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BEFORE THE

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. GR-2004-0209

REBUTTAL TESTIMONY AND EXHIBITS

OF

ROGER A. MORIN

On Behalf of

Missouri Gas Energy

MAY 2004

REBUTTAL TESTIMONY OF ROGER A. MORIN

CASE NO. GR-2004-0209

MAY 24, 2004

INDEX TO TESTIMONY

Q. PLEASE STATE YOUR NAME, ADDRESS, AND OCCUPATION.

A. My name is Dr. Roger A. Morin. My business address is Georgia State University, Robinson College of Business, University Plaza, Atlanta, Georgia, 30303. I am Professor of Finance at the College of Business, Georgia State University and Professor of Finance for Regulated Industry at the Center for the Study of Regulated Industry at Georgia State University. I am also a principal in Utility Research International, an enterprise engaged in regulatory finance and economics consulting to business and government.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I hold a Bachelor of Engineering degree and an MBA in Finance from McGill University, Montreal, Canada. I received my Ph.D. in Finance and Econometrics at the Wharton School of Finance, University of Pennsylvania.

Q. PLEASE SUMMARIZE YOUR ACADEMIC AND BUSINESS CAREER.

A. I have taught at the Wharton School of Finance, University of Pennsylvania, Amos Tuck School of Business at Dartmouth College, Drexel University, University of Montreal, McGill University, and Georgia State University. I was a faculty member of Advanced Management Research International, and I am currently a faculty member of The Management Exchange Inc. and Exnet, where I continue to conduct frequent national executive-level education seminars throughout the United States and Canada. In the last twenty years, I have conducted numerous national seminars on "Utility Finance," "Utility Cost of Capital," "Alternative Regulatory Frameworks," and on "Utility Capital Allocation," which I have developed on behalf of The Management Exchange Inc. in conjunction with Public Utilities Reports, Inc.

I have authored or co-authored several books, monographs, and articles in academic scientific journals on the subject of finance. They have appeared in a variety of journals, including The Journal of Finance, The Journal of Business Administration, International Management Review, and Public Utility Fortnightly. I published a widely-used treatise on regulatory finance, Utilities' Cost of Capital, Public Utilities Reports, Inc., Arlington, Va. 1984. My more recent book on regulatory matters, Regulatory Finance is a voluminous treatise on the application of finance to regulated utilities and was released by the same publisher in late 1994. I have engaged in extensive consulting activities on behalf of numerous corporations, legal firms, and regulatory bodies in matters of financial management and corporate litigation. Schedule RAM-1 describes my professional credentials in more detail.

Q. HAVE YOU TESTIFIED ON COST OF CAPITAL BEFORE?

A. Yes, I have been a cost of capital witness before more than 40 regulatory bodies in North America, including the Missouri Public Service Commission ("MPSC"), the Federal Energy Regulatory Commission, and the Federal Communications Commission. I have also testified before the following state and provincial commissions:

Alabama	Indiana	New Brunswick	Pennsylvania
Alaska	Iowa	New Jersey	Quebec
Alberta	Kentucky	New York	South Carolina
Arizona	Louisiana	Newfoundland	South Dakota
British Columbia	Manitoba	North Carolina	Tennessee
California	Michigan	North Dakota	Texas
Colorado	Minnesota	Nova Scotia	Utah
Florida	Mississippi	Ohio	Vermont
Georgia	Missouri	Oklahoma	Washington
Hawaii	Montana	Ontario	West Virginia
Illinois	Nevada	Oregon	

The details of my participation in regulatory proceedings are provided in Exhibit RAM-1.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR REBUTTAL TESTIMONY.

A. I have been asked by Missouri Gas Energy ("MGE"), an operating division of Southern Union Company, to provide rebuttal testimony to Mr. Murray's rate of return testimony filed on behalf of the Staff of the Missouri Public Service Commission ("MPSC" or the "Commission").

Q. WOULD YOU PLEASE BRIEFLY IDENTIFY THE EXHIBITS AND APPENDIX WHICH ACCOMPANY YOUR REBUTTAL TESTIMONY?

A. Yes. I have attached to my rebuttal testimony Schedule RAM-1 and Schedule RAM-2. These Schedules relate directly to points in my rebuttal testimony, and are described in further detail in connection with those points.

Q. PLEASE SUMMARIZE MR. MURRAY'S RATE OF RETURN RECOMMENDATION.

A. In determining MGE's return on common equity capital ("ROE"), Mr. Murray performs a comparable company analysis of eight companies using the plain vanilla Discounted Cash Flow (DCF) model as the primary tool to determine the required return on MGE. As a check on the DCF results, he performs a Risk Premium and a Capital Asset Pricing Model (CAPM) analysis, but no weight is attached to these results in arriving at his recommendation:

> *"I am recommending a return on common equity in the range of 8.52% to 9.52% **based on the results of the DCF analysis**."* (Murray testimony page 33)

Based on the results of this single DCF analysis, he recommends a return of only 8.52% - 9.52% on MGE's common equity capital.

Q. WHAT IS YOUR GENERAL REACTION TO MR. MURRAY'S RETURN ON COMMON EQUITY RECOMMENDATION?

A. My general reaction to his testimony, even before I engage in a more detailed critique, is that there are major infirmities in Mr. Murray's testimony. His recommendation of 8.52% - 9.52% rests almost exclusively on the results of a highly questionable and stale DCF analysis. This narrow approach stands in sharp contrast with the cost of capital estimation practices of investment analysts, finance experts, corporate analysts, and finance professionals. The Commission's hands should not be bound to one methodology of estimating equity returns, nor should the Commission ignore relevant evidence and back itself into a corner. Not only has Mr. Murray put all of his eggs in the DCF basket but he also relies on stale two-year old and inappropriate growth rates in his DCF analysis. His risk premium check contains a serious logical inconsistency whereby Mr. Murray was forced to assume the ROE answer before he even began his determination of MGE's return on equity with this approach.

His CAPM check on the DCF result also is flawed, as I discuss later. In short, Mr. Murray employs inappropriate and stale model inputs throughout his analyses, which causes him to recommend returns that are well below investors' required returns.

I also find that Mr. Murray's recommended 8.52% - 9.52% ROE for MGE is well outside the zone of currently authorized ROEs for utilities in the United States and would be among the lowest, if not the lowest, ROE in the country. Moreover, Mr. Murray's recommended ROE lies well outside the zone of his own comparable companies' authorized ROEs. These are clear indications that his return on equity recommendation for MGE is too low.

Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TO MR. MURRAY'S RETURN ON EQUITY TESTIMONY?

A. Mr. Murray seriously understates MGE's required return on common equity. A proper application of cost of capital methodologies would give results substantially higher than those that he obtained. Mr. Murray's overall testimony and recommendations are well outside the mainstream of both financial theory and practice. As such, Mr. Murray's opinion as to an ROE for MGE is fundamentally unsupported and unreliable. I do not believe that Mr. Murray's testimony can be credited with providing the Commission with any expert analysis that can give it insight in responsibly addressing the ROE issue in this case.

Q. PLEASE SUMMARIZE YOUR SPECIFIC CRITICISMS OF MR. MURRAY'S TESTIMONY.

A. I have fifteen specific criticisms:

1. Allowed returns far out of the mainstream. Mr. Murray's recommended return is outside the zone of currently allowed rates of return for natural gas utilities in the United States and for his own sample of companies. The average allowed return on equity for gas utilities in the years 2002 and 2003 was 11% for the average risk gas utility and is 11.1% for the first quarter of 2004. These authorized returns exceed by a significant margin Mr. Murray's anemic 8.52% - 9.52% recommended return for MGE, a riskier than average natural gas utility. Furthermore, the currently authorized ROE for Mr. Murray's own comparable companies is much higher than his recommended ROE for MGE.

2. DCF Dividend Yield. Mr. Murray's dividend yield component is understated by approximately 30 basis points because it does not allow for flotation costs, and a legitimate stockholder expense is left unrecovered.

3. DCF Functional Form. Mr. Murray's DCF formulation understates the required return on common equity capital. Use of the proper DCF functional form raises his estimate by approximately 30 basis points.

4. Quarterly Timing of Dividends. Mr. Murray's dividend yield component is understated by 20 basis points because it ignores the time value of quarterly dividend payments.

5. The use of an average 4-month stock price in the DCF model. Mr. Murray's application of the DCF model violates market efficiency principles and mismatches stock price and expected growth.

6. Two-Year Old Data. Inexplicably, Mr. Murray relies on stale growth rates ending in 2002 in his DCF analysis and ignores 2004 growth data. Not too surprisingly, the use of current growth data increases his DCF estimates by 40 basis points.

7. DCF Historical Growth Rates. Mr. Murray relies extensively on natural gas utility historical growth data despite sea changes occurring in the energy industry. The stock price in the DCF model is predicated on analysts' growth forecasts and not on historical growth rates. The use of forward-looking growth rates suggest much higher DCF estimates of the return on common equity than Mr. Murray has obtained.

8. DCF Dividend Growth Rates. Mr. Murray employs historical and projected dividend growth in his DCF analysis even though energy utilities have reduced, and continue to reduce, dividend payouts. Because energy utilities have lowered their dividend payout ratio in recent years and are expected to continue to do so over the next several years, the use of short-term dividend growth projections as proxies for long-term growth is inappropriate in the DCF model. Earnings growth projections are far more relevant at this time. Whenever the dividend payout ratio is expected to change, the results obtained from using dividend growth in the standard DCF model are of questionable relevance. The use of earnings growth forecasts suggests much higher DCF estimates of the return on common equity than Mr. Murray has recommended.

9. Risk Premium Method. Mr. Murray's Risk Premium method contains a serious logical inconsistency because he is using expected returns that differ from his recommended ROE and is in effect recommending two recommended ROEs. Mr. Murray's assumes that investors expect substantially higher returns from investments in his comparable risk gas utilities than the returns that he concludes such utilities should be permitted to earn.

10. Stale CAPM Risk-Free Rate. Mr. Murray's CAPM results are understated by 50 basis points because his proxy for the risk-free rate is stale given that current long-term interest rates are 50 basis points higher than what he assumed.

11. CAPM Market Risk Premium. Mr. Murray's CAPM estimate is downward-biased by a total of 100 basis points because: 1) it relies on the total return component of bond return instead of the income component that leads to a 40 basis points downward bias, 2) it relies in part on unrepresentative short-term time periods where the market risk premium was negative, and 3) it is stale and understates the current market risk premium by 60 basis points.

12. CAPM and the Empirical CAPM (ECAPM). The plain vanilla version of the CAPM used by Mr. Murray understates the Company's required return on equity by another 50 basis points.

13. Bond Rating Adjustment. Mr. Murray adjusts his DCF estimates upward by 32 basis points in order to recognize Southern Union's bond rating of BBB versus the average bond rating of A for his comparable companies. The 32 basis points are based arbitrarily on a nine-year average spread between BBB and A utility bonds. The current spread between A and BBB bonds is far more relevant and is currently 50 basis points, and not the 32 basis points assumed by

Mr. Murray. The result is an 18 basis points understatement for Mr. Murray's recommended ROE.

14. Capital Structure Adjustment. Mr. Murray did not adjust his recommended return on equity for the fact that the capital structure he attributes to MGE is more highly leveraged than that of the comparable companies he uses. In other words, his comparable companies are less risky than MGE and his return on equity estimates based on his sample of less risky companies are understated by 180 - 330 basis points.

15. **Inappropriate reliance on a single method.** Mr. Murray exclusively relies on the DCF method, an approach at odds with recognized standards for cost of capital analysis. The last section of my rebuttal of Mr. Murray's testimony includes a discussion on the need to rely on multiple methods when estimating the cost of common equity capital and the dangers of relying solely on the DCF approach as Mr. Murray has done.

1. ALLOWED RETURNS

Q. IS MR. MURRAY'S RATE OF RETURN RECOMMENDATION COMPATIBLE WITH CURRENTLY ALLOWED RETURNS IN THE NATURAL GAS UTILITY INDUSTRY?

A. No, it is not. Allowed returns, while certainly not a precise indication of a particular company's required return on equity capital, are nevertheless important determinants of investor growth perceptions and investor expected returns. They also serve to provide some perspective on the validity and reasonableness of Mr. Murray's recommendation.

The average allowed return in the gas utility industry in both the years 2002 and 2003 as reported by Regulatory Research Associates in its most recent quarterly survey of regulatory decisions dated March 2004 was 11% for both years. In the first quarter of 2004, the average authorized ROE is 11.1%. These ROE awards exceed by a substantial margin Mr. Murray's recommended ROE of 8.52% - 9.52% for MGE, an above average risk utility.

I have also examined the range of returns currently allowed on common equity for the eight natural gas utilities in Mr. Murray's sample group as reported in C.A. Turner Utility Reports survey for May 2004. The currently authorized ROEs for Mr. Murray's sample, shown in Table 1 below, average 11.14%:

TABLE 1

COMPANY	% ALLOWED ROE
AGL Resources	10.99%
Cascade Natural Gas	11.75%
New Jersey Resources	11.50%
Northwest Natural Gas	10.20%

Peoples Energy	11.20%
Piedmont Natural Gas	11.30%
South Jersey Industries	11.25%
WGL Holdings	10.95%
AVERAGE	**11.14%**

Source: C.A. Turner Utility Reports 05/04

In short, Mr. Murray's recommendation is outside the mainstream of currently allowed rates of return for Mr. Murray's comparable companies, and lies outside the mainstream of recently authorized returns for natural gas utilities in Unites States.

2. DIVIDEND YIELD AND FLOTATION COST

Q. DO YOU HAVE ANY COMMENT ON MR. MURRAY'S DIVIDEND YIELD COMPONENT IN HIS DCF APPROACH?

A. Yes. I disagree with Mr. Murray's dividend yield calculation in his DCF analysis because it ignores flotation costs. As I discuss below, total flotation costs amount to 5%, which in turn amount to approximately 30 basis points for MGE. Mr. Murray has thus understated MGE's return on equity by 30 basis points as a result of this omission alone.

Q. WHAT FLOTATION COST TREATMENT DID MR. MURRAY RECOMMEND IN THIS CASE?

A. Mr. Murray does not include any allowance whatsoever for flotation costs. Mr. Murray is completely silent on the subject, so I can only assume that he believes that an allowance for recovery of such costs is unwarranted. I am surprised by Mr. Murray's reluctance to even mention the subject of an allowance for flotation costs given that such an adjustment to the return on common equity capital is routinely discussed and applied in most corporate finance textbooks.

Q. SHOULD THE RETURN ON EQUITY BE ADJUSTED TO INCLUDE AN ALLOWANCE FOR FLOTATION COSTS?

A. Yes, definitely. Flotation costs are very similar to the closing costs on a *home mortgage. In the case of issues of new equity, flotation costs represent the* discounts that must be provided to place the new securities. Flotation costs have a direct and an indirect component. The direct component represents monetary compensation to the security underwriter for marketing/consulting services, for the risks involved in distributing the issue, and for any operating expenses *associated with the issue (printing, legal, prospectus, etc.). The indirect* component represents the downward pressure on the stock price as a result of the increased supply of stock from the new issue. The latter component is frequently referred to as "market pressure".

Flotation costs for common stock are analogous to the flotation costs associated with past bond issues which, as a matter of routine regulatory policy, continue to be amortized over the life of the bond, even though no new bond issues are contemplated. In the case of common stock, which has no finite life, flotation costs are not amortized. Therefore, the recovery of flotation costs requires an upward adjustment to the allowed return on equity.

As demonstrated in Schedule RAM-2, the expected dividend yield component of the DCF model must be adjusted for flotation cost by dividing it by (1 - f), where f is the flotation cost factor. Failure to make such an adjustment leads to a 30 basis points understatement ROE.

Q. IS A FLOTATION COST ADJUSTMENT REQUIRED FOR A COMPANY LIKE MGE THAT DOES NOT TRADE PUBLICLY AND IS AN OPERATING DIVISION OF A HOLDING COMPANY?

A. Yes, it is. It is sometimes alleged that a flotation cost allowance is inappropriate if the utility is a subsidiary or an operating division whose equity capital is obtained from its parent. This objection is unfounded since the parent-subsidiary relationship does not eliminate the costs of a new issue, but merely transfers them to the parent. It would be unfair and discriminatory to subject parent shareholders to dilution while individual shareholders are absolved from such dilution. Fair treatment must consider that, if the utility-subsidiary had gone to the capital markets directly, flotation costs would have been incurred.

3. DCF FUNCTIONAL FORM

Q. DR. MORIN, DO YOU HAVE ANY COMMENT ON THE FUNCTIONAL FORM OF THE DCF MODEL USED BY MR. MURRAY?

A. Yes, I do. I disagree with Mr. Murray's dividend yield calculation in his DCF analysis because he failed to multiply the spot dividend yield by one plus the expected growth rate (1 + g) as clearly required by the annual DCF model. This flaw understates the return expected by the investor by approximately 30 basis points. For example, for a spot dividend yield of 5% and a growth rate of 6%, the correct expected dividend yield is 5.0% times (1 + 0.06) which equals 5.3% and not 5.0%. The correct dividend yield to employ is 5% times (1 + .06) which equals 5.3%.

The fundamental assumption of the annual DCF model used by Mr. Murray is that dividends are received by investors annually at the end of each year and that the first dividend is to be received by the investor *one year from now*. Since the appropriate dividend to use in the plain vanilla annual DCF model is the prospective dividend one year from now, rather than the current dividend yield, Mr. Murray's approach understates the proper dividend yield. This creates a downward bias in his dividend yield component, and underestimates the return on equity by approximately 30 basis points.

4. QUARTERLY DCF MODEL

Q. PLEASE COMMENT ON THE USE OF THE ANNUAL DCF MODEL.

A. The DCF model used by Mr. Murray assumes that dividend payments are made annually at the end of the year and are increased once a year, while most utilities in fact pay dividends on a quarterly basis. Since the stock price fully reflects the quarterly payment of dividends, it is essential that the DCF model used to estimate equity returns also reflect the actual timing of quarterly dividends. In the same way that bond yield calculations are routinely adjusted to reflect semiannual interest payments, it stands to reason that stock yields should be similarly adjusted for quarterly compounding. It should be pointed out that the quarterly DCF model uses the exact same assumptions as the annual DCF model, but refines the latter so as to capture the exact timing of cash flows received by the investor. By failing to recognize the quarterly nature of dividend payments in his DCF computation, Mr. Murray understates the required return on equity capital by about 20 basis points.

A bank rate on deposits which does not take into consideration the timing of the interest payments understates the true yield of the investment if interest payments are received more than once a year. The same is true for stocks. Since the stock price employed in the DCF model reflects a quarterly stream of dividends, it stands to reason that the quarterly nature of dividend payments be explicitly recognized. Cash flows, that is, dividends, are actually received quarterly. Thus, a quarterly model should be applied. This is because investors set prices based on the present value of the cash flows that they receive. Since investors receive dividends quarterly, a quarterly model best matches the investor's expectations to the prices set in the market place and those prices reflect the quarterly receipt of cash flows.

5. DCF STOCK PRICE

Q. CAN YOU COMMENT ON MR. MURRAY'S STOCK PRICE IN HIS DCF MODEL?

A. In his implementation of the DCF model, shown on his Schedule 17, Mr. Murray uses the average stock price over the October 2003 to January 2004 four-month period. I disagree with the use of such a stale stock price reaching as far back as October 2003. The stock price to employ is the current price of the security at the time of estimating the return on equity, rather than some historical average stock price reaching back six months. The reason is that the analyst is attempting to determine a utility's return on equity in the future, and since current stock prices provide a better indication of expected future prices than any other price according to the basic tenets of the Efficient Market

Hypothesis, the most relevant stock price is the most recent one. The Efficient Market Hypothesis, which is widely accepted, states that capital markets, at least as a *practical matter, incorporate into security prices relevant publicly available* information, such that current security prices reflect the most recent information and thus are the best representation of investor expectations. Use of any other price violates market efficiency principles.

There is yet another justification for using current stock prices. In measuring the required return on equity as the sum of dividend yield and growth, the period used in measuring the dividend yield component must be consistent with the estimate of growth that is paired with it. Since the current stock price is caused by the growth foreseen by investors at the present time and not at any other time, it is clear that the use of spot prices is preferable. Mr. Murray has essentially mismatched a stale average stock price reaching as far back as October 2003 with a current estimate of expected growth. This not only violates market efficiency principles, but also constitutes a mismatch in the application of the DCF model. Actually, the situation is even worse for Mr. Murray because he has matched a stock price calculated over the October 2003-January 2004 period with growth rates that are heavily weighed toward historical growth rates ending in 2002. It is entirely inappropriate and completely illogical to match a current stock price with a historical growth rate ending two years earlier.

DCF GROWTH RATES

Q. WHAT GROWTH RATE ANALYSIS DID MR. MURRAY EMPLOY?

A. *Mr. Murray employs a veritable smorgasbord of nine proxies for the DCF* growth component. They are:

1. Historical growth rates in dividends per share, 5-year
2. Historical growth rates in dividends per share, 10-year
3. Historical growth rates in earnings per share, 5-year
4. Historical growth rates in earnings per share, 10 year
5. Historical growth rates in book value per share, 5-year
6. Historical growth rates in book value per share, 10-year
7. IBES consensus forecast of earnings per share
8. S&P forecast of earnings per share
9. Value Line forecast of earnings per share

Mr. Murray uses the average growth rate from all the proxies as input to the DCF model. I have serious reservations with this shotgun approach.

Q. PLEASE COMMENT ON MR. MURRAY'S GROWTH PROXIES.

A. Table 3 below replicates the average growth estimates for Mr. Murray's sample of natural gas utilities obtained from each proxy (see Murray Schedules 15-1, 15-2, 16).

TABLE 2

Mr. Murray's DCF Growth Rates

Historical 10-yr DPS	1.7%
Historical 10-yr EPS	4.4%
Historical 10-yr BPS	3.4%
Historical 5-yr DPS	1.7%
Historical 5-yr EPS	1.7%
Historical 5-yr BPS	3.8%
Forecast IBES EPS	4.8%
Forecast S&P EPS	4.8%

Forecast Value Line EPS	5.8%
AVERAGE	**3.5%**

The overall average growth rate from all the proxies, as shown at the bottom of the first column is 3.5% for the group. There are some very serious problems with Mr. Murray's approach to DCF growth rates:

1. Inclusion of negative growth rates.
2. Use of 2-year old growth rates.
3. Unrepresentative and redundant historical growth rates.
4. Dividend growth rates.

I shall discuss each of these problems in turn.

NEGATIVE GROWTH RATES

Q. DR. MORIN, DO NEGATIVE GROWTH RATES MAKE SENSE IN IMPLEMENTING THE DCF MODEL?

A. No, they do not. Investors certainly do not expect energy utilities to grow at a negative growth rate forever, as the DCF model assumes. Such negative growth rates should be excluded from any DCF analysis, as Mr. Murray should have done. Table 2 below replicates Mr. Murray's original growth rates both with and without the inclusion of negative growth rates.

Table 2
Mr. Murray's DCF Growth Rates

	Original	Excl. Negative
Historical 10-yr DPS	1.7%	1.7%
Historical 10-yr EPS	4.4%	5.2%
Historical 10-yr BPS	3.4%	3.4%
Historical 5-yr DPS	1.7%	1.7%

Historical 5-yr EPS	1.7%	4.9%
Historical 5-yr BPS	3.8%	3.8%
Forecast IBES EPS	4.8%	4.8%
Forecast S&P EPS	4.8%	4.8%
Forecast Value Line EPS	5.8%	5.8%
AVERAGE	**3.5%**	**4.0%**

The difference between the two average growth rates with and without the negative growth rates is 50 basis points. It is transparent from the table that the *exclusion of negative growth rates raises* Mr. Murray's DCF *growth rate, and* therefore his recommended ROE, by 50 basis points from this correction alone.

6. TWO-YEAR OLD DATA

Q. DR. MORIN, DO YOU HAVE ANY IDEA WHY MR. MURRAY UTILIZES HISTORICAL GROWTH RATES ENDING IN 2002 IN IMPLEMENTING THE DCF MODEL IN 2004?

A. No, I do not. This procedure is inexplicable unless Mr. Murray's approach is results-driven. I am puzzled as to why Mr. Murray chooses to use historical growth rates ending in 2002 in a ROE recommendation for 2004 when current 2004 growth data are widely available from the same Value Line source used extensively in Mr. Murray's testimony. His testimony and schedules are replete with references to current 2003 and 2004 market data in other contexts but not in case of historical growth rates.

In order to assess the impact of this highly unusual procedure, I proceeded to update Mr. Murray's historical growth rates with current Value Line estimates. The original stale 2002 and updated 2004 growth rates are shown in the table below.

Table 3
Mr. Murray's 2002 vs 2004 Growth Rates

	Stale 2002	Updated 2004
Historical 10-yr DPS	1.7%	1.7%
Historical 10-yr EPS	4.4%	4.6%
Historical 10-yr BPS	3.4%	3.3%
Historical 5-yr DPS	1.7%	1.9%
Historical 5-yr EPS	1.7%	4.0%
Historical 5-yr BPS	3.8%	3.4%
AVERAGE	**2.8%**	**3.2%**

The difference between the stale average ending in 2002 and the current 2004 average is that the latter is 40 basis points higher. Therefore, the inclusion of current 2004 historical growth data raises Mr. Murray's DCF growth rate, and therefore his recommended ROE, by 40 basis points from this correction alone.

Q. PLEASE COMMENT ON THE CONSISTENCY OF MR. MURRAY'S GROWTH PROXIES.

A. *Table 3 Column 1 below replicates the average growth estimates for Mr.* Murray's sample of gas utilities obtained from each proxy (see Murray Schedules 15-16). The second column shows the growth average excluding dividend growth rates, the third column shows the growth average using only forecast growth data, and the last column shows the growth average using dividend growth proxies only.

TABLE 4

Mr. Murray's Growth Rates
Natural Gas Utilities Group

	ALL (1)	Excl DPS (2)	Forecast (3)	Only DPS (4)
Historical 10-yr DPS	1.7%			1.7%
Historical 10-yr EPS	4.4%	4.4%		
Historical 10-yr BPS	3.4%	3.4%		
Historical 5-yr DPS	1.7%			1.7%
Historical 5-yr EPS	1.7%	1.7%		
Historical 5-yr BPS	3.8%	3.8%		
Forecast IBES EPS	4.8%	4.8%	4.8%	
Forecast S&P EPS	4.8%	4.8%	4.8%	
Forecast Value Line EPS	5.8%	5.8%	5.8%	
AVERAGE	**3.5%**	**4.1%**	**5.1%**	**1.7%**

Source: Mr. Murray Schedules 15-16

The overall average growth rate from all the proxies, as shown at the bottom of Column 1, is 3.5% for the group. It is very clear from this table that the dividend growth proxies average of 1.7% shown at the bottom of the last column is an *outlier*, compared to the average of 4.1% computed by excluding the dividend proxies (Column 2) and compared to the average of 5.1% obtained from the growth forecast proxies (Column 3).

Table 5 below shows the same calculations excluding the implausible negative growth rates discussed earlier from Mr. Murray's computation of growth averages.

TABLE 5

Mr. Murray's Growth Rates
Natural Gas Utilities Group

ALL (1)	Excl DPS (2)	Forecast (3)	Only DPS (4)

Historical 10-yr DPS	1.7%			1.7%
Historical 10-yr EPS	5.2%	5.2%		
Historical 10-yr BPS	3.4%	3.4%		
Historical 5-yr DPS	1.7%			1.7%
Historical 5-yr EPS	4.9%	4.9%		
Historical 5-yr BPS	3.8%	3.8%		
Forecast IBES EPS	4.8%	4.8%	4.8%	
Forecast S&P EPS	4.8%	4.8%	4.8%	
Forecast Value Line EPS	5.8%	5.8%	5.8%	
AVERAGE	**4.0%**	**4.6%**	**5.1%**	**1.7%**

Source: Mr. Murray Schedules 15-16

The same pattern is evident from Table 5. The dividend growth proxies average of 1.7% shown at the bottom of the last column is clearly an outlier, compared to the average of 4.6% computed by excluding the dividend proxies (Column 2) and compared to the average of 5.1% obtained from the growth forecast proxies (Column 3).

I show below that historical growth rates are inappropriate proxies for expected growth at this time and that dividend growth, both historical and prospective, is an improper proxy as well. Excluding the historical proxies and the outlying dividend growth forecast from Column 3, the average growth estimates that should have been used by Mr. Murray is between 4.6% and 5.1%, closer to 5%, and not the 3.9% - 4.9% range used by Mr. Murray. Use of the latter growth rate would raise his DCF estimates by at least 50 basis points.

7. HISTORICAL GROWTH RATES

Q. PLEASE DISCUSS THE USE OF HISTORICAL GROWTH RATES IN APPLYING THE DCF MODEL TO NATURAL GAS UTILITIES.

A. As proxies for the DCF growth component, Mr. Murray relies extensively on historical ten-year and five-year growth rates. Six of his nine growth proxies are historical growth rates. Under circumstances of stability, it is reasonable to assume that historical growth rates in dividends/earnings influence investors' assessment of the long-run growth rate of future dividends/earnings. But, these are anything but stable times in the energy industry.

Historical growth rates have little relevance as proxies for future long-term growth. They are downward-biased by the sluggish earnings performance in the last five years, due to the structural transformation of the energy utility industry from a regulated monopoly to a competitive environment. Historical growth rates are certainly not representative of energy utilities' long-term earning power, and produce unreasonably low DCF estimates, well outside reasonable limits of probability and common sense.

I therefore recommend that the MPSC reject the use of historical growth rates as proxies for expected growth in the DCF calculation in this proceeding. In any event, as I discuss below, historical growth rates are largely redundant because such historical growth patterns are already incorporated in analysts' growth forecasts that should be used in the DCF model.

8. DIVIDEND GROWTH RATES

Q. SHOULD MR. MURRAY HAVE CONSIDERED DIVIDEND GROWTH PROXIES IN APPLYING THE DCF MODEL?

A. No, he should not. It is abundantly clear from the above Tables 4 and 5 that the average dividend growth proxies of 1.7% is an outlier, when compared with the other proxies showing growth rates that are in the 4.0% - 5.0% range. Mr. Murray should not have considered dividend growth in applying the DCF model. This is because it is widely expected that natural gas utilities will continue to lower their dividend payout ratio over the next several years in response to the gradual penetration of competition in the revenue stream. In other words, earnings and dividends are not expected to grow at the same rate in the future. According to the latest edition of Value Line, the expected dividend growth of 1.8% for Mr. Murray's sample of natural gas utilities is far less than the expected earnings growth of 5.4% over the next few years. Mr. Murray's own growth results show a similar pattern on his Schedules 15-1 and 15-2, reproduced in Table 5 above.

Whenever the dividend payout ratio is expected to change, the intermediate growth rate in dividends cannot equal the long-term growth rate, because dividend/earnings growth must adjust to the changing payout ratio. The assumptions of constant perpetual growth and constant payout ratio are clearly not met. The implementation of the standard DCF model is of questionable relevance in this circumstance.

Dividend growth rates are unlikely to provide a meaningful guide to investors' growth expectations for energy utilities. This is because utilities' dividend policies have become increasing conservative as business risks in the industry have intensified steadily. Dividend growth has remained largely stagnant in past years as utilities are increasingly conserving financial resources in order to hedge against rising business risks. To wit, the dividend payout ratios of energy utilities has steadily decreased from about 80% ten years ago to the 60% level today. As a result, investors' attention has shifted from dividends to earnings. Therefore, earnings growth provides a more meaningful guide to investors' long-term growth expectations. After all, it is growth in earnings that will support future dividends and share prices.

Q. IS THERE ANY EMPIRICAL EVIDENCE DOCUMENTING THE IMPORTANCE OF EARNINGS IN EVALUATING INVESTORS' EXPECTATIONS IN THE INVESTMENT COMMUNITY?

A. Yes, there is an abundance of evidence attesting to the importance of earnings in assessing investors' expectations. First, the sheer volume of earnings forecasts available from the investment community relative to the scarcity of dividend forecasts attests to their importance. To illustrate, Value Line, Zacks Investment, First Call Thompson, and Multex provide comprehensive compilations of investors' earnings forecasts, to name some. The fact that these investment information providers focus on growth in earnings rather than growth in dividends indicates that the investment community regards earnings growth as a superior indicator of future long-term growth. Second, a survey of analytical techniques actually used by analysts published in the Financial Analysts Journal revealed the dominance of earnings. When asked to rank the relative importance of earnings, dividends, cash flow, and book value in analyzing securities, only three ranked dividends first while 276 ranked it last. The survey concluded that earnings are considered far more important than dividends. Third, Value Line's principal investment rating assigned to individual stocks, Timeliness Rank, is based primarily on earnings, accounting for 65% of the ranking.

Q. PLEASE DISCUSS THE USE OF ANALYSTS' FORECASTS IN APPLYING THE DCF MODEL TO UTILITIES.

A. The best proxy for the growth component of the DCF model is analysts' long-term earnings growth forecasts. Mr. Murray should have relied heavily on such forecasts in deriving the DCF growth component, specifically on the consensus long-term earnings growth forecast of 5.1% reported earlier in Tables 4 and 5. These forecasts are made by large reputable organizations, and the data are readily available to investors and are representative of the consensus view of investors.

Q. WHAT DOES THE PUBLISHED ACADEMIC LITERATURE SAY ON THE SUBJECT OF GROWTH RATES IN THE DCF MODEL?

A. Published studies in the academic literature demonstrate that growth forecasts made by security analysts are reasonable indicators of investor expectations, and that investors rely on analysts' forecasts. Cragg and Malkiel [*"Expectations and the Structure of Share Prices"*, Chicago: University of Chicago Press, 1982] present detailed empirical evidence that the average analysts' expectation is more similar to expectations being reflected in the market place than are historical growth rates. Cragg and Malkiel show the historical growth rates do not contain any information that is not already impounded in analysts' growth forecasts. A study by Professors Vander Weide and Carleton, *"Investor Growth Expectations: Analysts vs. History"* (<u>The Journal of Portfolio</u>

Management, Spring 1988), also confirms the superiority of analysts' forecasts over historical growth extrapolations. Another study by Timme & Eiseman, "*On the Use of Consensus Forecasts of Growth in the Constant Growth Model: The Case of Electric Utilities,*" Financial Management, Winter 1989, produces similar results.

Q. WHAT DO YOU CONCLUDE FROM MR. MURRAY'S GROWTH RATE ANALYSIS?

A. If we dismiss the historical growth rates and the dividend forecasts from Mr. Murray's myriad proxies, we are left with analysts' growth forecasts. Given the analyst growth projections shown on his Schedule 16 and my Table 5 above for the sample group, Mr. Murray should have used a growth rate of close to 5% and not the 3.9% - 4.9% range used by Mr. Murray. Use of the latter growth rate would raise his DCF estimates by at least 50 basis points.

9. RISK PREMIUM METHOD

Q. DO YOU HAVE ANY OBJECTIONS TO THE RISK PREMIUM METHODOLOGY USED BY MR. MURRAY?

A. Yes, I have. To apply the risk premium method, Mr. Murray subtracts the yield on U.S. 30-Year Treasury bonds from the expected ROE reported by Value Line for each month from January 1994 to December 2003. The average difference between the expected ROE and the 30-year Treasury bonds constitutes Mr. Murray's risk premium estimate. He relies on Value Line's forecast of the expected return for each of his 8 comparable natural gas utilities. There is a fundamental problem with Mr. Murray's risk premium methodology.

Q. PLEASE DISCUSS THE FUNDAMENTAL PROBLEM WITH MR. MURRAY'S RISK PREMIUM ESTIMATES.

A. Mr. Murray's risk premium method contains a fatal logical flaw: the method requires an estimate of ROE to be implemented. In other words, his method requires him to assume the ROE answer to start with. But if the ROE input required by the model differs from the recommended ROE, a fundamental contradiction in logic follows. Mr. Murray's recommended 8.52% - 9.52% ROE is far removed from the ROEs he uses in the risk premium method. In Table 6 below, I show the expected returns (ROE) used my Mr. Murray for each of his 8 natural gas utilities as of December 2003.

Table 6 Expected ROE Estimates

Company	Expected ROE
AGL Resources	13.5%
Cascade Natural Gas	12.5%
New Jersey Resources	15.0%
Northwest Natural Gas	9.0%
Peoples Energy	12.0%

Piedmont Natural Gas	10.5%
South Jersey Industries	12.5%
WGL Holdings	12.0%
Average	**12.1%**

Source: Mr. Murray Schedules 20-1 to 20-8

The average expected return of 12.1% used in Mr. Murray's risk premium computation and reported on his Schedules 20-1 to 20-8 differ markedly from his recommended 8.52% - 9.52% ROE. Mr. Murray is assuming in effect that his sample companies will earn a ROE exceeding what Mr. Murray has determined to be their required return on equity forever, that is, he is assuming that these companies will earn a ROE higher than that granted by their regulators and *reflected in their rates. While this scenario implicit in Mr. Murray's risk premium* method may be imaginable for an unregulated company with substantial market power, it is implausible for a regulated company whose rates are set by its regulator at a level designated to permit the company to earn a return equal to its cost of capital. In essence, Mr. Murray is using an ROE that differs from his final recommended ROE, and is requesting the Commission to make two inconsistent findings regarding ROE. I am perplexed as to why Mr. Murray assumes that his group of comparable gas utilities is expected to earn some 12.1% forever, while at the same time he recommends an ROE of only 8.52% - 9.52%. The only way that these gas utilities can earn an ROE of 12.1% is if rates are set so that they will in fact earn 12.1%. So, how can the return on equity be any different from 12.1%?

Q. DR. MORIN, DID YOU DETECT ANY OTHER FLAW IN MR. MURRAY'S RISK PREMIUM ESTIMATES.

A. Yes, I did. Another difficulty with Mr. Murray's risk premium approach is that the forecasts of the expected return on equity published by Value Line are based on end-of-period book equity rather than on average book equity. The following formula, discussed and derived in Chapter 5 of my book, Regulatory Finance, adjusts the reported end-of-year values so that they are based on average common equity, which is the common regulatory practice:

$$r_a = r_t \frac{2\,B_t}{B_t + B_{t-1}}$$

Where: r_a = return on average equity
r_t = return on year-end equity as reported
B_t = reported year-end book equity of the current year
B_{t-1} = reported year-end book equity of the previous year

The result of this error is that Mr. Murray's risk premium estimates are understated by some 10-20 basis points, depending on the magnitude of the book value growth rate.

Q. DID MR. MURRAY ACCORD ANY WEIGHT TO HIS RISK PREMIUM ESTIMATE OF THE COMPANY'S ROE?

A. No, he did not. On his Schedule 21, Mr. Murray shows a risk premium estimate of 10.64% which becomes almost 11% after adding Mr. Murray's upward risk adjustment of 32 basis points in recognition of the Company's weaker bond rating. Yet, strangely enough, he gives absolutely no weight to this result of 11% in arriving at his ROE recommendation of 8.52% - 9.52%.

CAPM ESTIMATES

Q. DOES MR. MURRAY EMPLOY A CAPM ESTIMATE?

A. Yes, he does. As a check on his DCF estimate, Mr. Murray performs a CAPM analysis shown on Pages 29-31 and Schedule 19 of his testimony.

Q. DO YOU AGREE WITH MR. MURRAY'S CAPM ANALYSIS?

A. No, I do not. While I agree with Mr. Murray's beta estimate, Mr. Murray's CAPM check is flawed for five reasons. First, Mr. Murray's proxy for the risk-free rate is stale. Second, Mr. Murray has employed a stale and erroneous input in estimating the historical market risk premium. Third, it is inappropriate to rely on short-term periods when using historical market risk premium data. Fourth, Mr. Murray's estimate of the market risk premium is stale, as was the case with his risk-free rate estimate. Fifth, the use of the plain vanilla CAPM understates the cost of capital. I shall discuss each of these flaws in turn.

10. STALE CAPM RISK-FREE RATE

Q. PLEASE COMMENT ON MR. MURRAY'S PROXY FOR THE RISK-FREE RATE IN THE CAPM.

A. In his implementation of the CAPM starting on Page 29 of his testimony, Mr. Murray correctly uses the yield on U.S. 30-year Treasury bonds as a proxy for the risk-free rate. My only disagreement with his 4.9% risk-free rate is that it is stale. Long-term interest rates have escalated substantially in the past few months and the yield on U.S. Treasury 30-year bonds has now reached the 5.4% level, 50 basis points higher than what Mr. Murray has assumed. Hence, Mr.

Murray's CAPM estimates are understated by 50 basis points from this flaw alone.

11. CAPM: MARKET RISK PREMIUM

Q. DR. MORIN, PLEASE COMMENT ON MR. MURRAY'S ESTIMATE OF THE MARKET RISK PREMIUM COMPONENT OF THE CAPM.

A. In order to determine the market risk premium component of the CAPM, Mr. Murray uses both the long-term 6.4% historical market risk premium reported in the Ibbotson Associates Valuation 2003 Yearbook for the 1926 – 2002 period and the short-term -0.34% reported in the same publication for the 1993-2002 period. I disagree determinedly with his estimates of 6.4% and -0.34% for several reasons.

First, only the income component of bond returns is relevant, and not the total return component when estimating a proxy for the expected market risk premium. Second, it is inappropriate to rely on short historical periods of ten years in estimating the market risk premium. Third, Mr. Murray's estimate of the market risk premium is stale and should have relied on the current 2004 version of the Ibbotson Yearbook instead of the 2003 edition. I shall now discuss these three issues in turn.

Q. SHOULD THE HISTORICAL MARKET RISK PREMIUM BE ESTIMATED USING THE INCOME COMPONENT OF BOND RETURNS OR THE TOTAL RETURN COMPONENT?

A. It should be computed using the income component of bond returns. The Ibbotson Associates *Stocks, Bonds, Bills, and Inflation, 2003 Yearbook,* on which

Mr. Murray relies, compiles historical security returns from 1926 to 2002 and shows that a broad market sample of common stocks outperformed long-term U.S. government bonds by 6.4%. Mr. Murray relies on the latter number for his market risk premium estimate in the CAPM. However, the historical market risk premium over the income component of long-term Treasury bonds rather than over the total return is 7.0% and not 6.4%. Ibbotson Associates recommend the use of the latter as a more reliable estimate of the historical market risk premium. This is because the income component of total bond return (i.e. coupon rate) is a far better estimate of expected return than the total return (i.e. coupon rate + capital gain), as realized capital gains/losses are largely unanticipated by investors. Clearly, the income component is a far superior proxy for investor expected return than total return because the latter includes unanticipated capital gains or losses. Mr. Murray's CAPM estimate is therefore downward-biased by 40 basis points from this omission alone (the difference between 7.0% and 6.4% times Mr. Murray's beta estimate of 0.68).

Q. DR. MORIN, IS IT APPROPRIATE TO RELY ON SHORT-TERM HISTORICAL PERIODS WHEN ESTIMATING THE MARKET RISK PREMIUM?

A. No, it is not. I disagree with Mr. Murray's use of short periods when estimating the market risk premium. Historical risk premiums are only reflective of prospective risk premiums if measured over long periods. Over long periods, it is clear that investor expectations are realized; otherwise, no one would ever invest any funds. Consequently, Mr. Murray should have ignored realized risk premiums measured over short time periods, since they are heavily dependent on short-term market movements. He should have instead relied only on the long-term market risk premium results reported by Ibbotson, which use periods long enough to smooth out short-term aberrations and to encompass several business and interest rate cycles. Only over long periods are investor expectations and realizations convergent, or else no one would ever invest any money. In short, Mr. Murray's estimate of a negative risk premium between stocks and bonds of -0.34% is preposterous and implies that bonds are riskier than stocks. This estimate should be totally ignored.

Q. IS MR. MURRAY'S ESTIMATE OF THE HISTORICAL MARKET RISK PREMIUM UP TO DATE?

A. No, it is not. As I discussed above, the Ibbotson Associates *Stocks, Bonds, Bills, and Inflation 2003 Yearbook* reports a market risk premium of 6.4% and 7% if the income component of bond return is used instead of the total return component. It is not clear to me as to why Mr. Murray ignored the more recent and up to date 2004 edition of the Ibbotson Yearbook. The current edition reports a market risk premium of 6.6% versus Mr. Murray's 6.4% and 7.2% over the income component of bond returns. Using the current edition of the Ibbotson Yearbook instead of the stale version employed by Mr. Murray raises the market risk premium by 80 basis points (7.2% versus 6.4%) and the CAPM return on equity estimate by almost 60 basis points (the difference between 7.2% and 6.4% times Mr. Murray's beta estimate of 0.68).

12. CAPM AND THE EMPIRICAL CAPM

Q. DO YOU AGREE WITH MR. MURRAY'S USE OF THE RAW FORM OF

THE CAPM TO ESTIMATE THE COST OF CAPITAL?

A. No, I do not. I believe that the plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. Mr. Murray ignores completely this important financial literature which reports one of the most well-known results in finance. A CAPM-based estimate of the return on capital underestimates the return required from low-beta securities and overstates the return from high-beta securities, based on the empirical evidence.

The downward-bias is particularly significant for low-beta securities, such as the natural gas utilities used by Mr. Murray in his comparison group. Mr. Murray's CAPM estimates of required equity returns are understated by about 50 basis points as a result of this bias alone.

13. RISK ADJUSTMENT

Q. DO YOU AGREE WITH MR. MURRAY'S RISK ADJUSTMENT TO ACCOUNT FOR MGE'S HIGHER RISK RELATIVE TO THE INDUSTRY?

A. No, I do not. In order to allow for MGE's weaker bond rating of BBB relative to the bond rating of A for his comparison group, Mr. Murray increases his recommended return by 32 basis points. The adjustment is based on the spread between Moody's A and Baa rated bonds prevailing over the last nine years. Mr. Murray ignores the fact that this spread has increased and is currently higher. The spread is in fact 50 basis points as of May 2004 and has been at that level for sometimes. In the most recent edition of the Value Line Investment Analyzer (April 2004), Value Line reports a spread of 40-60 basis points between A-rated and Baa-rated utility bonds. Incidentally, that is nearly twice the spread of 32 basis points assumed by Mr. Murray. Using the correct spread raises Mr. Murray's recommendation by almost 20 basis points from this correction alone.

14. CAPITAL STRUCTURE ADJUSTMENT

Q. DID MR. MURRAY ALLOW FOR THE RISKIER CAPITAL STRUCTURE HE ATTRIBUTES TO MGE RELATIVE TO THAT OF THE OTHER NATURAL GAS UTILITIES IN HIS COMPARABLE GROUP?

A. No, he did not. Mr. Murray should have adjusted his 8.52% - 9.52% ROE recommendation upward to reflect the higher relative risk associated with MGE's riskier capital structure. It is a rudimentary tenet of basic finance that the greater the amount of financial risk borne by common shareholders, the greater the return required by shareholders in order to be compensated for the added financial risk imparted by the greater use of senior debt financing. In other words, the greater the debt ratio, the greater is the return required by equity investors.

Q. WHAT IS THE MAGNITUDE OF THE REQUIRED ADJUSTMENT TO ACCOUNT FOR THE MORE HIGHLY LEVERAGED CAPITAL STRUCTURE MR. MURRAY ATTRIBUTES TO MGE?

A. Several researchers have studied the empirical relationship between the cost of capital, capital-structure changes, and the value of the firm's securities. Comprehensive and rigorous empirical studies of the relationship between cost of capital and leverage for public utilities are summarized in Morin, Regulatory Finance, Public Utilities Report, Inc., Arlington, VA, 1994, Chapter 17.

The results of empirical studies and theoretical studies obtained when the debt ratio increases from 40% to 50% indicate that required equity returns increase from a low of 34 to a high of 237 basis points. The average increase is 138 basis points from the theoretical studies and 76 basis points from the empirical studies, or a range of 7.6 to 13.8 basis points per one percentage point increase in the debt ratio. The more recent studies indicate that the upper end of that range is more indicative of the repercussions on equity returns.

Because the capital structure Murray attributes to MGE consists of 25.38% common equity compared to 49.7% for his comparable gas companies, an upward adjustment to Mr. Murray's return on common equity is required. Since the capital structure difference amounts to 24.3%, that is, 49.7% - 25.4% = 24.3%, the required upward adjustment to the return on equity ranges from 7.6 to 13.8 basis points times 24 percentage points, which equals approximately 180 to 330 basis points. Therefore, Mr. Murray should have adjusted his 8.52% -

9.52% ROE recommendation (midpoint of 9.02%) upward by 180 - 330 basis points (midpoint 255) to reflect MGE's weaker capital structure. Using midpoints for sake of clarity, Mr. Murray's recommended 9.02% ROE should be revised upward by 255 basis points to 11.57% from this omission alone.

15. DCF AND THE REQUIRED RETURN ON EQUITY CAPITAL

Q. DR. MORIN, HOW SHOULD THE REQUIRED RETURN ON COMMON EQUITY CAPITAL BE ESTIMATED?

A. Under normal circumstances, the required return on equity should be estimated with three equally-weighted methodologies: (1) the CAPM, (2) the Risk Premium, and (3) the DCF methodologies. All three are market-based methodologies and are designed to estimate the return required by investors on the common equity capital committed to MGE.

Q. DR. MORIN, ARE YOU AWARE THAT SOME REGULATORY COMMISSIONS AND SOME ANALYSTS HAVE PLACED PRINCIPAL RELIANCE ON DCF-BASED ANALYSES TO DETERMINE THE REQUIRED RETURN ON EQUITY FOR PUBLIC UTILITIES?

A. Yes, I am. I point out that Mr. Murray is indeed one such analyst.

Q. DO YOU AGREE WITH THIS APPROACH?

A. While I agree that it is certainly appropriate to use the DCF methodology to estimate the required return on equity as long as it is properly applied, there is no proof that the DCF produces a more accurate estimate of the required return on equity than other methodologies. There are three broad generic methodologies available to measure the return on equity: DCF, Risk Premium, and CAPM. All of these methodologies are accepted and widely used by the financial community and supported in the financial literature.

Q. DO THE ASSUMPTIONS UNDERLYING THE DCF MODEL REQUIRE THAT THE MODEL BE TREATED WITH CAUTION?

A. Yes, particularly in today's rapidly changing utility industry. Even ignoring the fundamental thesis that several methods and/or variants of such methods should be used in measuring required equity returns, the DCF methodology, as those familiar with the industry and the accepted norms for estimating the required return on equity are aware, is dangerously fragile at this time and therefore must be applied with care.

Several fundamental and structural changes have transformed the energy utility industry since the standard DCF model and its assumptions were developed. Deregulation, increased competition triggered by national policy, accounting rule changes, changes in customer attitudes regarding utility services, the evolution of alternative energy sources, and mergers-acquisitions have all influenced stock prices in ways that deviated substantially from the early assumptions of the DCF model. These changes suggest that some of the raw assumptions underlying the standard DCF model, particularly that of constant growth and constant relative market valuation, are of questionable pertinence at this point in time for utility stocks, and that the DCF model should be complemented, at a minimum, by alternate methodologies to estimate the required return on common equity.

Q. IS THE CONSTANT RELATIVE MARKET VALUATION ASSUMPTION INHERENT IN THE DCF MODEL ALWAYS REASONABLE?

A. No, not always. Caution must also be exercised when implementing the standard DCF model in a mechanistic fashion, for it may fail to recognize changes in relative market valuations. The traditional DCF model is not equipped to deal with surges in market-to-book (M/B) and price-earnings (P/E) ratios. The standard DCF model assumes a constant market valuation multiple, that is, a constant P/E ratio and a constant M/B ratio. That is, the model assumes that investors expect the ratio of market price to dividends (or earnings) in any given year to be the same as the current ratio of market price to dividend (or earnings) ratio, and that the stock price will grow at the same rate as the book value. This must be true if the infinite growth assumption is made.

This assumption is somewhat unrealistic under current conditions. The DCF model is not equipped to deal with sudden surges in M/B and P/E ratios, as was experienced by several utility stocks, in recent years.

In short, caution and judgment are required in interpreting the results of the DCF model because of (1) the effect of changes in risk and growth on energy utilities, (2) the fragile applicability of the DCF model to utility stocks in the current capital market environment, and (3) the practical difficulties associated with the growth component of the DCF model. Hence, there is a clear need to go beyond the DCF results and take into account the results produced by alternate methodologies in arriving at a ROE recommendation. Mr. Murray should have heeded this advice, and I urge the Commission to do likewise.

CONCLUSIONS

Q. WHAT DO YOU CONCLUDE FROM MR. MURRAY'S RATE OF RETURN TESTIMONY?

A. My general conclusion is that there are major infirmities in Mr. Murray's testimony. His recommendation of 8.52% - 9.52% rests solely on the questionable results of his DCF analysis. In his DCF analysis, Mr. Murray relies on very questionable proxies for growth in his implementation of the DCF model. His CAPM test is also flawed. I also conclude that Mr. Murray's recommended 8.52% - 9.52% ROE for the Company is well outside the zone of currently authorized rates of return for energy utilities in the United States for his own sample of comparable risk utilities, and would be among the lowest, if not the lowest, in the country, if ever adopted.

My specific conclusions on Mr. Murray's DCF analysis are it is understated by: (i) 30 basis points from the omission of an appropriate flotation cost allowance; (ii) 30 basis points from the understatement of growth in the dividend yield component due to the use of the wrong DCF functional form; (iii) 20 basis points due to the use of the annual DCF model rather than the quarterly version; (iv) 50 basis points from the use of stale growth data ending in 2002; (v) 50 basis points from the use of negative growth rates, and (vi) 50 basis points from the inappropriate use of dividend growth rates. The total DCF understatement of the Company's required return on equity is 220 basis points, as shown below, raising his DCF range reported on his Schedule 18 from 8.2% - 9.2% to a more reasonable 10.4% - 11.4%.

ITEM	DCF UNDERSTATEMENT (basis points)
OMISSION OF A FLOTATION ADJUSTMENT	30
DCF FUNCTIONAL FORM	30
QUARTERLY DCF	20
NEGATIVE GROWTH RATES	50
STALE GROWTH RATES	40
GROWTH RATE BIAS	50
TOTAL	220

My specific conclusions on Mr. Murray's CAPM analysis are it is understated by: (i) 50 basis points from the use of a stale risk-free rate; (ii) 60 basis points from a stale market risk premium; (iii) 40 basis points from the use of the total return component of bond returns rather than the income component; (iii) 50 basis points from the understatement of expected return inherent in the plain vanilla version of the CAPM; and (iv) from the omission of flotation costs. The total CAPM understatement of the Company's required return on equity is 230 basis points, as shown below:

ITEM	CAPM UNDERSTATEMENT (basis points)
STALE RISK-FREE RATE	50
STALE MARKET RISK PREMIUM	60
CORRECTED MARKET RISK PREMIUM	40
CAPM FUNCTIONAL FORM	50
FLOTATION COSTS	30
TOTAL	230

Allowance for these serious understatements raises Mr. Murray's recommended ROE from 9.3% for his CAPM study reported on his Schedule 19 to a more reasonable 11.6%.

Therefore, the evidence from both the DCF and CAPM frameworks, if implemented properly, is that investors expect substantially higher returns for the Company than what Mr. Murray has found. That investors are expecting such a low return is all the more questionable given that his recommended 8.52% - 9.52% is well outside the average currently authorized equity return for energy utilities.

Moreover, Mr. Murray's upward adjustment of 32 basis points to his DCF results in order to account for MGE's higher risks relative to the industry is understated by some 20 basis points. Finally, Mr. Murray's failure to adjust his recommended ROE for the fact that he attributes to MGE a capital structure that is more highly leveraged than that of his comparable group of companies understates the Company's ROE by 180 - 330 basis points.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Missouri Gas Energy's Tariff Sheets Designed to Increase Rates for Gas Service in the Company's Missouri Service Area.	))))	GR-2004-0209

AFFIDAVIT OF ROGER A. MORIN

STATE OF GEORGIA)
) ss.
COUNTY OF FULTON)

Roger A. Morin, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Rebuttal Testimony in question and answer form, to be presented in the above case; that the answers in the foregoing Rebuttal Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of his knowledge and belief.

Roger A. Morin

ROGER A. MORIN

Subscribed and sworn to before me this 24th day of May 2004.

Andrea M. Chitt

Notary Public

MY COMMISSION EXPIRES FEB. 13, 2007

My Commission Expires: ____________

RESUME OF ROGER A. MORIN

(Spring 2004)

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EDUCATIONAL HISTORY

- Bachelor of Electrical Engineering, McGill University, Montreal, Canada, 1967.

- Master of Business Administration, McGill University, Montreal, Canada, 1969.

- PhD in Finance & Econometrics, Wharton School of Finance, University of Pennsylvania, 1976.

EMPLOYMENT HISTORY

- Lecturer, Wharton School of Finance, Univ. of Pa., 1972-3
- Assistant Professor, University of Montreal School of Business, 1973-1976.
- Associate Professor, University of Montreal School of Business, 1976-1979.
- Professor of Finance, Georgia State University, 1979-2004
- Professor of Finance for Regulated Industry and Director, Center for the Study of Regulated Industry, College of Business, Georgia State University, 1985-2004
- Visiting Professor of Finance, Amos Tuck School of Business, Dartmouth College, Hanover, N.H., 1986

OTHER BUSINESS ASSOCIATIONS

- Communications Engineer, Bell Canada, 1962-1967.
- Member of the Board of Directors, Financial Research Institute of Canada, 1974-1980.
- Co-founder and Director Canadian Finance Research Foundation, 1977.
- Vice-President of Research, Garmaise-Thomson & Associates, Investment Management Consultants, 1980-1981.
- Executive Visions Inc., Board of Directors, Member
- Board of External Advisors, College of Business, Georgia State University, Member 1987-1991

PROFESSIONAL CLIENTS

AT & T Communications

Alagasco - Energen

Alaska Anchorage Municipal Light & Power

Alberta Power Ltd.

Ameren

American Water Works Company

Ameritech

Baltimore Gas & Electric

B.C. Telephone

B C GAS

Bell Canada

Bellcore

Bell South Corp.

Bruncor (New Brunswick Telephone)

Burlington-Northern

C & S Bank

Cajun Electric

Canadian Radio-Television & Telecomm. Commission

Canadian Utilities

Canadian Western Natural Gas

Centel

Centra Gas

Central Illinois Light & Power Co

Central Telephone

Central South West Corp.

Cincinnatti Gas & Electric

CONSULTING CLIENTS (CONT'D)

Cinergy Corp

Citizens Utilities

City Gas of Florida

CN-CP Telecommunications

Commonwealth Telephone Co.

Columbia Gas System

Consolidated Natural Gas

Constellation Energy

Deerpath Group

Edison International

Edmonton Power Company

Elizabethtown Gas Co.

Energen

Engraph Corporation

Entergy Corp.

Entergy Arkansas Inc.

Entergy Gulf States Utilities, Inc.

Entergy Louisiana, Inc.

Entergy New Orleans, Inc.

First Energy

Florida Water Association

Fortis

Garmaise-Thomson & Assoc., Investment Consultants

Gaz Metropolitain

General Public Utilities

Georgia Broadcasting Corp.

CONSULTING CLIENTS (CONT'D)

Georgia Power Company

GTE California

GTE Northwest Inc

GTE Service Corp.

GTE Southwest Incorporated

Gulf Power Company

Havasu Water Inc.

Hope Gas Inc.

Hydro-Quebec

ICG Utilities

Illinois Commerce Commission

Island Telephone

Jersey Central Power & Light

Kansas Power & Light

KeySpan Energy

Manitoba Hydro

Maritime Telephone

Metropolitan Edison Co.

Minister of Natural Resources Province of Quebec

Minnesota Power & Light

Mississippi Power Company

Missouri Gas Energy

Mountain Bell

Nevada Power Company

New Brunswick Power

Newfoundland Power Inc. - Fortis Inc.

CONSULTING CLIENTS (CONT'D)

New Tel Enterprises Ltd New York Telephone Co.

Northern Telephone Ltd.

Northwestern Bell

Northwestern Utilities Ltd.

Nova Scotia Power

Nova Scotia Utility and Review Board

NUI Corp

NYNEX

Oklahoma G & E

Ontario Telephone Service Commission

Orange & Rockland

Pacific Northwest Bell

People's Gas System Inc.

People's Natural Gas

Pennsylvania Electric Co.

Price Waterhouse

PSI Energy

Public Service Electric & Gas

Quebec Telephone

Regie de l'Energie du Quebec

Rochester Telephone

SaskPower

Sierra Pacific Power Company

Sierra Pacific Resources

Southern Bell

Southern States Utilities

CONSULTING CLIENTS (CONT'D)

South Central Bell

Sun City Water Company

TECO Energy

The Southern Company

Touche Ross and Company

TransEnergie

Trans-Quebec & Maritimes Pipeline

US WEST Communications

Union Heat Light & Power

Utah Power & Light

Vermont Gas Systems Inc.

MANAGEMENT DEVELOPMENT AND PROFESSIONAL EXECUTIVE EDUCATION

- Canadian Institute of Marketing, Corporate Finance, 1971-73
- Hydro-Quebec, "Capital Budgeting Under Uncertainty, 1974-75
- Institute of Certified Public Accountants, Mergers & Acquisitions, 1975-78
- Investment Dealers Association of Canada, 1977-78
- Financial Research Foundation, bi-annual seminar, 1975-79
- Advanced Management Research (AMR), faculty member, 1977-80
- Financial Analysts Federation, Educational chapter: "Financial Futures Contracts" seminar

- Exnet Inc. a.k.a. The Management Exchange Inc., faculty member, 1981-2003, National Seminars:

  Risk and Return on Capital Projects
  Cost of Capital for Regulated Utilities
  Capital Allocation for Utilities
  Alternative Regulatory Frameworks
  Utility Directors' Workshop
  Shareholder Value Creation for Utilities
  Real Options in Utility Capital Investments
  Fundamentals of Utility Finance in a Restructured Environment
  Contemporary Issues in Utility Finance

- Georgia State University College of Business, Management Development Program, faculty member, 1981-1994

EXPERT TESTIMONY & UTILITY CONSULTING AREAS OF EXPERTISE

Rate of Return

Capital Structure

Generic Cost of Capital

Phase-in Plans

Costing Methodology

Depreciation

Flow-Through vs Normalization

Revenue Requirements Methodology

Utility Capital Expenditures Analysis

Risk Analysis

Capital Allocation

Divisional Cost of Capital, Unbundling

Telecommunications, CATV, Energy, Pipeline, Water

Incentive Regulation & Alternative Regulatory Plans

Shareholder Value Creation

Value-Based Management

REGULATORY BODIES:

Federal Communications Commission

Federal Energy Regulatory Commission

Georgia Public Service Commission

South Carolina Public Service Commission

North Carolina Utilities Commission

Pennsylvania Public Service Commission

Ontario Telephone Service Commission

Quebec Telephone Service Commission

Newfoundland Board of Commissioners of Public Utilities

Georgia Senate Committee on Regulated Industries

Alberta Public Service Board

Tennessee Public Service Commission

Oklahoma State Board of Equalization

Mississippi Public Service Commission

Minnesota Public Utilities Commission

Canadian Radio-Television & Telecommunications Comm.

New Brunswick Board of Public Commissioners

Alaska Public Utility Commission

National Energy Board of Canada

Florida Public Service Commission

Montana Public Service Commission

Arizona Corporation Commission

Quebec Natural Gas Board

Quebec Regie de l'Energie

New York Public Service Commission

Washington Utilities & Transportation Commission

Manitoba Board of Public Utilities

New Jersey Board of Public Utilities

Alabama Public Service Commission

Utah Public Service Commission

Nevada Public Service Commission

Louisiana Public Service Commission

Colorado Public Utilities Board

West Virginia Public Service Commission

Ohio Public Utilities Commission

California Public Service Commission

Hawaii Public Service Commission

Illinois Commerce Commission

British Columbia Board of Public Utilities

Indiana Utility Regulatory Commission

Minnesota Public Utilities Commission

Texas Public Service Commission

Michigan Public Service Commission

Iowa Board of Public Utilities

SERVICE AS EXPERT WITNESS

Southern Bell, So. Carolina PSC, Docket #81-201C

Southern Bell, So. Carolina PSC, Docket #82-294C

Southern Bell, North Carolina PSC, Docket #P-55-816

Metropolitan Edison, Pennsylvania PUC, Docket #R-822249

Pennsylvania Electric, Pennsylvania PUC,Docket#R-822250

Georgia Power, Georgia PSC, Docket # 3270-U, 1981

Georgia Power, Georgia PSC, Docket # 3397-U, 1983

Georgia Power, Georgia PSC, Docket # 3673-U, 1987

Georgia Power, F.E.R.C., Docket # ER 80-326, 80-327

Georgia Power, F.E.R.C., Docket # ER 81-730, 80-731

Georgia Power, F.E.R.C., Docket # ER 85-730, 85-731

Bell Canada, CRTC 1987

Northern Telephone, Ontario PSC

GTE-Quebec Telephone, Quebec PSC, Docket 84-052B

Newtel., Nfld. Brd of Public Commission PU 11-87

CN-CP Telecommunications, CRTC

Quebec Northern Telephone, Quebec PSC

Edmonton Power Company, Alberta Public Service Board

Kansas Power & Light, F.E.R.C., Docket # ER 83-418

NYNEX, FCC generic cost of capital Docket #84-800

Bell South, FCC generic cost of capital Docket #84-800

American Water Works - Tennessee, Docket #7226

Burlington-Northern - Oklahoma State Board of Taxes

Georgia Power, Georgia PSC, Docket # 3549-U

GTE Service Corp., FCC Docket #84-200

Mississippi Power Co., Miss. PSC, Docket U-4761

Citizens Utilities, Ariz. Corp. Comm., D # U2334-86020

Quebec Telephone, Quebec PSC, 1986, 1987, 1992

Newfoundland L & P, Nfld. Brd. Publ Comm. 1987, 1991

Northwestern Bell, Minnesota PSC, #P-421/CI-86-354

GTE Service Corp., FCC Docket #87-463

Anchorage Municipal Power & Light, Alaska PUC, 1988

New Brunswick Telephone, N.B. PUC, 1988

Trans-Quebec Maritime, Nat'l Energy Brd. of Cda, '88-92

Gulf Power Co., Florida PSC, Docket #88-1167-EI

Mountain States Bell, Montana PSC, #88-1.2

Mountain States Bell, Arizona CC, #E-1051-88-146

Georgia Power, Georgia PSC, Docket # 3840-U, 1989

Rochester Telephone, New York PSC, Docket # 89-C-022

Noverco - Gaz Metro, Quebec Natural Gas PSC, #R-3164-89

GTE Northwest, Washington UTC, #U-89-3031

Orange & Rockland, New York PSC, Case 89-E-175

Central Illinois Light Company, ICC, Case 90-0127

Peoples Natural Gas, Pennsylvania PSC, Case

Gulf Power, Florida PSC, Case # 891345-EI

ICG Utilities, Manitoba BPU, Case 1989

New Tel Enterprises, CRTC, Docket #90-15

Peoples Gas Systems, Florida PSC

Jersey Central Pwr & Light, N.J. PUB, Case ER 89110912J

Alabama Gas Co., Alabama PSC, Case 890001

Trans-Quebec Maritime Pipeline, Cdn. Nat'l Energy Board

Mountain Bell, Utah PSC,

Mountain Bell, Colorado PUB

South Central Bell, Louisiana PS

Hope Gas, West Virginia PSC

Vermont Gas Systems, Vermont PSC

Alberta Power Ltd., Alberta PUB

Ohio Utilities Company, Ohio PSC

Georgia Power Company, Georgia PSC

Sun City Water Company

Havasu Water Inc.

Centra Gas (Manitoba) Co.

Central Telephone Co. Nevada

AGT Ltd., CRTC 1992

BC GAS, BCPUB 1992

California Water Association, California PUC 1992

Maritime Telephone 1993

BCE Enterprises, Bell Canada, 1993

Citizens Utilities Arizona gas division 1993

PSI Resources 1993-5

CILCORP gas division 1994

GTE Northwest Oregon 1993

Stentor Group 1994-5

Bell Canada 1994-1995

PSI Energy 1993, 1994, 1995, 1999

Cincinnati Gas & Electric 1994, 1996, 1999, 2004

Southern States Utilities, 1995

CILCO 1995, 1999, 2001

Commonwealth Telephone 1996

Edison International 1996, 1998

Citizens Utilities 1997

Stentor Companies 1997

Hydro-Quebec 1998

Entergy Gulf States Louisiana 1998, 1999, 2001, 2002, 2003

Detroit Edison, 1999, 2003

Entergy Gulf States, Texas, 2000, 2004

Hydro Quebec TransEnergie, 2001, 2004

Sierra Pacific Company, 2000, 2001, 2002

Nevada Power Company, 2001

Mid American Energy, 2001, 2002

Entergy Louisiana Inc. 2001, 2002, 2004

Mississippi Power Company, 2001, 2002

Oklahoma Gas & Electric Company, 2002 -2003

Public Service Electric & Gas, 2001, 2002

NUI Corp (Elizabethtown Gas Company), 2002

Jersey Central Power & Light, 2002

San Diego Gas & Electric, 2002

NB Power, 2002

Entergy New Orleans, 2002

Hydro-Quebec Distribution 2002

PSI Energy 2003

Fortis – Newfoundland Power & Light 2002

Emera – Nova Scotia Power 2004

Hydro-Quebec TransEnergie 2004

Hawaii Electric 2004

PROFESSIONAL AND LEARNED SOCIETIES

- Engineering Institute of Canada, 1967-1972
- Canada Council Award, recipient 1971 and 1972
- Canadian Association Administrative Sciences, 1973-80
- American Association of Decision Sciences, 1974-1978
- American Finance Association, 1975-2002
- Financial Management Association, 1978-2002

ACTIVITIES IN PROFESSIONAL ASSOCIATIONS AND MEETINGS

- Chairman of meeting on "New Developments in Utility Cost of Capital", Southern Finance Association, Atlanta, Nov. 1982

- Chairman of meeting on "Public Utility Rate of Return", Southeastern Public Utility Conference, Atlanta, Oct. 1982

- Chairman of meeting on "Current Issues in Regulatory Finance", Financial Management Association, Atlanta, Oct. 1983

- Chairman of meeting on "Utility Cost of Capital", Financial Management Association, Toronto, Canada, Oct. 1984.

- Committee on New Product Development, FMA, 1985

- Discussant, "Tobin's Q Ratio", paper presented at Financial Management Association, New York, N.Y., Oct. 1986

- Guest speaker, "Utility Capital Structure: New Developments", National Society of Rate of Return Analysts 18th Financial Forum, Wash., D.C. Oct. 1986

- Opening address, "Capital Expenditures Analysis: Methodology vs Mythology," Bellcore Economic Analysis Conference, Naples Fla., 1988.

PAPERS PRESENTED:

"An Empirical Study of Multi-Period Asset Pricing," annual meeting of Financial Management Assoc., Las Vegas Nevada, 1987.

"Utility Capital Expenditures Analysis: Net Present Value vs Revenue Requirements", annual meeting of Financial Management Assoc., Denver, Colorado, October 1985.

"Intervention Analysis and the Dynamics of Market Efficiency", annual meeting of Financial Management Assoc., San Francisco, Oct. 1982

"Intertemporal Market-Line Theory: An Empirical Study," annual meeting of Eastern Finance Assoc., Newport, R.I. 1981

"Option Writing for Financial Institutions: A Cost-Benefit Analysis", 1979 annual meeting Financial Research Foundation
"Free-lunch on the Toronto Stock Exchange", annual meeting of Financial Research Foundation of Canada, 1978.

"Simulation System Computer Software SIMFIN", HP International Business Computer Users Group, London, 1975.

"Inflation Accounting: Implications for Financial Analysis." Institute of Certified Public Accountants Symposium, 1979.

OFFICES IN PROFESSIONAL ASSOCIATIONS

- President, International Hewlett-Packard Business Computers Users Group, 1977

- Chairman Program Committee, International HP Business Computers Users Group, London, England, 1975

- Program Coordinator, Canadian Assoc. of Administrative Sciences, 1976

- Member, New Product Development Committee, Financial Management Association, 1985-1986

- Reviewer: Journal of Financial Research

  Financial Management

  Financial Review

  Journal of Finance

PUBLICATIONS

"Risk Aversion Revisited", Journal of Finance, Sept. 1983

"Hedging Regulatory Lag with Financial Futures," Journal of Finance, May 1983. (with G. Gay, R. Kolb)

"The Effect of CWIP on Cost of Capital," Public Utilities Fortnightly, July 1986.

"The Effect of CWIP on Revenue Requirements" Public Utilities Fortnightly, August 1986.

"Intervention Analysis and the Dynamics of Market Efficiency," Time-Series Applications, (New York: North Holland, 1983. (with K. El-Sheshai)

"Market-Line Theory and the Canadian Equity Market," Journal of Business Administration, Jan. 1982, M. Brennan, editor

"Efficiency of Canadian Equity Markets," International Management Review, Feb. 1978

"Intertemporal Market-Line Theory: An Empirical Test," Financial Review, Proceedings of the Eastern Finance Association, 1981

BOOKS

Utilities' Cost of Capital, Public Utilities Reports Inc., Arlington, Va., 1984.

Regulatory Finance, Public Utilities Reports Inc., Arlington, Va., 1994

Driving Shareholder Value, McGraw-Hill, January 2001

The New Regulatory Finance, forthcoming

MONOGRAPHS

Determining Cost of Capital for Regulated Industries, Public Utilities Reports, Inc., and The Management Exchange Inc., 1982 - 1993. (with V.L. Andrews)

Alternative Regulatory Frameworks, Public Utilities Reports, Inc., and The Management Exchange Inc., 1993. (with V.L. Andrews)

Risk and Return in Capital Projects, The Management Exchange Inc., 1980,(with B. Deschamps)

Utility Capital Expenditure Analysis, The Management Exchange Inc., 1983.

Regulation of Cable Television: An Econometric Planning Model, Quebec Department of Communications, 1978.

"An Economic & Financial Profile of the Canadian Cablevision Industry". Canadian Radio-Television & Telecommunication Commission (CRTC), 1978

Computer Users' Manual: Finance and Investment Programs, University of Montreal Press, 1974, revised 1978.

Fiber Optics Communications: Economic Characteristics, Quebec Department of Communications, 1978.

"Canadian Equity Market Inefficiencies", Capital Market Research Memorandum, Garmaise & Thomson Investment Consultants, 1979.

MISCELLANEOUS CONSULTING REPORTS

"Operational Risk Analysis: California Water Utilities, Calif. Water Association, 1993.

"Cost of Capital Methodologies for Independent Telephone Systems", Ontario Telephone Service Commission, March 1989.

"The Effect of CWIP on Cost of Capital and Revenue Requirements", Georgia Power Company,1985.

"Costing Methodology and the Effect of Alternate Depreciation and Costing Methods on Revenue Requirements and Utility Finances", Gaz Metropolitan Inc., 1985.

"Simulated Capital Structure of CN-CP Telecommunications: A Critique", CRTC, 1977.

"Telecommunications Cost Inquiry: Critique",CRTC,1977.

"Social Rate of Discount in the Public Sector", CRTC Policy Statement 1974.

"Technical Problems in Capital Projects Analysis", CRTC Policy Statement, 1974.

RESEARCH GRANTS

"Econometric Planning Model of the Cablevision Industry", International Institute of Quantitative Economics, CRTC

"Application of the Averch-Johnson Model to Telecommunications Utilities", Canadian Radio-Television Commission (CRTC)

"Economics of the Fiber Optics Industry", Quebec Dept. of Communications

"Intervention Analysis and the Dynamics of Market Efficiency", Georgia State Univ. College of Business, 1981

"Firm Size and Beta Stability", Georgia State University College of Business, 1982

"Risk Aversion and the Demand for Risky Assets", Georgia State University College of Business, 1981.

Chase Econometrics, Interactive Data Corp., Research Grant, $50,000 per annum, 1986-1989.

UNIVERSITY SERVICE

- University Senate, elected departmental senator 1987-1989, 1998-2002
- Faculty Affairs Committee, elected departmental representative
- Professional Continuing Education Committee member
- Director Master in Science (Finance) Program
- Course Coordinator, Corporate Finance, MBA program
- Chairman, Corporate Finance Curriculum Committee
- Executive Education: Departmental Coordinator 2000
- University Senate Committees: Commencement, Student Discipline

Schedule RAM-2FLOTATION COST ALLOWANCE

To obtain the final cost of equity financing from the investors' expected rate of return, it is necessary to make allowance for underpricing, which is the sum of market pressure, costs of flotation, and underwriting fees associated with new issues. Allowance for market pressure should be made because large blocks of new stock may cause significant pressure on market prices even in stable markets. Allowance must also be made for company costs of flotation (including such items as printing, legal and accounting expenses) and for underwriting fees.

1. MAGNITUDE OF FLOTATION COSTS

According to empirical studies, underwriting costs and expenses average at least 4% of gross proceeds for utility stock offerings in the U.S. (See Logue & Jarrow: "Negotiations vs. Competitive Bidding in the Sale of Securities by Public Utilities", Financial Management, Fall 1978.) A study of 641 common stock issues by 95 electric utilities identified a flotation cost allowance of 5.0%. (See Borum & Malley: "Total Flotation Cost for Electric Company Equity Issues", Public Utilities Fortnightly, Feb. 20, 1986.)

Empirical studies suggest an allowance of 1% for market pressure in U.S. studies. Logue and Jarrow found that the absolute magnitude of the relative price decline due to market pressure was less than 1.5%. Bowyer and Yawitz examined 278 public utility stock issues and found an average market pressure of 0.72%. (See Bowyer & Yawitz, "The Effect of New Equity Issues on Utility Stock Prices", Public Utilities Fortnightly, May 22, 1980.)

Eckbo & Masulis ("Rights vs. Underwritten Stock Offerings: An Empirical Analysis", University of British Columbia, Working Paper No. 1208, Sept., 1987) found an average flotation cost of 4.175% for utility common stock offerings. Moreover, flotation costs increased progressively for smaller size issues. They also found that the relative price decline due to market pressure in the days surrounding the announcement amounted to slightly more than 1.5%. In a classic and monumental study published in the prestigious Journal of Financial Economics by a prominent scholar, a market pressure effect of 3.14% for industrial stock issues and 0.75% for utility common stock issues was found (see Smith, C.W., "Investment Banking and the Capital Acquisition Process," Journal of Financial Economics 15, 1986). Other studies of market pressure are reported in Logue ("On the Pricing of Unseasoned Equity Offerings, Journal of Financial and Quantitative Analysis, Jan. 1973), Pettway ("The Effects of New Equity Sales Upon Utility Share Prices," Public Utilities Fortnightly, May 10 1984), and Reilly and Hatfield ("Investor Experience with New Stock Issues," Financial Analysts' Journal, Sept.- Oct. 1969). In the Pettway study, the market pressure effect for a sample of 368 public utility equity sales was in the range of 2% to 3%. Adding the direct and indirect effects of utility common stock issues, the indicated total flotation cost allowance is above 5.0%, corroborating the results of earlier studies.

As shown in the table below, a comprehensive empirical study by Lee, Lochhead, Ritter, and Zhao, "The Costs of Raising Capital," Journal of Financial Research, Vol. XIX, NO. 1, Spring 1996, shows average direct flotation costs for equity offerings of 3.5% - 5% for stock issues between $60 and $500 million. Allowing for market pressure costs raises the flotation cost allowance to well above 5%.

FLOTATION COSTS: RAISING EXTERNAL CAPITAL
(Percent of Total Capital Raised)

Amount Raised in $ Millions	Average Flotation Cost: Common Stock	Average Flotation Cost: New Debt
$ 2 - 9. 99	13.28%	4.39%
10 - 19. 99	8.72	2.76
20 - 39. 99	6.93	2.42
40 - 59. 99	5.87	1.32
60 - 79. 99	5.18	2.34
80 - 99. 99	4.73	2.16
100 - 199. 99	4.22	2.31
200 - 499. 99	3.47	2.19
500 and Up	3.15	1.64

Note: Flotation costs for IPOs are about 17 percent of the value of common stock issued if the amount raised is less than $10 million and about 6 percent if more than $500 million is raised. Flotation costs are somewhat lower for utilities than others.

Source: Lee, Inmoo, Scott Lochhead, Jay Ritter, and Quanshui Zhao, "The Costs of Raising Capital," *The Journal of Financial Research,* Spring 1996.

Therefore, based on empirical studies, total flotation costs including market pressure amount to approximately 5% of gross proceeds. I have therefore assumed a 5% gross total flotation cost allowance in my cost of capital analyses.

2. APPLICATION OF THE FLOTATION COST ADJUSTMENT

The section below shows: 1) why it is necessary to apply an allowance of 5% to the dividend yield component of equity cost by dividing that yield by 0.95 (100% - 5%) to obtain the fair return on equity capital, and 2) why the flotation adjustment is permanently required to avoid confiscation even if no further stock issues are contemplated. Flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years.

Flotation costs are just as real as costs incurred to build utility plant. Fair regulatory treatment absolutely must permit the recovery of these costs. An analogy with bond issues is useful to understand the treatment of flotation costs in the case of common stocks.

In the case of a bond issue, flotation costs are not expensed but are rather amortized over the life of the bond, and the annual amortization charge is embedded in the cost of service. This is analogous to the process of depreciation, which allows the recovery of funds invested in utility plant. The recovery of bond flotation expense continues year after year, irrespective of whether the company issues new debt capital in the future, until recovery is complete. In the case of common stock that has no finite life, flotation costs are not amortized. Therefore, the recovery of flotation cost requires an upward adjustment to the allowed return on equity. Roger A. Morin, Regulatory Finance, Public Utilities Reports Inc., Arlington, Va., 1994, provides numerical illustrations that show that even if a utility does not contemplate any additional common stock issues, a flotation cost adjustment is still permanently required. Examples there also demonstrate that the allowance applies to retained earnings as well as to the original capital.

From the standard DCF model, the investor's required return on equity capital is expressed as:

$$K = D_1/P_0 + g$$

If P_0 is regarded as the proceeds per share actually received by the company from which dividends and earnings will be generated, that is, P_0 equals B_0, the book value per share, then the company's required return is:

$$r = D_1/B_0 + g$$

Denoting the percentage flotation costs 'f', proceeds per share B_0 are related to market price P_0 as follows:

$$P - fP = B_o$$

$$P(1 - f) = B_o$$

Substituting the latter equation into the above expression for return on equity, we obtain:

$$r = D_1/P(1-f) + g$$

that is, the utility's required return adjusted for underpricing. For flotation costs of 5%, dividing the expected dividend yield by 0.95 will produce the adjusted cost of equity capital. For a dividend yield of 6% for example, the magnitude of the adjustment is 32 basis points: .06/.95 = .0632.

In deriving DCF estimates of fair return on equity, it is therefore necessary to apply a conservative after-tax allowance of 5% to the dividend yield component of equity cost.

Even if no further stock issues are contemplated, the flotation adjustment is still permanently required to keep shareholders whole. Flotation costs are only recovered if the rate of return is applied to total equity, including retained earnings, in all future years, even if no future financing is contemplated. This is demonstrated by the numerical example contained in pages 7-9 of this Appendix. Moreover, even if the stock price, hence the DCF estimate of equity return, fully reflected the lack of permanent allowance, the company always nets less than the market price. Only the net proceeds from an equity issue are used to add to the rate base on which the investor earns. A permanent allowance for flotation costs must be authorized in order to insure that in each year the investor earns the required return on the total amount of capital actually supplied.

The example shown on pages 7-9 shows the flotation cost adjustment process using illustrative, yet realistic, market data. The assumptions used in the computation are shown on page 7. The stock is selling in the market for $25, investors expect the firm to pay a dividend of $2.25 that will grow at a rate of 5% thereafter. The traditional DCF cost of equity is thus $k = D/P + g = 2.25/25 + .05$

= 14%. The firm sells one share stock, incurring a flotation cost of 5%. The traditional DCF cost of equity adjusted for flotation cost is thus ROE = D/P(1-f) + g = .09/.95 + .05 = 14.47%.

The initial book value (rate base) is the net proceeds from the stock issue, which are $23.75, that is, the market price less the 5% flotation costs. The example demonstrates that only if the company is allowed to earn 14.47% on rate base will investors earn their cost of equity of 14%. On page 8, Column 1 shows the initial common stock account, Column 2 the cumulative retained earnings balance, starting at zero, and steadily increasing from the retention of earnings. Total equity in Column 3 is the sum of common stock capital and retained earnings. The stock price in Column 4 is obtained from the seminal DCF formula: $D_1/(k - g)$. Earnings per share in Column 6 are simply the allowed return of 14.47% times the total common equity base. Dividends start at $2.25 and grow at 5% thereafter, which they must do if investors are to earn a 14% return. The dividend payout ratio remains constant, as per the assumption of the DCF model. All quantities, stock price, book value, earnings, and dividends grow at a 5% rate, as shown at the bottom of the relevant columns. Only if the company is allowed to earn 14.47% on equity do investors earn 14%. For example, if the company is allowed only 14%, the stock price drops from $26.25 to $26.13 in the second year, inflicting a loss on shareholders. This is shown on page 9. The growth rate drops from 5% to 4.53%. Thus, investors only earn 9% + 4.53% = 13.53% on their investment. It is noteworthy that the adjustment is always required each and every year, whether or not new stock issues are sold in the future, and that the allowed return on equity must be earned on total equity, including retained earnings, for investors to earn the cost of equity.

ASSUMPTIONS:

ISSUE PRICE =	25.00
FLOTATION COST =	5.00%
DIVIDEND YIELD =	9.00%
GROWTH =	5.00%
EQUITY RETURN = (D/P + g)	**14.00%**
ALLOWED RETURN ON EQUITY = (D/P(1-f) + g)	**14.47%**

COMPANY EARNS FLOTATION-ADJUSTED COST OF EQUITY
APPLIED ON ALL COMMON EQUITY
BEGINNING OF YEAR

YEAR	COMMON STOCK (1)	RETAINED EARNINGS (2)	TOTAL EQUITY (3)	STOCK PRICE (4)	MARKET/ BOOK RATIO (5)	EPS (6)	DPS (7)	PAYOUT (8)	CHANGE EARNINGS RETAINED (9)
1	23.75	0.000	23.750	25.000	1.0526	3.438	2.250	65.45%	1.188
2	23.75	1.188	24.938	26.250	1.0526	3.609	2.363	65.45%	1.247
3	23.75	2.434	26.184	27.563	1.0526	3.790	2.481	65.45%	1.309
4	23.75	3.744	27.494	28.941	1.0526	3.979	2.605	65.45%	1.375
5	23.75	5.118	28.868	30.388	1.0526	4.178	2.735	65.45%	1.443
6	23.75	6.562	30.312	31.907	1.0526	4.387	2.872	65.45%	1.516
7	23.75	8.077	31.827	33.502	1.0526	4.607	3.015	65.45%	1.591
8	23.75	9.669	33.419	35.178	1.0526	4.837	3.166	65.45%	1.671
9	23.75	11.340	35.090	36.936	1.0526	5.079	3.324	65.45%	1.754
10	23.75	13.094	36.844	38.783	1.0526	5.333	3.490	65.45%	1.842
			5.00%	5.00%		5.00%	5.00%		5.00%

COMPANY DOES NOT EARN THE FLOTATION-ADJUSTED COST OF EQUITY

YEAR	COMMON STOCK (1)	RETAINED EARNINGS (2)	TOTAL EQUITY (3)	STOCK PRICE (4)	MARKET/ BOOK RATIO (5)	EPS (6)	DPS (7)	PAYOUT (8)
1	23.75	0.000	23.750	25.000	1.0526	3.325	2.250	67.67%
2	23.75	1.075	24.825	26.132	1.0526	3.476	2.352	67.67%
3	23.75	2.199	25.949	27.314	1.0526	3.633	2.458	67.67%
4	23.75	3.373	27.123	28.551	1.0526	3.797	2.570	67.67%
5	23.75	4.601	28.351	29.843	1.0526	3.969	2.686	67.67%
6	23.75	5.884	29.634	31.194	1.0526	4.149	2.807	67.67%
7	23.75	7.225	30.975	32.606	1.0526	4.337	2.935	67.67%
8	23.75	8.627	32.377	34.082	1.0526	4.533	3.067	67.67%
9	23.75	10.093	33.843	35.624	1.0526	4.738	3.206	67.67%
10	23.75	11.625	35.375	37.237	1.0526	4.952	3.351	67.67%
			4.53%	4.53%		4.53%	4.53%	