MISSOURI PUBLIC SERVICE COMMISSION

MISSOURI GAS ENERGY

CASE NO. GR-2006-0422

REBUTTAL TESTIMONY OF

FRANK J. HANLEY

NOVEMBER 21, 2006

TABLE OF CONTENTS

REBUTTAL TESTIMONY OF FRANK J. HANLEY

CASE NO. GR-2006-0422

NOVEMBER 21, 2006

I. INTRODUCTION

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

A. My name is Frank J. Hanley and I am President of AUS Consultants – Utility Services. My business address is 155 Gaither Drive, P.O. Box 1050, Moorestown, New Jersey 08057.

Q. **ARE YOU THE SAME FRANK J. HANLEY WHO PREVIOUSLY SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?**

A. Yes, I am.

Q. **WHAT IS THE PURPOSE OF THIS TESTIMONY?**

A. The purpose of my testimony is to rebut the direct testimony of David Murray, Staff Witness for the Missouri Public Service Commission (the Commission) concerning his recommendation regarding a proper ratemaking capital structure for Missouri Gas Energy (MGE or the Company) and his recommended common equity cost rate range of 8.65% to 9.25% relative to Southern Union's common equity ratio of 36.31%.

Q. **HAVE YOU PREPARED SCHEDULES IN SUPPORT OF THIS REBUTTAL TESTIMONY?**

A. Yes, I have. They have been marked for identification as Schedules FJH-18 through FJH-30.

REBUTTAL TESTIMONY OF FRANK J. HANLEY

CASE NO. GR-2006-0422

NOVEMBER 21, 2006

II. SUMMARY

Q. **PLEASE BRIEFLY SUMMARIZE YOUR TESTIMONY.**

A. My rebuttal testimony describes the error of Mr. Murray's logic in his choice of using Southern Union's capital structure as a proxy for MGE's ratemaking capital structure as well as recommending a range of common equity cost rate well beneath the low end of any reasonable range for MGE because:

- Mr. Murray erroneously relies upon the year-end 2005 capital structure ratios of Southern Union, MGE's parent. Even though he acknowledges the need to update to June 30, 2006 and true-up to September 30, 2006, the reliance on Southern Union's capital structure would still be incorrect. In the first instance, there is a gross mismatch between the use of the December 31, 2005 Southern Union capital structure and its 36.31% common equity ratio and current 2006 market data which reflects investors' very different perspective of Southern Union, i.e., not as a gas distribution company (LDC), and understatement of common equity cost rate. Second, the use of a subsequent period such as September 30, 2006 for a true-up will further exacerbate the understatement, i.e., because it ignores the risk to which the capital invested in MGE is put, causing a mismatch between capital structure and common equity cost rate. In other words, Southern Union's capital structure for a subsequent period is definitely no longer reflective of the risk of a LDC like MGE. Moreover, applying a common equity cost rate derived from a proxy group of LDCs, which has a significantly greater

2

average common equity, to Southern Union's common equity ratio, results in a gross

mismatch and understatement of the required common equity cost rate as well as the

overall fair rate of return related to MGE's rate base.

In addition, Mr. Murray's use of the Southern Union consolidated capital

structure, which includes all of Southern Union's long-term debt capital including that

held at the Panhandle Eastern subsidiaries, but excludes the carrying costs associated

with those subsidiaries, is blatantly incorrect as it represents a cost of debt which is not

in synchronization with the amount of debt included in the capital structure.

- I review recently allowed rates of return on common equity (ROEs) authorized by

 other regulatory commissions in litigated cases which average about 10.6% relative to

 an average common equity ratio of about 48.6%. In addition, I note that the average

 awarded equity risk premium over A rated public utility bonds was 4.71%. With an

 updated prospective yield of 6.39% on A rated public utility bonds (equal to the

 average bond rating of my proxy LDC companies), an 11.10% common equity cost

 rate is indicated (6.39% + 4.71% = 11.10%) before any necessary updated adjustments

 to reflect MGE's unique risks. Moreover, the average of all litigated awarded ROEs to

 LDCs during the two-year period ended September 30, 2006 of 10.58% (contained in

 Schedule FJH-18) provide confirmation that Mr. Murray's recommended range of

 common equity cost rate of 8.65% - 9.25% does not pass a reality check, especially

 when the extremely low common equity ratio he utilizes in his capital structure and

3

MGE's greater risk attributable to small size and lack of protection from the vagaries of the weather are taken into account. Further confirmation of the gross inadequacy of Mr. Murray's recommended range of common equity cost rate are found in Schedule FJH-19 where I show that the average currently authorized rate of return on Mr. Murray's proxy group of six LDCs is 10.66% relative to an average authorized common equity ratio of 49.20%; and 10.89% relative to a common equity ratio of 48.90% for the companies with operations in Missouri (other than Southern Union with MGE) since 2002.

As for MGE, it was awarded an ROE of 10.50% in September 2004. In August 2004, the average yield on A rated utility bonds was about 6.1%, very similar to the current yield of about 6.1% and less than the prospective yield of 6.39% (see Schedule FJH-28, page 1, Line No. 3). Thus, in view of this fact and the fact that the foregoing average awarded ROE to all LDCs in litigated cases of 10.58% for the two years ended September 30, 2006, an average authorized ROE of 10.66% on Mr. Murray's six proxy companies and the indicated 11.10% prospective cost rate based upon the risk premia over A rated public utility bond yields implied in the average awarded ROEs to all LDCs also discussed supra, it is evident that any common equity cost rate below 10.50% completely fails these common sense reality checks.

- Mr. Murray erroneously relies solely upon the Discounted Cash Flow Model (DCF) to arrive at his recommended common equity cost rate despite the Commission's

4

consideration of the results of other cost of equity models and the results of recently awarded ROEs to LDCs by various regulatory commissions around the country in Case No. GR-2004-0209. He uses, albeit incorrectly, the CAPM model but only as a check on his flawed and understated recommendation. The Efficient Market Hypothesis (EMH), upon which all the cost of common equity models are premised, confirms that investors rely upon multiple cost of common equity models in formulating their required rates of return.

- Mr. Murray's so-called tests of reasonableness, i.e., his CAPM analysis, is flawed, as are the so-called lower required equity risk premiums.

- Mr. Murray erroneously attributes greater relevance to the expected return on Southern Union's pension fund than is warranted.

In addition, I update my recommended common equity cost rate to 11.75% which is a reduction of my recommended 11.95%.

III. CAPITAL STRUCTURE

Q.   MR. MURRAY RELIES UPON THE CAPITAL STRUCTURE RATIOS OF SOUTHERN UNION AT DECEMBER 31, 2005. THOSE RATIOS INCLUDE A 36.31% COMMON EQUITY RATIO. DO YOU AGREE WITH MR. MURRAY'S RECOMMENDED USE OF THE SOUTHERN UNION CAPITAL STRUCTURE RATIOS?

A.   No. I believe that their use is incorrect, despite the knowledge that in the last rate case, the

Commission did utilize Southern Union's capital structure ratios. I disagree with their use

at this time for several reasons:

- Ratemaking is prospective. It is already November, 2006 and rates set in this
proceeding will be in effect over a future period of time from the present. The market
prices that Mr. Murray utilizes are fairly recent market prices which reflect investors'
expectations of the future. Because investors no longer look at Southern Union as
primarily an LDC, but rather a midstream company, there is a substantial mis-match
between the common equity cost rate and the capital structure ratios utilized by Mr.
Murray.

- The Southern Union capital structure ratios are not consistent with those of the proxy
group of eight LDCs or Mr. Murray's group of six LDCs. Risk relates to where the
capital is invested, or put. It is very clear that my proxy group of eight LDCs maintain
capital structure ratios which include approximately 47% common equity capital as
shown on page 1 of Schedule FJH-4. Mr. Murray's six proxy LDCs had an average
common equity ratio of 48% in 2005 as follows:

MPSC Staff Witness Murray's Six Comparable LDCs	2005 Common Equity Ratio
AGL Resources, Inc.	40.80%
New Jersey Resources Corp.	46.97
Northwest Natural Gas Co.	47.21
Piedmont Natural Gas Co., Inc.	51.93
South Jersey Industries, Inc.	45.47
WGL Holdings, Inc.	55.97
Average	48.06%

Source of Information: Standard & Poor's Compustat Services, Inc.
PC Plus/Research Insight Data Base
Company Annual Forms 10K
(Sinking Fund Requirement)

There is a further mis-match attributable to Mr. Murray's application of a common equity cost rate derived from proxy LDC companies which have a much higher average common equity ratio to the much lower common equity ratio of Southern Union.

Q. **PLEASE EXPLAIN WHAT YOU MEAN BY THE MIS-MATCH OF UTILIZING SOUTHERN UNION'S CAPITAL STRUCTURE RATIOS AND THE CURRENT MARKET PRICES OF PROXY LDC COMPANIES.**

A. Mr. Murray utilized market data for his proxy LDCs for the months of May, June, July and August 2006 in his DCF analyses. Under the EMH, current market prices reflect investors' expectations of the future. As indicated in my direct testimony and in Footnote 1(a) of

Schedule FJH-1, page 1 of 23, to my direct testimony, public statements made by Southern

Union executives, including CEO Lindemann, in February 2006 confirm that Southern

Union is transforming itself into "a leader in the natural gas transportation and services

industry" (i.e., a midstream natural gas company). This was attributable to the $1.6 billion

acquisition of Sid Richardson Energy Services and the recent sale of its gas distribution

businesses in Pennsylvania and Rhode Island. Consequently, investors no longer will look

at Southern Union (and hence Southern Union's capital structure) as a meaningful indicator

of how gas distribution assets are, or should be, financed. Moreover, Mr. Murray

acknowledges this transformation at pages 13 through 16 of his direct testimony. He states,

at page 13, lines 23-26:

> This acquisition is consistent with Southern Union's recent strategy of
> transforming itself from primary a natural gas distribution utility company
> to a more diversified natural gas service provider, which will be discussed
> later, involves more business risk than a regulated transmission and
> distribution company.

Mr. Murray acknowledges at the top of page 14 of his testimony that as a result of

the announcement of these various transactions, Standard & Poor's placed Southern

Union's credit rating on a Negative CreditWatch. Also, at page 15 of his testimony, Mr.

Murray acknowledges and discusses his communication with S&P analyst Plana Lee at

lines 25-29, stating:

> In fact, S&P analyst Plana Lee informed Staff by email on October 5,
> 2006, that Southern Union would no longer be assigned a business profile
> ranking used to compare it to other natural gas distribution and

transmission companies.   S&P now considers Southern Union as predominately (sic) a midstream natural gas company.

In addition, at the bottom of page 16, Mr. Murray acknowledges the impact of

Southern Union's transition when he states:

> Because Southern Union is transitioning into a diversified natural gas energy company from a natural gas distribution company, <u>any comparison</u> <u>of Southern Union's recent ROEs to those of more traditional natural gas</u> <u>companies is inappropriate.</u> (underlining added for emphasis)

Q.   **WHAT ARE THE IMPLICATIONS OF THESE ACKNOWLEDGEMENTS BY MR.**

MURRAY?

A.   The implications are clear that Mr. Murray recognizes that Southern Union is no longer

recognized by investors, or indeed by major rating agencies such as S&P, as a natural gas

distribution company. Rather, Southern Union is now considered a midstream natural gas

company. In addition, Mr. Murray acknowledges that comparison of Southern Union to

more traditional natural gas distribution companies is inappropriate. If a comparison of

Southern Union's ROEs is inappropriate, the use of Southern Union's capital structure

ratios is also inappropriate because MGE is a gas distribution company. It should be

abundantly clear then, that Southern Union cannot be viewed as a company typifying gas

distribution operations. Moreover, since Mr. Murray does not see fit to rely upon Southern

Union's market data for purposes of determining common equity cost rate, it is

inappropriate to rely upon Southern Union's capital structure and fixed capital cost rates.

Since Southern Union is no longer viewed as a gas distribution entity, but rather a midstream company, its capital structure is not suitable for ratemaking purposes for MGE.

Q. **PLEASE EXPLAIN.**

A. If the entity which owns an organization is not financed in the same manner in which similar risk organizations are financed, then it is appropriate to adopt a hypothetical capital structure. Moreover, Morin[1], in discussing a critique of double leverage, confirms that "the returns granted an equity investor must be based on the risks to which the investor's capital is exposed and not on the investor's source of funds" (see Schedule FJH-20, at p. 475). He further explains that the cost of equity is the risk-adjusted opportunity cost to investors and not the cost of the specific capital sources employed by investors. He goes on to state:

> The *Hope* and *Bluefield* doctrines have made clear that the relevant considerations in calculating a company's cost of capital are the alternatives available to investors and the returns and risks associated with those alternatives. The specific source of funding and the cost of those funds to the investor are irrelevant considerations. (italics in original) (p. 476)

Morin also states:

> *The cost of capital is governed by the risk to which the capital is exposed and not by the cost of those funds or whether they were obtained from bondholders or common shareholders.* (italics added for emphasis) (p. 477)

---

[1] Roger A. Morin, <u>Regulatory Finance – Utilities' Cost of Capital</u>, 1994, Public Utilities Reports, Inc., Arlington, VA, pp. 475-477.

Another indicator that the risk is where capital is put is contained in <u>Principles of</u>

<u>Corporate Finance</u>, Third Edition, by Richard A. Brealey and Stewart C. Myers, McGraw-

Hill Book Company, 1988, when they state at page 173:

> *The true cost of capital depends on the use to which the capital is put.*
> (italics in original)

This means that Southern Union's capital structure, because it is no longer

representative of how a gas distribution entity is financed, should not be utilized. Rather, a

hypothetical capital structure should be utilized such as that which I recommended in my

direct testimony and is summarized in Schedule FJH-1, page 1 of 23, to my direct

testimony. That capital structure consists of 54.0% total debt and 46.0% common equity

capital.

Q. **ASIDE FROM THE TIMING MISMATCH DISCUSSED <u>SUPRA</u>, YOU INDICATED THAT MR. MURRAY'S RECOMMENDED COST OF CAPITAL CONTAINS AN ADDITIONAL MISMATCH. PLEASE EXPLAIN.**

A. Mr. Murray utilized, albeit incorrectly, Southern Union's capital structure ratios. He also

utilized Southern Union's fixed capital cost rates. However, with regard to common equity

cost rate, he analyzed a group of six LDCs which have a substantially higher average (48%)

common equity ratio than Southern Union's 36.31% common equity ratio, to formulate his

recommendation. He then applied his range of common equity cost rate derived from that

group of LDCs to Southern Union's 36.31% common equity ratio, thereby creating a

mismatch and a gross understatement of the cost of capital.

Morin[2] states with regard to capital structure as follows:

> Regulators frequently assign hypothetical, or deemed, capital structures to utility companies for purposes of revenue requirements computation. This procedure is appropriate only if the cost of equity estimated from current investor expectations is revised to take into account the new capital structure prescribed by the regulator. The cost of equity estimate based on the actual capital structure is no longer consistent with the new capital structure. ... In other words, the greater the debt ratio, the greater is the return required by equity investors. ... *In summary, it is logically inconsistent to combine a fictitious capital structure with a return on equity estimate that excludes the effects of the proposed capital structure.* By omitting the repercussions on equity costs and debt costs, a serious conceptual error would be committed in determining the cost of equity capital. (italics and underlining added for emphasis) (see Schedule FJH-21)

It is clear from the foregoing that a serious conceptual error has been committed by

Mr. Murray in utilizing the common equity cost rate derived from a proxy group of LDCs

with a much greater common equity ratio and applying that cost rate to Southern Union's

substantially lower common equity ratio.

Q. YOU STATED THAT MR. MURRAY UTILIZED SOUTHERN UNION'S
CONSOLIDATED LONG-TERM DEBT CAPITAL, WHICH INCLUDES DEBT
HELD AT THE PANHANDLE EASTERN SUBSIDIARIES BUT EXCLUDES THE
CARRYING COSTS OF SUCH DEBT IN CALCULATING THE EMBEDDED

---

[2] Id., page 438-439.

LONG-TERM DEBT COST RATE IS BLATANTLY INCORRECT. PLEASE EXPLAIN.

A.   Common sense and fairness mandates that the level of debt and its cost be in harmony. If it is correct to exclude the costs associated with the long-term debt of the Panhandle Eastern subsidiaries, the capital associated with such costs should also be excluded from the capital structure. What has been done by Mr. Murray is the equivalent of a person who has a first and second mortgage on his/her home, but who calculates the carrying costs on only the first mortgage. If Southern Union's consolidated capital structure is to be utilized, even though I do not believe that it is appropriate to do so, it should exclude both the debt capital and its related costs associated with the Panhandle Eastern subsidiaries.

IV. COST RATE OF COMMON EQUITY CAPITAL

Q.   PLEASE COMMENT ON MR. MURRAY'S EXCLUSIVE RELIANCE UPON THE DCF MODEL IN REACHING HIS RECOMMENDED COMMON EQUITY COST RATE RANGE OF 8.65% TO 9.25%.

A.   It is clear that Mr. Murray relies exclusively upon the DCF, as he states at page 26 of his direct testimony that he performed a CAPM analysis "to determine the reasonableness of" his DCF model cost of common equity. I believe that exclusive, even primary, reliance on the DCF model is incorrect.

13

Q. **PLEASE EXPLAIN WHY.**

A. The goal of a rate of return expert in a proceeding such as this is to attempt to best emulate investors' actions in formulating the required ROE. The DCF model is based upon the EMH, as are all other market-based cost of common equity models. The generally-accepted, semi-strong version of the EMH states that investors are aware of all publicly-available information and that such information is embedded in the market prices they pay. The financial literature is replete with discussions of all of the cost of common equity models such as the DCF, the Risk Premium Model (RPM), the CAPM and the Comparable Earnings Model (CEM). I provided a number of such examples at pages 29-31 of my direct testimony. Those examples make it clear that the financial literature encourages the use of multiple models and investors are aware of them. In addition, many state regulatory commissions consider a number of cost of common equity models and do not rely upon any single model. There is no empirical evidence with which I am familiar, which demonstrates that investors rely exclusively upon a single model such as the DCF. Moreover, there is also no empirical evidence of which I am aware that proves the DCF model to be a superior predictor of actual earned returns experienced by investors vis-à-vis other cost of common equity models.

In view of the foregoing, and because the EMH requires the assumption that investors take into account multiple cost of equity models when formulating their required rates of return, sole reliance upon any single model, including the DCF, is incorrect.

14

Q.   IN ADDITION TO YOUR CALCULATIONS OF COMMON EQUITY COST RATE BY THE USE OF OTHER COST OF COMMON EQUITY MODELS SUCH AS THE RPM, THE CAPM AND CEM, HAVE YOU MADE ANY COMPARISON TO MR. MURRAY'S RECOMMENDED RANGE OF COMMON EQUITY OF 8.65% - 9.25% AGAINST RECENTLY-AWARDED ROES TO LDCS (OR THE GAS OPERATIONS OF COMBINATION ELECTRIC AND GAS COMPANIES) DURING THE TWO YEARS ENDED SEPTEMBER 30, 2006?

A.   Yes, I have. As discussed previously, that information is set forth in Schedule FJH-18. It is shown that the average awarded ROE in litigated cases was 10.58% relative to an average common equity ratio of 48.61%. These awards contained an average equity risk premium of 4.71% over the yields on A rated public utility bonds. The updated prospective yield on A rated public utility bonds is 6.39% (page 1 of Schedule FJH-28) plus an equity risk premium of 4.71% indicates a common equity cost rate of 11.10% as shown at the bottom of Schedule FJH-18. Such a cost rate confirms that Mr. Murray's recommended range of common equity cost rate of 8.65% - 9.25% is completely unrealistic and outside the regulatory mainstream. I believe if this Commission were to concur with Mr. Murray's recommendation, the financial community would have a very adverse view of Missouri regulation.

REBUTTAL TESTIMONY OF FRANK J. HANLEY

CASE NO. GR-2006-0422

NOVEMBER 21, 2006

Q.   PLEASE COMMENT UPON THE APPLICABILITY OF MR. MURRAY'S RECOMMENDED DCF-BASED RANGE OF COMMON EQUITY COST RATE OF 8.65% - 9.25%.

A.   Such a common equity cost rate range, based upon what is known as the "simplified" DCF model which both Mr. Murray and I are using in this case, will mathematically mis-specify investors' required return rate when the market value of common stock differs significantly from its book value. As utility rate of return experts all know, and as discussed in my direct testimony, market value and book values are seldom at unity. The market-based DCF model will result in a total annual dollar return on book common equity equal to the total annual dollar return expected by investors only when market and book values are equal, a rare and unlikely situation.

Roger A. Morin has stated at page 236 of Regulatory Finance – Utilities' Cost of Capital, (1994):

> The third reason for caution and skepticism is that application of the DCF model produces estimates of common equity cost that are consistent with investors' expected return only when stock price and book value are reasonably similar, that is, when the M/B is close to unity. As shown below, application of the standard DCF model to utility stocks understates the investor's expected return when the market-to-book ratio of a given stock exceeds unity. This is particularly relevant in the capital market environment of the 1990s where utility stocks are trading at M/B ratios well above unity. The converse is also true, that is, the DCF model overstates that investor's return when the stock's M/B ratio is less than unity. The reason for the distortion is that the DCF market return is applied to a book value rate base by the regulator, that is, a utility's earnings are limited to earnings on a book value rate base.

16

Although Professor Morin discusses the capital market environment of the 1990s, utility stocks continue to trade at market-to-book ratios well above unity, as shown on Schedule FJH-1, page 11 of 23, the market-to-book ratios of all of the proxy LDCs are substantially above their book values for my proxy groups as well as for Mr. Murray's proxy group of six LDCs.

> As discussed in my direct testimony at page 34, line 22 through page 35, line 10:

> Under the DCF model, the rate of return investors require is related to the price paid for a stock. Thus, market price is the basis upon which investors formulate their required rate of return. A regulated utility (under the traditional rate base/rate of return paradigm) is limited to earning on its net book value (depreciated original cost) rate base. Market values diverge from book values for many reasons unrelated to allowed and/or achieved rates of earnings on book common equity (ROEs). Thus, when market values depart from book values, a market-based DCF cost rate applied to the book value of common equity will not reflect investors' expected common equity cost rate based on market prices. This is true because there are many macroeconomic factors which influence the demand for, and hence the market prices of, common stocks in addition to company-specific earnings per share (EPS) and dividends per share (DPS). Consequently, a market-based DCF cost rate applied to the book value per share will either overstate investors' required common equity cost rate when market value is less than book value or understate investors' required common equity cost rate when market value is above book value.

I demonstrated the inadequacy of a DCF-based cost rate applicable to the book value of common equity when the market value of such equity is substantially above its book value on Schedule FJH-8, which demonstrates that there is no realistic opportunity to earn the market-based rate of return when it is applied to a much lower book value. In that example, market price is 180.00% in excess of book value and the investor expects a total return rate

of 10.00% but can only achieve a 5.55% return on market value when the 10.00% market

rate is applied to the lower book value of common equity.

Q. AT THE TOP OF PAGE 28 OF HIS DIRECT TESTIMONY, MR. MURRAY

SUGGESTS THAT THE COMMISSION SHOULD ADOPT HIS DCF

RECOMMENDATION IN VIEW OF HIS CAPM ANLAYSES AND BECAUSE HE

BELIEVES THAT HE PROVIDES INFORMATION REGARDING LOWER

REQUIRED EQUITY RISK PREMIUMS. PLEASE COMMENT.

A. There are three major problems associated with Mr. Murray's CAPM analyses: 1) his

reliance, even in part, on geometric average market risk premiums; 2) his reliance, in part,

upon short-term risk premiums; and 3) his failure to utilize the empirical Capital Asset

Pricing Model (ECAPM).

Q. WHY IS IT INCORRECT TO RELY UPON THE GEOMETRIC MEAN WHEN

ESTIMATING THE COST RATE OF COMMON EQUITY CAPITAL?

A. In view of the more than six months'' passage of time since the filing of my direct

testimony, it is useful to look at the more current information from the 2006 Valuation

Yearbook of Stocks, Bonds, Bills and Inflation by Ibbotson Associates. It is identified as

Schedule FJH-22 and consists of 15 pages. Ibbotson Associates explains clearly why, only

the arithmetic mean data are appropriate when estimating the cost rate for common equity

capital. The classic definition of business risk is the expected variability in EBIT (Earnings Before Interest and Income Taxes). Consequently, in making investment decisions, expected volatility is crucial to investors in their analyses of risk. The geometric mean reduces the volatility of yearly data to a constant rate. Thus, observing the geometric mean provides no insight into the volatility, i.e., year-to-year fluctuations, so critical to investors' analyses of risk.

Q. **WHAT PERIOD OF TIME DOES THE STANDARD DCF MODEL CONTEMPLATE?**

A. The standard DCF model contains the assumption that the dividend growth rate is constant in every year to infinity. Schedule FJH-23, which consists of 6 pages, is an excerpt of pages 110-113 from Roger A. Morin's Regulatory Finance: Utilities' Cost of Capital. Dr. Morin lists the assumptions of the standard DCF model therein.

Q. **WHY IS IT THEN NOT APPROPRIATE TO UTILIZE THE GEOMETRIC MEAN IN ESTIMATING COST OF CAPITAL?**

A. Pages 4-6 of Schedule FJH-22 contain the explanation by Ibbotson Associates as to why the use of the arithmetic mean is appropriate when estimating the cost of capital. It is because only the arithmetic mean takes into account year-to-year fluctuations of random variables, such as the equity risk premium. Risk assessment is a function of the potential for

19

volatility. A standard measure of business risk is the volatility of earnings before interest

and income taxes (EBIT). Information about potential volatility is critical to investors'

decision-making. Schedule FJH-24, which consists of two pages, shows the returns by

year on large company stocks for all of the years 1926-2005 on page 1. As can be seen,

this results in an approximate normal distribution. Page 2 of Schedule FJH-24 shows the

returns and their volatility chronologically by year from 1926-2005. It is easily noted that

the volatility is considerable. The geometric mean, or the compound return, only takes into

account the first and last year, i.e., 1926 and 2005, and reduces the return to a constant. A

geometric (or compound) growth rate provides no insight into the potential for future

volatility because it ignores all of the intervening years' returns. When estimating the cost

of capital, which is forward-looking, only the arithmetic mean of all the historic returns (as

indicated on pages 5 and 6 of Schedule FJH-22) provides insight into the potential for

volatility because it takes all of the past performance (observations) into account.

The classic definition of the riskiness of an asset is defined as the likely variability

of future returns.[3] Only the arithmetic mean provides insight into the likely variability of

future returns. Mr. Murray's reliance upon geometric mean return data are of no relevance

to estimating the cost of capital.

---

[3] J. Fred Weston and Eugene F. Brigham, Essentials of Managerial Finance, 3rd Edition, the Dryden
Press, 1974, p. 272.

Q. **WHY IS MR. MURRAY'S USE OF SHORT-TERM (10-YEAR) EQUITY RISK PREMIUMS INCORRECT?**

A. The reasons are explained very well by Ibbotson Associates (upon whose data he relies) as contained Schedule FJH-22 at pages 7 through 13. Ibbotson Associates show that equity risk premiums are random variables. That is, they have a serial correlation of near zero (which can be seen on page 8 of Schedule FJH-22). Because the presumed investment horizon in utilities' common equity is infinite (in practical terms, a very long period of time), Ibbotson Associates states:

> Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect 'unusual' events to occur from time to time and their expectations reflect this. (pages 9 and 10)

Thus, in view of the foregoing and the fact that the DCF model presumes an infinite investment horizon, the use of short-term periods such as 10 years is entirely inappropriate, as is the use of the geometric mean equity risk premiums.

Q. **AT PAGE 29 OF HIS DIRECT TESTIMONY, MR. MURRAY CITES SEVERAL INDIVIDUALS WHO BELIEVE THAT EQUITY RISK PREMIUMS "ARE CURRENTLY QUITE LOW". PLEASE COMMENT.**

A. That is precisely the problem with relying upon current periods of time or short historical periods of time. Once again, for the reasons specified by Ibbotson Associates and common

sense in view of the infinite investment horizon presumed in the standard DCF model, a long range view should be taken based upon the arithmetic mean of long-term historical data.

Q.   **PLEASE COMMENT ON MR. MURRAY'S COMPLETE RELIANCE UPON THE STANDARD CAPM, DESPITE THE INCORRECT INPUT DATA AND INTERPETATION OF SUCH DATA AS DISCUSSED SUPRA.**

A.   Mr. Murray failed to take into account the ECAPM, which is discussed in my direct testimony at pages 58 and 59.   His failure to utilize the ECAPM results in a further understatement of the cost rate of common equity capital.   Adjusted betas are used in the application of the traditional CAPM.   The purpose of using adjusted betas is to account for regression analysis bias, i.e., the tendency of low beta stocks to rise toward 1 and of high beta stocks to decline toward 1.   Empirical studies have shown that the traditional CAPM, which requires the use of adjusted betas, understates the common equity cost rate for companies whose betas are less than 1 and overstates the common equity cost rate for those companies whose betas are greater than 1 because the slope of the line is not as steep as the Security Market Line (SML) predicted by the CAPM.   The ECAPM process takes that *additional tendency* into account.   On this subject, I was in communication with Professor Roger A. Morin in the past via email.   Professor Morin is the author of the textbook Regulatory Finance: Utilities' Cost of Capital cited supra.   That correspondence contains

Professor Morin's explanation of the ECAPM and why it is essential to reflect the true cost

of capital is contained in Schedule FJH-25 which consists of 4 pages. Please note that

Professor Morin indicated that regulatory support for the ECAPM can be found in the New

York Public Service Commission's Generic Financing Docket, Case 91-M-0509.

Q.   **THE STANDARD DCF MODEL PRESUMES A CONSTANT GROWTH RATE IN**

DIVIDENDS TO INFINITY AS NOTED BY MORIN, SUPRA. ARE EQUITY RISK

PREMIUMS CONSTANT?

A.   No. Equity risk premiums change over time as do the growth rate expectations assumed for

use in the constant growth standard DCF model. However, in the application of the DCF

and risk premium models (including CAPM and ECAPM), the growth rate in the DCF

model and the equity risk premium in risk premium models are "expectationally constant".

As discussed at page 56, lines 1-15 of my direct testimony, the DCF growth rate may vary

randomly around some average expected value, which is perfectly acceptable as long as the

mean expected growth is constant. Similarly, to the extent that "g", or DCF growth rate

varies randomly around its mean expected value over the presumed infinite horizon, so

does the equity risk premium. To the extent that relative risk varies in the short run, it

averages out over the very long run (infinity) and is taken into account by using the

arithmetic mean of long-run historic equity risk premiums which is a random variable.

Q. AT PAGES 33-34 OF HIS DIRECT TESTIMONY, MR. MURRAY CONSIDERED THE EXPECTED RETURN ON SOUTHERN UNION'S PENSION FUND ASSETS EQUITY OF 10.0% AS A TEST OF REASONABLENESS FOR HIS RECOMMENDATION IN THIS CASE. PLEASE COMMENT ON THE RELEVANCE OF THE USE OF THE EXPECTED RETURNS FROM SOUTHERN UNION'S PENSION FUND ASSETS AND THEIR USE IN THE RATEMAKING PARADIGM.

A. The use of such expected returns has no relevance to the establishment of a common equity cost rate for MGE in this proceeding for the following reasons. The expected pension fund returns are those on a portfolio of assets which reflect the risk-reducing benefits of portfolio theory as opposed to the greater risk associated with investment in a single asset, which in this case would be MGE's jurisdictional rate base. The pension fund investment horizon is a limited time horizon as opposed to the infinite investment horizon implicit in the standard DCF model. It is incorrect for Mr. Murray to compare his recommended common equity cost rate for MGE with the expected return on the equity portion of the entire pension portfolio because of the portfolio effect described supra. It must be kept in mind that when MGE needs capital in order to provide service to its customers, it must obtain that capital regardless of capital market conditions at that time. Also, whatever common equity cost rate is allowed by this Commission, it will simply be an opportunity cost rate which will be impacted by attrition caused by rising investment in rate base, increasing expenses, and the

24

impact of weather attributable to not having a weather normalization clause in effect in the Missouri jurisdiction versus the expected actually-earned rate of return on Southern Union's pension fund portfolio of assets.

For the foregoing reasons, Mr. Murray's use and reliance upon the expected return on the portfolio of equity assets of Southern Union's pension fund is inappropriate and should be rejected.

Q. **AT THE BOTTOM OF PAGE 35 AND THE TOP OF PAGE 36 OF HIS DIRECT TESTIMONY, MR. MURRAY COMPARES RATE OF RETURN DECISIONS WITH HIS RECOMMENDATION IN AN ATTEMPT TO JUSTIFY HIS RECOMMENDED OVERALL RATE OF RETURN. IS THIS A VALID TYPE OF COMPARISON?**

A. No. The overall cost of capital and fair rate of return is the result of a number of factors, including differences in the levels of financial risk reflected in different capital structure ratios. In addition, since a major portion of the capitalization of most natural gas distribution companies consists of fixed capital, i.e., debt and preferred stock capital, comparisons cannot be made. They cannot be made because the embedded costs of debt capital and preferred stock capital are impacted by, among other things, the time at which various issues were made and the capital markets which existed at those times in which they were made. Hence, the comparison of overall allowed rates of return is not a valid

comparison. Unlike recently awarded rates of return on common equity capital, which can be related to specific common equity ratios, the overall rates of return are impacted by many various issues of debt and preferred stock capital issued at many different points in time. His analysis of overall rates of return is not valid as a means of attempting to justify his recommendation.

V. UPDATED COMMON EQUITY COST RATE AND RESULTANT OVERALL COST OF CAPITAL

Q. **HAVE YOU PREPARED AN UPDATE OF YOUR COMMON EQUITY COST RATE TO REFLECT MORE CURRENT CAPITAL MARKET CONDITIONS?**

A. Yes, I have. In my update, I utilized the most recent information available. I also utilized the same hypothetical capital structure which includes 44.09% long-term debt and 9.91% short-term debt, equaling a total debt ratio of 54.00% and a common equity ratio of 46.00% as discussed in my direct testimony. The long- and short-term debt cost rates remain unchanged at 6.57% and 5.47%, respectively. In my update, I utilize the same cost of common equity models and applied them in the same manner as discussed in detail in my direct testimony. My updated cost rate of common equity capital is 11.75% and the resultant overall cost of capital is now 8.85%. In my updating, I utilized the same methodologies in precisely the same manner as discussed in my direct testimony. They need not be repeated here. I have also calculated averages for each proxy group and also excluded Cascade Natural Gas Corp. and Peoples Energy Corp. due to their pending

26

merger/acquisition activity which became known after my direct testimony was prepared and filed. A brief summary of my updated common equity cost rates and updated cost of common equity of 11.75% is shown on page 2 of Schedule FJH-26[4]. Schedules FJH-27 through 30 contain the information relating to the updated results of my application of the DCF, RPM, CAPM, and CEM, respectively.

My updated common equity cost rate of 11.75% confirms the unreasonableness of Mr. Murray's recommended range of 8.65% - 9.25%. Further affirmation of its unreasonableness is the indicated 11.10% cost rate shown on Schedule FJH-18. As discussed <u>supra</u>, the average equity risk premium implicit in all of the awarded equity cost rates shown on Schedule FJH-18 is 4.71%. When added to the prospective A rated utility bond yield of 6.39%, an 11.10% cost rate is indicated which, of course, does not include any provision for MGE's unique risks related to size and lack of protection from the vagaries of the weather. Moreover, if it were to be applied to Southern Union's common equity ratio of 36.31%, a substantial additional upward adjustment to the 11.10% cost rate would be required to reflect the greater financial risk in a 36.31% common equity ratio versus the average ratio of 48.61% of all the litigated awards as shown on Schedule FJH-18.

---

[4]   Page 3 of Schedule FJH-26 shows a brief summary of my updated common equity cost
rates and updated cost of common equity of 11.75 excluding Cascade Natural Gas Co. and Peoples Energy
Corp.

In view of the evidence presented <u>supra</u>, MGE should be afforded an opportunity to

earn an 11.75% ROE relative to a 46.00% hypothetical common equity ratio

Q.   **DOES THAT CONCLUDE YOUR REBUTTAL TESTIMONY?**

A.   Yes, it does.

In the Matter of Missouri Gas Energy's)
Tariff Sheets Designed to Increase Rates)   Case No. GR-2006-0422
for Gas Service in the Company's Missouri)
Service Area.)
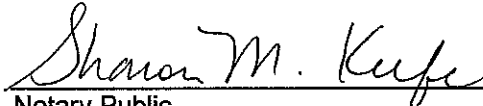
AFFIDAVIT OF FRANK J. HANLEY

STATE OF _New Jersey_)
)   ss.
COUNTY OF _Burlington_)

Frank J. Hanley, 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.

_____
FRANK J. HANLEY

Subscribed and sworn to before me this _16th_ day of November 2006.

_____
Notary Public

My Commission Expires: _7/9/2011_

**SHARON M. KEEFE
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES JULY 9, 2011**