DIRECT TESTIMONY

of

SHEENA KIGHT

Finance Department
Financial Analysis Division
Public Utilities Bureau
Illinois Commerce Commission

Illinois Gas Company

Docket No. 04-0475

October 15, 2004

TABLE OF CONTENTS

WITNESS IDENTIFICATION 1
COST OF CAPITAL 2
CAPITAL STRUCTURE 3
COST OF SHORT-TERM DEBT 9
COST OF LONG-TERM DEBT 10
COST OF COMMON EQUITY 10
Sample Selection 11
DCF Analysis 12
Risk Premium Analysis 16
Cost of Equity Recommendation 27
OVERALL COST OF CAPITAL RECOMMENDATION 30

SCHEDULES

Schedule 3.1 – Weighted-Average Cost of Capital Summary
Schedule 3.2 – Short-Term Debt Balance
Schedule 3.3 – Embedded Cost of Long-Term Debt
Schedule 3.4 – Growth Rate Estimates
Schedule 3.5 – Quarterly Dividends and Stock Prices
Schedule 3.6 – Expected Quarterly Dividends
Schedule 3.7 – DCF Analysis Cost of Equity Estimates
Schedule 3.8 – Risk Premium Analysis Cost of Equity Estimates

WITNESS IDENTIFICATION

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

A. My name is Sheena Kight. My business address is 527 East Capitol Avenue, Springfield, IL 62701.

2. Q. By whom are you employed and in what capacity?

A. I am employed by the Illinois Commerce Commission ("Commission") as a Senior Financial Analyst in the Finance Department of the Financial Analysis Division.

3. Q. Please describe your qualifications and background.

A. In May of 1998, I received a Bachelor of Business degree in Finance and Marketing from Western Illinois University in Macomb, Illinois. I earned a Master of Business Administration degree, with a concentration in Finance, also at Western Illinois University in May 2001. I have been employed by the Commission since January of 2001. I was promoted to Senior Financial Analyst on October 1, 2004.

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

A. The purpose of my testimony is to present the overall cost of capital and to recommend a fair rate of return on rate base for Illinois Gas Company ("Company" or "IL Gas").

COST OF CAPITAL

5. Q. Please summarize your cost of capital findings.

A. I recommend a 7.27% overall rate of return for the Company, as shown on Schedule 3.1. The Company's proposed 7.68% overall rate of return for IL Gas is also presented on Schedule 3.1.

6. Q. Why must one determine the overall rate of return for a public utility?

A. A primary goal of regulation is to properly balance the interests of a utility's ratepayers and investors. This is accomplished by minimizing the cost of reliable service to ratepayers while allowing utilities to earn a fair and reasonable rate of return on rate base.

Regulators should determine an allowable rate of return for a public utility that equals the investor-required rate of return for unregulated companies with similar risk characteristics. When public utilities charge rates that reflect an authorized rate of return that exceeds the cost of capital, consumers are encumbered with excessive prices. Conversely, when public utilities charge rates that reflect an authorized rate of return below the cost of capital, the financial integrity of the utility suffers, making it difficult for the utility to attract capital at a reasonable cost. Ultimately, the utility's inability to raise sufficient capital would impair service quality. Consumers 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. Mathematically define the overall cost of capital for a public utility.

A. The overall cost of capital equals the sum of the costs of the capital structure components (i.e., debt and equity) after weighting each component according to its proportion of total capitalization.

CAPITAL STRUCTURE

8. Q. What capital structure does the Company propose for determining the rate of return on rate base?

A. The Company proposes determining the rate of return on rate base on the March 31, 2004 pro-forma capital structure comprising 9.45% short-term debt, 48.44% long-term debt, and 42.11% common equity.[1] The Company's proposed capital structure appears on Schedule 3.1.

9. Q. What capital structure do you recommend for setting rates in this proceeding?

[1] Company's Schedule D-1, p. 1.

A. My proposed capital structure is shown on Schedule 3.1. I used a June 30, 2004 capital structure comprising 23.12% short-term debt, 41.02% long-term debt and 35.86% common equity.

10. Q. Did you adjust the Company's proposed short-term debt balance?

A. Yes. Since short-term debt balances might fluctuate substantially during a year, any single balance might not be representative of the amount employed throughout the year. Therefore, I used an average balance. I chose the July 2003 to June 2004 period because it is the most current information available. Since IL Gas does not have any construction-work-in-progress or allowance for funds used during construction there is no need to calculate a net balance as described in 83 IL Adm. Code 285.4020. Therefore, I calculated twelve monthly averages from the monthly ending balances of short-term debt and then averaged those monthly average balances for July 2003 through June 2004. Schedule 3.2 presents the calculation of the average balance of short-term debt.

11. Q. Did you adjust the Company's proposed long-term debt balance?

A. Yes. The Company refinanced all of its long-term debt on June 1, 2004.[2] Therefore, I adjusted the Company's proposed balance to reflect the actual balance outstanding as of June 30, 2004. The June 30, 2004 long-term debt balance is presented on Schedule 3.3.

12. Q. Did you adjust the Company's proposed common equity balance?

[2] Company's Schedule D-3.

A. Yes. I adjusted the common equity balance to reflect the actual amount outstanding as of June 30, 2004.[3] The common equity balance is presented on Schedule 3.1.

13. 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,[4] 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, 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 the Commission concludes that capital structure adversely affects the overall cost of capital.

[3] Company's revised response to data request SK 1-04.
[4] 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.

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

Towards that end, I compared the Company's June 30, 2004 capital structure to industry standards. Standard & Poor's ("S&P") categorizes debt securities on the basis of the risk that a company will default on its interest or principal payment obligations. The resulting credit rating reflects both the operating and financial risks of a utility.[5] The mean total debt ratio of gas distribution utilities that have an S&P "BBB" credit rating equals 54.76%. The mean common equity ratio for S&P BBB-rated gas distribution utilities equals 44.84%.[6] The above ratios are shown in Table 1 for comparative purposes.

[5] Standard & Poor's, *Utility Financial Statistics*, June 1999, p. 3.
[6] *S&P Utility Compustat II.*

Table 1: Capital Structure Ratios

	Gas Distribution Utilities		Range for BBB-Rated Utilities with Business Profile Score of 3	Illinois Gas June 30, 2004
	Mean	Standard Deviation		
Debt Ratio	54.76%	10.12%	55% - 65%	64.14%
Equity Ratio	44.84%	9.89%		35.86%

IL Gas' June 30, 2004 capital structure comprises a higher proportion of debt and a lower proportion of equity than gas distribution utilities. IL Gas' June 30, 2004 total debt ratio and equity ratio are within one standard deviation of the mean for gas distribution utilities.[7] In addition, IL Gas' June 30, 2004 total debt ratio is within the range S&P publishes for BBB-rated utilities with a business profile of 3. According to S&P, an obligor rated 'BBB' has an adequate capacity to meet its financial commitments.[8] The above suggests that the Company's June 30, 2004 capital structure as presented by Staff on Schedule 3.1 is commensurate with an adequate degree of financial strength.

14. Q. Why did you compare IL Gas' financial ratios to the S&P benchmarks for the business profile score of 3?

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 focuses on industry characteristics as well as the company's competitive position and management. A utility's

[7] *S&P Utility Compustat II*.
[8] Standard & Poor's Ratings Direct, "Research: Standard & Poor's Ratings Definitions," December 10,

business profile score is evaluated on a scale of one to ten. A rating of one denotes below average business risk, while a rating of ten denotes above average business risk.[9] I imputed an S&P business profile score for the Company since it does not have one. I began with all domestic corporations assigned an industry number of 4924 (i.e., gas distribution utilities) within S&P's *Utility Compustat II* with business profile scores listed in S&P *Utilities & Perspectives*. Of these 26 gas distribution utilities, 3 are assigned a business profile score of "1"; 9 are assigned a business profile score of "2"; 6 are assigned a business profile score of "3"; 4 are assigned a business profile score of "4"; 2 are assigned a business profile score of "5"; 1 is assigned a business profile score of "6"; and 1 is assigned a business profile score of "7".[10] The average business profile score of the 26 gas distribution utilities is 3.0. Therefore, I concluded that a business profile score of 3 would be a reasonable estimate for IL Gas.

15. Q. S&P currently does not rate IL Gas' credit strength. Why did you compare IL Gas' capital structure ratios to gas distribution utilities with 'BBB' credit ratings?

A. S&P publishes targets for the following three ratios (collectively, the "Benchmark Ratios") that it uses in its analysis of investor-owned utilities: (1) funds from operations ("FFO") interest coverage; (2) FFO to total debt; and (3) total debt to total capital. The Benchmark Ratios measure

---

2002, p. 5.

[9] Standard & Poor's, "Research: New Business Profile Scores Assigned for U.S. Utility and Power Companies; Financial Guidelines Revised," June 2, 2004.

[10] Standard & Poor's, *Utilities & Perspectives,* September 13, 2004, pp. 14-17.

financial risk. The financial targets vary with the business profile score.[11] The S&P published targets for utilities with business profile scores of 3 indicate that IL Gas' financial strength is consistent with a medium to strong BBB credit rating. Table 2 presents IL Gas' financial ratios for the 2001-2003 period.

Table 2: S&P Utility Benchmark Credit Ratio Analysis

		S&P Financial Benchmark Ratio Targets		
		BB-Rated Utilities	BBB-Rated Utilities	A-Rated Utilities
Financial Benchmark Ratio	IL Gas 3-Year Average	Business Profile Score of 3	Business Profile Score of 3	Business Profile Score of 3
FFO Interest Coverage	3.2X	1X – 1.5X	1.5X – 2.5X	2.5X – 3.5X
FFO to Total Debt	12.3%	5% - 10%	10% - 15%	15% - 25%
Total Debt to Total Capital	66.9%	65% - 70%	55% - 65%	50% - 55%

COST OF SHORT-TERM DEBT

16. Q. What is IL Gas' cost of short-term debt?

A. IL Gas issues short-term debt in the form of bank loans. For the cost of short-term debt, I determined the weighted average cost on the short-term

[11] Standard & Poor's, "Research: New Business Profile Scores Assigned for U.S. Utility and Power Companies; Financial Guidelines Revised," June 2, 2004.

loans outstanding for month ending June 30, 2004. The cost of short-term debt is 4.86%.[12]

COST OF LONG-TERM DEBT

17. Q. What is IL Gas' embedded cost of long-term debt?

A. As shown on Schedule 3.3, IL Gas' average embedded cost of long-term debt for 2005 is 5.39%. My only adjustment to the Company's long-term debt cost calculation was to include unamortized debt expense.[13]

COST OF COMMON EQUITY

18. Q. What is IL Gas' cost of common equity?

A. My analysis indicates that IL Gas' cost of common equity is 10.99%, which I rounded to 11.0% is presented on Schedule 3.1.

19. Q. How did you measure the investor-required rate of return on common equity for IL Gas?

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

[12] Company response to DR SK 1-03.

Sample Selection

20. Q. How did you select your gas sample?

A. I selected my gas sample based on two criteria. First, I began with a list of all domestic dividend paying corporations assigned an industry number of 4924 (i.e., gas distribution utilities) within S&P's *Utility Compustat II*. Second, I removed any company that did not have Zacks Investment Research ("Zacks") long-term growth rates. Finally, I removed any company that was the target of an acquisition or acquiring a company of nearly equal or greater size. The remaining companies, AGL Resources Inc., Energen Corp., Laclede Group Inc., National Fuel Gas Co., New Jersey Resources, Nicor Inc., Northwest Natural Gas Co., Peoples Energy Corp., Piedmont Natural Gas Co., South Jersey Industries Inc., and WGL Holdings Inc., compose my sample.

21. Q. How did you select a utility sample comparable in risk to IL Gas?

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, 4932, or 4941 in the S&P *Utility Compustat II* database that have been assigned an S&P business profile score of 2, 3, or 4. Second, I removed any company that had an S&P credit rating other than A-, BBB+, BBB, or BBB-. Next, I removed any company that lacked Zacks growth rates. Finally, I eliminated any company that was in the process of being acquired by another company or acquiring a company of

[13] *See* 83 IL Adm Code 285.4030.

equal size. The remaining companies, AGL Resources Inc., Energy East Corp., NiSource Inc., Puget Energy Inc., Scana Corp., Southwest Gas Corp., Vectren Corp., and York Water Co., compose my utility sample.

DCF Analysis

22. 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.

23. 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.

The expression $(1+k)^{1-[x+0.25(q-1)]}$ is a future value factor that measures the value of the expected dividend ($D_{0,q}(1+g)$) one year from the stock price measurement date. The DCF model above 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.

24. 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 Zack's growth estimates. Zacks summarizes the forward-looking, earnings growth expectations of financial analysts from the research departments of investment brokerage firms. The Zacks growth rate estimate for each firm in my samples is presented on Schedule 3.4.

25. 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 September 15, 2004. Those stock prices appear on Schedule 3.5.

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. Using historical stock prices along with current growth expectations or combining an updated stock price with past expectations will likely produce an inaccurate estimate of the market-required rate of return on common equity.

26. Q. Explain the significance of the column titled, "Next Dividend Payment Date" shown on Schedule 3.5.

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.

27. 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. For the quarter in which the dividend rate is expected to change, the expected dividend rate equals the sum of one plus the average expected growth rate ($1+g$) times the current dividend rate $D_{0,q}$ unless the utility has already declared a new dividend rate. Schedule 3.5 presents

the current quarterly dividends. Schedule 3.6 presents the expected quarterly dividends.

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

A. The DCF analysis estimates the required rate of return on common equity is 9.04% for the gas sample and 9.61% for the utility sample, as shown on Schedule 3.7. Those estimates are derived from the growth rates presented on Schedule 3.4, the stock price and dividends presented on Schedule 3.5, and the expected quarterly dividends presented on Schedule 3.6.

Risk Premium Analysis

29. 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 by 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 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.

30. 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 long-term U.S. Treasury bonds as estimates of the risk-free rate of return.

31. 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 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. Treasury securities, were 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; and U.S. Treasury bills are issued with terms to maturity ranging from four weeks to six months. Therefore, U.S. Treasury bond

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

[15] In October 2001, the U.S. Treasury suspended the issuance of 30-year U.S. Treasury bonds. In July 2004, the U.S. Treasury began issuing 20-year Treasury Inflation-Protected Securities, which adjust interest and principal semi-annually for inflation.

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.

32. Q. Given the similarity in 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, 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 implies that the 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.[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.

33. Q. Provide the current yield on three-month U.S. Treasury bills and the current estimated yield on thirty-year U.S. Treasury bonds.

A. Three-month U.S. Treasury bills are currently yielding 1.68%. The estimated yield for U.S. Treasury bonds equals 5.10%.[17] Both estimates are derived from quotes for September 15, 2004.[18] Schedule 3.8 presents the published quotes and effective yields.

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

[16] Fabozzi and Pollack, ed., *The Handbook of Fixed Income Securities,* 4th edition, Irwin, p. 789.
[17] To estimate a 30-year rate, I began with the 20-year U.S. Treasury bond yield and then added to it the daily extrapolation factor, as published by the U.S. Treasury.

A. In terms of both the gross domestic product ("GDP") price index and the consumer price index ("CPI"), the Energy Information Administration ("EIA") forecasts the inflation rate will average 3.0% annually during the 2004-2025 period.[19] In comparison, Global Insight forecasts that GDP price inflation will average 3.0% annually during the 2004-2029 period.[20] In terms of CPI, the *Survey of Professional Forecasters* ("*Survey*") forecasts the inflation rate will average 2.5% during the next ten years.[21] In terms of real GDP growth, EIA forecasts the real risk-free rate will average 3.0% during the 2004-2025 period;[22] Global Insight forecasts the real risk-free rate will average 3.0% during the 2004-2029 period;[23] and the *Survey* forecasts real GDP growth will average 3.4% during the next ten years.[24] Those forecasts imply a long-term, nominal risk-free rate between 6.0% and 6.1%.[25] Therefore, EIA, Global Insight and *Survey* forecasts of inflation and real GDP growth suggest that, currently, the U.S. Treasury bond yield more closely approximates the long-term risk-free rate. 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

---

www.treas.gov/offices/domestic-finance/debt-management/interest-rate/ltcompositeindex.html.

[18] The Federal Reserve Board, *Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update*, www.federalreserve.gov/releases/H15/update, September 17, 2004.

[19] Energy Information Administration, *EIA 2004 Long-Term Forecast*, Table 20, Macroeconomic Indicators.

[20] Global Insight, "The U.S. Economy: The 25 Year Focus," Table 1, Winter 2004.

[21] *Survey of Professional Forecasters,* Federal Reserve Bank of Philadelphia, www.phil.frb.org, August 20, 2004. The *Survey* aggregates the forecasts of approximately 30 forecasters.

[22] Energy Information Administration, *EIA 2004 Long-Term Forecast*, Table 20, Macroeconomic Indicators.

[23] Global Insight, "The U.S. Economy: The 25 Year Focus," Table 1, Winter 2004.

[24] *Survey of Professional Forecasters,* Federal Reserve Bank of Philadelphia, www.phil.frb.org, February 23, 2004.

[25] Nominal interest rates are calculated as follows:

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

Where: $r \equiv$ Nominal interest rate;
$R \equiv$ Real interest rate; and
$i \equiv$ Inflation rate.

inclusion of an interest rate risk premium associated with its relatively long term to maturity.

35. 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.[26] 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.

36. 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") as of June 30, 2004. That analysis used dividend information and closing market prices reported by Zacks Research Wizard and the July 2004 edition of *Standard & Poor's Security Owner's Stock Guide*. Firms not paying a dividend as of June 30, 2004, or for which Zacks growth rates

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

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 June 30, 2004, as provided by Zacks Research Wizard. The estimated weighted average expected rate of return for the remaining 371 firms, composing 84.7% of the market capitalization of the S&P 500, equals 13.54%.

37. 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").[27]

When available, I used published Value Line estimates of beta for each company in each sample. For the company that did not have a published Value Line beta estimate, I estimated a beta using the Value Line beta methodology.[28] Value Line estimates beta for a security with the following model using an ordinary least-squares technique:[29]

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

[27] The Regression beta methodology is the same as the Merrill Lynch methodology except 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&P500 Index as a proxy for the market return. The former substitution does not significantly affect the beta estimate; however, using the NYSE Composite Index as a proxy for the market return produced higher utility betas than using the S&P500 Index.

[28] The Value Line service to which the Commission subscribes does not provide a beta estimate for York Water Company.

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

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 estimated change in price of each company is regressed against the estimated percentage change in price 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, the raw estimate of beta is adjusted through the following equation:

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

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 price 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, raw estimate of beta is adjusted through the following equation:

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

38. Q. Why do you adjust the raw beta estimate?

A. I adjust the raw 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 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 of 1.0 results in a linear relationship between the beta estimate and realized return that more closely conforms to the CAPM prediction.[30] Securities with raw betas less than one are adjusted upwards thereby increasing the predicted required rate of return towards observed realized rates of return. Conversely, securities with raw betas greater than one are adjusted downwards thereby decreasing the predicted rate of return towards observed realized rates of return.

39. Q. What are the beta estimates for the gas sample and the utility sample?

A. The Value Line beta estimates average 0.74 for the gas sample and 0.73 for the utility sample. The regression beta estimates are 0.57 and 0.67 for the gas and utility samples, respectively. The average of the Value Line and regression beta estimates equals 0.655 for the gas sample and 0.698 for the utility sample.

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

[30] 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.

A. The risk premium model estimates a required rate of return on common equity of 10.63% for the gas sample and 10.99% for the utility sample. The computation of those estimates appears on Schedule 3.8.

Cost of Equity Recommendation

41. Q. Based on your entire analysis, what is your estimate of IL Gas' 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 6.20% rate of return the market currently requires on less risky BBB-rated long-term debt for utilities.[31] Based on my analysis, in my judgment, the investor-required rate of return on common equity for IL Gas is 10.99%, which I am rounding to 11.0%.

42. Q. Please summarize how you formed your recommendation for the investor-required rate of return on common equity for IL Gas.

A. When using samples to estimate the cost of equity of a target company, the risk level of the proxies should correspond to the risk level of the target

company as closely as possible. Therefore, I analyzed the S&P benchmark ratios, discussed earlier, to determine which sample more closely approximates the risk level of IL Gas. The table below presents the ratios for IL Gas, the gas sample, and the utility sample.

Table 3: Comparison to Benchmark Ratios

				S&P Financial Benchmark Ratio Targets	
				BBB-Rated Utilities	A-Rated Utilities
Financial Benchmark Ratio	IL Gas 3-Year Average	Gas Sample 3-Year Average	Utility Sample 3-Year Average	Business Profile Score of 3	Business Profile Score of 3
FFO Interest Coverage	3.2X	5.0X	3.3X	1.5X – 2.5X	2.5X – 3.5X
FFO to Total Debt	12.3%	23.5%	16.22%	10% - 15%	15% - 25%
Total Debt to Total Capital	66.9%	56.2%	61.56%	55% - 65%	50% - 55%

The table above illustrates that both the IL Gas and the utility sample ratios are indicative of a BBB-rated company with a business position of 3. The utility sample's ratios indicate that it has slightly less financial risk than IL Gas. However, the utility sample has slightly more operating risk than IL Gas. The average business profile for the utility sample is 3.5, whereas, IL Gas has an imputed business profile of 3. Since total risk of a company is a function of both operating risk and financial risk, the utility sample and IL Gas are very similar in overall risk. Therefore, the utility

[31] *Value Line Selection & Opinion*, September 17, 2004, p. 5.

sample is a reasonable proxy for IL Gas. In contrast, the gas sample has stronger ratios that are more consistent with an A-rated company with a business position of 3, which indicates it is less risky than IL Gas in terms of financial strength. Thus, I based my recommended rate of return on common equity for IL Gas on an average of the 9.61% DCF and 10.99% CAPM cost of equity estimates for my utility sample, or 10.30%.[32] 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 my proxy for investor expectations.[33] In addition, the use of a sample minimizes measurement error since estimates for a sample as a whole are subject to less measurement error than individual company estimates.

43. Q. Why did you adjust the cost of common equity estimate for the utility sample upward?

A. I adjusted the cost of common equity estimate for the utility sample for liquidity costs, which arise from the probability and financial consequences of an investor's inability to sell an asset at the desired time, at a predictable price. The utility sample comprises market-traded companies whose security prices do not reflect substantial liquidity costs. However, the security prices of small standalone companies such as IL Gas, typically reflect significant liquidity costs, which are largely due to the lack of a market for their securities.

[32] In contrast, the average of the DCF and CAPM cost of common equity estimates for the gas sample equals 9.85% (i.e., (9.04% + 10.63%) ÷ 2).
[33] Except as discussed above in regard to U.S. Treasury bond yields as proxies for the long-term risk-free rate.

44. Q. How did you estimate the liquidity premium for IL Gas' common equity?

A. A direct assessment of the liquidity premium in the cost of IL Gas' common equity cannot be performed since the cost of common equity to small gas distribution utilities is not directly observable. To determine the liquidity premium for IL Gas I added the current 81 basis point difference between the yields on BBB+/BBB rated utility debt and 5-year Treasury notes[34] to the yield on a 5-year Treasury note as of June 1, 2004, which is the day the Company refinanced its debt. The result was an estimated cost of 4.67% for publicly-traded, 5-year BBB+/BBB rated debt for June 1, 2004. I then subtracted the estimated cost of BBB+/BBB rated debt of 4.67% from the 5.36% interest rate the Company will pay for the first five years of the debt it issued on June 1, 2004, which resulted in a liquidity premium of 69 basis points. Thus in my judgment, a fair rate of return on common equity for IL Gas equals the cost of common equity for the utility sample, 10.30%, plus 69 basis points, or 10.99%, which I rounded to 11.0%.

OVERALL COST OF CAPITAL RECOMMENDATION

45. Q. What is the overall cost of capital for IL Gas in this proceeding?

A. As shown on Schedule 3.1, the overall cost of capital estimate for IL Gas is 7.27%, which incorporates an 11.0% cost of common equity.

[34] Reuters Corporate Spreads for Utilities, http://bondchannel.bridge.com/publicspreads.cgi?Utilities, September 17, 2004.

46. Q. Does this conclude your direct testimony?

A. Yes, it does.

Docket No. 04-0475
ICC Staff Exhibit 3.0
Schedule 3.1

Illinois Gas Company

Staff's Proposed Weighted Average Cost of Capital

Class of Capital	June 30, 2004 Balance	Percent of Total Capital	Cost	Weighted Cost
Short-Term Debt	$ 1,791,667	23.12%	4.86%	1.12%
Long-Term Debt	$ 3,179,788	41.02%	5.39%	2.21%
Common Equity	$ 2,779,501	35.86%	11.00%	3.94%
Total	$ 7,750,956	100.0%		7.27%

Company's Proposed Weighted Average Cost of Capital

Class of Capital	Balance as of 3/31/2004	Percent of Total Capital	Cost	Weighted Cost
Short-Term Debt	$ 624,385	9.45%	4.80%	0.454%
Long-Term Debt	$ 3,200,000	48.44%	5.36%	2.596%
Common Equity	$ 2,782,120	42.11%	11.00%	4.632%
Total	$ 6,606,505	100.0%		7.68%

Docket No. 04-0475
ICC Staff Exhibit 3.0
Schedule 3.2

Illinois Gas Company

Balance of Short-term Debt
Average 2004

Date (A)	End of Month Balance: Gross Short-term Debt Outstanding (B)	CWIP (C)	CWIP Accruing AFUDC (D)	Net Short-term Debt Outstanding (E)	Monthly Average (F)
Jun-03	$ 2,400,000	$ -	$ -	$ 2,400,000	
Jul-03	2,350,000	-	$ -	$ 2,350,000	$ 2,375,000
Aug-03	2,300,000	-	$ -	$ 2,300,000	2,325,000
Sep-03	2,500,000	-	$ -	$ 2,500,000	2,400,000
Oct-03	2,400,000	-	$ -	$ 2,400,000	2,450,000
Nov-03	2,400,000	-	$ -	$ 2,400,000	2,400,000
Dec-03	1,350,000	-	$ -	$ 1,350,000	1,875,000
Jan-04	1,350,000	-	$ -	$ 1,350,000	1,350,000
Feb-04	1,950,000	-	$ -	$ 1,950,000	1,650,000
Mar-04	1,000,000	-	$ -	$ 1,000,000	1,475,000
Apr-04	1,000,000	-	$ -	$ 1,000,000	1,000,000
May-04	1,150,000	-	$ -	$ 1,150,000	1,075,000
Jun-04	1,100,000	-	$ -	$ 1,100,000	1,125,000
			Average Balance of Short-Term		**$ 1,791,667**

Docket No. 04-0475
ICC Staff Exhibit 3.0
Schedule 3.3

Illinois Gas Company
June 30, 2004
Embedded Cost of Debt

Line No.	Issue	Date Issued	Maturity Date	Original Principal Amount	Principal Amount Outstanding June 30, 2004	Unamortized Debt Expense or Discount	Carrying Value	Interest Cost	Annual Amortization of Debt Expense or Discount	Annualized Interest	Embedded Cost
1	FMB Series M-5.36%	6/1/04	5/31/19	$ 3,200,000	$ 3,187,718	$ 7,930	3,179,788	$ 170,862	$ 531	171,393	
	Totals			$ 3,200,000	$ 3,187,718	$ 7,930	$ 3,179,788	$ 170,862	$ 531	$ 171,393	5.39%

Docket No. 04-0475
ICC Staff Exhibit 3.0
Schedule 3.4

Illinois Gas Company

Growth Rates

Gas Sample

	Company	Zacks Earnings
1	AGL Resources Inc	5.25%
2	Energen Corp	7.25%
3	Laclede Group Inc	4.00%
4	National Fuel Gas Co	5.40%
5	New Jersey Resources	5.96%
6	Nicor Inc	3.70%
7	Northwest Natural Gas Co	4.13%
8	Peoples Energy Corp	4.50%
9	Piedmont Natural Gas Co	4.42%
10	South Jersey Industries Inc	4.50%
11	WGL Holdings Inc	3.90%

Utility Sample

	Company	Zacks Earnings
1	AGL Resources Inc	5.25%
2	Energy East Corp	4.50%
3	NiSource Inc	4.63%
4	Puget Energy Inc	5.14%
5	Scana Corp	4.50%
6	Southwest Gas Corp	4.57%
7	Vectren Corp	6.40%
8	York Water Co	7.00%

Docket No. 04-0475
ICC Staff Exhibit 3.0
Schedule 3.5

Illinois Gas Company

Gas Sample

	Company	Current Dividend $D_{0,1}$	$D_{0,2}$	$D_{0,3}$	$D_{0,4}$	Next Dividend Payment Date	Stock Price
1	AGL Resources Inc	$ 0.280	$ 0.280	$ 0.290	$ 0.290	12/1/2004	$ 31.000
2	Energen Corp	0.185	0.185	0.185	0.193	12/1/2004	49.610
3	Laclede Group Inc	0.335	0.340	0.340	0.340	1/3/2005	28.840
4	National Fuel Gas Co	0.270	0.270	0.270	0.280	10/15/2004	27.580
5	New Jersey Resources	0.325	0.325	0.325	0.325	1/3/2005	41.350
6	Nicor Inc	0.465	0.465	0.465	0.465	11/1/2004	36.530
7	Northwest Natural Gas Co	0.325	0.325	0.325	0.325	11/15/2004	31.500
8	Peoples Energy Corp	0.530	0.530	0.540	0.540	10/15/2004	42.750
9	Piedmont Natural Gas Co	0.415	0.415	0.430	0.430	10/15/2004	44.210
10	South Jersey Industries Inc	0.405	0.405	0.405	0.405	1/4/2005	45.900
11	WGL Holdings Inc	0.320	0.320	0.325	0.325	11/1/2004	28.850

Utility Sample

	Company	Current Dividend $D_{0,1}$	$D_{0,2}$	$D_{0,3}$	$D_{0,4}$	Next Dividend Payment Date	Stock Price
1	AGL Resources Inc	$ 0.280	$ 0.280	$ 0.290	$ 0.290	12/1/2004	$ 31.000
2	Energy East Corp	0.250	0.260	0.260	0.260	11/15/2004	24.300
3	NiSource Inc	0.230	0.230	0.230	0.230	11/19/2004	21.050
4	Puget Energy Inc	0.250	0.250	0.250	0.250	11/15/2004	22.620
5	Scana Corp	0.345	0.365	0.365	0.365	1/3/2005	37.040
6	Southwest Gas Corp	0.205	0.205	0.205	0.205	12/1/2004	23.560
7	Vectren Corp	0.285	0.285	0.285	0.285	12/1/2004	24.670
8	York Water Co	0.135	0.145	0.145	0.145	10/15/2004	17.480

Docket No. 04-0475
ICC Staff Exhibit 3.0
Schedule 3.6

Illinois Gas Company

Expected Quarterly Dividends

Gas Sample

Company	$D_{1,1}$	$D_{1,2}$	$D_{1,3}$	$D_{1,4}$
AGL Resources Inc	$0.290	$0.290	$0.305	$0.305
Energen Corp	0.193	0.193	0.193	0.206
Laclede Group Inc	0.340	0.354	0.354	0.354
National Fuel Gas Co	0.280	0.280	0.280	0.295
New Jersey Resources	0.344	0.344	0.344	0.344
Nicor Inc	0.465	0.482	0.482	0.482
Northwest Natural Gas Co	0.338	0.338	0.338	0.338
Peoples Energy Corp	0.540	0.540	0.564	0.564
Piedmont Natural Gas Co	0.430	0.430	0.449	0.449
South Jersey Industries Inc	0.423	0.423	0.423	0.423
WGL Holdings Inc	0.325	0.325	0.338	0.338

Utility Sample

Company	$D_{1,1}$	$D_{1,2}$	$D_{1,3}$	$D_{1,4}$
AGL Resources Inc	$0.290	$0.290	$0.305	$0.305
Energy East Corp	0.260	0.272	0.272	0.272
NiSource Inc	0.230	0.241	0.241	0.241
Puget Energy Inc	0.263	0.263	0.263	0.263
Scana Corp	0.365	0.381	0.381	0.381
Southwest Gas Corp	0.214	0.214	0.214	0.214
Vectren Corp	0.303	0.303	0.303	0.303
York Water Co	0.145	0.155	0.155	0.155

Docket No. 04-0475
ICC Staff Exhibit 3.0
Schedule 3.7

Illinois Gas Company

DCF- Cost of Common Equity Estimates

Gas Sample

	Company	Cost of Equity Estimate
1	AGL Resources Inc	9.23%
2	Energen Corp	8.89%
3	Laclede Group Inc	8.99%
4	National Fuel Gas Co	9.73%
5	New Jersey Resources	9.39%
6	Nicor Inc	9.16%
7	Northwest Natural Gas Co	8.59%
8	Peoples Energy Corp	9.94%
9	Piedmont Natural Gas Co	8.58%
10	South Jersey Industries Inc	8.28%
11	WGL Holdings Inc	8.69%
	Average	9.04%

Utility Sample

	Company	Cost of Equity Estimate
1	AGL Resources Inc	9.23%
2	Energy East Corp	9.10%
3	NiSource Inc	9.34%
4	Puget Energy Inc	10.00%
5	Scana Corp	8.69%
6	Southwest Gas Corp	8.33%
7	Vectren Corp	11.55%
8	York Water Co	10.69%
	Average	9.61%

Docket No. 04-0475
ICC Staff Exhibit 3.0
Schedule 3.8

Illinois Gas Company

Risk Premium Analysis

Interest Rates as of September 15, 2004

U.S. Treasury Bills		U.S. Treasury Bonds	
Discount Rate	Effective Yield	Bond Equivalent Yield	Effective Yield
1.64%	1.68%	5.04%	5.10%

Risk Premium Cost of Equity Estimates*

Gas Sample

Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
5.10%	+	0.655	*	(13.54% - 5.10%)	=	10.63%

Utility Sample

Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
5.10%	+	0.698	*	(13.54% - 5.10%)	=	10.99%

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