feb. 1974	(643,930)	127,647	70,516,283	100.74	8.31	70,000,000	5,817,000
10-1/2%, 2005	Mar. 1975	612,500	190,501	69,196,959	98.85	10.63	70,000,000	7,441,000
8-7/8%, 2006	Aug. 1976	973,070	282,124	68,744,806	98.21	9.05	70,000,000	6,335,000
8-5/8%, 2007	Dec. 1977	741,000	184,846	59,074,154	97.59	8.77	60,000,000	5,262,000
5-80%, 2005 (Serial)	Oct. 1977	446,903	207,177	26,430,320	97.59	5.99	27,085,000	1,622,392
9-35%, 2008 (Serial)	Aug. 1978	-3-	258,532	54,701,468	99.46	9.42	55,000,000	5,181,000
9-55%, 1999 (Serial)	Nov. 1979	-0-	342,424	99,657,576	99.66	10.00	100,000,000	10,000,000
13%, 2011	Mar. 1981	(2)	(2)	(2)	(2)	13.00 (2)	100,000,000	13,000,000
REVENUE CONTROL BONDS	Apr. 1974	244,778	204,361	16,050,861	97.28	6.31	16,500,000	1,041,150
INTERMEDIATE TERM LOAN	Aug. 1980	1,500,000	360,000	56,440,000	96.90 (1)	10.01 (1)	49,000,000 (1)	4,904,900
	Jan. 1973	-0-	62,183	74,937,817	99.52	12.00	75,000,000	9,000,000
							<u>\$31,357,535,000</u>	<u>\$111,310,143</u>

COST = 8.20%

(1) Expenses estimated to be \$360,000. \$49,000,000 of the \$60,000,000 principal is estimated to be received by 9/30/81.
(2) Discount (or premium) and Expenses are unknown at this time. Cost is estimated to be 13%.
(3) Cost is based on the prevailing prime rate as determined by the Chemical Bank of New York. The terms of the loan are as follows:
The interest rate will be 100% of the prevailing prime rate from 1980 through 1987 and 105% or the prevailing prime rate thereafter, if the prevailing prime rate exceeds 15%, the interest rate will be one quarter percentage point higher than the prevailing prime rate.

UNION ELECTRIC COMPANY - CORPORATE
COST OF LONG-TERM DEBT OUTSTANDING
DECEMBER 31, 1967-DECEMBER 31, 1980
AND PRO FORMA AT SEPTEMBER 30, 1981

	<u>OUTSTANDING DEBT (000)</u>	<u>ANNUAL COST</u>	<u>WEIGHTED AVERAGE COST</u>
12/31/67	\$ 465,901	\$ 18,766,675	4.05%
12/31/68	500,500	21,754,800	4.37
12/31/69	575,506	27,611,800	4.82
12/31/70	635,461	32,987,800	5.21
12/31/71	706,072	42,764,800	6.08
12/31/72	730,919	44,492,300	6.11
12/31/73	780,742	48,584,800	6.24
12/31/74	864,500	55,442,950	6.41
12/31/75	943,500	64,560,150	6.84
12/31/76	1,013,500	70,895,150	7.00
12/31/77	1,078,585	75,729,374	7.02
12/31/78	1,133,585	81,900,542	7.22
12/31/79	1,183,585	86,900,542	7.34
12/31/80	1,230,585	93,586,142	7.61
9/30/81 (PRO FORMA)	1,357,585	111,310,442	8.20

UNION ELECTRIC COMPANY - CORPORATE
COST OF PREFERRED STOCK PRO FORMA AT SEPTEMBER 30, 1981

ISSUE	DATE OF SALE	PRINCIPAL AMOUNT OUTSTANDING	PREMIUM	EXPENSE AND DISCOUNT	NET PROCEEDS	NET PROCEEDS PER SHARE	COST OF PREPARED STOCK	ANNUAL COST
\$100 Stated Value								
\$4.50	May 1941	\$ 15,000,000	\$ 412,500	\$ 27,794	\$ 21,714,206	\$101.80	4.42%	\$ 946,099
\$4.50	May 1945	6,359,500	-					
\$3.70	Oct. 1945	4,000,000	21,996	21,395	4,000,604	100.02	3.70	148,010
\$3.50	May 1946	13,300,000	910,000	252,772	13,657,228	105.06	3.33	432,900
\$4.00	Nov. 1949	15,000,000	125,885	68,881	15,057,104	100.38	3.98	597,000
\$4.56	Nov. 1963	20,000,000	16,000	47,633	19,968,367	99.84	4.57	914,000
\$6.40	Nov. 1967	30,000,000	-	429,180	29,570,820	98.57	6.49	1,947,000
\$93.25 Stated Value								
\$8.00	Nov. 1969	32,287,500	-	464,364	31,823,136	90.92	8.80	2,841,300
\$97.30 Stated Value								
\$8.00	Apr. 1971	41,437,500	-	680,384	40,757,116	95.90	8.56	3,455,888
\$100 Stated Value								
\$7.44	Dec. 1972	55,000,000	-	699,763	54,300,237	98.73	7.54	4,147,000
\$25 Stated Value								
\$2.72	Nov. 1974	36,000,000	-	1,597,441	34,402,559	24.00	11.48	4,132,800
\$25 Stated Value								
\$2.125	Oct. 1977	40,000,000	-	1,535,821	38,464,179	24.04	8.84	3,536,000
\$50 Stated Value								
\$4.60	Apr. 1979	75,000,000	-	378,112	74,621,888	49.75	9.26	6,945,000
	June 1981	60,000,000	(1)	(1)	(1)	(1)	12.50	7,500,000
		\$443,084,500	\$1,486,481	\$6,203,537	\$379,367,444		8.47*	\$37,540,978

* Weighted Average.
(1) Discount (or premium) and expenses are unknown at this time. Cost is estimated to be 12.50.

UNION ELECTRIC COMPANY - CORPORATE
COST OF PREFERRED STOCK
DECEMBER 31, 1967 - DECEMBER 31, 1980
AND PRO FORMA AT SEPTEMBER 30, 1981

	<u>TOTAL PREFERRED STOCK ISSUED</u>	<u>ANNUAL COST</u>	<u>WEIGHTED AVERAGE COST</u>
12/31/67	\$103,360	\$ 4,983	4.82%
12/31/68	103,360	4,983	4.82
12/31/69	135,647	7,824	5.77
12/31/70	135,647	7,824	5.77
12/31/71	177,084	11,280	6.37
12/31/72	232,084	15,427	6.65
12/31/73	232,084	15,427	6.65
12/31/74	272,084	20,019	7.36
12/31/75	272,084	20,019	7.36
12/31/76	272,084	20,019	7.36
12/31/77	312,084	23,555	7.55
12/31/78	312,084	23,555	7.55
12/31/79	385,084	30,271	7.86
12/31/80	383,084	30,041	7.84
9/30/81 PRO FORMA	443,084	37,541	8.47

UNION ELECTRIC COMPANY
BETAS AND SAFETY RANKINGS
ELECTRIC UTILITY INDUSTRY
2ND QUARTER 1980

<u>COMPANY</u>	<u>BETA</u> <u>(IN HUNDREDTHS)</u>	<u>SAFETY</u>
Allegheny Power System	65	3
American Electric Power	65	2
Atlantic City Electric	60	2
Baltimore Gas & Electric	70	1
Boston Edison	60	2
Carolina Power & Light	70	2
Central Hudson Gas & Electric	50	2
Central Maine Power	50	2
Consolidated Edison	65	2
Delmarva Power & Light	65	2
Duke Power	70	1
Duquesne Light	55	2
Eastern Utilities Assn.	55	3
Florida Power Corp.	65	2
Florida Power & Light	75	2
General Public Utilities	80	3
Long Island Lighting	65	2
New England Electric System	60	1
New England Gas & Electric	50	2
New York State Electric & Gas	60	1
Niagara - Mohawk	60	2
Northeast Utilities	55	2
Orange & Rockland Utilities	55	3
Pennsylvania Power & Light	60	1
Philadelphia Electric	60	2
Potomac Electric Power	60	2
Public Service Electric & Gas	70	1
Public Service of New Hampshire	65	2
Rochester Gas & Electric	55	2
Savannah Electric Power	65	3
South Carolina Electric & Gas	65	1
Southern Co.	65	2
Tampa Electric	75	2
United Illuminating	50	2
Virginia Electric & Power	70	2
Consumers Power	70	2
Central and South West	85	1
Central Illinois Light	60	2
Central Illinois Public Service	55	2
Cincinnati Gas & Electric	65	1
Cleveland Electric	65	1
Commonwealth Edison	70	1

<u>COMPANY</u>	<u>BETA</u> <u>(IN HUNDRETHS)</u>	<u>SAFETY</u>
Dayton Power & Light	60	1
Detroit Edison	60	2
El Paso Electric	65	2
Empire District Electric	60	2
Gulf States Utilities	70	3
Houston Industries	80	2
Illinois Power	65	1
Indianapolis Power & Light	65	2
Interstate Power	55	1
Iowa Electric Light & Power	60	3
Iowa-Illinois Gas & Electric	60	2
Iowa Resources	55	1
Iowa Public Service	60	1
Iowa Southern Utilities	55	1
Kansas City Power & Light	60	1
Kansas Gas & Electric	60	2
Kansas Power & Light	60	1
Kentucky Utilities	55	2
Louisville Gas & Electric	65	1
Middle South Utilities	70	2
Minnesota Power & Light	55	2
Missouri Public Service	60	3
Montana-Dakota Utilities	70	3
Northern Indiana Public Service	60	2
Northern States Power	65	1
Ohio Edison	65	2
Oklahoma Gas & Electric	65	2
Otter Tail Power	60	2
Public Service of Indiana	65	1
St. Joseph Light & Power	50	2
Southern Indiana Gas & Electric	60	2
Southwestern Public Service	60	1
Texas Utilities	80	1
Toledo Edison	60	2
Wisconsin Electric Power	65	1
Wisconsin Power & Light	50	1
Wisconsin Public Service	60	1
Arizona Public Service	70	2
Citizens Utilities	55	1
Hawaiian Electric	55	2
Idaho Power	55	2
Montana Power	70	2
Nevada Power	75	3
Pacific Gas & Electric	55	1
Pacific Power & Light	60	1
Portland General Electric	60	2
Public Service of Colorado	75	2
Public Service of New Mexico	70	2
Puget Sound Power & Light	65	2

<u>COMPANY</u>	<u>BETA</u> <u>(IN HUNDREDTHS)</u>	<u>SAFETY</u>
San Diego Gas & Electric	60	2
Sierra Pacific Power	70	2
Southern California Edison	70	1
Tucson Electric & Power	55	1
Utah Power & Light	75	2
Washington Water Power	60	2
 Average	 62.89	 1.78
Standard Deviation	7.35	0.63

DCF RETURN
100 COMPANIES
COMPARABLE TO UNION ELECTRIC

CASE NO. ER-81-180
EXHIBIT (JEB-4)
PAGE 1 of 3

<u>COMPANY</u>	<u>YIELD</u>	<u>GROWTH</u>	<u>TOTAL</u>
Allied Products	4.25	16.5	20.75
American Seating	3.26	4.0	7.26
Atlanta Gas Light	10.07	8.0	18.07
Atlantic City Electric	10.17	5.5	15.67
Bay State Gas	9.26	8.0	17.26
Bell Telephone of Canada	7.96	7.5	15.46
Boston Edison	11.76	4.5	16.26
CP National Corp.	11.57	5.5	17.07
Canal-Randolph Corp.	5.51	14.0	19.51
Canon Inc.	2.36	21.0	23.36
Cascade Natural Gas	9.73	14.5	24.23
Central Hudson Gas & Electric	11.16	6.0	17.16
Central Illinois Light	11.04	3.5	14.54
Central Illinois Public Service	10.82	3.5	14.32
Central Maine Power	11.25	3.0	14.25
Cincinnati Bell	9.10	9.5	18.60
Citizens Utilities	8.53	7.5	16.03
Copperweld Corp.	7.88	8.0	15.88
Dayton Power & Light	11.44	3.5	14.94
Detroit Edison	11.78	3.5	15.28
Dillon Cos.	5.08	14.0	19.08
Dominion Stores	6.15	7.0	13.15
Duquesne Light	11.60	0.5	12.10
Eastern Utilities Assoc.	12.03	2.0	14.03
Empire District Electric	11.34	3.0	14.34
Equifax Inc.	10.77	6.5	17.27
Fidelity Union Bancorp.	8.82	4.5	13.32
First National St. Bancorp.	9.99	3.0	12.99
Fuji Photo	1.16	12.0	13.16
Gas Service Co.	9.22	4.5	13.72
General Bancshares	5.50	7.0	12.50
Hackensack Water	9.83	9.0	18.83
Handy & Hartman	2.56	15.0	17.56
Hawaiian Electric	9.65	7.5	17.15
Hitachi	2.58	14.5	17.08
Hollinger Argus	6.34	4.0	10.34
Honda Motor	1.64	14.0	15.64
Houghton Mifflin	5.25	14.5	19.75
Idaho Power	10.47	4.0	14.47
Indiana Gas	9.21	7.5	16.71
Interstate Power	11.04	3.0	14.04
Iowa Electric Light & Power	11.01	3.0	14.01
Iowa-Illinois Gas & Electric	10.77	4.0	14.77
Iowa Public Service	10.07	4.0	14.07
Iowa Resources	10.94	4.5	15.44
Iowa Southern Utilities	9.97	5.0	14.97

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<u>COMPANY</u>	<u>YIELD</u>	<u>GROWTH</u>	<u>TOTAL</u>
Kansas City Power & Light	11.12	3.5	14.62
Kansas Gas & Electric	11.27	2.5	13.77
Kansas Power & Light	11.42	4.5	15.92
Kentucky Utilities	10.72	3.5	14.22
Michigan Gas Utilities	9.86	7.0	16.86
Minnesota Gas	3.99	5.0	13.99
Minnesota Power & Light	10.38	5.0	15.38
Missouri Public Service	8.49	4.5	12.99
Mountain States Telephone	9.43	4.0	13.43
Munsingwear	8.16	2.0	10.16
National Fuel Gas	9.42	7.5	16.92
National Utilities	8.39	7.0	15.39
New England Electric	10.93	5.5	16.43
New England Gas & Electric	10.90	3.5	14.40
New England Telephone & Telegraph	10.06	5.0	15.06
New York State Electric & Gas	10.90	5.0	15.90
Niagara-Mohawk	10.79	3.5	14.29
Northeast Utilities	11.95	8.5	20.45
Northern Indiana Public Service	10.34	3.0	13.34
Opelika Mfg. Corp.	7.60	3.5	11.10
Orange & Rockland Utilities	11.39	4.0	15.39
Otter Tail Power	13.28	7.0	20.28
Pacific Gas & Electric	11.00	8.0	19.00
Pacific N.W. Bell	9.35	4.0	13.35
Pacific Power & Light	10.50	6.0	16.50
Pacific Telephone & Telegraph	10.53	2.0	12.53
Pennsylvania Power & Light	10.92	3.0	13.92
Philadelphia Electric	11.92	3.5	15.42
Philips NV	8.62	6.0	14.62
Piedmont Natural Gas	8.91	9.0	17.91
Portland General Electric	11.05	2.0	13.05
Potomac Electric Power	11.14	5.5	16.64
Rochester Gas & Electric	9.41	5.5	14.91
St. Joseph Light & Power	11.39	4.0	15.39
San Diego Gas & Electric	10.91	5.5	16.41
Shell Transport	13.05	12.0	25.05
Southern Indiana Gas & Electric	8.96	8.0	16.96
Southern New England Telephone	10.03	4.0	14.03
South Jersey Ind.	9.40	6.5	15.90
Southwestern Public Service	10.24	5.0	15.24
Sterling Bancorp.	8.25	0.0	8.25
Toledo Edison	11.01	2.0	13.01
Tucson Electric & Power	9.93	7.5	17.43
Unilever Ltd.	5.02	7.5	12.52
Unilever NV	8.98	7.0	15.98
United Illuminating	11.37	2.5	13.87
Washington Gas Light	10.46	6.5	16.96
Washington Water	10.20	4.5	14.70

<u>COMPANY</u>	<u>YIELD</u>	<u>GROWTH</u>	<u>TOTAL</u>
Weis Markets	3.63	15.5	19.13
Wicor Inc.	9.75	9.0	18.75
Winn-Dixie	5.44	12.0	17.44
Wisconsin Power & Light	10.01	5.0	15.01
Wisconsin Public Service	9.83	6.0	15.83
Wrigley (Wm.) Jr.	7.00	10.5	17.50
AVERAGE	9.26	6.34	15.60

DCF RETURN
100 COMPANIES
COMPARABLE TO UNION ELECTRIC

<u>COMPANY</u>	<u>MARKET- TO-BOOK</u>	<u>ADJUSTED YIELD</u>	<u>GROWTH</u>	<u>ADJUSTED TOTAL</u>
Allied Products	0.5759	2.45	16.5	18.95
American Seating	0.5870	1.92	4.0	5.92
Atlanta Gas Light	0.7019	7.07	8.0	15.07
Atlantic City Electric	0.8937	9.09	5.5	14.59
Bay State Gas	1.0270	9.51	8.0	17.51
Bell Telephone of Canada	1.1947	9.51	7.5	17.01
Boston Edison	0.8588	10.10	4.5	14.60
CP National Corp.	0.7193	8.32	5.5	13.82
Canal-Randolph Corp.	1.6583	9.13	14.0	23.13
Canon Inc.	1.1483	2.72	21.0	23.72
Cascade Natural Gas	0.9048	8.80	14.5	23.30
Central Hudson Gas & Electric	0.7941	8.36	6.0	14.86
Central Illinois Light	0.8399	9.27	3.5	12.77
Central Illinois Public Service	0.9271	10.04	3.5	13.54
Central Maine Power	0.8596	9.67	3.0	12.67
Cincinnati Bell	0.8681	7.90	9.5	17.40
Citizens Utilities	1.5144	12.92	7.5	20.42
Copperweld Corp.	0.7303	5.75	8.0	13.75
Dayton Power & Light	0.9530	10.90	3.5	14.40
Detroit Edison	0.7808	9.19	3.5	12.69
Dillon Cos.	2.3810	12.09	14.0	26.09
Dominion Stores	0.9730	5.99	7.0	12.99
Duquesne Light	0.9032	10.48	0.5	10.98
Eastern Utilities Assoc.	0.8202	9.87	2.0	11.87
Empire District Electric	0.8898	10.09	3.0	13.09
Equifax Inc.	1.6135	17.38	6.5	23.88
Fidelity Union Bancorp.	0.7117	6.27	4.5	10.77
First National St. Bancorp.	0.6807	6.80	3.0	9.80
Fuji Photo	1.2181	1.42	12.0	13.42
Gen. Service Co.	0.7846	7.24	4.5	11.74
General Bancshares	0.6381	3.51	7.0	10.51
Hackensack Water	0.8705	8.56	9.0	17.56
Handy & Hartman	2.3830	6.11	15.0	21.11
Hawaiian Electric	0.8940	8.63	7.5	16.13
Hitachi	0.8429	2.18	14.5	16.68
Hollinger Argus	1.0375	6.58	4.0	10.58
Honda Motor	1.6959	2.78	14.0	16.78
Houghton Mifflin	1.4213	7.46	14.5	21.96
Idaho Power	0.8953	9.37	4.0	13.37
Indiana Gas	0.9426	8.69	7.5	16.19
Interstate Power	0.8720	8.62	3.0	12.62
Iowa Electric Light & Power	0.8111	8.93	3.0	11.93
Iowa-Illinois Gas & Electric	0.9407	10.13	4.0	14.13
Iowa Public Service	0.9722	9.79	4.0	13.79
Iowa Resources	0.9482	10.37	4.5	14.87
Iowa Southern Utilities	0.8383	8.36	5.0	13.36

<u>COMPANY</u>	<u>MARKET- TO-BOOK</u>	<u>ADJUSTED YIELD</u>	<u>GROWTH</u>	<u>ADJUSTED TOTAL</u>
Kansas City Power & Light	0.7753	8.62	3.5	12.12
Kansas Gas & Electric	0.8406	9.47	2.5	11.97
Kansas Power & Light	0.8017	9.15	4.5	13.65
Kentucky Utilities	0.8122	8.71	3.5	12.21
Michigan Gas Utilities	1.1377	11.22	7.0	18.22
Minnesota Gas	0.9347	8.41	5.0	13.41
Minnesota Power & Light	0.9103	9.45	5.0	14.45
Missouri Public Service	0.8478	7.20	4.5	11.70
Mountain States Telephone	0.9464	8.92	4.0	12.92
Munsingwear	0.5086	4.15	2.0	6.15
National Fuel Gas	0.7213	6.89	7.5	14.39
National Utilities	0.8758	7.34	7.0	14.34
New England Electric	0.8830	9.65	5.5	15.15
New England Gas & Electric	0.8286	9.03	3.5	12.53
New England Telephone & Telegraph	0.9512	9.56	5.0	14.56
New York State Electric & Gas	0.8246	8.99	5.0	13.99
Niagara-Mohawk	0.8438	9.10	3.5	12.60
Northeast Utilities	0.7508	8.97	8.5	17.47
Northern Indiana Public Service	0.8201	8.48	3.0	11.48
Opelika Mfg. Corp.	0.5151	3.92	3.5	7.42
Orange & Rockland Utilities	0.9032	10.29	4.0	14.29
Otter Tail Power	0.6978	9.27	7.0	16.27
Pacific Gas & Electric	0.7905	8.69	8.0	16.69
Pacific N.W. Bell	0.9337	8.73	4.0	12.73
Pacific Power & Light	1.0008	11.35	6.0	17.35
Pacific Telephone & Telegraph	0.6624	6.97	2.0	8.97
Pennsylvania Power & Light	0.7906	8.63	3.0	11.63
Philadelphia Electric	0.8104	9.78	3.5	13.28
Philips NV	0.3454	2.98	6.0	8.98
Piedmont Natural Gas	1.0432	9.29	9.0	18.29
Portland General Electric	0.8962	9.91	2.0	11.91
Potomac Electric Power	0.8043	9.85	5.5	15.35
Rochester Gas & Electric	0.7966	7.49	5.5	12.99
St. Joseph Light & Power	0.8000	9.12	4.0	13.12
San Diego Gas & Electric	1.0012	10.92	5.5	16.42
Shell Transport	1.0622	13.87	12.0	25.87
Southern Indiana Gas & Electric	0.8781	7.87	8.0	15.87
Southern New England Telephone	0.7745	7.77	4.0	11.77
South Jersey Ind.	1.4158	13.31	6.5	19.81
Southwestern Public Service	1.3629	13.96	5.0	18.96
Sterling Bancorp.	4.3127	35.58	0.0	35.58
Toledo Edison	0.9011	9.92	2.0	11.92
Tucson Electric & Power	1.0707	10.63	7.5	18.13
Unilever Ltd.	0.9783	4.91	7.5	12.41
Unilever NV	0.7938	7.13	7.0	14.13
United Illuminating	0.8201	9.39	2.5	11.89
Washington Gas Light	0.8971	9.38	6.5	15.88
Washington Water	0.9061	9.24	4.5	13.74

<u>COMPANY</u>	<u>MARKET- TO-BOOK</u>	<u>ADJUSTED YIELD</u>	<u>GROWTH</u>	<u>ADJUSTED TOTAL</u>
Weis Markets	1.6166	5.87	15.5	21.37
Wicor Inc.	0.8785	8.57	9.0	17.57
Winn-Dixie	1.6620	9.05	12.0	21.05
Wisconsin Power & Light	0.9950	9.96	5.0	14.96
Wisconsin Public Service	0.9346	9.19	6.0	15.19
Wrigley (Wm.) Jr.	1.3323	9.33	10.5	19.83
 Average	 0.9910	 8.77	 6.34	 15.11

COST OF CAPITAL
PRO FORMA AS OF SEPTEMBER 30, 1981

<u>TYPE OF CAPITAL</u>	<u>AMOUNT (000)</u>	<u>PROPORTION OF TOTAL</u>	<u>COST OF EACH TYPE</u>	<u>COST</u>
Long Term Debt	\$1,356,894	48.15%	8.20%	3.95%
Preferred Stock	444,571	15.78%	8.47%	1.34%
Common Stock	<u>1,016,441</u>	36.07%	15.50%	<u>5.59%</u>
TOTAL	\$2,817,906			10.88%

Question 7, Item 3

PREPARED TESTIMONY

of

RONALD L. SHACKELFORD

Office of Financial Analysis
Missouri Public Service Commission

UNION ELECTRIC COMPANY
Case Number ER 81-180

May, 1981

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of the Union)
Electric Company of St. Louis,)
Missouri for authority to file)
tariffs increasing rates for)
service provided to customers)
in the Missouri service area.)

Case Number ER 81-180

AFFIDAVIT OF Ronald L. Shackelford

STATE OF MISSOURI)
COUNTY OF COLE) SS

Ronald L. Shackelford of lawful age, on his oath states:
that he has participated in the preparation of the attached written testi-
mony in question and answer form, consisting of 37 pages, to be presented
in the above case; that the answers in the attached written testimony were
given by him; that he has knowledge of the matters set forth in such answers;
and that such matters are true to the best of his knowledge and belief.

Ronald L. Shackelford
Ronald L. Shackelford

Subscribed and sworn to before me this 27th day of May, 1981.

Judith L. Smith
Notary Public, Cole County, Missouri

My commission expires NOTARY PUBLIC STATE OF MISSOURI
MY COMMISSION EXPIRES JULY 30 1981