DIRECT TESTIMONY

OF

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FINANCE DEPARTMENT

FINANCIAL ANALYSIS DIVISION

ILLINOIS COMMERCE COMMISSION

NEW LANDING UTILITY, INC.

PROPOSED GENERAL INCREASE IN WATER AND SEWER RATES

DOCKET NO. 04-0610

JANUARY 21, 2005

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Witness Identification

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

A. My name is Rochelle Phipps. My business address is 527 East Capitol Avenue, Springfield, Illinois 62701.

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

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

3. Q. Describe your qualifications and background.

A. In May 1998, I received a Bachelor of Arts degree in Finance from Illinois College, Jacksonville, Illinois. In May 2000, I received a Master of Business Administration degree from the University of Illinois at Springfield. I have been employed by the Commission since June 2000.

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

A. I will present my analysis of New Landing Utility, Inc.'s ("New Landing" or "Company") cost of capital and my recommendation for a fair rate of return on rate base for New Landing.

Cost of Capital

5. Q. Summarize your findings and recommendations.

A. The overall cost of capital for New Landing is 8.38%, as shown on Schedule 3.01.

6. Q. Why must one determine the overall cost of capital for a public utility?

A. Under the traditional regulatory model, the proper balance of ratepayer and shareholder interests occurs when the Commission authorizes a public utility a rate of return on its rate base equal to its overall cost of capital. 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, then the utility may be unable to raise capital at a reasonable cost. Ultimately, the utility's inability to raise sufficient capital would impair service quality. Therefore, ratepayers are best served when the authorized rate of return on rate base equals the 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. If unreasonable 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.

7. Q. 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 capital structure components (i.e., debt and equity) after weighting each component by its proportion to total capital.

Cost of Common Equity

8. Q. How did you measure the investor-required rate of return on common equity for New Landing?

A. I measured the investor-required rate of return on common equity for New Landing with discounted cash flow ("DCF") and risk premium models. Since current market data is not available for New Landing, DCF and risk premium models cannot be applied directly to New Landing; therefore, I applied both models to water utility and public utility samples (hereafter, referred to as *water sample* and *utility sample*, respectively).

Sample Selection

9. 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 public corporations assigned an industry number of 4941 (i.e., water utilities) within *Standard & Poor's* ("S&P") *Utility Compustat*. Second, I removed any company that lacked Zacks Investment Research ("Zacks") long-term growth rate estimates. The remaining companies, Aqua America, Inc., Artesian Resources, California Water Service Group,

Middlesex Water Company, Southwest Water Company, and York Water Company, compose my water sample.

10. Q. How did you select your utility sample comparable in risk to New Landing?

A. A firm's market-required return on common equity is a function of its operating and financial risks. S&P business profile scores reflect the operating risk of a utility. S&P credit ratings reflect both the operating risk and financial risk of a utility. S&P focuses on industry characteristics as well as the company's competitive position and management. Utilities' business profiles are evaluated on a scale of one to ten. A rating of one denotes below average business risk. A rating of ten denotes above average business risk.[1] I used an S&P business profile score and credit rating for an average water utility for New Landing, since the Company does not have either. I began with eleven water companies with S&P business profile scores.[2] Of these eleven water utilities, one is assigned a business profile score of 1, six are assigned a business profile score of 2, three are assigned a business profile score of 3 and one is assigned a business profile score of 4. The average business profile score of the water utilities is 2.36. The average credit rating for the eleven water utilities is A with one company assigned a credit rating of AA; three companies assigned a credit rating of A+; four companies assigned a credit rating of A; and three companies assigned a credit rating of A-. From the average business profile score and credit rating, I concluded that

[1] Standard & Poor's, "Research: U.S. Utility and Power Ranking List," December 22, 2004, www.ratingsdirect.com.
[2] *Ibid.*

a business profile score of 2 and a credit rating of A would be reasonable estimates for a typical water utility, and therefore, for New Landing.

To form the utility sample, I began with a list of all domestic publicly traded corporations assigned an industry number of 4911, 4922, 4923, 4924, 4931 or 4932 in the S&P *Utility Compustat II* database that have been assigned an S&P credit rating of AA, AA-, A+, A or A- and a business profile score of 1, 2 or 3. Next, I removed any company that lacked a Zacks growth rate estimate. Finally, I eliminated any company that was in the process of being acquired by another company. The remaining companies, Consolidated Edison, Inc., Laclede Group, Inc., Nicor, Inc., Northwest Natural Gas Company, NSTAR, Piedmont Natural Gas Company, and WGL Holdings, Inc., compose my utility sample.

DCF Analysis

11. Q. Describe DCF analysis.

A. For a utility to attract common equity capital, it must provide a rate of return on common equity sufficient to meet investor requirements. DCF analysis establishes a rate of return directly from investor requirements. A comprehensive analysis of a utility's operating and financial risk is unnecessary to estimate a utility's cost of common equity with DCF analysis since the market price of a utility's stock already embodies the market consensus of those risks.

According to DCF theory, a security price equals the present value of the cash flows investors expect it to generate. Specifically, the market value of

a firm's common stock equals the aggregate value of its expected stream of future dividends, discounted at the investor-required rate of return.

12. Q. 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 the 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 both samples pay dividends quarterly; therefore, I applied a constant-growth DCF model that measures the annual required rate of return on common equity as follows:

$$k = \frac{\sum_{q=1}^{4} D_{0,q}(1+g)(1+k)^{1-[x+0.25(q-1)]}}{P} + g.$$

Where: P ≡ The current stock price;

$D_{0,q}$ ≡ The last dividend paid at the end of quarter q, where q=1 to 4;

k ≡ The cost of common equity;

x ≡ The elapsed time between the stock observation and first dividend payment dates, in years; and

g ≡ The expected dividend growth rate.

That model assumes dividends will grow at a constant rate and the market value of common stock (i.e., stock price) equals the sum of the discounted value of each dividend.

13. 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 growth expectations, market-consensus expected growth rates cannot be measured directly. Therefore, I measured market-consensus expected growth rates indirectly with growth estimates from Zacks, which summarizes the forward-looking earnings growth expectations of financial analysts from research departments of investment brokerage firms. The Zacks growth rate estimates for each firm comprising my water and utility samples are presented on Schedule 3.02.

14. Q. How did you measure stock price?

A. A current stock price reflects all relevant 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 firm's current stock price

with its closing stock price from January 4, 2005. Those stock prices appear on Schedule 3.03.

Since current stock prices reflect the market's current expectations 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. Price changes 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 rate of return on common equity with the DCF model, one should measure the expected dividend yield and the corresponding growth rate concurrently.

15. Q. Explain the significance of the column titled, "Next Dividend Payment Date" shown on Schedule 3.03.

A. Estimating year-end dividend values requires measuring the length of time between each dividend payment date and the first anniversary of 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.

16. 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 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 be increased during the next quarter. The expected growth rates were applied to the current dividend rate to estimate the expected dividend rate. Schedule 3.03 presents the current quarterly dividends. Schedule 3.04 presents the expected quarterly dividends.

17. Q. Based on your DCF analysis, what is the estimated required rate of return on common equity for the water sample and the utility sample?

A. The DCF analysis estimates the required rate of return on common equity is 10.53% for the water sample and 8.78% for the utility sample, as shown on Schedule 3.05. Those estimates are derived from the growth rates presented on Schedule 3.02, the stock price and dividend payments presented on Schedule 3.03 and the expected quarterly dividends presented on Schedule 3.04.

Risk Premium Analysis

18. Q. 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 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 return, they would purchase the security with less risk. Conversely, 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
β_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.

19. Q. How did you measure the risk-free rate of return?

A. I examined the suitability of the yields on three-month U.S. Treasury bills and twenty-year U.S. Treasury bonds as estimates of the risk-free rate of return.

20. 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.[3] 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 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 long run. U.S. Treasury bonds, the longest term U.S.

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

Treasury securities, were issued with terms to maturity of thirty years;[4] 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 six months. Therefore, U.S. Treasury bond yields are more likely to incorporate the inflation and real risk-free rate expectations that drive, in part, the prices of common stocks than either U.S. Treasury notes or U.S. 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.

21. Q. Given that the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bonds and the prices of common stocks are similar, does it necessarily follow that 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 time. Any other assumption implausibly implies that the

[4] In October 2001, the U.S. Treasury suspended the issuance of 30-year U.S. Treasury bonds.

real risk-free rate and inflation are 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, during finite time periods, short and long-term expectations may differ. Short-term interest rates tend to be more volatile than long-term interest rates.[5] 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.

22. Q. Provide the current yield on three-month U.S. Treasury bills and the current yield on twenty-year U.S. Treasury bonds.

A. Three-month U.S. Treasury bills are currently yielding 2.40%. The yield for twenty-year U.S. Treasury bonds equals 4.97%. Both yields are derived

[5] Fabozzi and Pollack, ed., *The Handbook of Fixed Income Securities,* 4th edition, Irwin, p. 789.

from quotes for January 4, 2005.[6] Schedule 3.06 presents the published quotes and effective yields.

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

A. In terms of the gross domestic product ("GDP") price index, the Energy Information Administration ("EIA") forecasts the annual inflation rate will average 2.5% during the 2004-2025 period.[7] In comparison, Global Insight forecasts that annual GDP price inflation will average 2.5% during the 2004-2029 period.[8] In terms of the Consumer Price Index ("CPI"), the EIA forecasts the annual inflation rate will average 2.6% during the 2004-2025 period.[9] In comparison, the *Survey of Professional Forecasters* ("*Survey*") forecasts that annual CPI inflation will average 2.5% during the next ten years.[10] In terms of real GDP growth, EIA forecasts the real risk-free rate will average 3.0% during the 2004-2025 period.[11] Global Insight forecasts the real risk-free rate will average 3.0% during the 2004-2029 period.[12] The *Survey* forecasts real GDP growth will average 3.4% during the next ten years.[13,14] Those forecasts imply a long-term, nominal risk-free rate

[6] The Federal Reserve Board, *Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update*, www.federalreserve.gov/releases/H15/update, January 5, 2005.
[7] Energy Information Administration, *EIA 2004 Long-Term Forecast,* Table 19, Macroeconomic Indicators.
[8] Global Insight, "The U.S. Economy: The 25-Year Focus," Table 1, November 2004.
[9] Energy Information Administration, *EIA 2004 Long-Term Forecast,* Table 19, Macroeconomic Indicators.
[10] *Survey of Professional Forecasters,* Federal Reserve Bank of Philadelphia, www.phil.frb.org/files/psf/survq403.html, November 22, 2004. The *Survey* aggregates the forecasts of approximately thirty forecasters.
[11] Energy Information Administration, *EIA 2004 Long-Term Forecast,* Table 19, Macroeconomic Indicators.
[12] Global Insight, "The U.S. Economy: The 25 Year Focus," Table 1, November 2004.
[13] *Survey of Professional Forecasters,* Federal Reserve Bank of Philadelphia, www.phil.frb.org/files/spf/survq103.html, February 23, 2004.
[14] Historically, the realized interest rate return premium averaged 1.6% during the last 75 years (Ibbotson Associates, *Stocks, Bonds, Bills and Inflation, 2004 Yearbook*, p. 175).

between 5.6% and 6.0%.[15] Therefore, EIA, Global Insight and *Survey* forecasts of inflation and real GDP growth expectations suggest that, currently, the U.S. Treasury bond yield of 4.97% more closely approximates the long-term risk-free rate, currently. 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.

24. Q. Explain why the real risk-free rate and the GDP growth rate should be similar.

A. Risk-free securities provide a rate of return sufficient to compensate investors for the time value of money, which is a function of production opportunities, time preferences for consumption and inflation. The real risk-free rate excludes the premium for inflation.[16] The real GDP growth rate measures output of goods and services without reflecting inflation expectations and, as such, also reflects both production and consumers' consumption preferences. Therefore, both the real GDP growth rate and the real risk-free rate of return should be similar since both are a function of production opportunities and consumption preferences without the effects of either a risk premium or an inflation premium.

[15] Nominal interest rates are calculated as follows:

$$r = (1+R) \times (1+i) - 1$$

Where: r ≡ Nominal interest rate;
R ≡ Real interest rate; and
i ≡ Inflation rate.

[16] Brigham and Houston, *Fundamentals of Financial Management,* 8th edition.

25. 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 comprising the S&P 500 Index ("S&P 500"). That analysis used dividend information and closing market prices reported by Zacks Research Wizard and in the October 2004 edition of *S&P Security Owner's Stock Guide.* Firms not paying a dividend as of September 30, 2004, or for which Zacks growth rates were not available, were eliminated from the analysis. The resulting company-specific estimates of the expected rate of return on common equity were then weighted using market value data from Zacks Research Wizard. The estimated weighted average expected rate of return for the remaining 374 firms, composing 85.72% of the market capitalization of the S&P 500, equals 13.59%.

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 developed two betas for each sample, one based on the Value Line methodology ("Value Line beta") and the other based on the Merrill Lynch methodology ("Regression beta").[17]

[17] The Regression beta methodology is the same as the Merrill Lynch methodology except the Regression beta methodology substitutes (1) total excess return data for the total price change data that the Merrill Lynch methodology uses and (2) the NYSE Composite Index for the S&P 500 Index as a proxy for the market return. The former substitution does not significantly affect the beta estimate; however, using NYSE Composite Index as a proxy for the market return produced higher beta estimates than the

When available, I used published Value Line betas for each company in each sample. For the companies that did not have published Value Line beta estimates, I estimated beta using the Value Line beta methodology.[18] 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 for security j;
β_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 ("NYSE Index") to estimate a raw beta. The regression analysis employs 260 weekly observations of stock return data. Then, an adjusted beta is estimated through the following equation:

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

S&P 500 Index.
[18] The Value Line service to which the Commission subscribes does not provide beta estimates for Artesian Resources, Middlesex Water Company, Southwest Water Company and York Water Company.
[19] Statman, Meir, "Betas Compared: Merrill Lynch vs. Value Line", *The Journal of Portfolio Management,* Winter 1981.

The regression analysis applies an ordinary least-squares technique to the following model to estimate beta for a security or portfolio of securities.

$$R_{j,t} - R_{f,t} = a + \beta(R_{m,t} - R_{f,t}) + e_t.$$

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	≡	The intercept term for security *j*;
β	≡	Beta, the measure of market risk for security *j*; and
e_t	≡	The residual term in period *t* for security *j*.

The beta estimates for the samples were calculated in three steps using regression analysis. First, the U.S. Treasury bill return was subtracted from 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 price returns of each of the two 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:

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

27. 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 of 1.0 over time; therefore, the adjustment makes the beta estimate more forward-looking. 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 that 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 return that more closely conforms to the CAPM prediction.[20] Securities with betas less than one are adjusted upwards thereby 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 rate of return towards observed realized rates of return.

28. Q. What are the beta estimates for the water sample and the utility sample?

A. The Value Line beta estimates average 0.63 for the water sample and 0.74 for the utility sample. The Regression beta estimates are 0.45 and 0.58, respectively. The average of the Value Line and Regression beta estimates equals 0.54 for the water sample and 0.66 for the utility sample.

[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 and Blume M., "Betas and Their Regression Tendencies," *Journal of Finance*, June 1975.

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

A. The risk premium model estimates a required rate of return on common equity of 9.62% for the water sample and 10.66% for the utility sample. The computation of those estimates appears on Schedule 3.06.

Cost of Equity Recommendation

30. Q. Based on your entire analysis, what is your estimate of New Landing's cost of common equity?

A. A thorough cost of common equity analysis requires both the proper application of financial models and appropriate use of the analyst's informed judgment. A cost of common equity recommendation based solely on judgment is inappropriate. Nevertheless, because cost of common equity measurement techniques necessarily employ proxies for investor expectations, judgment remains necessary to evaluate the results of such analyses. Along with DCF and risk premium analyses, I have considered the observable 5.57% rate of return the market currently requires on less risk A-rated long-term debt.[21] Based on my analysis, in my judgment, the investor-required rate of return on common equity for New Landing is 12.36%.

31. Q. Summarize how you determined the investor-required rate of return on common equity for New Landing.

[21] *Value Line,* Selection and Opinion, January 7, 2005, p. 1935. 5.57% is the rate of return on 25/30-year A-rated utility bonds.

A. I estimated the investor-required rate of return on common equity by: 1) averaging the DCF-derived estimates of the required rate of return on common equity, or 9.66%, 2) averaging the risk premium-derived estimates of the required rate of return on common equity, or 10.14%, 3) taking the midpoint of the DCF- and risk premium-derived estimates, or 9.90%, and 4) adding 246 basis points for liquidity costs. The models from which the individual company estimates were derived are correctly specified and, thus, contain no source of bias. Moreover, I am unaware of bias in any of my proxies for investor expectations.[22] Consequently, estimates for a sample as a whole are subject to less measurement error than individual company estimates.

32. Q. Why did you adjust the cost of common equity estimate upward for liquidity costs?

A. Liquidity costs arise from the probability and financial consequences of an investor's inability to sell an asset at the desired time, at a predictable price. Both samples I used to estimate New Landing's cost of equity comprise market-traded companies whose security prices do not reflect substantial liquidity costs. However, the security prices of small standalone companies such as New Landing typically reflect significant liquidity costs, which are largely due to the lack of a liquid market for their securities.

33. Q. How did you estimate the liquidity premium for New Landing's common equity?

A. A direct assessment of the liquidity premium in the cost of New Landing's common equity cannot be performed since the cost of common equity to small water companies is not directly observable. To determine the liquidity premium for New Landing, I subtracted the current, observable 4.89% rate of return on 10-year, A-rated corporate utility bonds from the 7.35% interest rate the Rural Telephone Finance Cooperative charges for 10-year loans.[23] The resulting liquidity premium is 246 basis points, which I then added to my 9.90% cost of equity estimate to derive a 12.36% cost of equity estimate for New Landing.

Capital Structure

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

A. Yes. Financial theory suggests capital structure will affect the value of a firm and, therefore, its cost of capital, to the extent capital structure affects the expected level of cash flows that accrue to third parties (i.e., other than debt and stock holders). Employing debt as a source of capital reduces a company's income taxes,[24] thereby reducing the cost of capital. However, as reliance on debt as a source of capital increases, so does the probability of bankruptcy. As bankruptcy becomes more probable,

[22] Except as discussed above in regard to U.S. Treasury bond yields as proxies for the long-term risk-free rate.
[23] The Rural Telephone Finance Cooperative provides lending and financial services to eligible cooperative and commercial telephone companies serving rural areas. The 4.29% January 4, 2005, 10-year U.S. Treasury bond yield was obtained from the Federal Reserve website (www.federalreserve.gov/releases). The 10-year, A-rated utility bond yield was obtained from Reuters Corporate Spreads for Utilities (www.bondsonline.com).
[24] The tax advantage debt has over equity at the corporate level is partially offset at the individual investor level. Debt investors receive returns largely in the form of current income (i.e., interest). In contrast, equity investors receive returns in the form of both current income (i.e., dividends) and capital appreciation (i.e., capital gains). Taxes on capital gains and dividend income are lower than taxes on interest income because capital gains and dividend tax rates are lower and taxes on capital gains are deferred until realized.

expected payments to attorneys, trustees, accountants and other third parties increase; simultaneously, the expected value of the income tax shield provided by debt financing declines. Beyond a certain point, a growing dependence on debt as a source of funds increases the overall cost of capital. Therefore, the Commission should not determine the overall rate of return from a utility's actual capital structure if it determines that capital structure adversely affects the overall cost of capital.

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 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 all conditions, and if so, whether the cost of that financial strength is reasonable.

35. Q. What capital structure is appropriate for setting New Landing's overall rate of return on rate base?

A. Because this proceeding will set rates for future service, under ideal circumstances, the capital structure components should be developed from the best available estimates for the period during which the rates will

remain in effect. As of December 31, 2003, New Landing's capital structure comprised $80,357 debt and -$385,289 in common equity.[25] The negative common equity balance is problematic. When multiplied by the cost of common equity, the negative common equity balance produces a negative return requirement. That result is nonsensical given that investors require positive returns to compensate them for the risk of their investment. On this basis, I developed a capital structure for a hypothetical water utility. That hypothetical capital structure should be used to determine New Landing's overall cost of capital.

36. Q. How did you derive a hypothetical capital structure for determining New Landing's overall cost of capital?

A. To be consistent with the financial risk reflected in my recommended cost of common equity, the hypothetical capital structure for New Landing is based on the mean debt and equity ratios of the water and utility samples. The water and utility samples that share an average water company's implied A credit rating have mean total debt ratios of 54.8% and 57.4%.[26] The mean common equity ratio for the water and utility samples equals 44.5% and 41.9%, respectively. In comparison, New Landing's December 31, 2003, capital structure has a negative equity balance (*i.e.*, -$385,289). Thus, New Landing is exposed to a much higher degree of financial risk than a typical water utility or the companies comprising my water and utility samples. Thus, I used the average of the two samples' debt ratios, or 56%, for New Landing's long-term debt ratio. Since preferred stock

[25] New Landing's ILCC Form 21, December 31, 2003, Balance Sheet shows indebtedness totaling $80,357, which is labeled "Advance from Associated Companies" under long-term debt.
[26] *S&P Utility Compustat.*

generally composes a relatively small proportion of capital, I excluded it from the capital structure. Common equity composes the remaining 44% of the capital structure. In summary, I recommend imputing a capital structure consisting of 56% long-term debt and 44% common equity for determining New Landing overall cost of capital, as shown on Schedule 3.01.

37. Q. Should short-term debt be included in New Landing's capital structure?

A. No. Short-term debt is not currently a source of financing for New Landing's rate base investments.

Cost of Long-Term Debt

38. Q. What is the Company's proposed cost of long-term debt?

A. The Company's proposed cost of long-term debt is 11.35%, which reflects historical prime interest rates during the 1981-2002 measurement period, plus two percentage points.[27]

39. Q. Do you agree with the Company's proposed cost of long-term debt?

A. No. I have two objections to the Company's proposed cost of long-term debt. First, New Landing's proposed debt cost is based on a 21-year historical average of the prime interest rate even though the variable

[27] Company response to Staff data request FD-1.

interest rate for it's mortgage note is adjusted monthly. Since the rate on the mortgage note adjusts monthly, the current prime rate should be used. Current interest rates are better predictors of future interest rates than historical averages. Second, the two percentage points the Company added to the 21-year historical average prime rate is a penalty imposed on New Landing for defaulting on its mortgage note. Prior to default, the interest rate on the mortgage note was set equal to the prime rate. Adding a two percentage point penalty for default might be appropriate for a high risk capital structure containing little if any common equity such as New Landing's actual capital structure. However, the hypothetical capital structure I used to estimate New Landing's cost of capital is consistent with that of a financially strong utility. As I explained in response to Question 34 of my direct testimony, the cost of capital is a continuous function of the capital structure. Thus, New Landing's cost of capital should be consistent with the hypothetical capital structure the Commission approves to estimate New Landing's cost of capital. In summary, the Company's proposed cost of debt is improper for ratemaking purposes because it relies on untimely, obsolete interest rate data and adds a default penalty that is inconsistent with the capital structure I recommend.[28]

40. Q. What is a reasonable cost of long-term debt for New Landing?

A. As shown on Schedule 3.01, a reasonable cost of long-term debt for New Landing equals 5.25%.

[28] New Landing provided no reason why ratepayers should be charged a 2% default penalty for indebtedness that is currently held by New Landing's affiliate and owner, DAME Co. (Company response to Staff data request FD-7.)

41. Q. How did you estimate New Landing's cost of long-term debt?

A. To be consistent with the capital structure I recommend, which comprises a much greater percentage of common equity and a much lower degree of financial risk than New Landing's actual capital structure, I recommend adopting the current prime rate, 5.25%, for the cost of debt for New Landing.[29]

Overall Cost of Capital Recommendation

42. Q. What is the overall cost of capital for New Landing in this proceeding?

A. As shown on Schedule 3.01, the overall cost of capital estimate for New Landing is 8.38%, which incorporates a 12.36% cost of common equity.

Response to Mr. Armstrong's Direct Testimony

43. Q. Do you agree with Mr. Armstrong's proposed 10.3% rate of return estimate for New Landing?

A. No. Mr. Armstrong's proposed rate of return should not be given any weight in this proceeding because it is based on historical returns of stocks, corporate bonds and U.S. Treasury bills during the 1980-1999

[29] The Federal Reserve Board, *Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update,* www.federalreserve.gov/releases/H15/update, January 5, 2005.

measurement period.[30] Historical data is improper for estimating the investor-required rate of return.

44. Q. Has the Commission previously ruled on the use of historical data in determining a company's cost of capital?

A. Yes. In Docket No. 92-0357, a rate proceeding for Iowa-Illinois Gas and Electric Company, the Commission's Order stated:

> The Commission notes that the investor-required return on common equity is a forward-looking concept. Mr. Benore [the company witness], in many instances, inappropriately utilized historical data to determine the Company's cost of equity.[31]

Similarly, in Docket No. 95-0076, a rate proceeding for Illinois-American Water Company, the Commission's Order stated:

> The Commission also concludes that Staff's criticism of Dr. Phillips' [the company witness] use of two-month average historical stock prices and historical growth rates in his traditional DCF analysis, and historical risk premiums in his risk premium analysis are valid. Historical data is inappropriate in determining a forward-looking cost of equity because it contains information that may no longer be relevant to investors.[32]

The Commission has also rejected using historical data to estimate a utility's cost of equity in Docket Nos. 99-0121/99-0130 Consolidated (an electric delivery services rate proceeding for MidAmerican Energy Co.), Docket Nos. 01-0528/01-0628/01-0629 Consolidated (an electric delivery services rate proceeding for Interstate Power Co. and South Beloit Water,

[30] Direct Testimony of Gene L. Armstrong, p. 18.
[31] Order, Docket No. 92-0357, July 21, 1993, p. 66.
[32] Order, Docket No. 95-0076, December 20, 1995, p. 69.

Gas & Electric Co.), Docket No. 02-0837 (Central Illinois Light Co. rate proceeding) and Docket No. 03-0403 (Aqua Illinois, Inc. rate proceeding).[33]

45. Q. Does this conclude your direct testimony?

A. Yes, it does.

[33] Order, Docket Nos. 99-0121/0130 Consol., August 25, 1999, p. 10; Order, Docket Nos. 01-0528/0628/0629 Consol., March 28, 2002, p. 12; Order, Docket No. 02-0837, October 17, 2003, p. 37; Order, Docket No. 03-0403, April 13, 2004, p. 42.

NEW LANDING UTILITY, INC.

Staff's Proposed Weighted-Average Cost of Capital

Class of Capital	Percent of Total Capitalization	Cost	Weighted Cost
Long-Term Debt	56%	5.25%	2.94%
Common Equity	44%	12.36%	5.44%
Total	100%		**8.38%**

New Landing Utility, Inc.'s Actual Capital Structure

December 31, 2003

Class of Capital	Balance
Long-Term Debt	$80,357
Common Equity	-$385,289
Total	-$304,932

Source: New Landing Utility, Inc., 21 ILCC Form 21, December 31, 2003.

NEW LANDING UTILITY, INC.

Growth Rate Estimates

	Company	Zacks Earnings
1	Aqua America	9.25%
2	Artesian Resources	8.50%
3	California Water Service	6.00%
4	Middlesex Water	6.00%
5	Southwest Water	8.33%
6	York Water	7.00%

	Company	Zacks Earnings
1	Consolidated Edison	2.80%
2	Laclede Group	4.00%
3	Nicor, Inc.	3.38%
4	Northwest Natural Gas	4.90%
5	NSTAR	4.50%
6	Piedmont Natural Gas	4.57%
7	WGL Holdings	3.90%

Source: Zacks Research Wizard, January 4, 2005.

NEW LANDING UTILITY, INC.

Quarterly Dividends and Stock Prices

WATER SAMPLE

Company	Current Dividend $D_{0,1}$	$D_{0,2}$	$D_{0,3}$	$D_{0,4}$	Next Dividend Payment Date	Stock Price
Aqua America	$0.120	$0.120	$0.120	$0.130	3/01/2005	$23.81
Artesian Resources	0.203	0.208	0.208	0.213	2/22/2005	27.25
California Water Service	0.283	0.283	0.283	0.283	2/21/2005	36.53
Middlesex Water	0.165	0.165	0.165	0.168	3/01/2005	18.43
Southwest Water	0.048	0.048	0.053	0.053	4/21/2005	13.35
York Water	0.145	0.145	0.145	0.156	4/14/2005	19.87

UTILITY SAMPLE

Company	Current Dividend $D_{0,1}$	$D_{0,2}$	$D_{0,3}$	$D_{0,4}$	Next Dividend Payment Date	Stock Price
Consolidated Edison	$0.565	$0.565	$0.565	$0.565	3/15/2005	$43.17
Laclede Group	0.335	0.340	0.340	0.340	4/01/2005	30.07
Nicor, Inc.	0.465	0.465	0.465	0.465	5/02/2005	36.01
Northwest Natural Gas	0.325	0.325	0.325	0.325	2/15/2005	33.10
NSTAR	0.555	0.555	0.555	0.555	2/01/2005	53.58
Piedmont Natural Gas	0.215	0.215	0.215	0.215	4/14/2005	22.69
WGL Holdings	0.320	0.325	0.325	0.325	2/01/2005	30.21

Sources: Company Press Releases, www.yahoo.com.
The Wall Street Journal, www.wsj.com.
S&P Utility Compustat.

NEW LANDING UTILITY, INC.

Expected Quarterly Dividends

Water Sample

Company	$D_{1,1}$	$D_{1,2}$	$D_{1,3}$	$D_{1,4}$
Aqua America	$0.130	$0.130	$0.130	$0.142
Artesian Resources	0.213	0.226	0.226	0.231
California Water Service	0.299	0.299	0.299	0.299
Middlesex Water	0.168	0.168	0.168	0.178
Southwest Water	0.053	0.053	0.057	0.057
York Water	0.156	0.156	0.156	0.167

Utility Sample

Company	$D_{1,1}$	$D_{1,2}$	$D_{1,3}$	$D_{1,4}$
Consolidated Edison	$0.581	$0.581	$0.581	$0.581
Laclede Group	0.340	0.354	0.354	0.354
Nicor, Inc.	0.481	0.481	0.481	0.481
Northwest Natural Gas	0.341	0.341	0.341	0.341
NSTAR	0.580	0.580	0.580	0.580
Piedmont Natural Gas	0.225	0.225	0.225	0.225
WGL Holdings	0.325	0.338	0.338	0.338

NEW LANDING UTILITY, INC.

DCF Analysis Cost of Equity Estimates

Water Sample

Company	Cost of Equity Estimate
Aqua America	11.60%
Artesian Resources	11.97%
California Water Service	9.43%
Middlesex Water	9.86%
Southwest Water	10.02%
York Water	10.31%
	10.53%

Utility Sample

Company	Cost of Equity Estimate
Consolidated Edison	8.37%
Laclede Group	8.81%
Nicor, Inc.	8.86%
Northwest Natural Gas	9.21%
NSTAR	9.04%
Piedmont Natural Gas	8.65%
WGL Holdings	8.53%
	8.78%

NEW LANDING UTILITY, INC.

Risk Premium Analysis Cost of Equity Estimates

Interest Rates on January 4, 2005

U.S. Treasury Bills		U.S. Treasury Bonds	
Discount Rate	Effective Yield	Bond Equivalent Yield	Effective Yield
2.33%	2.40%	4.91%	4.97%

Risk Premium Cost of Equity Estimates*

Water Sample

Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
4.97%	+	0.54	×	(13.59% - 4.97%)	=	9.62%

Utility Sample

Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
4.97%	+	0.66	×	(13.59% - 4.97%)	=	10.66%

*Risk-free rate proxy is the U.S. Treasury bond.