CORRECTED DIRECT TESTIMONY

of

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Finance Department
Financial Analysis Division
Illinois Commerce Commission

Proposed General Increase In Rates For Delivery Service

North Shore Gas Company and The Peoples Gas Light and Coke Company

Docket Nos. 11-0280 and 11-0281
(Consolidated)

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TABLE OF CONTENTS

WITNESS IDENTIFICATION

Q1. Please state your name and business address.

A1. My name is Michael McNally. My business address is 527 East Capitol Avenue, Springfield, IL 62701.

Q2. What is your current position with the Illinois Commerce Commission ("Commission")?

A2. I am a Senior Financial Analyst in the Finance Department of the Financial Analysis Division.

Q3. Please describe your qualifications and background.

A3. I received both a Bachelor of Arts degree in Economics and a Master of Business Administration degree with a concentration in Finance from the University of Illinois at Urbana-Champaign. I earned the Chartered Financial Analyst designation from the organization now known as the CFA Institute in 2003. I have been employed by the Commission since 1999 and have previously testified before the Commission on a variety of financial issues.

Q4. Please state the purpose of your testimony in this proceeding.

A4. The purpose of my testimony is to present my analysis of the cost of common equity of North Shore Gas Company ("North Shore") and The Peoples Gas Light and Coke Company ("Peoples Gas") (individually, the "Company" and collectively, the "Companies"). In addition, I will respond to the direct testimony of the Companies' witness Paul R. Moul (NS Ex. 3.0 and PGL Ex. 3.0).

Cost of Common Equity

Q5. What are your estimates of the Companies' costs of common equity?

A5. My analysis indicates that the cost of common equity for both North Shore and Peoples Gas is 8.75%.

Q6. How did you measure the investor required rate of return on common equity for the Companies?

A6. I measured the investor required rate of return on common equity for the Companies with discounted cash flow ("DCF") and risk premium models. Since the Companies do not have market-traded common stock,[1] DCF and risk premium models cannot be applied directly to the Companies; for this reason, and to reduce measurement error, I applied both models to a sample of natural gas utility companies ("Gas Group").

Sample Selection

Q7. How did you select a utility sample comparable in risk to the Companies?

A7. According to financial theory, the market-required rate of return on common equity is a function of operating and financial risk. Thus, the method used to select a sample should reflect both the operating and financial characteristics of a firm. I adopted the same group of gas utility companies that Companies' witness Moul used in his estimate of the return on common equity for North Shore and Peoples Gas. I believe that Mr. Moul's sample companies provide reasonable proxies for the operating risk of North Shore and Peoples Gas.

[1] Peoples Gas, 2010 Form 21 ILCC, p. 102; North Shore, 2010 Form 21 ILCC, p. 102.

DCF Analysis

Q8. Please describe DCF analysis.

A8. 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.

Q9. Please describe the DCF model with which you measured the investor required rate of return on common equity.

A9. As it applies to common stocks, DCF analysis is generally employed to determine appropriate stock prices given a specified discount rate. Since a DCF model incorporates time-sensitive valuation factors, it must correctly reflect the timing of the dividend payments that stock prices embody. As such, incorporating stock prices that the financial market sets on the basis of quarterly dividend payments into a model that ignores the time value of quarterly cash flows constitutes a misapplication of DCF analysis. The companies in the Gas Group pay dividends quarterly; therefore, I applied a constant growth quarterly DCF model to measure the annual required rate of return on common equity.

Q10. Please describe how you modeled your constant growth DCF analysis.

A10. The constant-growth DCF model 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 into perpetuity and that the market value of common stock (i.e., stock price) equals the sum of the discounted value of each dividend.

Q11. How did you estimate the growth rate parameter?

A11. 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 the market-consensus expected growth indirectly, with 3-5 year growth rates

forecasted by securities analysts, which are compiled and disseminated to investors by Zacks Investment Research, Inc. ("Zacks"). Schedule 5.1 presents the analysts' growth rate estimates for the companies in the Gas Group.

Q12. How did you measure the stock price?

A12. 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 May 12, 2011. Those stock prices appear on Schedule 5.2.

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

Q13. Please explain the significance of the column titled "Next Dividend Payment Date" shown on Schedule 5.2.

A13. Estimating the present value of each dividend requires measuring the length of time between its payment date and the stock observation date. For the first dividend payment, that length of time is measured from the "Next Dividend Payment Date." Subsequent dividend payments occur in quarterly intervals.

Q14. How did you estimate the expected future quarterly dividends?

A14. Most utilities declare and pay the same dividend per share for four consecutive quarters before adjusting the rate. Consequently, I assumed the current declared dividend rate 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 declared 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 declared dividend rate to estimate the expected dividend rate. Schedule 5.2 presents the quarterly dividends for the prior year. Schedule 5.3 presents the expected quarterly dividends for the coming year.

Q15. Based on your DCF analysis, what is the estimated required rate of return on common equity for the Gas Group?

A15. My DCF analysis estimated that the required rate of return on common equity for the Gas Group averages 8.50%, as shown on Schedule 5.4. That result was derived from the growth rates presented on Schedule 5.1, the stock prices and dividend payment dates presented on Schedule 5.2, and the expected quarterly dividends presented on Schedule 5.3.

Risk Premium Analysis

Q16. Please describe the risk premium model.

A16. The risk premium model is based on the theory that the market-required rate of return for a given risk-bearing security equals the risk-free rate of return[2] plus a risk premium that investors expect in exchange for assuming the risk associated with that security. 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:

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

[2] The risk-free rate of return is the rate of return on an investment with zero risk. This represents the absolute minimum return an investor demands as compensation for deferring consumption.

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.

Q17. How did you estimate the risk-free rate of return?

A17. I examined the suitability of the yields on four-week U.S. Treasury bills and thirty-year U.S. Treasury bonds as estimates of the risk-free rate of return.

Q18. Why did you examine the yields on U.S. Treasury bills and bonds as measures of the risk-free rate?

A18. The proxy for the nominal risk-free rate should contain no risk premium and reflect similar inflation and real risk-free rate expectations to the security being analyzed through the risk premium methodology.[3] The yields of fixed income securities include premiums for default and interest rate risk. Default risk pertains to the possibility of default on principal or interest payments. The federal government's fiscal and monetary authority makes securities of the United States Treasury virtually free of default risk. Interest rate risk pertains to the effect of unexpected interest rate fluctuations on the value of securities.

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

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, are issued with terms to maturity of thirty years; 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 to fifty-two weeks. Therefore, U.S. Treasury bonds are more likely to incorporate within their yields the inflation and real risk-free rate expectations that drive, in part, the prices of common stocks than either U.S. Treasury notes or Treasury bills.

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

Q19. 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?

A19. 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.[4] 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.

Q20. What are the current yields on four-week U.S. Treasury bills and thirty-year U.S. Treasury bonds?

A20. Four-week U.S. Treasury bills are currently yielding 0.01%. Thirty-year U.S. Treasury bonds are currently yielding 4.42%. Both estimates are derived from quotes for May 12, 2011.[5] Schedule 5.5 presents the published quotes and effective yields.

[4] Fabozzi, The Handbook of Fixed Income Securities, Fifth Edition, Irwin, p. 827.
[5] The Federal Reserve Board, *Selected Interest Rates (Daily) - H.15*, www.federalreserve.gov/releases/h15/data, May 13, 2011.

Q21. Of the U.S. Treasury bill and bond yields, which is currently a better proxy for the long-term risk-free rate?

A21. In terms of the gross domestic product ("GDP") price index, the Energy Information Administration ("EIA") forecasts the inflation rate will average 1.9% annually during the 2011-2035 period.[6] Similarly, Global Insight forecasts the GDP price index will average 1.8% annually during the 2011-2041 period.[7] In terms of the personal consumption expenditures price index, the *Survey of Professional Forecasters* ("*Survey*") forecasts the inflation rate will average 2.1% during the next ten years.[8] EIA forecasts of real GDP growth imply the real risk-free rate will average 2.7% during the 2011-2035 period.[9] Global Insight forecasts of real GDP growth imply the real risk-free rate will average 2.7% during the 2011-2041 period.[10] The *Survey* forecasts real GDP growth will average 2.9% during the next ten years.[11] Those forecasts imply a long-term, nominal risk-free rate between 4.5% and 5.1%.[12] Therefore, EIA, Global Insight, and *Survey* forecasts of inflation and real GDP growth expectations suggest that,

[6] Energy Information Administration, *Annual Energy Outlook 2011 Early Release*, Table 20, Macroeconomic Indicators, www.eia.doe.gov, December 2010.
[7] Global Insight, *The U.S. Economy: The 30-Year Focus, First Quarter 2011*, Table 1: Summary of the U.S. Economy.
[8] Federal Reserve Bank of Philadelphia, *First Quarter 2011 Survey of Professional Forecasters*, www.phil.frb.org, February 11, 2011. The *Survey* aggregates the forecasts of more than forty forecasters.
[9] Energy Information Administration, *Annual Energy Outlook 2011 Early Release*, Table 20, Macroeconomic Indicators, www.eia.doe.gov, December 2010.
[10] Global Insight, *The U.S. Economy: The 30-Year Focus, First Quarter 2011*, Table 1: Summary of the U.S. Economy.
[11] Federal Reserve Bank of Philadelphia, *First Quarter 2011 Survey of Professional Forecasters*, www.phil.frb.org, February 11, 2011.
[12] 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.

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.

Q22. Please explain why the real risk-free rate and the GDP growth rate should be similar.

A22. 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.[13] 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 are a function of production opportunities and consumption preferences without the effects of either a risk premium or an inflation premium.

Q23. How was the expected rate of return on the market portfolio estimated?

A23. 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 March 31, 2011. That analysis used dividend information reported in the April 2011 edition of S&P's *Security Owner's Stock Guide* and closing market prices for March 31, 2011 reported by Zacks. March 31, 2011 growth rate estimates were obtained from Zacks and Reuters. Firms not paying a dividend as of March 31, 2011, or for which Zacks or Reuters growth rates were not available were eliminated from

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

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 March 31, 2011. The estimated weighted average expected rate of return for the remaining 378 firms, composing 81.33% of the market capitalization of the S&P 500, equals 12.67%.

Q24. How did you measure market risk on a security-specific basis?

A24. 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 betas, Zacks betas, and a regression analysis to estimate the beta of the Gas Group.

Value Line estimates beta for a security with the following model using an ordinary least-squares technique:[14]

$$R_{j,t} = \alpha_j + \beta_j \times R_{m,t} + \varepsilon_{j,t}$$

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

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

α_j ≡ the intercept term for security j;

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

$\varepsilon_{j,t}$ ≡ 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

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

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:

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

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 Group 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 Group 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:

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

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

Q25. Why do you adjust the raw beta estimate?

A25. I adjust the raw beta to produce a more accurate forward-looking beta estimate. 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.[15] 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

[15] 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.

292 are adjusted downwards thereby decreasing the predicted rate of return towards
293 observed realized rates of return.

294 **Q26. Why do you rely on three approaches to calculate the betas for your**
295 **samples?**
296 A26. True betas are forward-looking measures of investors' expectations of market
297 risk. As such, true betas are not observable. Betas that Staff calculates and
298 betas that Zacks, Value Line, and other financial information services publish are
299 proxies for true betas. Therefore, like all proxies, beta estimates are subject to
300 measurement error. Thus, there is no single, definitively "correct" beta for a
301 given company. Beta measurements can overstate a security's risk, and
302 consequently its cost, at times, and understate it at other times. Indeed, this is
303 true of any cost of common equity estimation methodology. The inevitable
304 presence of measurement error is why Staff recommends against reliance on
305 any single model to estimate the cost of common equity. In fact, my analysis
306 relies on multiple models involving a sample composed of multiple companies.
307 Similarly, using multiple approaches to estimate beta mitigates the effect on my
308 cost of common equity estimate of measurement error in my sample's beta
309 estimates.

310 **Q27. What is the beta estimate for the Gas Group?**
311 A27. The regression beta estimate for the Gas Group is 0.49. The average Value Line
312 beta and average Zacks beta for the Gas Group are 0.65 and 0.53, respectively,
313 as shown in Table 1 below.[16]

[16] The Value Line Investment Survey, "Summary and Index," May 6, 2011, pp. 2-22; Zacks Research Wizard, May 12, 2011.

Table 1

Company	Value Line Estimate	Zacks Estimate*
AGL RESOURCES	0.75	0.64
ATMOS ENERGY CORP	0.65	0.68
LACLEDE GROUP INC	0.60	0.39
NEW JERSEY RESOURCES	0.65	0.47
NORTHWEST NATURAL GAS	0.60	0.54
PIEDMONT NATURAL GAS	0.65	0.51
SOUTH JERSEY INDUSTRIES	0.65	0.54
WGL HOLDINGS INC	0.65	0.51
Average	0.65	0.53

* after adjustment

Since the Zacks beta estimate (0.53) and the regression beta estimate (0.49) are calculated using monthly data rather than weekly data (as Value Line uses), I averaged those results to avoid over-weighting that approach. The average of those two estimates is 0.51. I then averaged that result with the Value Line beta (0.65), which produces a beta for the Gas Group of 0.58.

Q28. What required rate of return on common equity does the risk premium model estimate for the Gas Group?

A28. The risk premium model estimates a required rate of return on common equity of 9.20% for the Gas Group. The computation of that estimate appears on Schedule 5.5.

Cost of Equity Recommendation

Q29. Based on your entire analysis, what are your estimates of the Companies' costs of common equity?

A29. 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 common equity analyses, I have considered the observable 5.53% rate of return the market currently requires on less risky A-rated long-term utility debt.[17] Based on my analysis, in my judgment the investor-required rate of return on common equity equals 8.75% for both North Shore and Peoples Gas.

Q30. Please summarize how you estimated the investor-required rate of return on common equity for the Companies.

A30. First, I estimated the investor required rate of return on common equity for the Gas Group, which is a simple average of the DCF-derived results (8.50%) and the risk premium-derived results (9.20%) for the Gas Group, or 8.85%. The models from which the company estimate was derived are correctly specified and thus contain no source of bias. Moreover, excepting the use of U.S. Treasury bond yields as proxies for the long-term risk-free rate and overall economic growth, I am unaware of bias in my proxy for investor expectations. In addition,

[17] The Value Line Investment Survey, "Selection & Opinion," May 6, 2011.

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.

Next, I adjusted the Companies' costs of equity downward by 10 basis points to reflect the reduction in risk associated with the Uncollectible Expense Adjustment rider ("Rider UEA"), which was authorized in the Companies' last rate case. Thus, the investor-required rate of return on common equity is 8.75% for both North Shore and Peoples Gas.

Q31. Does your estimate of the investor-required rate of return reflect the revenue decoupling resulting from the authorization of the Volume Balancing Adjustment rider ("Rider VBA")?

A31. Yes. Because all of the companies in the Gas Group have some form of revenue stabilization mechanism or other mechanism to mitigate the effects on revenues of conservation, the cost of common equity for that sample largely reflects the risk reduction associated with Rider VBA.

Q32. How would Rider UEA affect the Companies' risks and costs of capital?

A32. The uncollectible expense adjustment rider reduces the volatility in, and ensures more timely collection of, bad debt expense. This cost recovery provides the utilities greater assurance that their authorized rates of return will be earned. Since Rider UEA reduces the volatility and uncertainty of cash flows, it reduces the Companies' risk. Therefore, downward adjustments to the Companies' rates of return on common equity are appropriate to recognize the reduction in risk associated with the use of a bad debt rider.

Q33. How should the cost of common equity for the Companies be adjusted for Rider UEA?

A33. The Commission adopted a 10 basis point downward adjustment to the Companies' costs of common equity for Rider UEA in their last rate case. I recommend the Commission make the same adjustment in this proceeding.

Q34. How does the Infrastructure Cost Recovery rider ("Rider ICR") affect the risk and cost of capital of Peoples Gas?

A34. In comparison to rate base cost recovery, the recovery of the capital costs of projects run through Rider ICR is more timely. Further, Rider ICR effectively eliminates the risk that prudent and reasonable project costs will not be recovered. Since Rider ICR improves the timeliness and certainty of cash flows, it reduces the Company's risk. Thus, a downward adjustment to the cost of common equity factor in Rider ICR is appropriate.

Q35. What is your recommendation for the cost of common equity factor in Rider ICR, if the Commission approves Rider ICR for Peoples Gas?

A35. I recommend a rate of return on common equity factor for Rider ICR of 6.92%. This represents a 183 basis point adjustment from the base cost of equity I recommend for Peoples Gas.

Q36. How did you develop your adjustment to the cost of common equity factor in Rider ICR?

A36. I used the same approach I used in the Companies' last rate case, which was adopted by the Commission.[18] My 183 basis point adjustment equals one-half of

[18] Docket Nos. 09-0166/09-0167, Order, January 21, 2010, pp. 107-108 and 128.

the spread between the current yield for AAA-rated, 30-year utility bonds (5.10%)[19] and my base cost of equity recommendation for Peoples Gas (8.75%). As explained previously, Rider ICR effectively eliminates both regulatory lag and the risk of non-recovery of prudent and reasonable costs incurred in implementing ICR projects. If Rider ICR protected the Company against all risk of non-recovery of investments in the ICR program, a return consistent with AAA-rated long-term utility bonds would be warranted. In contrast, my base cost of equity recommendation for Peoples Gas reflects the full risk of regulated gas utility assets under standard rate regulation. The risk of Rider ICR falls between these two limits. That is, while Rider ICR eliminates the risk of non-recovery of prudent and reasonable costs, the prudency and reasonableness of Rider ICR investments is still subject to annual reviews. Thus, there remains some degree of risk of non-recovery of costs. It is impossible to determine precisely what percentage of the spread between the AAA bond yields and the full cost of common equity can be attributable to the risk of non-recovery due to costs the Commission finds to be imprudent or unreasonably incurred. Thus, my recommendation reflects the midpoint of those limits.

RESPONSE TO MR. MOUL

Q37. What costs of equity did Mr. Moul recommend for North Shore and Peoples Gas?

A37. Mr. Moul recommended an 11.25% cost of equity for both North Shore and Peoples Gas.[20]

[19] Citigroup Global Markets, *Bond Market Round-up: Strategy*, May 6, 2011, p. 18.
[20] NS Ex. 3.0, p. 2; PGL Ex. 3.0, p. 2.

Q38. Please evaluate Mr. Moul's analysis of the Companies' cost of common equity.

A38. Mr. Moul's analysis contains several errors that lead him to over-estimate the Companies' cost of common equity. The most significant flaws in Mr. Moul's analysis of the Companies' cost of common equity are the following:

1. His recommendation reflects the results of an inappropriate risk premium model.

2. His recommendation inappropriately excludes his DCF results.

3. The growth rate used in his DCF analysis was inappropriately shifted upward.

4. He included an unwarranted leverage adjustment in deriving his DCF and CAPM estimates of the cost of common equity.

5. He included an unwarranted size premium adjustment in his CAPM estimate of the cost of common equity.

Risk Premium Model

Q39. Please describe Mr. Moul's risk premium model.

A39. To estimate a common equity return commensurate with the Companies' level of risk, Mr. Moul starts with a projected yield of 5.75% on A-rated public utility bonds, based on near-term Blue Chip forecasts of 30-year U.S. Treasury rates

plus the historical spreads between A-rated public utility bonds and 20-year U.S. Treasuries as well as longer-term Blue Chip forecasts of corporate bonds and U.S. Treasuries.[21] Next, he estimates a 6.23% common equity premium, which represents various measures of the historical spread between public utility bonds and the S&P Public Utilities Index for the periods 1974-2007 and 1979-2007. Mr. Moul adjusts the 6.23% premium down to 5.50% in recognition of the lower risk of his proxy group in comparison to the S&P Public Utilities Index.[22] Finally, he adds the 5.50% premium to the 5.75% A-rated utility bond yield, which results in a cost of common equity estimate of 11.25%.

Q40. Please describe the shortcomings of Mr. Moul's risk premium model.

A40. Mr. Moul's methodology for determining a reasonable common equity risk premium for his proxy groups is inappropriate. In determining the equity risk premium, Mr. Moul began with a 6.23% base equity risk premium estimate representing the historical earnings spread between public utility bonds and the S&P Utilities Index, which he adjusted to 5.50% for the Gas Group, as discussed above. Unfortunately, the ultimate estimate was based on flawed methodology.

First, Mr. Moul's base equity premium estimate is calculated from historical data, which is inappropriate. Use of historical data falsely assumes that market data reverts to a mean, despite the fact that security returns approximate a random walk. Moreover, no true mean exists. Therefore the selection of a measurement period will necessarily be arbitrary, and that arbitrarily selected measurement period will dictate the magnitude of a historical risk premium, as Mr. Moul's

[21] NS Ex. 3.0, pp. 30-32; PGL Ex. 3.0, pp. 30-32.
[22] NS Ex. 3.0, pp. 32-35; PGL Ex. 3.0, pp. 32-35.

testimony demonstrates.[23] For example, had Mr. Moul used the 1966-2007 measurement period, his base equity premium estimate would have been 4.85% rather than 6.23%, which would need to be adjusted downward even farther for the less risky Gas Group. Thus, while this approach would, at best, only produce the "correct" risk premium by sheer chance, it is unquestionably, and incurably, subject to manipulation. Second, Mr. Moul's measurement periods end in 2007, rendering his estimates outdated even by historical risk premium standards. Third, Mr. Moul added a risk premium measured relative to a public utility bond index to an A-rated bond yield estimate without providing any support that the two are comparable. Specifically, Mr. Moul provides no support that the public utility bond index has been, and remains, comprised of A-rated bonds with similar terms to maturity as reflected in his A-rated bond yield estimate. Both term to maturity and credit rating are important determinants of bond returns. Fourth, Mr. Moul provides no quantitative support for the adjustments he made in deriving his estimate of the equity risk premium for the Gas Group from the base equity risk premium.[24]

Q41. Has the Commission rejected the use of such a risk premium model previously?

A41. Yes. In fact, Mr. Moul presented the exact same approach in the Companies' last rate case. The Commission rejected that analysis, noting "We have repeatedly rejected this model as a valid basis on which to set return on equity. Our view remains unchanged."[25]

[23] NS Ex.3.10; PGL Ex. 3.10.
[24] Peoples Gas response to Staff Data Request MGM 1.22; North Shore response to Staff Data Request MGM 1.22.
[25] Docket Nos. 09-0166/09-0167, Order, January 21, 2010, p. 128.

DCF Model

Q42. What reasoning did Mr. Moul provide for excluding his DCF analysis from his recommendation for the Companies' cost of common equity?

A42. He claims that the growth prospects for the natural gas industry generally, and the Gas Group in particular, have been "negatively impacted by the recent economic conditions" and that dividend yields for the Gas Group "remain low in response to the low interest rate environment."[26] Thus, he concludes that the DCF produces a "misleading" measure of the cost of common equity for gas utilities. He suggests that conclusion is confirmed by the fact that his DCF result is inconsistent with his risk premium and CAPM results.

Q43. Do you agree with Mr. Moul's assessment?

A43. No. The low growth rates and low interest rate environment Mr. Moul cites simply indicates that the cost of capital is low. A relatively low cost of capital is not a reasonable rationale for dismissing the results of a model that reflects those low costs. To the contrary, since the Companies' costs of capital are low, their authorized rates of return should be low for cost-based rate setting purposes. Mr. Moul's argument, on the other hand, suggests that the Commission should grant rates based on higher costs of capital than the current economic environment suggests. Mr. Moul has provided nothing to demonstrate that current growth rates and dividend yields are somehow invalid or misstate investors' expectations and requirements. In fact, his argument amounts to nothing more than unsupported speculation. He claims that the fact that his DCF results are low relative to his risk premium and CAPM results supports his

[26] NS Ex. 3.0, p. 5; PGL Ex. 3.0, p. 5.

conclusion. However, that fallacious reasoning assumes the conclusion as to what the appropriate cost of common equity is.[27] Indeed, as I will discuss later, when errors in his models are corrected, the results show that his DCF is not understated, but rather, that his risk premium and CAPM analyses are overstated.

Curiously, while Mr. Moul excluded the result of his DCF analysis in this proceeding due to the recent economic conditions, he relied upon both a CAPM and a DCF model in the Companies' previous rate case, which was filed at a time when market conditions were much worse. Specifically, the Chicago Board Options Exchange Volatility Index ("VIX"), which measures volatility of the stock market and averaged 20.40 from January 1990 through January 2011, peaked at 55.89 in October 2008 and remained at 40.00 for the month in which Mr. Moul performed his analysis for the Companies' last rate case (December 2008). In contrast, the VIX at the time of his analysis in this case (December 2010) was below the 20-year average, at 17.75 – less than half what it was in December 2008~~10~~. Moreover, the difference between Mr. Moul's CAPM and DCF estimates in the Companies' previous proceeding (1.93~~8~~%) was greater than it is in this proceeding (1.54~~8~~%). Yet, now he alleges that the difference renders his DCF results invalid.

[27] Notably, he does not use that same line of reasoning when discarding Value Line growth rates and adopting the much higher Morningstar growth rates for use in his DCF analysis, as I will discuss below.

DCF Growth Rates

Q44. What sources did Mr. Moul rely on for the growth rate estimates used in his DCF analysis?

A44. Mr. Moul relied on IBES, Zacks, and Morningstar earnings per share ("EPS") growth rates in this proceeding.

Q45. Are those the same sources he relied upon in the Companies' last rate proceeding?

A45. No. In the Companies' last rate case Mr. Moul used earnings growth rates from IBES, Zacks, and Value Line. Although, he maintains that "projections of earnings per share growth, such as those published by IBES/First Call, Zacks, Morningstar, and Value Line, represent a reasonable assessment of investor expectations," he excludes the Value Line estimates in this proceeding.[28]

Q46. What was his rationale for excluding the Value Line growth rates?

A46. With respect to the dividend per share ("DPS") growth rates, he states that "the Value Line forecast of dividend per share growth is inadequate in this regard due to the forecast decline in the dividend payout…."[29] He provides no reason for excluding the Value Line EPS growth estimates. To the contrary, he indicates that Value Line's earnings growth estimates are reasonable.

[28] NS Ex. 3.0, p. 21; PGL Ex. 3.0, p. 21.
[29] NS Ex. 3.0, p. 22; PGL Ex. 3.0, p. 22.

Q47. Do you agree with the basis for his decision to exclude Value Line growth rates from his analysis?

A47. No. To begin with, the average difference between the earnings per share ("EPS") growth and the dividends per share ("DPS") growth, which Mr. Moul cites in rejecting the Value Line growth rates, is very small (i.e., 0.12%). Although the constant growth DCF model assumes that the dividend payout ratio[30] remains constant, in reality, simultaneously maintaining a perfectly constant dividend payout ratio and consistent dividend rates is impossible due to earnings volatility. In fact, Mr. Moul acknowledges that such assumptions of constancy do not actually prevail in the capital markets and, therefore, concludes that the capital appreciation potential of an equity investment is best measured by the expected growth in earnings per share.[31] Yet, he rejects Value Line's estimate of earnings per share growth.

Moreover, while the testimony Mr. Moul presents regarding this issue is nearly identical to that which he presented in the Companies' last rate case, his conclusion is directly contradictory. In the Companies' last rate case, the average difference between his sample's EPS and DPS growth rates was 1.50% – more than 12 times as great as in the instant docket.[32] Despite that much more pronounced difference, he still employed Value Line earnings growth rates in that proceeding. Notably, the Value Line growth rates were not the lowest among his growth rate sources in that proceeding, but are in this proceeding.

[30] The dividend payout ratio equals 1 – the earnings retention ratio. Thus, the constant growth DCF model also assumes the earnings retention ratio is constant.
[31] NS Ex. 3.13C, p, 8; PGL Ex. 3.13C, p, 8. In reality, fluctuating dividend payout ratios affect earnings per share growth as much as they affect dividend per share growth. Consequently, Mr. Moul's conclusion that earnings per share is a better measure of capital appreciation than dividends per share is wrong.
[32] Docket Nos. 09-0166/09-0167, Peoples Gas Ex. PRM-1.7.

Q48. What was his rationale for substituting the Morningstar growth rates in place of the excluded Value Line growth rates?

A48. He indicates that Morningstar growth rates are consensus forecasts taken from a survey of analysts and are widely available to investors free-of-charge, and concludes that they represent a reasonable assessment of investor expectations. However, aside from being analyst consensus forecasts, he said the same of the Value Line growth rates.

Q49. Do you agree with his substitution?

A49. No. First, as noted above, it was not necessary to exclude the Value Line EPS growth estimates from his analysis. Second, it is inappropriate for Mr. Moul to replace the Value Line EPS growth rates, which he deemed a reasonable assessment of investor expectations, in favor of a growth rate that is an outlier relative to the other growth estimates he presents and unsustainably high.

Q50. Why do you believe that the Morningstar growth rates are unsustainably high?

A50. The average Morningstar EPS growth rate for the sample is 5.60%, which is approximately 10%-20% greater than the forecasts of overall economic growth, estimated to be between 4.5%-5.1%, as noted previously. In theory, no company could sustain a growth rate greater than that of the overall economy, or it would eventually grow to become the entire economy. Moreover, even if one assumes overall economic growth will be at the high end of the forecasts (i.e., 5.1%), since utilities are generally below-average growth companies, the sustainability of a growth rate at 5.1%, let alone the Morningstar average of 5.6%, is dubious for the Gas Group.

As an additional evaluation of the sustainability of the Morningstar growth rates, I also calculated the return on equity ("ROE") implied by those growth rates, based on the dividend payout and other data published in Value Line for each company in the Gas Group.[33] That calculation produced an average ROE of 14.27% for that sample. In comparison, Value Line forecasts an average ROE for the Gas Group of 12.25% for the 2014-2016 period.[34] The implication that investors expect those companies to sustain a 14.27% rate of return on equity indefinitely is not plausible. Thus, the Morningstar growth rates are not suitable for a constant-growth DCF analysis.

Q51. Do you have any other concerns with his growth rate estimate?

A51. Yes. Even if one ignores all the foregoing arguments and accepts the inappropriate substitution of Morningstar growth rates for Value Line growth rates, Mr. Moul's selection of a 5.0% growth estimate overweights the most extreme of his growth estimates. As noted above, the Morningstar growth estimate is a clear outlier from all the other estimates and unsustainably high. Yet, he effectively assigned that growth estimate a much higher weight by selecting a 5.0% growth rate for use in his analysis. For the Gas Group, the simple average of the IBES (4.14%), Zacks (4.41%), and Morningstar (5.60%) growth rates he employed is 4.72%. In contrast, to achieve a 5.0% growth rate average from those three sources, one would effectively be giving the Morningstar growth rate 54.34% weight, while only giving the IBES and Zacks growth rates 22.83% weight each. He provides no explanation for his selection

[33] The retention ratio in published Value Line forecasts were derived algebraically from the published Value Line data. The implied ROE for each of the sample companies was then calculated by dividing the average 3-5 year growth rates by the 2012~~1~~ retention ratio.

[34] The published Value Line ROE forecasts for the sample companies reflect return on end of year equity. Therefore, I adjusted the Value Line published forecasts to reflect the return on average 2015 earnings.

of a 5.0% growth rate from those three sources other than his "opinion" that it is "reasonable" for the Gas Group. Thus, even if one erroneously accepts his use of Morningstar growth rates, the more appropriate growth rate would be to use the simple average of all three growth rate sources, or 4.72%.

Leverage Adjustment

Q52. Mr. Moul argues that "[i]f regulators use the results of the DCF (which are based on the market price of the stock of the companies analyzed) to compute the weighted average cost of capital with a book value capital structure used for ratesetting purposes, those results will not reflect the higher level of financial risk associated with the book value capital structure."[35] Do you agree?

A52. No. Mr. Moul argues that, when a company's book value exceeds its market value, the risk of a company increases if the capital structure is measured with book values of capital rather than market values of capital.[36] Such a notion is absurd. The intrinsic risk level of a given company does not change simply because the manner in which it is measured has changed. Such an assertion is akin to claiming that the ambient temperature changes when the measurement scale is switched from Fahrenheit to Celsius. Mr. Moul has confused the measurement tool with the object to be measured. Specifically, capital structure ratios are merely indicators of financial risk; they are not sources of financial risk. Financial risk arises from contractually required debt service payments; changing capital structure ratios from a market value basis to a book value basis does not

[35] NS Ex. 3.0, p. 23; PGL Ex. 3.0, p. 23.
[36] Peoples Gas responses to Staff data requests MGM 1.14, 1.15, and 1.17; North Shore responses to Staff data requests MGM 1.14, 1.15, and 1.17.

affect a company's debt service requirements; thus, it does not change the company's risk.

Q53. Has the Commission ever rejected the use of the leverage adjustments to a utility's cost of common equity?

A53. Yes. Mr. Moul presented, and the Commission rejected , the same approach in the Companies' last rate case.[37] In fact, the same leverage adjustment arguments were also rejected by the Commission in the Companies' 2007 rate case.[38] Indeed, that Order quite clearly sets forth, in great detail, the reasons why such a leverage adjustment should be rejected. The Commission also rejected use of leverage adjustments in Docket Nos. 01-0528/01-0628/01-0629 Consol., 99-0120/99-0134 Consol. and 94-0065.[39]

Size-Based Risk Premium

Q54. Mr. Moul adds a risk premium based on firm size to his CAPM analysis. Is this adjustment appropriate?

A54. No. Mr. Moul's size-based risk premium has no theoretical basis. Rather, it is based on an empirical study that is not applicable to the Companies.

Q55. Please explain the significance of the absence of a theoretical basis for a size-based risk premium.

A55. Since a size-based risk premium has no theoretical basis, to the extent that a correlation between firm size and return exists, that relationship is likely the result

[37] Docket Nos. 09-0166/09-0167, Order, January 21, 2010, p. 129.
[38] Docket Nos. 07-0241/07-242 Consol., Order, February 5, 2008, pp. 95-96.
[39] Docket Nos. 01-0528/01-0628/01-0629, Order, March 28, 2002, pp. 12-13; Docket Nos. 99-0120/99-0134 Consol., Order, August 25, 1999, p. 54; Docket No. 94-0065, Order, January 9, 1995, pp. 92-93.

of some other factor or factors that are related to both size and return, such as liquidity or information costs. Relatively illiquid securities impose costs on the investor since he may be unable to sell them at a fair price on a timely basis. The securities of smaller companies tend to be less liquid than those of larger companies since the potential breadth of the market for the former tends to be more limited. In addition, gathering information regarding the expected cash flows and risks of a security imposes costs an investor must recover through the returns that that security generates. If fewer sources of information regarding smaller companies exist, then obtaining information might be more expensive.

If the securities of the Companies are less liquid or the availability of information regarding the Companies is more restricted than the average security, then adding a size-based premium to a CAPM analysis of the Companies' costs of common equity might be proper. However, Mr. Moul has not provided any evidence to demonstrate that a size premium is warranted for utilities. Unlike most stocks listed on the New York Stock Exchange, utilities' earnings are regulated through proceedings in which substantial amounts of information, including their rates and conditions of service, are publicly reported. Therefore, the cost of obtaining information regarding smaller utilities is unlikely to be as high as that of unregulated companies that are similar in size. Also, utilities are subject to uniform reporting requirements, regardless of size. Therefore, the cost of obtaining information regarding smaller utilities is unlikely to be any higher than the cost of obtaining information regarding larger utilities. Further, despite Mr. Moul's claim to the contrary, the Ibbotson study does not support his size-based CAPM adjustment for electric and gas companies, as the Ibbotson study

was not restricted to utilities.[40] Rather, it is based on the entire population of NYSE, AMEX, and NASDAQ-listed securities, which are heavily weighted with industrial stocks.[41] To assume the Ibbotson general study applies specifically to utilities is a logical fallacy (i.e., a sweeping generalization). Thus, the basis of Mr. Moul's size-based risk premium is inapplicable. Indeed, in direct contrast with Mr. Moul's claims, a study by Annie Wong, reported in the *Journal of the Midwest Finance Association*, specifically found no justification for a size premium for utilities.[42]

Even for non-utilities, evidence of the existence of a size-based risk premium is not very strong. Ibbotson data shows that out of a 1926-2007 study period, small stocks consistently out-performed large stocks only during the 1963-1983 period.[43] Further, Fernholz found that a statistical property he termed the "crossover effect" was the primary cause of the difference between large and small company stock returns. The "crossover effect" measures the effect on rate of return of those stocks that switch from one size portfolio to another.[44] Fernholz states that as random price changes affect the size of stocks, some stocks cross over from one size portfolio to another. When a stock that starts in the large stock portfolio and experiences a random negative price change that moves it into the small stock portfolio, its resulting negative return is assigned to,

[40] His citation to the Morin text does not corroborate his claim regarding the Ibbotson study. Contrary to Mr. Moul's implication, Morin does not state that Ibbotson found that the CAPM understates the cost of common equity for electric and gas utilities. Rather, Morin merely states that, with respect to companies within SIC Code 49 (Electric, Gas, and Sanitary Services), the historical average achieved returns for small companies exceeds that of large companies. There is no indication in Morin, nor in the Ibottson study itself, that CAPM results for utilities are inconsistent with that finding.

[41] Morningstar, *Ibbotson SBBI 2010~~08~~ ClassicYearbook*, p. 65~~129~~.

[42] Wong, "Utility Stocks and the Size Effect: an Empirical Analysis," *Journal of the Midwest Finance Association*, 1993, pp. 95-101.

[43] Morningstar, *SBBI 2008 ClassicYearbook*, pp. 36-37.

[44] Fernholz, "Crossovers, Dividends, and the Size Effect," *Financial Analysts Journal*, May/June1998, pp. 73-75.

and therefore reduces, the return on the large stock portfolio. Conversely, when that same stock experiences a random positive price change that moves it back into the large stock portfolio, its resulting positive return is assigned to, and therefore increases, the return on the small stock portfolio.[45] The combination of portfolio construction and random (i.e., non-systematic) price movements creates a biased source of measurement error. Thus, the "small stock effect" may be less a market return phenomenon than a modeling problem. That is, the "small stock effect" may be nothing more than a statistical anomaly.

In another study of domestic stocks listed on the NYSE and AMEX, Jensen, Johnson, and Mercer, found that small stock premiums appear to be related to monetary policy. Specifically, during expansive monetary periods, defined as months following a reduction in the Federal Reserve discount rate, Jensen, et al., found that small stock returns were significantly greater than large stock returns. Conversely, during restrictive monetary periods, defined as months following an increase in the discount rate, Jensen, et al., found that small stock returns were not significantly greater than large stock returns.[46] Nevertheless, the applicability of the Jensen, et al., results to small utility stocks is doubtful. First, since the Jensen, et al., study was based on largely non-utility companies, their findings that small stocks outperformed large stocks during "expansionary" monetary periods is not surprising. During monetary expansions, as the supply of loanable funds increases, investors are more likely to invest in speculative, small company stocks. However, during monetary contractions, as the supply of loanable funds decreases, investors are more likely to switch from speculative investments to

[45] Fernholz, "Crossovers, Dividends, and the Size Effect," *Financial Analysts Journal*, May/June1998, p. 73.
[46] Jensen, Johnson, and Mercer, "The Inconsistency of Small-Firm and Value Stock Premiums," *Journal of Portfolio Management*, p. 35.

safer ones – the well-known "flight to quality." That investors would consider the smaller firms in the regulated utility sector to be speculative investments is counter-intuitive; and Mr. Moul has not supported that premise. Moreover, Jensen, et al., did not control their measurement of the small stock premium for risk as measured by beta or other means.[47] Therefore, their study does not support Mr. Moul's size-based risk premium adjustment.

Even if a size-based risk premium did exist for utilities, which it does not, Mr. Moul's estimates of the size of the premium are questionable because they are based on historical returns, whose shortcomings as proxies for expected returns were previously addressed.

Further, even if one improperly ignored all the foregoing, Mr. Moul's size-based CAPM adjustment cannot be accepted, since his application of the Ibbotson historical size-based risk premiums is inconsistent with the manner in which Ibbotson measured them. While Mr. Moul adds the historical size premium to his CAPM-based risk premium analysis which is based on adjusted Value Line betas, the Ibbotson size-based risk premiums are a function of raw betas.[48] Thus, the "size premium" Mr. Moul adds to his CAPM result is already captured by the adjustment Value Line applies to the betas Mr. Moul used in his CAPM analysis. Any further adjustment is duplicative.

In summary, although the relationship between firm size and return has been studied from a variety of angles, no theoretical or empirical support has been

[47] Jensen, Johnson, and Mercer, "The Inconsistency of Small-Firm and Value Stock Premiums," *Journal of Portfolio Management*, pp. 30 and 34.
[48] Morningstar, *Ibbotson SBBI 2010 ClassicYearbook*, p. 95.

found for the notion that investors require higher rates of return than indicated by the CAPM from relatively small utility stocks than they do from relatively large stocks.

Q56. What would Mr. Moul's results be, if one were to correct the principal errors in his analysis?

A56. By adjusting the average Value Line beta estimate for his Gas Group (0.65) up to 0.74 to reflect the book value "leverage" of those companies, Mr. Moul inappropriately inflated the CAPM result for that sample by 71 basis points. He further overstated his CAPM result by adding a 108 basis point size adjustment. Removing those inappropriate adjustments produces a CAPM estimate of only 9.42%, instead of the 11.21% estimate he calculated. This is much more consistent with Staff's 9.20% CAPM estimate.

Likewise, correcting the two primary flaws in his DCF analysis would produce a result much more consistent with Staff's estimate. Removing his inappropriate "leverage" adjustment would decrease his DCF result by 51 basis points. Further, adjusting his growth rate to reflect the average of the same 3 growth rate sources he utilized in the Companies' last rate case (i.e., Value Line, IBES, and Zacks) would reduce his DCF estimate by an additional 80 basis points. Thus, his DCF result would be 8.36%. This is consistent with, and in fact lower than, Staff's 8.50% DCF estimate.

Taken together, those corrections to his CAPM and DCF estimates would produce a cost of common equity of 8.89%. This is much more consistent with

my 8.85% estimate for the Gas Group than it is with Mr. Moul's 11.25% recommendation.

Q57. Does this conclude your direct testimony?

A57. Yes, it does.