# DIRECT TESTIMONY

OF

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Illinois Commerce Commission

Utility Services of Illinois, Inc.

Proposed Rate Increases for Water and Sewer Service

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## Witness Identification

**Q. Please state your name and business address.**

A. My name is Janis Freetly. My business address is 527 East Capitol Avenue, Springfield, Illinois 62701.

**Q. What is your current position with the Illinois Commerce Commission ("Commission")?**

A. I am currently employed as a Senior Financial Analyst in the Finance Department of the Financial Analysis Division.

**Q. Please describe your qualifications and background.**

A. In May of 1995, I earned a Bachelor of Business from Western Illinois University. I received a Master of Business Administration degree, with a concentration in Finance, from Western Illinois University in May of 1998. I have been employed by the Commission in my present position since September of 1998. I was promoted to Senior Financial Analyst on August 31, 2001.

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

A. The purpose of my testimony and accompanying schedules is to present the overall cost of capital and recommend a fair rate of return on rate base for Utility Services of Illinois, Inc. ("USI" or the "Company"). The Company is a wholly owned subsidiary of Utilities, Inc. ("UI").

**Cost of Capital**

**Q. Please summarize your conclusions.**

A. The overall cost of capital for the Company is 7.55% as shown on Schedule 5.1. This is based on my recommended cost of common equity for the Company of 8.69%.

**Q. Why must one determine an overall cost of capital for a public utility?**

A. Under the traditional regulatory model, ratepayer and shareholder interests are balanced when the Commission authorizes a rate of return on rate base equal to the public utility's overall cost of capital, as long as that overall cost of capital is not unnecessarily expensive.[1] If the authorized rate of return on rate base exceeds the overall cost of capital, then ratepayers bear the burden of excessive prices. Conversely, if the authorized rate of return on rate base is lower than the overall cost of capital, the financial strength of the utility could deteriorate, making it difficult for the utility to raise capital at a reasonable cost. Ultimately, the utility's inability to raise sufficient capital would impair service quality. Therefore, ratepayer interests are served best when the authorized rate of return on rate base equals the utility's overall cost of capital.

In authorizing a rate of return on rate base equal to the overall cost of capital, all costs of service are assumed reasonable and accurately measured, including the costs and balances of the components of the capital structure. If unreasonable

[1] The remainder of the discussion assumes that the utility's overall cost of capital is not unnecessarily expensive; that is, the utility's cost of capital reflects a reasonable balance between financial strength and cost.

costs continue to be incurred, or if any reasonable cost of service component is measured inaccurately, then the allowed rate of return on rate base will not balance ratepayer and investor interests.

**Q. Please define the overall cost of capital for a public utility.**

A. The overall cost of capital for a public utility equals the sum of the costs of the components of the capital structure (i.e., debt, preferred stock, and common equity) after weighing each by its proportion to total capital.

## Capital Structure

**Q. What capital structure did the Company propose for setting rates?**

A. The Company proposed using UI's forecasted capital structure for the year ended December 31, 2015, comprised of 53.31% debt and 46.69% common equity.[2]

**Q. What capital structure do you propose for setting rates?**

A. Since USI obtains all its capital from UI, UI's capital structure balances and costs should be the starting point for setting USI's authorized rate of return. I have adjusted the Company's proposed capital structure such that it comprises 1.82% short-term debt, 50.14% long-term debt, and 48.04% common equity, as shown on Schedule 5.1.

[2] Direct Testimony of Steven Lubertozzi, USI Ex. No. 1.0, pp. 9-12.

**Q. How was the balance of short-term debt measured?**

A. The Company forecasted a $15,500,000 balance of short-term debt on December 31, 2015. Since short-term debt balances tend to fluctuate substantially during a year, any single balance might not be representative of the amount employed throughout the year. While Staff typically uses the period of time centered at the measurement date of the long-term components of the capital structure, the Company did not provide the forecasted monthly short-term balances needed to center in time on December 31, 2015. Hence, I measured the amount of short-term debt over the January 2014 through January 2015 period, which comprises the most recent actual monthly balances available.

To calculate the amount of short-term debt, I first calculated the monthly ending net balance of short-term debt outstanding from January 2014 through January 2015. The net balance of short-term debt equals the monthly ending gross balance of short-term debt outstanding minus the corresponding monthly ending balance of construction-work-in-progress ("CWIP") that is accruing an allowance for funds used during construction ("AFUDC") times the lesser of the ratio of short-term debt to total CWIP for the corresponding month or one. That adjustment recognizes the Commission's formula for calculating AFUDC assumes short-term debt is the first source of funds financing CWIP[3] and addresses the double-counting concern the Commission raised in a previous

[3] *Uniform System of Accounts for Water Utilities Operating in Illinois,* Accounting Instruction 19 Utility Plant - Components of Construction Cost (17). Long-term debt, preferred stock and common equity are assumed to finance CWIP balances in excess of the short-term debt balance according to their relative proportions to long-term capital.

Order.[4] Next, I calculated the twelve monthly averages from the monthly ending balances of net short-term debt. Finally, I averaged the twelve monthly balances of short-term debt for February 2014 through January 2015. Schedule 5.2 presents the calculation of the average adjusted balance of short-term debt.

**Q. Did you adjust the long-term capital components to recognize the Commission's formula for calculating AFUDC?**

A. No. The Commission's formula for calculating AFUDC assumes short-term debt is the *first* source of funds financing CWIP; however, it is not necessarily the *only* source. That formula also assumes that any CWIP not funded by short-term debt is funded proportionally by the remaining sources of capital (i.e., long-term debt and common equity). However, the remaining balance of CWIP accruing AFUDC over the February 2014 through January 2015 period is minimal and does not affect the long-term capital structure ratios. Therefore, such an adjustment would not affect the rate of return.

**Q. What balance of long-term debt did you include in your recommended capital structure?**

A. I began with the $180,000,000 balance of long-term debt outstanding on December 31, 2015, as presented on Schedule 5.3. I then adjusted that balance

[4] Order, Docket No. 95-0076 (Illinois-American Water Company, general rate increase), December 20, 1995, p. 51.

to reflect the unamortized debt expense incurred to issue the debt.[5] This produced a long-term debt balance of $178,726,842.

**Q. What balance of common equity did you include in your recommended capital structure?**

A. I used the Company's proposed $171,231,433 forecasted balance of common shareholders equity on December 31, 2015. (Company work paper– w/p [h-1])

**Q. Does capital structure affect the overall cost of capital?**

A. Yes; although, that effect is complex and difficult to measure. As a utility increases the proportion of common equity in its capital structure, the resulting decline in financial risk reduces the cost of each capital component. However, since common equity is the most costly capital structure component, an increasing proportion of common equity could increase the overall cost of capital. Conversely, since debt is less costly than equity, increasing the proportion of debt in the capital structure could reduce the overall cost of capital. However, raising the proportion of debt in the capital structure increases financial risk, thereby causing the cost of all capital components to rise. Hence, an increasing proportion of debt could increase the overall cost of capital. Therefore, the Commission should not determine the overall rate of return from a utility's actual capital structure if the Commission concludes that capital structure adversely affects the overall cost of capital.

[5] Company Response to Staff DR JF-1.09.

An optimal capital structure would minimize the cost of capital and maintain a utility's financial integrity. Unfortunately, determining whether a capital structure is optimal remains problematic because: (1) the cost of capital is a continuous function of the capital structure, rendering its precise measurement along each segment of the range of possible capital structures problematic; (2) the optimal capital structure is a function of operating risk, which is dynamic; and (3) the relative costs of the different types of capital vary with dynamic market conditions. Consequently, one should determine whether the capital structure is consistent with the financial strength necessary to access the capital markets under most economic conditions, and if so, whether the cost of that financial strength is reasonable.

**Q. How did you evaluate your proposed capital structure for UI?**

A. I compared my proposed common equity ratio for UI to the common equity ratio for the water utility industry. In the third quarter of 2014, the mean common equity ratio for the water utility industry was 53.49%.[6] My proposed common equity ratio of 48.04% is relatively close to that mean.

## Cost of Short-Term Debt

**Q. What is your estimate of the cost of short-term debt?**

[6] Standard & Poor's Compustat database.

A. The current interest rate on UI's short-term revolving bank facility is 1.6875%.[7] I used this interest rate to estimate the cost of short-term debt at 1.69%

## Cost of Long-Term Debt

**Q. What is the embedded cost of long-term debt?**

A. The embedded cost of long-term debt for 2015 is 6.66%, as shown on Schedule 5.3.

**Q. Please describe the adjustments you made to the cost of long-term debt.**

A. I included the annual amortization of debt expense, which reflects straight-line amortization of the unamortized balance over the remaining life of the outstanding issue of long-term debt.

## Cost of Common Equity

**Q. What is USI's cost of common equity?**

A. My analysis indicates that the cost of common equity for USI is 8.69%.

**Q. How did you measure the investor-required rate of return on common equity for USI?**

A. I measured the investor-required rate of return on common equity for USI with the discounted cash flow ("DCF") and risk premium models. Since USI does not have market-traded common stock, DCF and risk premium models cannot be applied directly to UI; for this reason, and to minimize measurement error, I

[7] Company Responses to Staff Data Requests JF 1.05, JF 1.06 and JF 1.07.

applied both models to water utility and public utility samples (hereafter, referred to as "Water sample" and "Utility sample," respectively).

**Sample Selection**

**Q. How did you select your Water sample?**

A. I selected my Water sample based on two criteria. First, I began with a list of all domestic corporations assigned an industry number of 4941 (i.e., water utilities) within Standard & Poor's *Utility Compustat II* that have publicly-traded common stock. Second, I removed any company that did not have the data needed for my cost of common equity analyses. The remaining companies, American States Water Company, American Water Works Company, Aqua America, Inc., California Water Service Group, and Connecticut Water Service Inc., compose my Water sample.

**Q. How did you select a Utility sample comparable in risk to USI?**

A. To form the Utility sample, I began with a list of all domestic dividend paying publicly-traded corporations assigned an industry number of 4911, 4922, 4923, 4924, 4931, or 4932 in the Standard & Poor's ("S&P") *Utility Compustat II* database that have been assigned (1) an S&P credit rating of BBB or BBB-; (2) an S&P business risk profile score of "excellent" or "strong;" and (3) an S&P financial risk profile of "intermediate," "significant," or "aggressive." Next, I removed any company that did not have the data needed for my cost of common equity analyses. Finally, I eliminated any company that was in the process of being acquired by another company or acquiring a company of similar size. The

remaining companies, American Electric Power Company, El Paso Electric Co., Empire District Electric, Entergy Corp., IDACORP, Inc., NiSource Inc., PG&E Corp., PNM Resources, and Portland General Electric Company compose my Utility sample.

**Q. Why did you limit your Utility sample to those with a Standard & Poor's credit rating of BBB or BBB-?**

A. The credit rating agencies do not rate the creditworthiness of UI. Therefore, I used Moody's Investors Service ("Moody's") rating methodology for water utilities to estimate the credit rating of UI. Specifically, I calculated UI's three year averages (2011-2013) for the four ratios that Moody's focuses on to assess the financial strength for the regulated water utility industry: (1) funds from operations ("FFO") interest coverage; (2) debt to capitalization; (3) FFO to net debt; and (4) retained cash flow ("RCF") to capital expenditures ("CapEx").[8] For UI, the three-year average FFO interest coverage ratio is 3.57x, which falls within the middle third of the benchmark range of a Baa credit rating (i.e., Baa2). The three-year average debt-to-capitalization ratio for UI is 51.53%, which falls within the bottom third of the benchmark range of an A credit rating (i.e., A3). The three-year average FFO-to-net debt ratio for UI is 17.80%, which falls within the bottom third of the benchmark range of an A credit rating (i.e., A3). The three-year average RCF-to-capital expenditures ratio for UI is 0.48, which falls within the top third of the benchmark range of a B credit rating (i.e., B1). Together, the four ratios that I

[8] Moody's Investors Service, Rating Methodology: Global Regulated Water Utilities, December 2009, pp. 19-22.

calculated for UI are consistent with a Baa2 rating, when weighted in accordance with the Moody's rating methodology for regulated water utilities.[9] The Baa2 credit rating is equivalent to Standard & Poor's BBB credit rating. Hence, I considered electric and gas utilities in the BBB range for my Utility sample.

**Q. Please describe Standard & Poor's business risk and financial risk profile scores and why you limited the composition of the Utility sample to those companies with a business profile score of "excellent" or "strong" and a financial risk profile of "intermediate," "significant," or "aggressive."**

A. According to financial theory, the market-required rate of return on common equity is a function of operating and financial risk. Thus, the method used to select a sample should reflect both the operating and financial characteristics of a firm. S&P's rating methodology is organized around fundamental business and financial analysis. In ascending order of risk, S&P categorizes business risk profiles as "excellent," "strong," "satisfactory," "fair," "weak," or "vulnerable." The key factors of a utility's business risk profile are markets and service area economy; competitive position; operations; regulation; and management. In ascending order of risk, S&P characterizes financial risk profiles as "minimal," "modest," "intermediate," "significant," "aggressive" and "highly leveraged." The primary determinants of S&P's financial risk profile analysis are accounting characteristics; financial governance/policies and risk tolerance; cash flow

[9] Moody's weights the FFO interest coverage and Debt to capitalization ratios 15% each and the FFO-to-Debt and RCF-to-CapEx ratios 5% each. Together, those four financial ratios constitute 40% of Moody's credit rating for regulated water utilities.

adequacy; capital structure and leverage; and liquidity and short-term factors.[10] I used S&P the business risk profiles and financial risk profiles for an average water utility for the Company, since S&P does not rate UI. I began with all twelve of the water utilities S&P rates.[11] Those twelve water utilities have an average financial risk profile of "intermediate." The business risk profile of all twelve S&P water utilities is "excellent." From that, I concluded that a business risk profile of "excellent" and a financial risk profile of "intermediate" are representative of the business and financial risk of an average water utility and are therefore reasonable proxies for UI. To obtain a sample with a sufficient number of companies to minimize measurement error associated with estimates of cost of common equity for individual companies, I also included utilities with the business profile of "strong" and financial risk profiles of "significant" and "aggressive."

## DCF Analysis

**Q. Please describe DCF analysis.**

A. For a utility to attract common equity capital, its investors must expect it to provide a rate of return on common equity sufficient to meet their requirements. DCF analysis establishes a rate of return directly from investor requirements. The DCF model does not include a separate term for the quantity of a security's

[10] S&P Ratings Direct, *U.S. Investor-Owned Water Utilities, Strongest to Weakest*, December 21, 2010, http://www.globalcreditportal.com/ratingsdirect.

[11] S&P Ratings Direct, *CreditStats: Water Utilities—U.S.,* August 29, 2014.

operating and financial risks. The market consensus of those risks is embodied in the market prices of securities.

According to DCF theory, a security price equals the present value of the cash flow investors expect it to generate. Specifically, the market value of common stock equals the cumulative value of the expected stream of future dividends after each is discounted by the investor-required rate of return.

**Q. Please describe the DCF model with which you measured the investor-required rate of return on common equity.**

A. As it applies to common stocks, DCF analysis is generally employed to determine appropriate stock prices given a specified discount rate. Since a DCF model incorporates time-sensitive valuation factors, it must correctly reflect the timing of the dividend payments that stock prices embody. As such, incorporating stock prices that the financial market sets on the basis of quarterly dividend payments into a model that ignores the time value of quarterly cash flows constitutes a misapplication of DCF analysis. The companies in the samples pay dividends quarterly; therefore, I applied a quarterly DCF model to measure the annual required rate of return on common equity.

**Q. How did you estimate the growth rate parameter?**

A. Determining the market-required rate of return with the DCF methodology requires a growth rate that reflects the expectations of investors. Although the current market price reflects aggregate investor expectations, market-consensus

expected growth rates cannot be observed directly. Therefore, I measured market-consensus expected growth indirectly with growth estimates from Zacks Investment Research ("Zacks") and Reuters, which summarize securities analysts' growth rate forecasts that are disseminated to investors. The average of the Zacks and Reuters growth rate estimates for the companies in my Water and Utility samples as of February 4, 2015 are shown on Schedule 5.4 under the column heading "Stage 1".

**Q. How did you measure the stock price?**

A. A current stock price reflects all information that is available and relevant to the market; thus, it represents the market's assessment of the common stock's current value. I measured each company's current stock price with its closing market price from February 4, 2015. Those stock prices for the companies in the Water and Utility samples appear on Schedule 5.5.

Since stock prices reflect the market's concurrent expectation of the cash flows the securities will produce and the rate at which those cash flows are discounted, an observed change in the market price does not necessarily indicate a change in the required rate of return on common equity. Rather, a price change may reflect investors' re-evaluation of the expected dividend growth rate. In addition, stock prices change with the approach of dividend payment dates. Consequently, when estimating the required return on common equity with the DCF model, one should measure the expected dividend yield and the corresponding expected growth rate concurrently. Using a historical stock price

along with current growth expectations or combining an updated stock price with past growth expectations reduces the accuracy of the estimated market-required rate of return on common equity.

**Q. Please explain the significance of the column titled "Next Dividend Payment Date" shown on Schedule 5.6.**

A. Estimating the present value of each dividend requires measuring the length of time between its payment date and the stock observation date. For the first dividend payment, that length of time is measured from the "Next Dividend Payment Date." Subsequent dividend payments occur in quarterly intervals.

**Q. How did you estimate the next four expected quarterly dividends?**

A. Most utilities declare and pay the same dividend per share for four consecutive quarters before adjusting the rate. Consequently, I assumed the current declared dividend rate would adjust during the same quarter it changed the previous year. If the utility did not increase its dividend over the previous four quarters, I assumed the dividend would increase during the next quarter. For those companies that had announced the next dividend payment by the date that I performed my analysis, I input the dividend payment amount announced by the company. Otherwise, the average expected growth rate was applied to the current declared dividend rate to estimate the expected dividend rate. Schedule 5.5 presents the current quarterly dividends for the companies in the Water and Utility samples. Schedule 5.6 presents the expected quarterly dividends for the companies in the Water and Utility samples.

**Q. What are the required rates of return on common equity your constant growth DCF analysis estimates for the Water and Utility samples?**

A. The constant growth DCF analysis estimated that the required rate of return on common equity equals 7.74% for the Water sample and 8.94% for the Utility sample as shown on Schedule 5.7.

**Non-constant Growth DCF ("NCDCF") Analysis**

**Q. Please describe how you modeled your non-constant growth DCF analysis.**

A. I modeled three stages of dividend growth. The first, a near-term growth stage, is assumed to last five years. The second stage is a transitional growth period lasting from the end of the fifth year to the end of the tenth year. The third, or "steady-state," growth stage is assumed to begin after the tenth year and continue into perpetuity. An expected stream of dividends is estimated by applying these stages of growth to the current dividend. The discount rate that equates the present value of this expected stream of cash flows to the company's current stock price equals the investor required return on common equity.

**Q. How did you estimate the growth rate parameters for the NCDCF analysis?**

A. For the first stage, which is assumed to last five years, I used the same Zacks and Reuters estimates used in the constant growth DCF analysis described above.

The growth rate employed in the second stage equals the average of the first and third stage growth rates.

For the third stage, which begins at the end of the tenth year, I used the forecasted growth rate for nominal gross domestic product ("GDP") for the U.S. economy beginning in 2025. The GDP growth rate is composed of two parts, the expected real growth rate in GDP and the expected inflation rate. I estimated the expected real growth rate from the average of the Energy Information Administration's ("EIA") and IHS's forecasts of real GDP. EIA forecasts that real GDP will average 2.4% over the 2025-2040 period while IHS forecasts that real GDP will average 2.3% over the 2025-2044 period.

I extracted an estimate of the expected inflation rate from the difference in yields on U.S. Treasury bonds, which contain a premium for expected inflation, and U.S. Treasury Inflation-Protected Securities ("TIPS"), which do not contain a premium for expected inflation. The formula for this calculation is:

$$\text{Expected inflation} = (1+UST) / (1+TIPS) - 1$$

Where UST = yield on U.S. Treasury bonds; and
TIPS = yield on U.S. Treasury Inflation-Protected Securities.

However, because the third stage begins ten years hence, the first step is to remove the first ten years of Treasury yields from the 30-year TIPS and UST yields to produce a 20-year yield beginning ten years hence. This is accomplished through the following formula:

$$_{20}f_{10} = [(1+_{30}r_0)^{30} / (1+_{10}r_0)^{10}]^{1/20} - 1$$

Where $_{20}f_{10}$ = the implied 20-year forward rate in ten years;
$_{30}r_0$ = the current 30-year rate; and
$_{10}r_0$ = the current 10-year rate.

An implied 20-year forward TIPS yield of 0.85% beginning ten years hence was derived from the 0.10% 10-year and 0.60% 30-year TIPS rates as of February 4, 2015. An implied 20-year forward U.S. Treasury bond yield of 2.70% beginning ten years hence was derived from the 1.81% 10-year and 2.39% 30-year U.S. Treasury rates as of February 4, 2015.

Therefore, the estimate of long-term expected inflation equals 1.8%:

$$(1+2.70\%) / (1+0.85\%) - 1 = 1.8\%$$

The two components of nominal overall economic growth were then combined to estimate the long-term growth rate for the third stage, using the following formula:

$$\text{Nominal overall economic growth} = [(1+\text{Real GDP}) * (1+\text{Inflation})] - 1$$

Therefore, from the long-term estimates of real GDP growth of 2.3% and expected inflation of 1.8%, the long-term estimate of overall economic growth equals 4.2%:

$$\text{Nominal overall economic growth} = (1+2.4\%) * (1+1.8\%) - 1 = 4.2\%$$

I also calculated the nominal economic growth EIA forecasted for the 2025-2040 period (4.4%) and IHS forecasted for the 2025-2044 period (4.4%). Finally, I combined the 4.4% average of the EIA and IHS forecasts with the 4.2% nominal economic growth estimate described above to derive my long-term estimate of overall economic growth of 4.3%.

Schedule 5.4 presents the growth rate estimates for the companies in the Water and Utility samples.

**Q. What stock price and dividend data did you use in your NCDCF analysis?**

A. I used the same stock price and dividend data that I used in my constant growth DCF analysis.

**Q. What is your non-constant DCF estimate of the investor-required rates of return on common equity for the Water and Utility samples?**

A. My NCDCF analysis estimates an investor required rate of return on common equity of 7.06% for the Water sample and 7.79% for the Utility sample as shown on Schedule 5.7.

**Q. Why did you apply a non-constant growth DCF ("NCDCF") model in this proceeding?**

A. A single-stage, constant growth DCF model employs a single growth rate estimate which is assumed to be sustainable infinitely. Thus, the cost of common equity calculation derived from a constant growth estimate is appropriate if the near-term growth rate forecast for each company in the sample

is expected to equal its average long-term dividend growth. However, the 3-5 year growth rate for my Utility sample is not sustainable over the long-term while the long-term sustainability of the 3-5 year growth rates for my Water sample is questionable. Therefore, I implemented a multi-stage, non-constant growth DCF model.

**Q. How did you assess the long-term sustainability of the 3-5 year growth rates?**

The average 3-5 year growth rate is 5.12% for the Water sample and 5.70% for the Utility sample, while my estimate of the long-term gross domestic product ("GDP") growth rate is 4.30%.[12] In theory, no company could sustain indefinitely a growth rate greater than that of the overall economy, or it would eventually grow to dominate the entire economy. Moreover, since utilities in particular are generally below-average growth companies, the sustainability of an above average growth rate is particularly dubious. Given that the average growth rates for each of my samples were greater than the overall growth expectations for the economy, the sustainability of the average 3-5 year growth rates for my samples is unlikely.

As an additional evaluation of the sustainability of the 3-5 year growth rates, I also calculated the return on equity ("ROE") those growth rates imply, based on the dividend payout data published in Value Line for each company in the Water and Utility samples. That calculation produced an average ROE of 10.82% for

[12] The calculation of the long-term growth in GDP is described later.

the Water sample and 13.42% for the Utility sample. In comparison, Value Line forecasts an implied average ROE for the 2017-2019 period of 11.25% for the Water sample and 9.89% for the Utility sample.[13] This indicates that the growth rates for the Water sample might be sustainable. However, it is unlikely that investors would expect the companies in the Utility Sample to sustain a 13.42% rate of return on equity indefinitely. Consequently, while the validity of applying a constant growth DCF analysis to the Water sample is ambiguous, both tests of growth sustainability indicate that a constant growth DCF analysis is not appropriate for the Utility sample.

**Q. Why is the long-term GDP growth rate a reasonable estimate for the steady-state stage growth for your Water and Utility samples?**

A. Ideally, company-specific steady-state growth rate estimates are preferable but are not available. Thus, while the long-term GDP growth rate might be biased upward for generally below average growth companies such as utilities, it is much closer to the growth rate that investors could reasonably expect utilities to sustain over the long term.

## Risk Premium Analysis

**Q. Please describe the risk premium model.**

A. The risk premium model is based on the theory that the market-required rate of return for a given security equals the risk-free rate of return plus a risk premium

[13] The published Value Line ROE forecasts for the Water and Utility sample companies reflect return on end of year equity. Therefore, I adjusted the Value Line published forecasts to reflect the return on average 2017-2019 common equity.

associated with that security. A risk premium represents the additional return investors expect in exchange for assuming the risk inherent in an investment. Mathematically, a risk premium equals the difference between the expected rate of return on a risk factor and the risk-free rate. If the risk of a security is measured relative to a portfolio, then multiplying that relative measure of risk and the portfolio's risk premium produces a security-specific risk premium for that risk factor.

The risk premium methodology is consistent with the theory that investors are risk-averse. That is, investors require higher returns to accept greater exposure to risk. Thus, if investors had an opportunity to purchase one of two securities with equal expected returns, they would purchase the security with less risk. Similarly, if investors had an opportunity to purchase one of two securities with equal risk, they would purchase the security with the higher expected return. In equilibrium, two securities with equal quantities of risk have equal required rates of return.

The Capital Asset Pricing Model ("CAPM") is a one-factor risk premium model that mathematically depicts the relationship between risk and return as:

$$R_j = R_f + \beta_j \times (R_m - R_f)$$

where $R_j$ ≡ the required rate of return for security $j$;

$R_f$ ≡ the risk-free rate;

$R_m$ ≡ the expected rate of return for the market portfolio; and

$\beta_j$ ≡ the measure of market risk for security *j*.

In the CAPM, the risk factor is market risk, which is defined as risk that cannot be eliminated through portfolio diversification. To implement the CAPM, one must estimate the risk-free rate of return, the expected rate of return on the market portfolio, and a security or portfolio-specific measure of market risk.

**Q. How did you estimate the risk-free rate of return?**

A. I examined the suitability of the yields on four-week U.S. Treasury bills and thirty-year U.S. Treasury bonds as estimates of the risk-free rate of return.

**Q. Why did you examine the yields on U.S. Treasury bills and bonds as measures of the risk-free rate?**

A. The proxy for the nominal risk-free rate should contain no risk premium and reflect similar inflation and real risk-free rate expectations to the security being analyzed through the risk premium methodology.[14] The yields of fixed income securities include premiums for default and interest rate risk. Default risk pertains to the possibility of default on principal or interest payments. Securities of the United States Treasury are virtually free of default risk by virtue of the federal government's fiscal and monetary authority. Interest rate risk pertains to the effect of unexpected interest rate fluctuations on the value of securities.

Since common equity theoretically has an infinite life, its market-required rate of return reflects the inflation and real risk-free rates anticipated to prevail over the

[14] Real risk-free rate and inflation expectations comprise the non-risk portion of a security's rate of return.

long run. U.S. Treasury bonds, the longest term treasury securities, are issued with terms to maturity of thirty years;[15] U.S. Treasury notes are issued with terms to maturity ranging from two to ten years; U.S. Treasury bills are issued with terms to maturity ranging from four weeks to fifty-two weeks. Therefore, U.S. Treasury bonds are more likely to incorporate within their yields the inflation and real risk-free rate expectations that drive, in part, the prices of common stocks than either U.S. Treasury notes or Treasury bills.

However, due to relatively long terms to maturity, U.S. Treasury bond yields also contain an interest rate risk premium that diminishes their usefulness as measures of the risk-free rate. U.S. Treasury bill yields contain a smaller premium for interest rate risk. Thus, in terms of interest rate risk, U.S. Treasury bill yields more accurately measure the risk-free rate.

**Q. Given that the inflation and real risk-free rate expectations reflected in the yields on U.S. Treasury bonds and the prices of common stocks are similar, does it necessarily follow that the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bills and the prices of common stocks are dissimilar?**

A. No. To the contrary, short and long-term inflation and real risk-free rate expectations, including those that are reflected in the yields on U.S. Treasury bills, U.S. Treasury bonds, and the prices of common stocks, should equal over

[15] In February 9, 2006, the U.S. Department of Treasury resumed the issuance of 30-year U.S. Treasury Bonds.

time. Any other assumption implausibly implies that the real risk-free rate and inflation is expected to systematically and continuously rise or fall.

Although expectations for short and long-term real risk-free rates and inflation should equal over time, in finite time periods, short- and long-term expectations may differ. Short-term interest rates tend to be more volatile than long-term interest rates.[16] Consequently, over time U.S. Treasury bill yields are less biased (i.e., more accurate) but less reliable (i.e., more volatile) estimators of the long-term risk-free rate than U.S. Treasury bond yields. In comparison, U.S. Treasury bond yields are more biased (i.e., less accurate) but more reliable (i.e., less volatile) estimators of the long-term risk-free rate. Therefore, an estimator of the long-term nominal risk-free rate should not be chosen mechanistically. Rather, the similarity in current short- and long-term nominal risk-free rates should be evaluated. If those risk-free rates are similar, then U.S. Treasury bill yields should be used to measure the long-term nominal risk-free rate. If not, some other proxy or combination of proxies should be used.

**Q. What are the current yields on four-week U.S. Treasury bills and thirty-year U.S. Treasury bonds?**

A. Four-week U.S. Treasury bills are currently yielding 0.01%. Thirty-year U.S. Treasury bonds are currently yielding 2.40%. Both estimates are derived from

[16] Fabozzi and Fabozzi, ed., *The Handbook of Fixed Income Securities*, Fourth Edition, Irwin, p. 789.

quotes for February 4, 2015.[17] Schedule 5.8 presents the published quotes and effective yields.

**Q. Of the U.S. Treasury bill and bond yields, which is currently a better proxy for the long-term risk-free rate?**

A. For a growing economy with inflation, such as that of the U.S., a long-term risk-free rate near zero is implausible; therefore, the U.S. Treasury bond yield of 2.40% currently more closely approximates the long-term risk-free rate than the U.S. Treasury bill yield of 0.01%. It should be noted, however, that the U.S. Treasury bond yield is an upwardly biased estimator of the long-term risk-free rate due to the inclusion of an interest rate risk premium associated with its relatively long term to maturity.

**Q. How was the expected rate of return on the market portfolio estimated?**

A. The expected rate of return on the market was estimated by conducting a DCF analysis on the firms composing the S&P 500 Index ("S&P 500") as of December 31, 2014. That analysis used dividend information and closing market prices reported by Zacks Research Wizard. January 2, 2015 growth rate estimates were also obtained primarily from Zacks and secondarily from Reuters.[18] Firms not paying a dividend as of December 31, 2014, or for which neither Zacks nor Reuters growth rates were available were eliminated from the analysis. The resulting company-specific estimates of the expected rate of return on common

[17] The Federal Reserve Board, *Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update*, http://www.federalreserve.gov/releases/H15/update/, February 5, 2015.

[18] Growth rates were obtained from Reuters only if unavailable from Zacks.

equity were then weighted using market value data from Zacks Research Wizard. The estimated weighted average expected rate of return for the remaining 414 firms, composing 84.59% of the market capitalization of the S&P 500, equals 12.26%.

**Q. How did you measure market risk on a security-specific basis?**

A. Beta measures risk in a portfolio context. When multiplied by the market risk premium, a security's beta produces a market risk premium specific to that security. I used Value Line's betas, Zacks' betas, and a regression analysis to estimate the betas of the Water and Utility samples.

Value Line estimates beta for a security with the following model using an ordinary least-squares technique:[19]

$$R_{j,t} = a_j + \beta_j \times R_{m,t} + e_{j,t}$$

where $R_{j,t}$ ≡ the return on security $j$ in period $t$;

$R_{m,t}$ ≡ the return on the market portfolio in period $t$;

$a_j$ ≡ the intercept term for security $j$;

$\beta_j$ ≡ beta, the measure of market risk for security $j$; and

$e_{j,t}$ ≡ the residual term in period $t$ for security $j$.

A beta can be calculated for firms with market-traded common stock. Value Line calculates its betas in two steps. First, the returns of each company are regressed against the returns of the New York Stock Exchange Composite Index

[19] Statman, Meir, "Betas Compared: Merrill Lynch vs. Value Line," *The Journal of Portfolio Management*, Winter 1981.

("NYSE Index") to estimate a raw beta. The regression analysis employs 259 weekly observations of stock return data. Then, an adjusted beta is estimated through the following equation:

$$\beta_{adjusted} = 0.35 + 0.67 \times \beta_{raw}.$$

The regression analysis estimate of beta for a security or portfolio of securities is estimated with the following model using an ordinary least-squares technique:

$$R_{j,t} - R_{f,t} = a_j + \beta_j \times (R_{m,t} - R_{f,t}) + e_{j,t}$$

where $R_{j,t}$ ≡ the return on security $j$ in period $t$;

$R_{f,t}$ ≡ the risk-free rate of return in period $t$;

$R_{m,t}$ ≡ the return on the market portfolio in period $t$;

$a_j$ ≡ the intercept term for security $j$;

$\beta_j$ ≡ beta, the measure of market risk for security $j$; and

$e_{j,t}$ ≡ the residual term in period $t$ for security $j$.

Next, a beta estimate for both samples was calculated in three steps using regression analysis. First, the U.S. Treasury bill return is subtracted from both the average percentage change in the two samples' stock prices and the percentage change in the NYSE Index to estimate each portfolio's return in excess of the risk-free rate. Second, the excess returns of each of the samples are regressed against the excess returns of the NYSE Index to estimate a raw beta. The regression analysis employs sixty monthly observations of stock and

U.S. Treasury bill return data. Third, the beta is adjusted through the following equation:

$$\beta_{adjusted} = 0.33743 + 0.66257 \times \beta_{raw}.$$

Like Staff's regression beta, Zacks employs 60 monthly observations in its beta estimation. However, Zacks' betas regress stock returns against the S&P 500 Index rather than the NYSE Index. Further, the beta estimates Zacks publishes are raw betas. Thus, I adjusted the Zacks raw betas using the same formula used to adjust the regression beta.

**Q. Why do you use an adjusted beta estimate?**

A. I use an adjusted beta estimate for two reasons. First, betas tend to regress towards the market mean value of 1.0 over time; therefore, the adjustment represents an attempt to estimate a forward-looking beta. Second, some empirical tests of the CAPM suggest that the linear relationship between risk, as measured by raw beta, and return is flatter than the CAPM predicts. That is, securities with raw betas less than one tend to realize higher returns than the CAPM predicts. Conversely, securities with raw betas greater than one tend to realize lower returns than the CAPM predicts. Adjusting the raw beta estimate towards the market mean value of 1.0 results in a linear relationship between the beta estimate and realized rate of return that more closely conforms to the CAPM prediction.[20] Securities with betas less than one are adjusted upwards thereby

[20] Litzenberger, Ramaswamy and Sosin, "On the CAPM Approach to the Estimation of A Public Utility's Cost of Equity Capital," *Journal of Finance*, May 1980, pp. 375-376.

increasing the predicted required rate of return towards observed realized rates of return. Conversely, securities with betas greater than one are adjusted downwards thereby decreasing the predicted required rate of return towards observed realized rates of return.[21]

**Q. What are the beta estimates for the samples?**

A. The regression beta estimate for the Water sample is 0.65. The average Value Line beta and average Zacks beta for the Water sample are 0.69 and 0.67, respectively, as shown in Table 1 below.[22]

**Table 1**

| Company | Value Line Estimate | Zacks Estimate* |
|---|---|---|
| American States Water | 0.70 | 0.79 |
| American Water Works | 0.70 | 0.48 |
| Aqua America | 0.70 | 0.64 |
| California Water Service | 0.70 | 0.73 |
| Connecticut Water Service | 0.65 | 0.72 |
| Average | 0.66 | 0.67 |

* after adjustment

Since the Zacks beta estimate (0.67) and the regression beta estimate (0.65) are calculated using monthly data[23] rather than weekly data (as Value Line uses), I

[21] In other words, the linear relationship between risk, as measured by adjusted beta, and return is steeper than the linear relationship between risk, as measured by raw beta, and return.

[22] The Value Line Investment Survey, "Summary and Index," January 30, 2015, pp. 3-17; Zacks Research Wizard, February 4, 2015.

[23] Hereafter referred to as "monthly betas."

averaged those results to avoid over-weighting that approach. The average of the two monthly beta estimates is 0.66. I then averaged that result with the Value Line beta (0.69), which produces a beta for the Water sample of 0.66.

The regression beta estimate for the Utility sample is 0.62. The average Value Line beta and average Zacks beta for the Utility sample are 0.75 and 0.62, respectively, as shown in Table 2 below.[24]

**Table 2**

| Company | Value Line Estimate | Zacks Estimate* |
|---|---|---|
| American Electric Power | 0.70 | 0.56 |
| El Paso Electric | 0.70 | 0.61 |
| Empire District | 0.70 | 0.60 |
| Entergy Corp. | 0.70 | 0.56 |
| IDACORP Inc. | 0.80 | 0.73 |
| Nisource Inc. | 0.85 | 0.61 |
| PG&E Corp. | 0.65 | 0.51 |
| PNM Resources | 0.85 | 0.72 |
| Portland General Electric | 0.80 | 0.65 |
| Average | 0.75 | 0.62 |

* after adjustment

The average of the two monthly beta estimates is 0.62. I then averaged that result with the Value Line beta (0.75), which produces a beta for the Utility sample of 0.69.

[24] The Value Line Investment Survey, "Summary and Index," January 30, 2015, pp. 3-17; Zacks Research Wizard, February 4, 2015.

**Q. What investor required rate of return on common equity does the risk premium model estimate for the samples?**

A. The risk premium model estimates an investor required rate of return on common equity of 9.11% for the Water sample and 9.20% for the Utility sample. The computation of those estimates appears on Schedule 5.8.

## Cost of Equity Recommendation

**Q. Based on your entire analysis, what is your estimate of the investor required rate of return on the common equity for USI?**

A. A thorough analysis of the required rate of return on common equity requires both the application of financial models and the analyst's informed judgment. An estimate of the required rate of return on common equity based solely on judgment is inappropriate. Nevertheless, because techniques to measure the required rate of return on common equity necessarily employ proxies for investor expectations, judgment remains necessary to evaluate the results of such analyses. Along with NCDCF and risk premium analyses, I have considered the observable 3.85%[25] to 4.33% [26] rates of return the market currently requires on less risky Baa-rated utility long-term debt. Based on my analysis, in my judgment, the investor-required rate of return on common equity for USI equals 8.69%.

[25] *Value Line Selection & Opinion,* February 13, 2015, p. 4385.
[26] Moody's Investors Service, *Daily Bond Yields and Key Indicators*, February 3, 2015.

**Q. Please summarize how you determined that the investor-required rate of return on common equity for USI equals 8.69%**

The average investor-required rate of return on common equity for the Utility sample, 8.50%, is based on the average of its NCDCF-derived results (7.79%) and risk-premium-derived results (9.20%). I then added a risk premium to reflect the higher level of financial risk of UI relative to the Utility Sample. Adding a 0.19% financial risk adjustment to the 8.50% Utility sample average, results in an 8.69% estimate of the Company's cost of common equity.

**Q. How did you minimize measurement error in your cost of equity analysis?**

A. The models from which the individual company estimates were derived are correctly specified and thus contain no source of bias. Moreover, excepting the use of U.S. Treasury bond yields are proxies for the long-term risk-free rate, I am unaware of bias in my proxy for investor expectations. In addition, measurement error has been minimized through the use of samples, since estimates for a sample as a whole are subject to less measurement error than individual company estimates.

**Q. Why did you exclude the cost of common equity estimates for the Water sample?**

A. The Water sample consists of only five water utilities that currently have sufficient data to conduct my cost of common equity analysis. As discussed earlier, given that the sustainability tests of 3-5 year growth rates produced ambiguous results, an average of the constant and non-constant growth DCF results might be in

order. However, the constant growth DCF results for the Water sample are unreliable due to the wide disparity in the individual constant growth DCF results among the small number of companies that comprise the Water sample (ranges from 4.21% - 10.58% as shown on Schedule 5.7). Therefore, in my judgment, the cost of common equity estimate for USI should be based on the results of the Utility sample alone.

**Q. Why did you exclude the Utility sample constant growth DCF estimate from your estimate of the Company's cost of common equity?**

A. Due to the clear unsustainability of the growth rates for the Utility sample, only the non-constant DCF results for the Utility sample should be used to derive the investor-required rate of return on common equity for the Company.

**Q. Why does your estimate of the Company's cost of common equity include a financial risk adjustment?**

A. The Water and Utility samples serve as proxies for the target companies and should therefore reflect the risks of the Companies. If the proxy does not accurately reflect the risk level of the target company, an adjustment should be made. Since the operating risks of the Water sample is similar to the operations of the Companies and the Utility sample reflects similar operating risk to an average water utility, a review of the relative financial risks of UI and the Water and Utility samples remains. To assess relative financial risk, I compared the values of four ratios that Moody's focuses on to assess the financial strength of the samples. As discussed earlier, for the regulated water utility industry,

Moody's focuses on four ratios to assess the financial strength: (1) funds from operations ("FFO") interest coverage; (2) debt to capitalization; (3) FFO to net debt; and (4) retained cash flow ("RCF") to capital expenditures ("CapEx").[27] For regulated electric and gas utilities. Moody's focuses on four ratios to assess the financial strength: (1) FFO interest coverage; (2) FFO-to-debt; (3) RCF-to-debt; and (4) debt-to-capitalization.[28] I compared three-year average financial ratios for UI and the Water sample to Moody's key credit metrics for global regulated water utilities.[29] I compared three-year average financial ratios for the Utility sample to Moody's key credit metrics for regulated electric and gas utilities.

The Moody's financial guidelines for regulated water utilities, along with the three-year average scores for UI and the Water sample on those financial ratios are shown below in Table 3.

**Table 3 – Moody's Guideline Ratios for Water Utilities**

| | A (6) | Baa (9) | Ba (12) | B (15) |
|---|---|---|---|---|
| ***Financial Guideline Ratios*** | | | | |
| FFO / Interest | 4.5 - 7.0X | 2.5 – 4.5X | 1.8 – 2.5X | 1.5 – 1.8X |
| Debt / Capitalization | 40 - 55% | 55 - 70% | 70 - 85% | 85 - 100% |
| FFO / Debt | 15 – 25% | 10 - 15% | 6 - 10% | 4 – 6% |
| RCF / CapEx | 1.5 – 2.5X | 1.0 – 1.5X | 0.5 – 1.0X | 0.25 – 0.5X |
| **Utilities, Inc.** | | | | |
| FFO / Interest | | 3.57X | | |
| Debt / Capitalization | 51.53% | | | |
| FFO / Debt | 17.80% | | | |
| RCF / CapEx | | | | 0.48X |

[27] Moody's Investors Service, *Rating Methodology: Global Regulated Water Utilities*, December 2009, pp. 19-22.

[28] Moody's Investors Service, *Rating Methodology: Regulated Electric and Gas Utilities*, August 2009, pp. 10-13.

[29] The three-year average was computed using the years 2007, 2008, and 2009.

| | | | | |
|---|---|---|---|---|
| **Water sample** | | | | |
| FFO / Interest | 5.07X | | | |
| Debt / Capitalization | 51.09% | | | |
| FFO / Debt | 22.19% | | | |
| RCF / CapEx | | | 0.83X | |

The Moody's financial guidelines for regulated electric and gas utilities, along with the three-year average scores for the Utility sample on those financial ratios are shown below in Table 4.

**Table 4 – Moody's Guideline Ratios for Electric and Gas Utilities**

| | A | Baa | Ba |
|---|---|---|---|
| **Financial Guideline Ratios** | | | |
| FFO/IC | 4.5-6.0x | 2.7-4.5x | 1.5-2.7x |
| FFO/Debt | 22-30% | 13-22% | 5-13% |
| RCF/Debt | 17-25% | 9-17% | 0-9% |
| Debt/Capitalization | 35-45% | 45-55% | 55-65% |
| **Utility Sample** | | | |
| FFOIC | 4.97X | | |
| FFO/Debt | 22.84% | | |
| RCF/Debt | 18.52% | | |
| Debt/Capitalization | | 53.17% | |

As discussed earlier, the four ratios that I calculated for UI are consistent with a Baa2 rating. In contrast, the average financial ratios for 2011-2013, shown in Tables 3 and 4 above, are indicative of a level of financial risk that is commensurate with Baa1 ratings for both the Water and Utility Samples. The samples' implied credit ratings indicate that UI has more financial risk than the Water and Utility Samples. Thus, the cost of common equity for the Company should be adjusted upward to reflect that relatively higher level of financial risk.

**Q. How did you determine the 0.19% financial risk adjustment?**

A. My ratio analysis indicates that the Company has greater financial risk than the Utility sample. Financial theory posits that investors require higher returns to accept greater exposure to risk.

To estimate the appropriate adjustment, I began with the spread between long-term utility bonds rated A and Baa by Moody's. According to Moody's, on February 3, 2015 A-rated long-term utility bonds yielded 3.50%, while Baa rated long-term utility bonds yielded 4.33%.[30] I then divided the 0.83% spread by 3 to determine the incremental yield by the 3 notches assigned to each rating (Baa1, Baa2, Baa3) since the implied credit ratings for the Utility sample and USI are only one notch apart (Baa1 vs. Baa2). This results in a 0.28% yield spread per notch. I also considered the Value Line long-term utility bond yields of 3.53% for A-rated utility bonds and 3.85% for Baa rated utility bonds.[31] Dividing this 0.32% spread by three results in a 0.11% yield spread per notch. I then took a simple average of the two, resulting in the 0.19% upward financial risk adjustment to the cost of common equity estimate for the Utility sample. Adding the 0.19% financial risk adjustment to the 8.50% cost of common equity estimate for the Utility sample, results in an investor-required rate of return on common equity for USI of 8.69%.

[30] Moody's Investors Service, *Daily Bond Yields and Key Indicators*, February 3, 2015.
[31] The Value Line Investment Survey, Selection & Opinion, February 13, 2015, p. 4385.

## Rate of Return on Rate Base Conclusion

**Q. What is your recommended rate of return on rate base for USI?**

A. I recommend a 7.55% rate of return on rate base for USI, which incorporates my 8.69% rate of return on common equity for USI. My rate of return recommendation is presented on Schedule 5.1.

## Response to the Company

**Q. What cost of common equity is the Company requesting?**

A. The Company is requesting a 10.58% return on common equity in this proceeding. (USI Ex. No. 1.0, 10-12)

**Q. How did the Company determine the proposed 10.58% return on common equity?**

A. The Company relied on the following leverage formula used by the Florida Public Service Commission to calculate a reasonable range of returns on equity for water and wastewater utilities (USI E. No. 1.0, 11).

$$\text{Return on Common Equity} = 7.13\% + (1.610 / \text{Equity Ratio})$$

This formulaic approach produced a range of returns of 8.74% to 11.16% for water and wastewater utilities operating in the state of Florida.

**Q. Is the Florida leverage formula appropriate for estimating the investor-required return on common equity for the Illinois subsidiaries of UI?**

A. No. The Florida leverage formula is not appropriate for estimating the investor-required return on common equity for USI. The 7.13% in the Florida leverage formula reflects the debt cost for a Moody's Baa3 bond rating for March 2011, plus a 50 basis point private placement premium and a 50 basis point small utility risk premium.[32] Clearly, four-year old bond yields are too old for setting the investor-required rate of return in this proceeding given that Baa bonds are currently yielding 3.85 to 4.33%. Further, an upward adjustment for the small utility risk premium is inappropriate because USI obtains its common equity capital from an ultimate parent company that is much larger in size than the small Florida water utilities for which those adjustments are designed. Thus, a size premium is not appropriate for USI. In addition, it is not clear how the 50 basis point private placement and size premiums were derived. Lastly, the Florida Public Service Commission orders do not explain how the 1.610 figure in the Florida leverage formula was developed.[33] Hence, the Company's 10.58% proposed cost of common equity should be rejected.

**Q. Does this conclude your prepared direct testimony?**

A. Yes, it does.

[32] Florida Public Service Commission, Docket No. 110006-WS, Order No. PSC-11-0287-PAA-WS, Attachment 1, page 2, July 5, 2011.

[33] Florida Public Service Commission, Docket No. 140006-WS, Order No. PSC-14-0272-PAA-WS, May 29, 2014; Docket No. 110006-WS, Order No. PSC-11-0287-PAA-WS, July 5, 2011; Docket No. 020006-WS, Order No. PSC-02-0898-PAA-WS, July 5, 2002; and Docket No. 010006-WS, Order No. PSC-01-2514-FOF-WS, December 24, 2001.

**Utility Services of Illinois, Inc.**

**Weighted Average Cost of Capital**
**December 31, 2015**

**Staff Proposal**

| | Amount | Percent of Total Capital | Cost | Weighted Cost |
|---|---|---|---|---|
| Short-term Debt | $6,496,098 | 1.82% | 1.69% | 0.03% |
| Long-term Debt | $178,726,842 | 50.14% | 6.66% | 3.34% |
| Common Equity | $171,231,433 | 48.04% | 8.69% | 4.17% |
| Total Capital | $356,454,373 | 100.00% | | |
| **Weighted Average Cost of Capital** | | | | **7.55%** |

**Company Proposal**

| | Percent of Total Capital | Cost | Weighted Cost |
|---|---|---|---|
| Long-term Debt | 53.31% | 6.23% | 3.32% |
| Common Equity | 46.69% | 10.58% | 4.94% |
| Total Capital | 100.00% | | |
| **Weighted Average Cost of Capital** | | | **8.26%** |

## Utility Services of Illinois. Inc.

## Balance of Short-term Debt

## December 31, 2014

| Date (A) | Gross Short-term Debt Outstanding (B) | CWIP (C) | CWIP Accruing AFUDC (D) | Net Short-term Debt Outstanding (E) | Monthly Average (F) | Remaining CWIP Accruing AFUDC (G) | Monthly Average (H) |
|---|---|---|---|---|---|---|---|
| Jan-14 | $ 13,200,000 | $ 7,192,346 | $ 11,136,104 | $ 2,063,896 | | $ - | $ - |
| Feb-14 | $ 12,900,000 | $ 6,568,677 | $ 11,646,031 | $ 1,253,969 | $ 1,658,933 | $ - | $ - |
| Mar-14 | $ 15,000,000 | $ 7,873,703 | $ 6,259,720 | $ 8,740,280 | $ 4,997,125 | $ - | $ - |
| Apr-14 | $ 15,500,000 | $ 9,552,637 | $ 6,552,829 | $ 8,947,171 | $ 8,843,726 | $ - | $ - |
| May-14 | $ 15,500,000 | $ 9,897,448 | $ 6,090,838 | $ 9,409,162 | $ 9,178,167 | $ - | $ - |
| Jun-14 | $ 15,500,000 | $ 6,504,169 | $ 7,048,755 | $ 8,451,245 | $ 8,930,204 | $ - | $ - |
| Jul-14 | $ 17,200,000 | $ 7,342,494 | $ 7,852,826 | $ 9,347,174 | $ 8,899,210 | $ - | $ - |
| Aug-14 | $ 17,200,000 | $ 9,177,466 | $ 9,059,273 | $ 8,140,727 | $ 8,743,951 | $ - | $ - |
| Sep-14 | $ 17,000,000 | $ 10,500,986 | $ 10,331,733 | $ 6,668,267 | $ 7,404,497 | $ - | $ - |
| Oct-14 | $ 17,000,000 | $ 10,942,940 | $ 10,845,159 | $ 6,154,841 | $ 6,411,554 | $ - | $ - |
| Nov-14 | $ 17,000,000 | $ 9,128,991 | $ 9,021,832 | $ 7,978,168 | $ 7,066,505 | $ - | $ - |
| Dec-14 | $ 2,300,000 | $ 6,987,888 | $ 6,860,628 | $ 41,886 | $ 4,010,027 | $ 4,602,514 | $ 2,301,257 |
| Jan-15 | $ 11,500,000 | $ 8,050,587 | $ 7,923,327 | $ 3,576,673 | $ 1,809,280 | $ - | $ 2,301,257 |
| **Average** | **$ 14,369,231** | **$ 8,440,026** | **$ 8,509,927** | $ 5,859,303 | | | |
| | | | | | **$ 6,496,098** | | **$ 383,543** |

Notes: Column (E) = the greater of [Column (B) - Column (D)] or [Column (B) - {Column (B) / Column (C) * Column (D)}]
Column (G) = Column (D) - [Column (B) - Column (E)]

**Utility Services of Illinois, Inc.**

**Embedded Cost of Long-term Debt**
**December 31, 2015**

| Debt Issue Type, Coupon Rate | | Date Issued | Maturity Date | Principal Amount | Face Amount Outstanding | Unamortized Debt Expense | Carrying Value | Annual Interest Cost | Annualized Amort. of Debt Expense | Annualized Interest Expense |
|---|---|---|---|---|---|---|---|---|---|---|
| (A) | | (B) | (C) | (D) | (E) | (F) | (G)=(E-F) | (H) = (A*D) | (I) | (J)=(H+I) |
| 6.58% | Collateral Trust Notes | 7/19/2006 | 7/21/2036 | $ 180,000,000 | $ 180,000,000 | $ 1,273,158 | $ 178,726,842 | $ 11,844,000 | $ 61,894 | $ 11,905,894 |

**Embedded Cost of Long-term Debt** **6.66%**

## Utility Services of Illinois, Inc.

## Growth Rate Estimates

### Water Sample

| Company | Growth Rates Stage 1[1] | Stage 2[2] | Stage 3[3] |
|---|---|---|---|
| American States Water | 2.00% | 3.15% | 4.30% |
| American Water Works | 8.08% | 6.19% | 4.30% |
| Aqua America | 4.50% | 4.40% | 4.30% |
| California Water Service | 6.00% | 5.15% | 4.30% |
| Connecticut Water Service | 5.00% | 4.65% | 4.30% |

### Utility Sample

| Company | Growth Rates Stage 1[1] | Stage 2[2] | Stage 3[3] |
|---|---|---|---|
| American Electric Power | 4.94% | 4.62% | 4.30% |
| El Paso Electric Co. | 6.70% | 5.50% | 4.30% |
| Empire District Electric | 3.00% | 3.65% | 4.30% |
| Entergy Corp. | 1.67% | 2.99% | 4.30% |
| IDACORP | 4.00% | 4.15% | 4.30% |
| NiSource Inc. | 5.50% | 4.90% | 4.30% |
| PG&E Corp. | 8.16% | 6.23% | 4.30% |
| PNM Resources | 9.37% | 6.83% | 4.30% |
| Portland General Electric Co. | 7.96% | 6.13% | 4.30% |

[1] Equals the average of Zacks 3-5 year earnings per share growth rate estimates (Zacks Investment Research, Inc.) and Reuters long-term growth rates (Reuters.com)

[2] Equals the average of Stage 1 and Stage 3 growth rates.

[3] The implied 20-year forward U.S. Treasury Inflation-Protected Securities yield in ten years ($_{20}f_{10}$), based on the 10- and 30-year U.S. Treasury Inflation-Protected Securities rates as of Feb. 4, 2015. (The Federal Reserve Board, Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update, http://www.federalreserve.gov/releases/H15/update/, February 5, 2015.)

Energy Information Administration, *Annual Energy Outlook 2014,* Table A20. Macroeconomic Indicators, www.eia.doe.gov/oiaf/aeo/, April 2014.

Global Insight, *The U.S. Economy: The 30-Year Focus, Third Quarter 2014* , Table 1: Summary of the U.S. Economy.

**Utility Services of Illinois, Inc.**

**Prices and Dividends**

**Water Sample**

| Company | Current Dividend $D_{0,1}$ | $D_{0,2}$ | $D_{0,3}$ | $D_{0,4}$ | Next Dividend ($D_1$) Payment Date | 2/4/2015 Stock Price |
|---|---|---|---|---|---|---|
| American States Water | $ 0.203 | $ 0.203 | $ 0.213 | $ 0.213 | 3/2/2015 | $ 39.90 |
| American Water Works | 0.280 | 0.310 | 0.310 | 0.310 | 3/2/2015 | $ 55.64 |
| Aqua America | 0.152 | 0.152 | 0.165 | 0.165 | 3/1/2015 | $ 27.25 |
| California Water Service | 0.163 | 0.163 | 0.163 | 0.163 | 2/20/2015 | $ 24.99 |
| Connecticut Water Service | 0.248 | 0.248 | 0.258 | 0.258 | 3/16/2015 | $ 36.09 |

**Utility Sample**

| Company | Current Dividend $D_{0,1}$ | $D_{0,2}$ | $D_{0,3}$ | $D_{0,4}$ | Next Dividend ($D_1$) Payment Date | 2/4/2015 Stock Price |
|---|---|---|---|---|---|---|
| American Electric Power | $ 0.500 | $ 0.500 | $ 0.500 | $ 0.530 | 3/10/2015 | $ 62.22 |
| El Paso Electric Co. | 0.265 | 0.280 | 0.280 | 0.280 | 3/31/2015 | $ 40.06 |
| Empire District Electric | 0.255 | 0.255 | 0.255 | 0.260 | 3/16/2015 | $ 30.40 |
| Entergy Corp. | 0.830 | 0.830 | 0.830 | 0.830 | 3/2/2015 | $ 87.47 |
| IDACORP | 0.430 | 0.430 | 0.470 | 0.470 | 5/29/2015 | $ 67.09 |
| NiSource Inc. | 0.250 | 0.250 | 0.260 | 0.260 | 2/20/2015 | $ 44.55 |
| PG&E Corp. | 0.455 | 0.455 | 0.455 | 0.455 | 4/15/2015 | $ 57.91 |
| PNM Resources | 0.185 | 0.185 | 0.185 | 0.200 | 5/15/2015 | $ 30.33 |
| Portland General Electric Co. | 0.275 | 0.280 | 0.280 | 0.280 | 4/15/2015 | $ 39.37 |

**Utility Services of Illinois, Inc.**

**Expected Quarterly Dividends**

**Water Sample**

| Company | $D_{1,1}$ | $D_{1,2}$ | $D_{1,3}$ | $D_{1,4}$ |
|---|---|---|---|---|
| American States Water | $ 0.213 | $ 0.213 | $ 0.217 | $ 0.217 |
| American Water Works | 0.310 | 0.335 | 0.335 | 0.335 |
| Aqua America | 0.165 | 0.165 | 0.172 | 0.172 |
| California Water Service | 0.168 | 0.168 | 0.168 | 0.168 |
| Connecticut Water Service | 0.258 | 0.258 | 0.270 | 0.270 |

**Utility Sample**

| Company | $D_{1,1}$ | $D_{1,2}$ | $D_{1,3}$ | $D_{1,4}$ |
|---|---|---|---|---|
| American Electric Power | $ 0.530 | $ 0.530 | $ 0.530 | $ 0.556 |
| El Paso Electric Co. | $ 0.280 | $ 0.299 | $ 0.299 | $ 0.299 |
| Empire District Electric | $ 0.260 | $ 0.260 | $ 0.260 | $ 0.268 |
| Entergy Corp. | $ 0.830 | $ 0.844 | $ 0.844 | $ 0.844 |
| IDACORP | $ 0.470 | $ 0.470 | $ 0.489 | $ 0.489 |
| NiSource Inc. | $ 0.260 | $ 0.260 | $ 0.274 | $ 0.274 |
| PG&E Corp. | $ 0.492 | $ 0.492 | $ 0.492 | $ 0.492 |
| PNM Resources | $ 0.200 | $ 0.200 | $ 0.200 | $ 0.219 |
| Portland General Electric Co. | $ 0.280 | $ 0.302 | $ 0.302 | $ 0.302 |

**Utility Services of Illlinois, Inc.**

**DCF Estimates**

**Water Sample**

| Company | Constant DCF Estimate | Nonconstant DCF Estimate |
|---|---|---|
| American States Water | 4.21% | 6.23% |
| American Water Works | 10.58% | 7.35% |
| Aqua America | 7.07% | 6.90% |
| California Water Service | 8.82% | 7.37% |
| Connecticut Water Service | 8.04% | 7.46% |
| Average | 7.74% | 7.06% |

**Utility Sample**

| Company | Constant DCF Estimate | Nonconstant DCF Estimate |
|---|---|---|
| American Electric Power | 8.54% | 8.03% |
| El Paso Electric Co. | 9.77% | 7.78% |
| Empire District Electric | 6.56% | 7.61% |
| Entergy Corp. | 5.63% | 7.75% |
| IDACORP | 6.92% | 7.17% |
| NiSource Inc. | 8.01% | 6.98% |
| PG&E Corp. | 11.73% | 8.62% |
| PNM Resources | 12.17% | 8.04% |
| Portland General Electric Co. | 11.11% | 8.12% |
| Average | 8.94% | 7.79% |

**Utility Services of Illinois, Inc.**

**Risk Premium Analysis**

Interest Rates as of February 4, 2015

| U.S. Treasury Bills | | U.S. Treasury Bonds | |
|---|---|---|---|
| Discount Rate | Effective Yield | Equivalent Yield | Effective Yield |
| 0.01% | 0.01% | 2.39% | 2.40% |

**Risk Premium Cost of Equity Estimates***
**Water Sample**

| Risk-Free Rate | | Beta | | Risk Premium | | Cost of Common Equity |
|---|---|---|---|---|---|---|
| 2.40% | + | 0.68 | * | (12.26% - 2.40%) | = | 9.11% |

**Risk Premium Cost of Equity Estimates***
**Utility Sample**

| Risk-Free Rate | | Beta | | Risk Premium | | Cost of Common Equity |
|---|---|---|---|---|---|---|
| 2.40% | + | 0.69 | * | (12.26% - 2.40%) | = | 9.20% |

*Risk-Free Rate Proxy is the 30-year U.S. Treasury Bond Yield.