DIRECT TESTIMONY

of

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Financial Analysis Division

Illinois Commerce Commission

Northern Illinois Gas Company d/b/a Nicor Gas Company

Proposed General Increase For Gas Rates

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WITNESS IDENTIFICATION

Q. Please state your name and business address.

A. My name is Michael McNally. My business address is 527 East Capitol Avenue, Springfield, IL 62701.

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

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

Q. Please describe your qualifications and background.

A. In May of 1993, I received a Bachelor of Arts degree in Economics from the University of Illinois at Urbana-Champaign. In May of 1999, I received a Master of Business Administration degree, with a concentration in Finance, from the University of Illinois at Urbana-Champaign. I have been employed by the Commission since June of 1999. I was promoted to Senior Financial Analyst in April of 2002.

Q. Please state the purpose of your testimony in this proceeding.

A. The purpose of my testimony is to present my analysis of the cost of capital of, and recommend an overall rate of return for, the natural gas distribution operations of Northern Illinois Gas Company d/b/a/ Nicor Gas Company ("Nicor Gas" or the "Company"). In addition, I will respond to the joint direct testimony of Company witnesses Richard L. Hawley and Robert R. Mudra and to the direct testimony of Company witness Dr. Jeff D. Makholm.

COST OF CAPITAL

Q. Please summarize your cost of capital findings.

A. The overall cost of capital for Nicor Gas equals 7.55%, as shown on Schedule 5.1.

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

A. The overall cost of capital equals the sum of the component costs of the capital structure (i.e., debt, preferred stock, and common equity) after each is weighted by its proportion to total capital. It represents the rate of return the utility needs to earn on its assets to satisfy contractual obligations to, or the market requirements of, its investors.

Q. Why must one determine an overall cost of capital 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 public utilities that equals the investor-required rate of return for 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 rate payer and investor interests.

Capital Structure

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

A. The Company proposed using a December 31, 2005 capital structure that contains 43.51% long-term debt, 0.12% preferred stock, and 56.37% common equity, as shown on Schedule 5.1.[1]

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

A. I propose using an average 2005 capital structure that contains 13.62% short-term debt, 36.65% long-term debt, 0.11% preferred stock, and 49.63% common equity, as shown on Schedule 5.1.

[1] Nicor Gas Exhibit No. 3.1.

Q. Why do you propose a different capital structure measurement period than the Company?

A. I used an average 2005 capital structure because the Company could not endorse the accuracy of its forecast of the short-term debt balances for the first six months of 2006. As I will explain below, to adopt a December 31, 2005 capital structure measurement date would require a reasonably reliable estimate of short-term debt for both the last six months of 2005 and the first six months of 2006. Since such a forecast was not available for the first six months of 2006, I used the latest period for which the required data was available, the twelve months ending December 2005.

Q. Why should short-term debt be included in the capital structure for Nicor Gas?

A. Capital is fungible; thus, it is not traceable. Thus, as the Commission noted in a previous Order, "[d]ue to the fungible nature of capital, it is generally assumed that all assets, including assets in rate base, are financed in proportion to total capital,"[2] unless shown otherwise. The Company has failed to demonstrate that short-term debt does not support rate base. Indeed, when asked to account for the usage of its short-term debt, the Company could not, stating "The cash requirements of the organization are fungible and specific uses of cash…can not be strictly defined."[3] Thus, the Company, by its own admission, cannot supported its claim that short-term debt does not support rate base; unless the Company can do so, short-term debt should be included in the capital structure.

[2] Order, Docket Nos. 02-0798/03-0008/03-0009, consol., October 22, 2003, p. 67.
[3] Company response to Staff data request MGM 3.01.

In addition, Nicor Gas carried a monthly ending balance of total short-term debt of at least $111,400,000 during each month of 2003 and carried outstanding short-term debt balances for nine out of twelve months in 2004 and forecasts the same for 2005.[4] Those balances closely track the Company's monthly Working Gas in Storage, which is included in its requested rate base.

Q. Please respond to Messrs. Hawley and Mudra's claim that Nicor Gas does not use short-term debt as a permanent source of financing rate base investments.[5]

A. Permanency is not a prerequisite for including short-term debt in the capital structure. For example, in Docket No. 95-0076, an Illinois-American Water Company ("IAWC") rate proceeding, an IAWC witness made the same argument that Messrs. Hawley and Mudra make in this proceeding; the Commission rejected the argument, concluding that short-term debt should be included in the capital structure even though IAWC projected month-end short-term debt balances of zero for three months out of the test year.[6] In addition, Messrs. Hawley and Mudra state that short-term debt is used to meet seasonal cash flow requirements.[7] But such temporary and seasonal cash flow requirements as Gas in Storage, including Working Gas, are included in Nicor Gas' requested rate base.[8] This indicates that short-term debt does finance a portion of Nicor Gas' requested rate base. Thus, as noted above, unless the Company can demonstrate that its short-term debt is not used to finance rate base, which it has not done, short-term debt should be included in Nicor Gas' capital structure.

[4] Company response to Staff data request MGM 1.02.
[5] Nicor Gas Exhibit 3.0, pp. 5-6.
[6] Order, Docket No. 95-0076, December 20, 1995, pp. 49 and 51.
[7] Nicor Gas Exhibit 3.0, p. 6.
[8] Nicor Gas Schedule B-1.

Q. How did you measure the balance of short-term debt for Nicor Gas?

A. Since short-term debt balances tend to fluctuate substantially during a year, any single balance might not be representative of the typical amount employed throughout the year. Therefore, I used an average balance. I chose the January 2005 through December 2005 period because that is the latest period for which I have forecasted short-term debt balances that the Company considers accurate. To calculate the balance of short-term debt, I first calculated the monthly ending net balance of short-term debt outstanding from December 2004 through December 2005. The net balance of short-term debt equals the monthly ending gross balance of short-term debt outstanding minus the lesser of a) the corresponding monthly ending balance of construction-work-in-progress ("CWIP") accruing an allowance for funds used during construction ("AFUDC") or b) the monthly ending balance of CWIP accruing AFUDC times the ratio of short-term debt to total CWIP for the corresponding month. That adjustment recognizes that the Commission's formula for calculating AFUDC assumes short-term debt is the first source of funds financing CWIP[9] and addresses the double-counting concern the Commission raised in a previous Order.[10] Next, I calculated twelve monthly averages from the thirteen monthly ending net balances of short-term debt. Finally, I averaged the twelve monthly average net balances of short-term debt for January 2005 through December 2005. Schedule 5.2 presents the calculation of the average adjusted balance of short-term debt.

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

[10] Order, Docket No. 95-0076, December 20, 1995, p. 51.

Q. Did you adjust the other capital components to recognize the Commission's formula for calculating AFUDC?

A. Yes. As noted above, the Commission's formula for calculating AFUDC assumes short-term debt is the *first* source of funds financing CWIP; however, it is not necessarily the *only* source. That formula also assumes that any CWIP not funded by short-term debt is funded by the remaining sources of capital (i.e., long-term debt, preferred stock, and common equity) proportionally. Thus, to avoid double-counting, $3,368,364 was subtracted from the balance of long-term debt, $9,768 was subtracted from the balance of preferred stock, and $4,561,095 was subtracted from the balance of common equity.

Q. How did you calculate those amounts?

A. The Company forecasts a higher balance of CWIP than short-term debt during the months of April, May, and June of 2005. Therefore, a portion of CWIP is assumed to be funded by the long-term sources of capital during those months. After adjusting the monthly short-term debt balances to remove the portion of short-term debt reflected in the calculation of AFUDC, any remaining amount of CWIP accruing AFUDC was allocated on the basis of the proportion of total long-term capital that each long-term capital component represents. The average monthly balance of the remaining amount of CWIP accruing AFUDC for 2005 was $7,939,227, as presented in Column (H) on Schedule 5.2. Long-term debt, preferred stock, and common equity compose 42.43%, 0.12%, and 57.45% of the long-term capital, respectively, based on their balances discussed below. Thus, 42.43%, 0.12%, and 57.45% of $7,939,227, or $3,368,364, $9,768, and $4,561,095, was subtracted from the balance of long-term debt, preferred stock, and common equity, respectively.

Q. Did you make any adjustments to the Company's balance of preferred stock?

A. Yes. I began with a preferred stock balance of $1,395,898, as presented on Schedule 5.4. That number reflects the net proceeds available to the Company. I then subtracted $9,768 to reflect the amount of preferred stock already incorporated in the calculation of the AFUDC, as explained previously. This produced a preferred stock balance of $1,386,130.

Q. What balance of long-term debt did you use?

A. I began with an average debt balance for 2005 of $481,377,992, as presented on page 1 of Schedule 5.3. That number reflects the average 2005 carrying value for all debt reported in the Company's 2003 ILCC Form 21, including unamortized loss on reacquired debt issues. Then I subtracted $3,368,364 to reflect the amount of long-term debt already incorporated in the calculation of the AFUDC, as explained previously. This produced a long-term debt balance of $478,009,628.

Q. How do your debt schedules differ from those presented in Revised Nicor Gas Exhibit No 3.2?

A. To create my debt schedule for December 31, 2003, which is presented on page 4 of Schedule 5.3, I made the following adjustments to the December 31, 2003 debt schedule presented on page 3 of Revised Nicor Gas Exhibit No. 3.2: (1) the 3.00% and 5.750% series that were retired in 2003 were eliminated because they were not outstanding at year end; (2) the remaining 2003 issuances and calls/retirements were reclassified as outstanding First Mortgage Bonds and Retired Issues, respectively; (3) several issue dates were changed to reflect

those shown in Nicor Gas' 2003 Form 21 ILCC; and (4) the annual amortization of debt discount, premium, and expense was adjusted to reflect straight-line amortization of each issue's December 31, 2003 unamortized balances over its remaining life. The fourth adjustment noted above represents the only material difference between the Company's and my 2003 debt schedules.

My December 31, 2004 and December 31, 2005 debt schedules, presented on pages 3 and 2 of Schedule 5.3, respectively, merely update the 2003 debt schedule to reflect the additional annual amortization of debt discount, premium, and expense and the annual sinking fund redemption of the mandatorily redeemable preferred stock for 2004 and 2005.

Q. How did you derive the average 2005 debt schedule presented on page 1 of Schedule 5.3?

A. The amounts presented on the average 2005 debt schedule represent simple averages of the corresponding amounts presented on the end-of-year 2004 and 2005 debt schedules for all entries except for the outstanding balances of the mandatorily redeemable preferred stock issuances. The average balances for 2005 of the mandatorily redeemable preferred stock issuances reflect a weighted average of the year-end 2004 and 2005 balances, since those issuances are subject to a sinking fund redemption scheduled to occur on May 1 of each year.

Q. Did you make any changes to the Company's proposed common equity balance?

A. Yes. While the Company used a December 31, 2005 common equity balance, I used an average 2005 outstanding common equity balance. I began with a

balance of $651,833,042, as presented on Schedule 5.5. That balance reflects the average of the twelve average monthly balances for January through December 2005. Then I subtracted $4,561,095 to reflect the amount of common equity already incorporated in the calculation of the AFUDC, as explained previously. This produced a common stock balance of $647,271,946.

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

A. Yes. Financial theory suggests capital structure affects the value of a firm and, therefore, its cost of capital, to the extent it affects the expected level of cash flows that accrue to outside parties (i.e., other than debt and stock holders). Employing debt as a source of capital reduces a company's income taxes,[11] thereby reducing the cost of capital; however, as reliance on debt as a source of capital increases, so does the probability of default. As default becomes more probable, expected payments to attorneys, trustees, accountants and other outside 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.

[11] 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 common dividends and capital gains are lower than taxes on interest income because common dividends and capital gains 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 its precise measurement along each segment of the range of possible capital structures problematic; (2) the optimal capital structure is a function of operating risk, which is dynamic; and (3) the relative costs of the different types of capital vary with dynamic market conditions. Consequently, one should determine whether the capital structure is consistent with the financial strength necessary to access the capital markets under most conditions, and if so, whether the cost of that financial strength is reasonable.

Towards that end, I compared the Company's average 2005 capital structure to utility industry benchmarks. 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.[12] Although no formula exists for determining a credit rating, S&P publishes utility benchmark values, by business profile score, for three financial ratios it uses to determine credit ratings, including the total debt ratio. S&P currently assigns Nicor Gas a corporate credit rating of AA and a business profile score of 2.[13] According to S&P, AA-rated utilities with a business profile score of 2 should have a total debt to total capital ratio between 45% and 52%.[14] Nicor Gas' average 2005 total debt ratio is 50.27%,

[12] Standard & Poor's Utilities Rating Service: Industry Commentary, May 20, 1996, p. 1.
[13] Standard & Poor's, "U.S. Utility and Power Ranking List," February 2, 2005.
[14] Standard & Poor's, "New Business Profile Scores Assigned for U.S. Utility and Power Companies; Financial Guidelines Revised," June 2, 2004.

which is within the benchmark range for an AA rating. Thus, the Company's capital structure is reasonable for rate-making purposes.

Cost of Long-term Debt

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

A. Nicor Gas' average embedded cost of long-term debt for 2005 equals 6.72%, as shown on page 1 of Schedule 5.3. That cost reflects the adjustments to the Company's proposed debt schedule discussed previously.

Cost of Short-term Debt

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

A. Nicor Gas' cost of short-term debt is 2.58%. Nicor Gas issues short-term debt in the form of commercial paper[15] rated A-1+ and P-1 by S&P and Moody's, respectively.[16] The interest rate on commercial paper varies with grade and term to maturity. The Company states that the term-to-maturity of its commercial paper averaged approximately 58 days in 2003 and assumes it will be the same in 2005.[17] Therefore, to estimate Nicor Gas' cost of short-term debt, I converted the February 7, 2005 2.53% discount rate on 60-day, AA non-financial commercial paper into an annual yield of 2.58% using the following formula:[18, 19]

[15] Company response to Staff data request MGM 1.02, footnote (1).
[16] Standard and Poor's: Ratings Direct, www.ratingsdirect.com; Moody's Investors Service, www.moodys.com.
[17] Company response to Staff data request MGM 1.02, footnote (6).
[18] "Commercial Paper," Federal Reserve Release, www.federalreserve.gov/Releases/cp/histrates.txt.

$$Annual\ yield = \left(\frac{discount\ rate \times \left(\frac{days\ to\ maturity}{360} \right)}{1 - discount\ rate \times \left(\frac{days\ to\ maturity}{360} \right)} \right) \times \left(\frac{365}{days\ to\ maturity} \right)$$

Cost of Preferred Stock

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

A. Nicor Gas' embedded cost of preferred stock is 4.77%, as shown on Schedule 5.4.

Cost of Common Equity

Q. What is your estimate of the Company's cost of common equity?

A. My analysis indicates that the cost of common equity for Nicor Gas' gas distribution operations equals 9.54%, as presented on Schedule 5.1.

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

A. I measured the investor required rate of return on common equity for Nicor Gas with discounted cash flow ("DCF") and risk premium models. Since Nicor Gas does not have market-traded common stock,[20] DCF and risk premium models cannot be applied directly to Nicor Gas; for this reason, and to minimize

[19] The Federal Reserve classifies companies with at least one "1" or "1+" commercial paper rating but no ratings other than "1" as "AA." Federal Reserve Release, "About Commercial Paper and Rate Calculations," www.federalreserve.gov/Releases/cp/about.htm.

[20] Nicor Gas Exhibit 3.0, p. 4.

measurement error, I applied both models to a sample of natural gas utility companies ("Gas Sample").

Sample Selection

Q. How did you select a gas sample?

A. Since this proceeding will set rates for the Company's gas distribution operations, under ideal circumstances the sample should reflect the risks associated with the provision of those services. Therefore, I selected a gas sample based on the following criteria. First, I began with a list of all domestic publicly-traded companies assigned an industry number of 4924 (i.e., natural gas distribution companies) within *S&P Utility Compustat*. Second, I removed any company that had no Zacks Investment Research ("Zacks") long-term growth rates. Third, I eliminated any company that does not have a stable dividend payment history. Fourth, I eliminated any company involved in any significant merger activity. Finally, I eliminated any company that derives less than 70% of its revenues from regulated gas delivery operations. The eight remaining companies, as presented on Schedule 5.6, compose the Gas Sample.

Q. Please discuss the criteria by which you selected the Gas Sample.

A. Because it includes only companies that operate primarily as utility gas distributors, the operating risk of the Gas Sample is similar to that of Nicor Gas' natural gas distribution utility business. In addition, limiting the sample to companies with no significant merger activity ensures that the price data for each company is not distorted by the inclusion of a merger premium. The remaining criteria ensure that I have the data necessary to complete my analysis.

DCF Analysis

Q. Please 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 risks becomes unnecessary to implement a 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 flow investors expect it to generate. Specifically, the market value of common stock equals the cumulative value of the expected stream of future dividends after each is discounted by the investor required rate of return.

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

A. As it applies to common stocks, DCF analysis is generally employed to determine appropriate stock prices given a specified discount rate. Since a DCF model incorporates time-sensitive valuation factors, it must correctly reflect the timing of the dividend payments that stock prices embody. As such, incorporating stock prices that the financial market sets on the basis of quarterly dividend payments into a model that ignores the time value of quarterly cash flows constitutes a misapplication of DCF analysis.

The companies in 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:

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

where P ≡ the current stock price;

$D_{1,q}$ ≡ the next 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 next dividend payment dates, in years; and

g ≡ the expected dividend growth rate.

The expression $(1 + k_e)^{1-[x+0.25(q-1)]}$ is a future value factor that measures the value of each expected dividend ($D_{1,q}$) one year from the stock price measurement date. The DCF model above assumes that dividends will grow at a constant rate and that the market value of common stock (i.e., stock price) equals the sum of the discounted value of each dividend.

Q. How did you estimate the growth rate parameter?

A. Determining the market-required rate of return with the DCF methodology requires a growth rate that reflects the expectations of investors. Although the current market price reflects aggregate investor expectations, market-consensus expected growth rates cannot be measured directly. Therefore, I measured

market-consensus expected growth indirectly with growth rates forecasted by securities analysts that are disseminated to investors.

Zacks Investment Research, Inc. ("Zacks") summarizes and publishes the earnings growth expectations of financial analysts employed by the research departments of investment brokerage firms. Zacks provides forward-looking, expectational estimates of earnings growth. Schedule 5.7 presents the analysts' growth rate estimates for the companies in the Gas Sample.

Q. How did you measure the stock price?

A. A current stock price reflects all information that is available and relevant to the market; thus, it represents the market's assessment of the common stock's current value. I measured each company's current stock price with its closing market price from February 7, 2005. Those stock prices appear on Schedule 5.8.

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

past growth expectations will likely produce an inaccurate estimate of the market-required rate of return on common equity.

Q. Please explain the significance of the column titled "Next Dividend Payment Date" shown on Schedule 5.8.

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.

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

A. Most utilities declare and pay the same dividend per share for four consecutive quarters before adjusting the rate. Consequently, I assumed the current dividend rate will remain in effect for a minimum of four quarters and then adjust during the same quarter it changed during the preceding year; if the utility did not change its dividend during the last year, I assumed the rate would change during the next quarter. The average expected growth rate was applied to the current dividend rate to estimate the expected dividend rate.[21] Schedule 5.8 presents the current quarterly dividends. Schedule 5.9 presents the expected quarterly dividends.

[21] Unless the next dividend has already been declared, in which case the declared dividend value is entered. This was the case for AGL Resources, Inc.; Laclede Group, Inc.; and Peoples Energy Corp.

Q. Based on your DCF analysis, what is the estimated required rate of return on common equity for the Gas Sample?

A. My DCF analysis estimated that the required rate of return on common equity for the Gas Sample averages 9.14%, as shown on Schedule 5.10. That result was derived from the growth rates presented on Schedule 5.7, the stock prices and dividend payment dates presented on Schedule 5.8, and the expected quarterly dividends presented on Schedule 5.9.

Risk Premium Analysis

Q. Please describe the risk premium model.

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

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

equal risk, they would purchase the security with the higher expected return. In equilibrium, two securities with equal quantities of risk have equal required rates of return.

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

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

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

R_f ≡ the risk-free rate;

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

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.

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

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

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

A. The proxy for the nominal risk-free rate should contain no risk premium and reflect similar inflation and real risk-free rate expectations to the security being analyzed through the risk premium methodology.[22] The yields of fixed income securities include premiums for default and interest rate risk. Default risk pertains to the possibility of default on principal or interest payments. Securities of the United States Treasury are virtually free of default risk by virtue of the federal government's fiscal and monetary authority. Interest rate risk pertains to the effect of unexpected interest rate fluctuations on the value of securities.

Since common equity theoretically has an infinite life, its market-required rate of return reflects the inflation and real risk-free rates anticipated to prevail over the long run. U.S. Treasury bonds, the longest term treasury securities, were issued with terms to maturity of thirty years;[23] 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 bonds are more likely to incorporate within their yields the inflation and real risk-free rate expectations that drive, in part, the prices of common stocks than either U.S. Treasury notes or Treasury bills.

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

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

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

premium for interest rate risk. Thus, in terms of interest rate risk, U.S. Treasury bill yields more accurately measure the risk-free rate.

Q. Given 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 the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bills and the prices of common stocks are dissimilar?

A. No. To the contrary, short and long-term inflation and real risk-free rate expectations, including those that are reflected in the yields on U.S. Treasury bills, U.S. Treasury bonds, and the prices of common stocks, should equal over time. Any other assumption implausibly 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, in finite time periods, short and long-term expectations may differ. Short-term interest rates tend to be more volatile than long-term interest rates.[24] 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

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

should be used to measure the long-term nominal risk-free rate. If not, some other proxy or combination of proxies should be used.

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

A. Four-week U.S. Treasury bills are currently yielding 2.28%. Twenty-year U.S. Treasury bonds are currently yielding 4.54%. Both estimates are derived from quotes for February 7, 2005.[25] Schedule 5.11 presents the published quotes and effective yields.

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

A. In terms of the gross domestic product ("GDP") price index, the Energy Information Administration ("EIA") forecasts the inflation rate will average 2.5% annually during the 2005-2025 period.[26] Likewise, Global Insight forecasts the GDP price index will average 2.5% annually during the 2005-2029 period.[27] In terms of the consumer price index ("CPI"), the *Survey of Professional Forecasters* ("*Survey*") forecasts the inflation rate will average 2.5% during the next ten years.[28] In terms of real GDP growth, EIA forecasts the real risk-free rate will average 3.0% during the 2005-2025 period.[29] Global Insight forecasts

[25] The Federal Reserve Board, *Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update*, www.federalreserve.gov/releases/H15/update/, February 8, 2005.

[26] Energy Information Administration, *EIA 2005 Annual Energy Outlook*, Table 19, Macroeconomic Indicators, February 2005.

[27] Global Insight, "The U.S. Economy: The 25 Year Focus," Table Summary 1: Annual, November 2004.

[28] *Survey of Professional Forecasters*, Federal Reserve Bank of Philadelphia, www.phil.frb.org/files/spf/survq404.htm, November 22, 2004. The *Survey* aggregates the forecasts of approximately thirty forecasters.

[29] Energy Information Administration, *EIA Annual Energy Outlook*, Table 19, Macroeconomic Indicators, February 2005.

the real risk-free rate will average 3.0% during the 2005-2029 period.[30] The *Survey* forecasts real GDP growth will average 3.4% during the next ten years.[31] Those forecasts imply a long-term, nominal risk-free rate between 5.6% and 6.0%.[32] Therefore, EIA, Global Insight, and *Survey* forecasts of inflation and real GDP growth expectations suggest that, currently, the U.S. Treasury bond yield more closely approximates the long-term risk-free rate. It should be noted, however, the U.S. Treasury bond yield is an upwardly biased estimator of the long-term risk-free rate due to the inclusion of an interest rate risk premium associated with its relatively long term to maturity.

Q. Please 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.[33] The real risk-free rate excludes the premium for inflation. 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

[30] Global Insight, "The U.S. Economy: The 25 Year Focus," Table Summary 1: Annual, November 2004.

[31] *Survey of Professional Forecasters*, Federal Reserve Bank of Philadelphia, www.phil.frb.org/files/spf/survq104.html, February 23, 2004.

[32] 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.

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

are a function of production opportunities and consumption preferences without the effects of either a risk premium or an inflation premium.

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

A. The expected rate of return on the market was estimated by conducting a DCF analysis on the firms composing the S&P 500 Index ("S&P 500") as of December 31, 2004. That analysis used dividends information reported in the January 2005 edition of S&P's *Security Owner's Stock Guide* and closing market prices reported by Zacks on January 3, 2005. January 3, 2005 growth rate estimates were also obtained from Zacks. Firms not paying a dividend as of December 31, 2005, 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 on January 3, 2005. The estimated weighted average expected rate of return for the remaining 378 firms, composing 85.42% of the market capitalization of the S&P 500, equals 13.40%.

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

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

Value Line estimates beta for a security with the following model using an ordinary least-squares technique:[34]

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

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

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

a_j ≡ the intercept term for security j;

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 Value Line regression employs 259 weekly observations of stock return data. Then, an adjusted beta is estimated through the following equation:

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

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

$$R_{j,t} - R_{f,t} = \alpha + \beta (R_{m,t} - R_{f,t}) + \varepsilon_t$$

[34] Statman, Meir, "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*;

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

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

α ≡ the intercept term for security *j*;

β ≡ beta, the measure of market risk for security *j*; and

ε_t ≡ the residual term in period *t* for security *j*.

The regression analysis beta estimate for the Gas Sample was calculated in three steps. First, the U.S. Treasury bill return was subtracted from the average percentage change in the sample's stock prices and the percentage change in the NYSE Index to estimate the portfolio's return in excess of the risk-free rate. Second, the excess returns of the Gas Sample were 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, an adjusted beta is estimated through the following equation:

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

Q. What is the beta estimate for the Gas Sample?

A. The average Value Line beta for the Gas Sample is 0.76.[35] The regression beta estimate for the Gas Sample is 0.56. The average of those two estimates is 0.66.

[35] The Value Line Investment Survey, "Summary and Index," February 4, 2005, pp. 2-19.

Q. What required rate of return on common equity does the risk premium model estimate for the Gas Sample?

A. The risk premium model estimates a required rate of return on common equity of 10.39% for the Gas Sample. The computation of that estimate appears on Schedule 5.11.

Cost of Equity Recommendation

Q. Based on your entire analysis, what is your estimate of the cost of common equity for Nicor Gas' gas distribution operations?

A. A thorough analysis of the required rate of return on common equity requires both the application of financial models and the analyst's informed judgment. An estimate of the required rate of return on common equity based solely on judgment is inappropriate. Nevertheless, because techniques to measure the required rate of return on common equity necessarily employ proxies for investor expectations, judgment remains necessary to evaluate the results of such analyses. Along with DCF and risk premium cost of equity analyses, I have considered the observable 5.31% rate of return the market currently requires on less risky A-rated long-term utility debt.[36] Based on my analysis, in my judgment the investor-required rate of return on common equity for Nicor Gas' gas distribution operations equals 9.54%.

[36] The Value Line Investment Survey, "Selection & Opinion," February 4, 2005. The Value Line Investment Survey does not publish an AA-rated long-term utility bond yield.

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

A. First, I estimated the investor-required rate of return for the Gas Sample, which is a simple average of the 9.14% DCF-derived results and the 10.39% risk premium-derived results for the Gas Sample, or 9.77%. 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.[37] In addition, measurement error has been minimized through the use of a sample, since estimates for a sample as a whole are subject to less measurement error than individual company estimates. Second, I adjusted the Gas Sample's investor-required rate of return downward by 23 basis points to reflect the lower risk of Nicor Gas relative to the Gas Sample. Thus, the investor-required rate of return on common equity for Nicor Gas equals 9.54%.

Q. Why did you adjust your estimate of the investor-required rate of return on common equity for the Gas Sample downward to estimate Nicor Gas' cost of common equity?

A. The Gas Sample serves as a proxy for the target company, Nicor Gas, and should therefore reflect the risks of Nicor Gas. If the proxy does not accurately reflect the risk level of the target company, an adjustment should be made. Therefore, a review of the relative risks of the Gas Sample and Nicor Gas is required. The S&P credit rating and S&P business profile score for the Gas Sample average approximately A and 2.75, respectively, as shown on Schedule 5.6. As noted previously, S&P currently assigns Nicor Gas a corporate credit

[37] Except as discussed above in regard to U.S. Treasury bond yields as proxies for the long-term risk-free rate.

rating of AA and a business profile score of 2. The Gas Sample's lower average credit rating and higher average business profile score indicate its risk is higher than that of Nicor Gas' gas distributions operations. Financial theory posits that investors require higher returns to accept greater exposure to risk. Conversely, the investor required return is lower for investments with less exposure to risk. Thus, in my judgment, given the full credit rating difference between Nicor Gas' credit rating and the average credit rating for the Gas Sample, an adjustment is required.

Q. How did you establish the 23 basis point adjustment you used to determine your cost of equity estimate for Nicor Gas?

A. The 23 basis point adjustment reflects the spread between A-rated and AA-rated 30-year utility debt yields.[38] In my judgment, this is a reasonable level of adjustment, since the average credit rating of the Gas Sample is A and Nicor Gas' credit rating is AA.

Q. Should the investor-required rate of return on common equity be adjusted for issuance costs?

A. No. Nicor Gas has not demonstrated that the issuance costs it has incurred have not been recovered. Without any such demonstration, no adjustment should be made. In response to the filing requirement of Administrative Code Part 285.4050, which requires a company to demonstrate that flotation costs for which it seeks recovery have not been recovered through rates, the Company states that it has had $478,277 in stock issuance expenses reported in Prime Account

[38] Reuters Corporate Spreads for Utilities, www.bondsonline.com, February 8, 2005.

214 since 1978.[39] However, an entry of stock issuance expenses on a company's books does not mean that those expenses have not been recovered.

Overall Cost of Capital Recommendation

Q. What are the overall costs of capital for the Companies?

A. As shown on Schedule 5.1, Nicor Gas' overall cost of capital equals 7.55%. That estimate incorporates the midpoint cost of common equity of 9.54%.

RESPONSE TO DR. MAKHOLM

Q. Please evaluate Dr. Makholm's analysis of Nicor Gas' cost of common equity.

A. Dr. Makholm's analysis contains five significant errors that lead him to over-estimate Nicor Gas' cost of common equity:

1. The sustainable growth rate estimate used in his DCF model is biased upward due the inconsistent combination of incompatible data from different time periods.

2. The sustainable growth rate is likely overstated because it assumes all new equity is issued at market prices.

[39] Nicor Gas workpaper WP (D-5) 1.

3. The Value Line growth rate used in his DCF model is biased upward due to a failure to normalize the base earnings per share ("EPS") from which he calculated growth rates.

4. He failed to make a downward adjustment to his cost of common equity estimate to reflect the lower risk of Nicor Gas relative to the proxy sample from which his estimate was based.

5. He made an unwarranted upward adjustment to his cost of common equity estimate to compensate for flotation costs that he neither demonstrated to have been incurred for the benefit of Nicor Gas' utility operations nor verified to remain unrecovered.

Growth Rate Estimate

Q. How did Dr. Makholm derive his growth rate estimate?

A. Dr. Makholm adopted the average of three sources of growth rates for use in his DCF model. Like Staff, he employed the growth rates published by Zacks for each company in his sample. In addition, he developed two other growth rate estimates for each company in his sample from data published by Value Line. The first of these, his "sustainable growth" methodology, is intended to measure growth through new investment in each company in his sample, in the form of both earnings retention and the sale of new stock at a premium to book value.

The other set of growth rate estimates Dr. Makholm developed, which he refers to as the "Value Line" growth rates,[40] reflects the growth rate implied by the

[40] Nicor Gas Exhibit 4.0, p. 29.

difference between the 2003 EPS reported in Value Line and Value Line's forecast of EPS for the 2007-2009 period.[41] For purposes of his calculation, Dr. Makholm treats the EPS forecast for the 2007-2009 period as a 2008 EPS forecast. Thus, he calculates the implied geometric average annual growth of EPS over a five-year period (2003-2008).

Q. How is Dr. Makholm's sustainable growth rate methodology flawed?

A. Both the "BR" and the "SV" components of the sustainable growth rate estimates are flawed. The BR component, which is intended to measure the expected growth from reinvested earnings by multiplying the earnings retention ratio, B, by the expected return on the earnings retained, R, contains two flaws. First, to develop his estimate of the R portion of the BR component, Dr. Makholm mismatches data from different time periods, creating a meaningless entanglement of the data and its underlying assumptions. Dr. Makholm claims that he commingled 2003 book value per share data with a projected return on common equity for the 2007-2009 period to derive an estimate of normalized earnings.[42] This implies that the return reported for 2003 is "abnormal" and the return Value Line forecasted for the 2007-2009 period is "normal." Dr. Makholm then works backward, multiplying the 2003 book value per share by the "normal" 2007-2009 return to derive a "normalized" 2003 EPS.[43] This approach, by starting with the conclusion (i.e., a "normalized" rate of return on end-of-year book value of common equity), if carried through to its logical end as consistency requires, would result in a repeated loop of calculations that would ultimately lead

[41] Nicor Gas Exhibit 4.12.
[42] See Schedule 5.13.
[43] In contrast, Value Line derives the return on common equity for a given period by dividing the EPS by the book value per share reported for that same period.

to a different conclusion (i.e., rate of return on end-of-year book value of common equity). For example, using the data in Nicor Gas Exhibit 4.10 for Cascade Natural Gas, applying the 12.0% return forecasted for 2007-2009 to the $10.11 end-of-period 2003 book value, as Dr. Makholm did, produces a "normalized" 2003 EPS of $1.21, as opposed to the $0.87 EPS Cascade actually earned in 2003. However, had Cascade actually experienced an EPS of $1.21 in 2003, it's end-of-period 2003 book value would be higher than $10.11, which would imply a lower return on that higher end-of-period 2003 book value of common equity than the 12.0% Dr. Makholm assumed.[44]

Second, having developed his "normalized" average return for 2003, Dr. Makholm compounded the errors in the BR component of his sustainable growth rates by developing his own biased estimate of the retention ratio, B, rather than using, for consistency, the retention ratio implied by the "normalized" 2003 EPS he calculated (i.e., the 2003 end-of-year book value per share multiplied by the forecasted return for 2007-2009). Once again, Dr. Makholm commingled data from different time periods. To derive his retention ratio, he divided Value Line's forecast of dividend per share for 2007-2009 by the product of the "normalized" return on average book value for 2003 and Value Line's forecasted end-of-period book value of common equity for 2007-2009, and subtracted the result from one. This produced an average retention ratio for his sample of 43.0%.[45] In contrast, the "normalized" 2003 EPS and the 2003 dividends for his sample imply an

[44] This assumes that less than 100% of the additional earnings from the "normalized" EPS, relative to the actual EPS, would be paid out in dividends. That is a reasonable assumption, since company dividend policies are typically based on normalized expectations for future earnings, rather than on individual year-to-year earnings, to facilitate stable dividend payments, which was one of Dr. Makholm's criteria for including companies in his sample.

[45] Nicor Gas Exhibit 4.10.

average retention ratio of only 32.5%.[46] Thus, if, despite the flaws discussed above, one accepts Dr. Makholm's calculation of the R portion of the BR component, for consistency, the corresponding implied retention ratios, B, should be adopted. This would produce a BR component of 3.86%, rather than the 4.98% Dr. Makholm calculated, reducing his sustainable growth rate estimate by 1.12 percentage points.

In addition, Dr. Makholm's sustainable growth rate estimate is not only internally inconsistent, as discussed above, but is inconsistent with its application in Dr. Makholm's DCF model. The retention ratio Dr. Makholm calculates for the BR component of his sustainable growth rate is a forecasted 2007-2009 retention ratio, but the dividend yield he uses in his DCF model incorporates dividend expectations for 2003-2007 as well as 2007-2009 and beyond. Dr. Makholm acknowledges that the 2007-2009 Value Line forecasts reflect a decreasing payout ratio.[47] All else equal, a decreasing payout ratio produces lower dividend growth in the near term than the growth Dr. Makholm assumes. Thus, Dr. Makholm combines in his DCF model the higher 2003 dividend yield, reflecting the higher near-term payout ratio, with a higher growth rate that reflects the lower 2007-2009 payout ratio.

The SV component of Dr. Makholm's sustainable growth rate estimates, which is intended to measure the expected growth from new common stock issuances, is likely overstated due to his assumption that all new common stock will be issued at the prevailing market price. Dr. Makholm states that investors can expect

[46] See footnote 44.
[47] See Schedule 5.13.

growth through the sale of new stock, S, at a premium over book value, V.[48] To estimate that premium, Dr. Makholm divided the year-end 2003 book value per share into the adjusted closing market price as of September 17, 2003.[49, 50] That data produces an average market value to book value ratio for Dr. Makholm's sample of approximately 1.9x. However, the Company has not provided any documentation to support the assumption that the new common stock *was*, let alone *will be*, issued at a 90% premium to book value. Indeed, when asked to provide information relating to the price at which companies in his sample issued new common stock, Dr. Makholm stated that he "does not have, and did not use, the information specified."[51] Thus, the 1.9x average book value to market value ratio assumed for Dr. Makholm's sample and the resulting sustainable growth rate estimates are questionable, at best, if not upwardly biased. In fact, given the use of stock options for officer and employee compensation, it is likely that some, if not all, of the new common stock issuances for the companies in Dr. Makholm's sample represent exercised stock options, which would certainly be issued at a price below the prevailing market price. To the degree that any of the new common stock was issued at less than a 90% premium over book value, the SV component of the sustainable growth rate estimates is overstated.

Q. How is Dr. Makholm's "Value Line" growth rate methodology flawed?

A. Dr. Makholm's "Value Line" growth rate estimate equals the geometric average annual growth in a company's EPS from 2003 to Value Line's forecasted EPS for 2007-2009. However, he made no attempt to normalize the base-year 2003 EPS

[48] Nicor Gas Exhibit 4.0, p. 28.
[49] He adjusts the September 17, 2003 closing market price data to remove the accrued portion of the next expected dividend. Nicor Gas Exhibit 4.0, pp. 24-26.
[50] Nicor Gas Exhibit 4.11.
[51] Company response to Staff data request MGM 2.10.

data in his "Value Line" growth rate estimates, despite acknowledging the importance of normalizing those same earnings to calculate his sustainable growth rate estimates.[52] Because EPS can fluctuate substantially from year to year, the EPS in any single year may be either above or below "normal." This is problematic when attempting to derive growth rate estimates through a comparison of a given year's EPS to a fixed forecast of future EPS, as the implied growth rate can change significantly depending on the base-year selected. For example, as shown on Schedule 5.12, the 2003 EPS for Cascade Natural Gas ("Cascade") is significantly lower than that for 2001, 2002, or 2004. Thus, the growth rate implied by the geometric average change in EPS between 2003 and 2007-2009 is significantly higher than those implied by the geometric average changes in EPS from 2001, 2002, or 2004 to 2007-2009. To illustrate, in contrast to Dr. Makholm's 13.66% 5-year average growth rate estimate for Cascade, the 6-year average growth rate implied by the geometric average change in Cascade's EPS from 2002 to 2007-2009 equals 6.51%. Similarly, the average reported 2003 EPS for all six companies in Dr. Makholm's sample is significantly lower than that for 2001, 2002, or 2004. Thus, the average growth rate for the entire sample, upon which Dr. Makholm's cost of equity estimate relies, is inflated due to failure to normalize his base-year EPS data.

Curiously, in opting to calculate his own "Value Line" growth rate estimates using Value Line EPS forecasts, Dr. Makholm ignores the EPS growth rate estimates explicitly published by Value Line, which are imbedded in the Value Line forecasts. Significantly, "since nonrecurring events or cyclical swings in any one year can distort the growth picture of a company, [Value Line's EPS growth rate

[52] See Schedule 5.13.

estimates] are measured from the average of three base years and the average of three ending years," rather than relying upon the EPS for any single base year, as Dr. Makholm does.[53, 54] The average of Value Line's published EPS growth estimates for the companies in Dr. Makholm's sample, exclusive of Nicor, Inc.,[55] is more than two full percentage points below the average of Dr. Makholm's calculated "Value Line" growth rates for the same five companies.[56]

Relative Risk Adjustment

Q. Why is a downward adjustment to the results of Dr. Makholm's sample necessary?

A. As I noted previously, Nicor Gas has been assigned a credit rating of AA and a business profile score of 2 by S&P. S&P states, "[a]n obligor rated AA has a VERY STRONG capacity to meet its financial commitments. It differs from the highest rated obligors only in small degree."[57] Further, an S&P business profile score of 2, on a scale of 1 to 10, reflects a low level of business risk. In contrast, Dr. Makholm's proxy sample has an average credit rating of A and business profile score of 2.5. While such an average credit rating and business profile score indicate that Dr. Makholm's sample comprises fairly low-risk companies on average, it nonetheless indicates that his sample is significantly riskier, overall, than the target company, Nicor Gas, for which it serves as a proxy. Thus, to estimate the required rate of return on common equity for Nicor Gas, a downward

[53] The Value Line Investment Survey, "Value Line Methods of Evaluating Common Stocks," Copyright 1979.
[54] This should not be construed as a Staff endorsement of Value Line's normalization methodology or its growth rate estimates.
[55] Value Line designated Nicor, Inc.'s expected growth rate as not meaningful.
[56] See Schedule 5.12.
[57] Standard & Poor's, "User's Guide," Copyright 1997, p. 5.

adjustment to the results of Dr. Makholm's sample is necessary. Dr. Makholm's failure to make such an adjustment causes him to overestimate the required rate of return on common equity for Nicor Gas.

Q. Dr. Makholm states that his sample selection criteria satisfy his first basic objective to assemble a group of companies with publicly-traded stock that are representative, on average, of the business risk faced by Nicor Gas' natural gas distribution operations.[58] Please comment.

A. A company's overall risk is composed of two types of risk, business risk and financial risk. Dr. Makholm's sample selection criteria only recognizes the business risk portion of total risk. Moreover, Dr. Makholm's sample selection criteria, which limited his sample to gas utility companies covered by Value Line that derive at least 80 percent of operating revenues from regulated utility operations, only provides a general comparison of business risk faced by Nicor Gas and the companies in his sample. As evidenced by their respective business profile scores of 2 and 2.5, Nicor Gas and Dr. Makholm's sample are similar in terms of business risk, with Dr. Makholm's sample being slightly riskier. However, the more significant difference in overall risk, as evidenced by Nicor Gas' AA rating and the sample's A average rating, indicates that Dr. Makholm's sample has a significantly higher degree of financial risk than Nicor Gas. For example, the ratio of total debt to total capital averaged 60.6% for Dr. Makholm's sample, as compared to 50.27% for Nicor Gas.[59] The cost of equity adopted for setting Nicor Gas' rates should reflect the total risk of Nicor Gas, not just its business risk.

[58] Nicor Gas Exhibit 4.0, p. 20.
[59] Standard & Poor's, "CreditStats: Gas Transmission & Distribution Utilities--Regulated," August 20, 2004; Standard & Poor's, "CreditStats: Energy Utilities--Diversified," August 20, 2004.

Flotation Cost Adjustment

Q. Why is Dr. Makholm's adjustment for flotation costs inappropriate?

A. The Commission Order from Commonwealth Edison Company, Docket No. 94-0065, states that "The Commission has traditionally approved [flotation cost] adjustments only when the utility anticipates it will issue stock in the test year or when it has been demonstrated that costs incurred prior to the test year have not been recovered previously through rates."[60] Moreover, that Order states that "[the utility] has the burden of proof on this issue." Thus, flotation costs are to be allowed only if a utility can verify both that it has incurred the specific amount of flotation costs for which it seeks compensation and that those costs have not been previously recovered through rates. The Company has done neither.

Dr. Makholm's common stock flotation cost adjustment would compensate Nicor Gas for an assumed issuance cost of 4.18%, based on issuance costs incurred by Nicor Gas' parent, Nicor, Inc., and a generalized flotation cost estimate based on a study of electric utilities.[61] The Company has not demonstrated that it actually incurred common stock flotation costs of that magnitude. First, the Company has failed to demonstrate that the proceeds raised through the Nicor, Inc. common stock issuances were used for the benefit of Nicor Gas' utility operations. Second, Nicor Gas has provided no documentation that verifies the "Estimated Company's Expenses" shown on Exhibit 4.13 for which it seeks compensation. Third, the Commission has repeatedly rejected the use of

[60] Order, Docket No. 94-0065, pp. 93-94.
[61] Nicor Gas Exhibit 4.0, p. 34 and Nicor Gas workpaper WP (D-5) 2.

generalized flotation cost adjustments in previous cases as an inappropriate basis for raising utility rates.[62]

The above discussion notwithstanding, even if the Company had verified that it incurred 4.18% flotation costs, it has not demonstrated that the issuance costs it has incurred have not previously been recovered through rates. The Company implies that it has not previously recovered its flotation costs through rates, stating that the Commission has not previously allowed recovery of flotation costs. However, the Company has provided no documentation to support this claim. Moreover, the Commission has stated that the lack of a reference to recovery of such costs in previous orders is not sufficient evidence to support an adjustment for flotation costs.[63] Significantly, the Commission rejected Nicor Gas' flotation cost adjustment proposal in its last gas rate case, Docket No. 95-0219.[64] The Company has provided no documentation that it has issued any new equity since that time, for which new issuance costs would have been incurred. Thus, Dr. Makholm's argument for a flotation cost adjustment is unsubstantiated and should be rejected.

Q. Please comment on Dr. Makholm's criticism of the CAPM model.

A. Dr. Makholm claims that, unlike the DCF model, the CAPM provides no measure of central tendency because the same risk-free rate applies to each company's cost of equity estimate.[65] Although Dr. Makholm is correct to suggest that the

[62] Order, Docket No. 01-0696, September 11, 2002, pp. 23-24; Order, Docket Nos. 02-0798/03-0008/03-0009 (Cons.), October 22, 2003, pp. 83 and 89; Order, Docket Nos. 01-0465/01-0530/01-0637 (Cons.), March 28, 2002, pp. 75 and 79.
[63] Order, Docket No. 91-0193, March 18, 1992, p. 106.
[64] Order, Docket No. 95-0219, April 3, 1996, pp. 41 and 46.
[65] Nicor Gas Exhibit 4.0, p. 36.

use of a sample of several companies will not remove any *bias* in the risk-free rate input,[66] such a sample would provide a *measure of central tendency* for the beta component of the CAPM. Thus, using a sample of several companies as a proxy for Nicor Gas will reduce the error associated with the beta term.

Dr. Makholm states that "[b]ecause CAPM does not have the central tendency properties that DCF has, there is no reason to focus primarily on a comparable group rather than Nicor[, Inc.] especially where, as here, Nicor[, Inc.]'s beta is significantly different from that of the proxy group."[67] Unfortunately, Dr. Makholm's focus on potential bias in the risk-free rate causes him to ignore the problem of beta measurement error. An analysis of Nicor, Inc.'s beta indicates that a small number of stock price observations, coinciding with news releases regarding problems with its public accounting data and performance-based rates program, increased its beta, despite the low level of risk implied by Nicor, Inc.'s largely regulated operations, S&P credit rating of AA, and S&P business profile score of 3. Because Nicor, Inc.'s beta is a significant outlier relative to the other companies in both my sample and Dr. Makholm's sample, it should not be relied upon exclusively, as Dr. Makholm's statement implies.

Q. Does this conclude your direct testimony?

A. Yes, it does.

[66] Staff takes great care in selecting its risk-free rate in order to mitigate the potential bias that may be introduced through the selection of a risk-free rate. An extensive discussion of my risk-free rate selection process can be found on pages 20-24 of this testimony.

[67] Nicor Gas Exhibit 4.0, p. 37.

Nicor Gas

Weighted Average Cost of Capital

Company Proposal
December 31, 2005

	Amount	Percent of Total Capital	Cost	Weighted Cost
Long-term Debt	$500,376,000	43.51%	6.72%	2.92%
Preferred Stock	$1,401,000	0.12%	4.77%	0.01%
Common Equity	$648,156,000	56.37%	11.22% *	6.33%
Total Capital	$1,149,933,000	100.00%		
Weighted Average Cost of Capital				**9.26%**

* From Nicor Gas Corrected Exhibit 4.2 supplied in Company response to Staff data request MGM 2.05(1).

Staff Proposal
2005 Average

	Amount	Percent of Total Capital	Cost	Weighted Cost
Short-term Debt	$177,608,285	13.62%	2.58%	0.35%
Long-term Debt	$478,009,628	36.65%	6.72%	2.46%
Preferred Stock	$1,386,130	0.11%	4.77%	0.01%
Common Equity	$647,271,946	49.63%	9.54%	4.73%
Total Capital	$1,304,275,990	100.00%		
Weighted Average Cost of Capital				**7.55%**

Nicor Gas

Balance of Short-term Debt
2005 Average

End of Month Balance

Date (A)	Gross Short-term Debt Outstanding (B)	CWIP (C)	CWIP Accruing AFUDC (D)	Net Short-term Debt Outstanding (E)	Monthly Average (F)	Remaining CWIP Accruing AFUDC (G)	Monthly Average (H)
Dec-04	$ 375,000,000	$ 26,043,826	$ 18,937,172	$ 356,062,828		$ -	
Jan-05	350,400,000	29,334,110	24,834,110	325,565,890	$ 340,814,359	-	$ -
Feb-05	182,600,000	30,412,754	25,912,754	156,687,246	241,126,568	-	-
Mar-05	39,300,000	33,228,316	28,728,316	10,571,684	83,629,465	-	-
Apr-05	-	36,918,660	32,418,660	-	5,285,842	32,418,660	16,209,330
May-05	-	38,698,004	34,198,004	-	-	34,198,004	33,308,332
Jun-05	-	33,154,059	28,654,059	-	-	28,654,059	31,426,032
Jul-05	80,500,000	35,379,303	30,879,303	49,620,697	24,810,349	-	14,327,030
Aug-05	185,400,000	37,286,047	32,786,047	152,613,953	101,117,325	-	-
Sep-05	286,600,000	39,592,009	35,092,009	251,507,991	202,060,972	-	-
Oct-05	370,900,000	41,944,653	37,444,653	333,455,347	292,481,669	-	-
Nov-05	470,700,000	44,297,297	39,797,297	430,902,703	382,179,025	-	-
Dec-05	515,800,000	35,615,009	31,115,009	484,684,991	457,793,847	-	-
Average					**$ 177,608,285**		**$ 7,939,227**

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

Sources: Nicor Gas workpapers WP (D-2) 11 and WP (D-2) 11 and Company response to Staff Data Request MGM 1.02.

Nicor Gas

Embedded Cost of Long-term Debt
Average 2005

	Coupon Rate, Debt Issue Type, (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Unamortized Debt Discount or (Premium) (F)	Unamortized Debt Expense (G)	Carrying Value (H)	Coupon Interest Expense (I)	Amortization of Debt Discount or (Premium) (J)	Amortization of Debt Expense (K)	Total Expense (L)
	First Mortgage Bonds											
1	5.550%	12/17/2001	12/15/2006	$50,000,000	$50,000,000	$87,475	$48,792	$49,863,733	$2,775,000	$60,072	$33,507	$2,868,579
2	5.875%	8/17/2001	8/15/2008	75,000,000	75,000,000	300,708	63,155	74,636,137	4,406,250	96,237	20,212	4,522,699
3	5.370%	2/1/1999	2/1/2009	50,000,000	50,000,000	95,027	58,621	49,846,352	2,685,000	26,467	16,327	2,727,794
4	6.625%	1/25/2001	2/1/2011	75,000,000	75,000,000	459,521	73,279	74,467,200	4,968,750	82,198	13,108	5,064,056
5	7.200%	5/18/2001	5/15/2016	50,000,000	50,000,000	360,706	67,523	49,571,771	3,600,000	33,159	6,207	3,639,366
6	6.580%	2/15/1998	2/15/2028	50,000,000	50,000,000	342,030	158,303	49,499,666	3,290,000	15,108	6,992	3,312,100
7	5.800%	12/1/2003	12/1/2023	50,000,000	50,000,000	624,821	219,398	49,155,781	2,900,000	33,905	11,905	2,945,810
8	5.900%	12/1/2003	12/1/2032	50,000,000	50,000,000	421,194	225,248	49,353,557	2,950,000	15,351	8,210	2,973,561
9	5.900%	12/1/2003	12/1/2033	50,000,000	50,000,000	422,003	112,011	49,465,986	2,950,000	14,840	3,939	2,968,779
				$500,000,000	$500,000,000	$3,113,487	$1,026,330	$495,860,183	$30,525,000	$377,337	$120,407	$31,022,744
	Redeemable Preferred Stock											
10	5.000%	2/19/1958			$1,066,667	($11,000)	$26,740	$1,050,926	$53,333	($2,000)	$4,862	$56,195
11	4.480%	3/17/1965			3,700,000	(2,621)	10,589	3,692,031	165,760	(210)	847	166,398
					$4,766,667	($13,621)	$37,330	$4,742,958	$219,093	($2,210)	$5,709	$222,593
	Retired Issues											
12	8.750%	2/1/1986	12/1/2016			$1,450,688	($25,795)	($1,424,893)		$126,963	($2,258)	$124,706
13	9.000%	7/1/1989	7/1/2019			1,888,124	85,373	(1,973,498)		134,800	6,095	140,895
14	8.875%	8/22/1991	8/15/2021			1,980,789	111,609	(2,092,398)		122,780	6,918	129,698
15	8.250%	7/21/1992	7/15/2022			3,474,339	151,737	(3,626,075)		203,798	8,901	212,699
16	7.375%	6/22/1993	7/1/2023			2,182,976	85,737	(2,268,713)		121,212	4,761	125,972
17	8.250%	7/21/1992	8/15/2024			2,507,648	97,383	(2,605,031)		131,046	5,089	136,135
18	7.260%	10/13/1995	10/15/2025			2,336,282	167,694	(2,503,975)		115,072	8,260	123,332
19	7.375%	10/15/1997	10/15/2027			2,628,626	101,940	(2,730,566)		117,861	4,571	122,432
						$18,449,471	$775,678	($19,225,149)		$1,073,533	$42,336	$1,115,869
				$500,000,000	$504,766,667	$21,549,337	$1,839,338	$481,377,992	$30,744,093	$1,448,660	$168,453	$32,361,206
												6.72%

Nicor Gas

Embedded Cost of Long-term Debt
December 31, 2005

	Coupon Rate, Debt Issue Type, (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Unamortized Debt Discount or (Premium) (F)	Unamortized Debt Expense (G)	Carrying Value (H)	Coupon Interest Expense (I)	Amortization of Debt Discount or (Premium) (J)	Amortization of Debt Expense (K)	Total Expense (L)
	First Mortgage Bonds											
1	5.550%	12/17/2001	12/15/2006	$50,000,000	$50,000,000	$57,439	$32,038	$49,910,523	$2,775,000	$60,072	$33,507	$2,868,579
2	5.875%	8/17/2001	8/15/2008	75,000,000	75,000,000	252,589	53,049	74,694,361	4,406,250	96,237	20,212	4,522,699
3	5.370%	2/1/1999	2/1/2009	50,000,000	50,000,000	81,793	50,458	49,867,749	2,685,000	26,467	16,327	2,727,794
4	6.625%	1/25/2001	2/1/2011	75,000,000	75,000,000	418,422	66,725	74,514,853	4,968,750	82,198	13,108	5,064,056
5	7.200%	5/18/2001	5/15/2016	50,000,000	50,000,000	344,127	64,419	49,591,454	3,600,000	33,159	6,207	3,639,366
6	6.580%	2/15/1998	2/15/2028	50,000,000	50,000,000	334,477	154,807	49,510,716	3,290,000	15,108	6,992	3,312,100
7	5.800%	12/1/2003	12/1/2023	50,000,000	50,000,000	607,869	213,445	49,178,686	2,900,000	33,905	11,905	2,945,810
8	5.900%	12/1/2003	12/1/2032	50,000,000	50,000,000	413,519	221,143	49,365,338	2,950,000	15,351	8,210	2,973,561
9	5.900%	12/1/2003	12/1/2033	50,000,000	50,000,000	414,584	110,042	49,475,375	2,950,000	14,840	3,939	2,968,779
				$500,000,000	$500,000,000	$2,924,818	$966,127	$496,109,055	$30,525,000	$377,337	$120,407	$31,022,744
	Redeemable Preferred Stock											
10	5.000%	2/19/1958			$1,000,000	($10,000)	$24,309	$985,691	$50,000	($2,000)	$4,862	$52,862
11	4.480%	3/17/1965			3,600,000	(2,516)	10,166	3,592,350	161,280	(210)	847	161,918
					$4,600,000	($12,516)	$34,475	$4,578,041	$211,280	($2,210)	$5,709	$214,779
	Retired Issues											
12	8.750%	2/1/1986	12/1/2016			$1,387,206	($24,666)	($1,362,540)		$126,963	($2,258)	$124,706
13	9.000%	7/1/1989	7/1/2019			1,820,724	82,326	(1,903,050)		134,800	6,095	140,895
14	8.875%	8/22/1991	8/15/2021			1,919,399	108,150	(2,027,549)		122,780	6,918	129,698
15	8.250%	7/21/1992	7/15/2022			3,372,440	147,286	(3,519,726)		203,798	8,901	212,699
16	7.375%	6/22/1993	7/1/2023			2,122,370	83,356	(2,205,727)		121,212	4,761	125,972
17	8.250%	7/21/1992	8/15/2024			2,442,125	94,839	(2,536,964)		131,046	5,089	136,135
18	7.260%	10/13/1995	10/15/2025			2,278,746	163,564	(2,442,309)		115,072	8,260	123,332
19	7.375%	10/15/1997	10/15/2027			2,569,695	99,655	(2,669,350)		117,861	4,571	122,432
						$17,912,705	$754,509	($18,667,214)		$1,073,533	$42,336	$1,115,869
				$500,000,000	$504,600,000	$20,825,008	$1,755,111	$482,019,881	$30,736,280	$1,448,660	$168,453	$32,353,392
												6.71%

Nicor Gas

Embedded Cost of Long-term Debt
December 31, 2004

	Coupon Rate, Debt Issue Type, (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Unamortized Debt Discount or (Premium) (F)	Unamortized Debt Expense (G)	Carrying Value (H)	Coupon Interest Expense (I)	Amortization of Debt Discount or (Premium) (J)	Amortization of Debt Expense (K)	Total Expense (L)
	First Mortgage Bonds											
1	5.550%	12/21/2001	12/15/2006	$50,000,000	$50,000,000	$117,512	$65,545	$49,816,943	$2,775,000	$60,072	$33,507	$2,868,579
2	5.875%	8/24/2001	8/15/2008	75,000,000	75,000,000	348,827	73,261	74,577,912	4,406,250	96,237	20,212	4,522,699
3	5.370%	2/5/1999	2/1/2009	50,000,000	50,000,000	108,260	66,785	49,824,955	2,685,000	26,467	16,327	2,727,794
4	6.625%	2/1/2001	2/1/2011	75,000,000	75,000,000	500,620	79,833	74,419,547	4,968,750	82,198	13,108	5,064,056
5	7.200%	5/29/2001	5/15/2016	50,000,000	50,000,000	377,286	70,626	49,552,088	3,600,000	33,159	6,207	3,639,366
6	6.580%	2/15/1998	2/15/2028	50,000,000	50,000,000	349,584	161,800	49,488,616	3,290,000	15,108	6,992	3,312,100
7	5.800%	12/11/2003	12/1/2023	50,000,000	50,000,000	641,773	225,351	49,132,876	2,900,000	33,905	11,905	2,945,810
8	5.900%	12/11/2003	12/1/2032	50,000,000	50,000,000	428,870	229,353	49,341,777	2,950,000	15,351	8,210	2,973,561
9	5.900%	12/11/2003	12/1/2033	50,000,000	50,000,000	429,423	113,980	49,456,596	2,950,000	14,840	3,939	2,968,779
				$500,000,000	$500,000,000	$3,302,155	$1,086,534	$495,611,311	$30,525,000	$377,337	$120,407	$31,022,744
	Redeemable Preferred Stock											
10	5.000%	4/30/1976			$1,200,000	($12,000)	$29,171	$1,182,829	$60,000	($2,000)	$4,862	$62,862
11	4.480%	4/30/1976			3,900,000	(2,725)	11,013	3,891,713	174,720	(210)	847	175,358
					$5,100,000	($14,725)	$40,184	$5,074,541	$234,720	($2,210)	$5,709	$238,219
	Retired Issues											
12	8.750%	2/1/1986	12/1/2016			$1,514,170	($26,924)	($1,487,246)		$126,963	($2,258)	$124,706
13	9.000%	7/1/1989	7/1/2019			1,955,524	88,421	(2,043,945)		134,800	6,095	140,895
14	8.875%	8/22/1991	8/15/2021			2,042,179	115,068	(2,157,247)		122,780	6,918	129,698
15	8.250%	7/21/1992	7/15/2022			3,576,238	156,187	(3,732,425)		203,798	8,901	212,699
16	7.375%	6/22/1993	7/1/2023			2,243,582	88,117	(2,331,699)		121,212	4,761	125,972
17	8.250%	7/21/1992	8/15/2024			2,573,171	99,928	(2,673,099)		131,046	5,089	136,135
18	7.260%	10/13/1995	10/15/2025			2,393,818	171,823	(2,565,641)		115,072	8,260	123,332
19	7.375%	10/15/1997	10/15/2027			2,687,556	104,226	(2,791,782)		117,861	4,571	122,432
						$18,986,238	$796,846	($19,783,083)		$1,073,533	$42,336	$1,115,869
				$500,000,000	$505,100,000	$22,273,667	$1,923,564	$480,902,769	$30,759,720	$1,448,660	$168,453	$32,376,832
												6.73%

Nicor Gas

Embedded Cost of Long-term Debt
December 31, 2003

	Coupon Rate, Debt Issue Type, (A)	Date Issued (B)	Maturity Date (C)	Original Principal Amount (D)	Face Amount Outstanding (E)	Unamortized Debt Discount or (Premium) (F)	Unamortized Debt Expense (G)	Carrying Value (H)	Coupon Interest Expense (I)	Amortization of Debt Discount or (Premium) (J)	Amortization of Debt Expense (K)	Total Expense (L)
	First Mortgage Bonds											
1	5.550%	12/21/2001	12/15/2006	$50,000,000	$50,000,000	$177,500	$99,005	$49,723,495	$2,775,000	$59,988	$33,460	$2,868,448
2	5.875%	8/24/2001	8/15/2008	75,000,000	75,000,000	444,991	93,458	74,461,551	4,406,250	96,164	20,197	4,522,611
3	5.370%	2/5/1999	2/1/2009	50,000,000	50,000,000	134,709	83,101	49,782,190	2,685,000	26,449	16,316	2,727,765
4	6.625%	2/1/2001	2/1/2011	75,000,000	75,000,000	582,781	92,935	74,324,284	4,968,750	82,161	13,102	5,064,013
5	7.200%	5/29/2001	5/15/2016	50,000,000	50,000,000	410,437	76,832	49,512,731	3,600,000	33,151	6,206	3,639,357
6	6.580%	2/15/1998	2/15/2028	50,000,000	50,000,000	364,690	168,791	49,466,519	3,290,000	15,106	6,991	3,312,097
7	5.800%	12/11/2003	12/1/2023	50,000,000	50,000,000	675,673	237,254	49,087,073	2,900,000	33,900	11,903	2,945,803
8	5.900%	12/11/2003	12/1/2032	50,000,000	50,000,000	444,220	237,562	49,318,218	2,950,000	15,350	8,209	2,973,559
9	5.900%	12/11/2003	12/1/2033	50,000,000	50,000,000	444,262	117,919	49,437,819	2,950,000	14,839	3,939	2,968,777
				$500,000,000	$500,000,000	$3,679,263	$1,206,857	$495,113,880	$30,525,000	$377,108	$120,323	$31,022,431
	Redeemable Preferred Stock											
10	5.000%	4/30/1976			$1,400,000	($14,000)	$34,033	$1,379,967	$70,000	($2,000)	$4,862	$72,862
11	4.480%	4/30/1976			4,200,000	(2,935)	11,860	4,191,075	188,160	(210)	847	188,798
					$5,600,000	($16,935)	$45,893	$5,571,042	$258,160	($2,210)	$5,709	$261,659
	Retired Issues											
12	8.750%	2/1/1986	12/1/2016			$1,641,104	($29,181)	($1,611,923)		$126,934	($2,257)	$124,677
13	9.000%	7/1/1989	7/1/2019			2,090,299	94,515	(2,184,814)		134,775	6,094	140,869
14	8.875%	8/22/1991	8/15/2021			2,164,938	121,985	(2,286,923)		122,759	6,917	129,676
15	8.250%	7/21/1992	7/15/2022			3,780,004	165,086	(3,945,090)		203,766	8,899	212,665
16	7.375%	6/22/1993	7/1/2023			2,364,776	92,877	(2,457,653)		121,194	4,760	125,954
17	8.250%	7/21/1992	8/15/2024			2,704,199	105,016	(2,809,215)		131,028	5,088	136,116
18	7.260%	10/13/1995	10/15/2025			2,508,875	180,082	(2,688,957)		115,057	8,259	123,316
19	7.375%	10/15/1997	10/15/2027			2,805,403	108,796	(2,914,199)		117,847	4,570	122,417
						$20,059,598	$839,176	($20,898,774)		$1,073,360	$42,330	$1,115,691
				$500,000,000	$505,600,000	$23,721,926	$2,091,926	$479,786,148	$30,783,160	$1,448,259	$168,362	$32,399,781
												6.75%

Nicor Gas

Preferred Stock
December 31, 2005

Series (A)	Date of Issuance (B)	Dividend Rate (C)	Shares Outstanding (D)	Amount Outstanding (E)	Premium or (Discount) (F)	Issuance Expense (G)	Net Proceeds (H)	Annual Dividends (I)	Embedded Cost of Preferred Stock (J)	Weighted Cost of Preferred Stock (K)
5% Convertible Series	12/31/1962	5.000%	5,258	$ 525,800	$ 89	$ 2,694	$ 523,195	$ 26,290	5.02%	1.88%
4.6% Convertible Series	12/30/1965	4.600%	8,750	875,000	-	2,297	872,703	40,250	4.61%	2.88%
Total				$ 1,400,800	$ 89	$ 4,991	$ 1,395,898	$ 66,540		4.77%

Notes: Column(H) = Column(E) + Column(F) - Column(G)
Column(I) = Column(E) * Column(C)
Column(J) = Column(I) / Column(H)

Source: Nicor Gas' 2003 ILCC Form 21.

Nicor Gas

Balance of Common Equity
December 31, 2005

Month (A)	Month-Ending Balance (B)	Monthly Average (C)
Dec-04	$ 638,895,000	
Jan-05	651,149,000	$ 645,022,000
Feb-05	660,469,000	655,809,000
Mar-05	659,907,000	660,188,000
Apr-05	665,166,000	662,536,500
May-05	666,380,000	665,773,000
Jun-05	663,845,000	665,112,500
Jul-05	651,908,000	657,876,500
Aug-05	648,911,000	650,409,500
Sep-05	636,506,000	642,708,500
Oct-05	637,593,000	637,049,500
Nov-05	636,637,000	637,115,000
Dec-05	648,156,000	642,396,500
Average		**$ 651,833,042**

Source: Nicor Gas workpaper WP (D-1) 2.

Nicor Gas

S&P Corporate Credit Ratings and Business Profiles

Gas Sample

Company	Credit Rating	Business Profile
AGL Resources, Inc.	A–	4
Cascade Natural Gas Corp.	BBB+	2
Laclede Group, Inc.	A	3
NICOR, Inc.	AA	3
Northwest Natural Gas Co.	A+	1
Peoples Energy Corp.	A–	5
Piedmont Natural Gas Co.	A	2
South Jersey Industries, Inc.[1]	BBB+	2
Average	A	2.75

Nicor Gas

Company	Credit Rating	Business Profile
Nicor Gas	AA	2

[1] Credit Rating and Business Profile score is for South Jersey Gas Co., a subsidiary of South Jersey Industries, Inc.

Source: Standard & Poor's, "U.S. Utility and Power Ranking List," February 2, 2005.

Nicor Gas

Growth Rate Estimates

Company	Zacks Earnings
AGL Resources, Inc.	5.50%
Cascade Natural Gas Corp.	6.00
Laclede Group, Inc.	4.00
NICOR, Inc.	3.38
Northwest Natural Gas Co.	4.90
Peoples Energy Corp.	4.50
Piedmont Natural Gas Co.	4.77
South Jersey Industries, Inc.	4.67

Source: *Zacks Investment Research*, February 7, 2005.

Nicor Gas

Quarterly Dividends and Stock Prices
as of February 7, 2005

Company	Current Quarterly Dividends $D_{0,1}$	$D_{0,2}$	$D_{0,3}$	$D_{0,4}$	Next Dividend Payment Date	Stock Price
AGL Resources, Inc.	$0.280	$0.290	$0.290	$0.290	03/01/2005	$35.48
Cascade Natural Gas Corp.	0.240	0.240	0.240	0.240	05/13/2005	20.46
Laclede Group, Inc.	0.340	0.340	0.340	0.340	04/01/2005	30.95
NICOR, Inc.	0.465	0.465	0.465	0.465	05/01/2005	37.26
Northwest Natural Gas Co.	0.325	0.325	0.325	0.325	05/13/2005	34.94
Peoples Energy Corp.	0.540	0.540	0.540	0.540	04/15/2005	42.91
Piedmont Natural Gas Co.	0.215	0.215	0.215	0.215	04/15/2005	23.24
South Jersey Industries, Inc.	0.405	0.405	0.405	0.425	04/04/2005	54.86

Sources: *The Wall Street Journal*, February 8, 2005.
http://biz.yahoo.com.
http://www.aglresources.com.
http://www.cngc.com.
http://www.lacledegas.com.
http://www.nicorinc.com.
http://www.nwnatural.com.
http://www.peoplesenergy.com.
http://www.piedmontng.com.
http://www.sjindustries.com.

Nicor Gas

Expected Quarterly Dividends

Company	$D_{1,1}$	$D_{1,2}$	$D_{1,3}$	$D_{1,4}$
AGL Resources, Inc.	$0.310	$0.310	$0.310	$0.310
Cascade Natural Gas Corp.	0.254	0.254	0.254	0.254
Laclede Group, Inc.	0.345	0.345	0.345	0.345
NICOR, Inc.	0.481	0.481	0.481	0.481
Northwest Natural Gas Co.	0.341	0.341	0.341	0.341
Peoples Energy Corp.	0.545	0.545	0.545	0.545
Piedmont Natural Gas Co.	0.225	0.225	0.225	0.225
South Jersey Industries, Inc.	0.425	0.425	0.425	0.445

Sources: Staff Schedules 5.7 and 5.8.

Nicor Gas

DCF Cost of Common Equity Estimates

Gas Sample

Company	Estimate
AGL Resources, Inc.	9.17%
Cascade Natural Gas Corp.	11.17
Laclede Group, Inc.	8.64
NICOR, Inc.	8.72
Northwest Natural Gas Co.	8.93
Peoples Energy Corp.	9.80
Piedmont Natural Gas Co.	8.80
South Jersey Industries, Inc.	7.92
Average	9.14%

Nicor Gas

Risk Premium Analysis

Interest Rates as of February 7, 2005

U.S. Treasury Bills[1]		U.S. Treasury Bonds[2]	
Discount Rate	Effective Yield	Bond Equivalent Yield	Effective Yield
2.22%	2.28%	4.49%	4.54%

Risk Premium Cost of Equity Estimates

Proxy Group	Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
Gas Sample	4.54%	+	0.66	×	(13.40% – 4.54%)	=	10.39%

[1] U.S. Treasury bill yields are quoted on a 360-day discount basis. The effective yield is determined as follows:

$$Effective\ yield = \left(1 + \frac{discount\ rate \times \left(\frac{days\ to\ maturity}{360} \right)}{1 - discount\ rate \times \left(\frac{days\ to\ maturity}{360} \right)} \right)^{\left(\frac{365}{days\ to\ maturity} \right)} - 1$$

where *days to maturity* equals twenty-eight days.

[2] The bond equivalent yield on U.S. Treasury bonds represents a nominal rather than an effective yield. The effective yield is calculated as follows:

$$Effective\ yield = [1 + (bond\ equivalent\ yield \div 2)]^2 - 1.$$

Nicor Gas

Growth Rates Implied by Value Line EPS Data

Company	EPS 2001	EPS 2002	EPS 2003	EPS 2004	EPS 2007-09	6-yr growth from 2002 to 2007-09	5-yr growth from 2003 to 2007-09*	4-yr growth from 2004 to 2007-09	EPS Growth Rate Estimate Reported in Value Line
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
Cascade Nat. Gas	1.47	1.13	0.87	1.15	1.65	6.51%	13.66%	9.45%	6.00%
Keyspan Corp.	1.72	2.75	2.62	2.75	3.45	3.85%	5.66%	5.83%	6.50%
Nicor, Inc.	3.01	2.88	2.11	2.30	2.50	-2.33%	3.45%	2.11%	Not Meaningful
NW Nat. Gas	1.88	1.62	1.76	1.80	2.40	6.77%	6.40%	7.46%	5.50%
Piedmont	1.01	0.95	1.11	1.23	1.55	8.50%	6.91%	5.95%	7.50%
Southwest Gas	1.15	1.16	1.13	1.50	2.15	10.83%	13.73%	9.42%	10.50%
Average	1.71	1.75	1.60	1.79	2.28	5.69%	8.30%	6.70%	Not Meaningful

Notes: * Column (H) reflects the methodology adopted by Dr. Makholm.
Column (G) = (Column (F) / Column (C))^(1/6) - 1
Column (H) = (Column (F) / Column (D))^(1/5) - 1
Column (I) = (Column (F) / Column (E))^(1/4) - 1

Source: The Value Line Investment Survey, Issue 3, September 17, 2004.

Northern Illinois Gas Company
d/b/a Nicor Gas Company
Response to:
Illinois Commerce Commission
Ill.C.C. Docket No. 04-0779
MGM Second Data Request

MGM 2.06 Q. The Value Line reports Dr. Makholm cites in Exhibit 4.10 provide forecasts of earnings per share for the 2007-2009 period. However, in the formula presented in Note [3] to Exhibit 4.10, Dr. Makholm used the term (R_{av} * V_e) to calculate his own earnings per share estimates. Given Dr. Makholm's use of Value Line forecasts of dividends per share for the 2007-2009 period in that same formula (and the interdependency of earnings per share and dividends per share assumptions), please explain why he did not use the corresponding Value Line forecasts of earnings per share to estimate his payout ratios. Further, please explain why Dr. Makholm believes that multiplying an end of period book value of common equity with an estimated return on average common equity is appropriate for calculating annual earnings per share.

MGM 2.06 A. In the B*R + S*V approach, "R" is the expected return on equity. Value Line provides a forecast for the expected ROE for the 2007-09 period, which is used to develop R. As shown on **Exhibit 4.10**, R_{av} adjusts the Value Line expected ROE for 2007-09 based on book values for 2003 and 2002 in order to derive an estimate of normalized earnings, as required by the B*R + S*V model. This methodology is explained in **Exhibit 4.9**.

Dr. Makholm did not use Value Line forecasts of earnings per share to estimate his payout ratios because he used the methodology as explained above. Nor did he multiply an end-of-period book value of common equity times an estimated return on average common equity (that is, "R_{av} times V") in order to calculate annual earnings per share.

Dr. Makholm calculated the expected dividend payout rate by dividing Value Line's DPS estimate for 2007-09 by "R_{av} times V." Then, the product of this calculation was subtracted from 1 to produce an estimate of the expected retention rate, B. The derivation of these formulas is presented in **Exhibit 4.9**.

Dr. Makholm agrees that EPS and DPS are interdependent, but would be cautious about calculating as DPS as a function of EPS. This is because Value Line projects a decreasing payout ratio for the proxy group as a whole.

Witness who can testify subject to appropriate, in-scope cross examination:
Dr. Jeff Makholm, NERA