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MISSOURI PUBLIC SERVICE COMMISSION

UTILITY SERVICES DIVISION

REBUTTAL TESTIMONY

OF

DAVID MURRAY

MISSOURI GAS ENERGY

CASE NO. GR-2006-0422

Jefferson City, Missouri
November 2006

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	)))	Case No. GR-2006-0422

AFFIDAVIT OF DAVID MURRAY

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

David Murray, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Rebuttal Testimony in question and answer form, consisting of 32 pages 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.

David Murray

Subscribed and sworn to before me this 20th day of Nov. 2006.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
County of Cole
My Commission Exp. 07/01/2008

Notary Public

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Q. Please state your name.

A. My name is David Murray.

Q. Are you the same David Murray who filed direct testimony in this proceeding for the Staff of the Missouri Public Service Commission (Staff)?

A. Yes, I am.

Q. In your direct testimony, did you provide your expert opinion on what you considered to be a fair and reasonable rate of return on the Missouri jurisdictional natural gas utility rate base for Southern Union Company's (Southern Union) Missouri Gas Energy (MGE) division?

A. Yes, I did.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to respond to the direct testimony of MGE witness Frank J. Hanley, who has sponsored rate-of-return (ROR) testimony on behalf of MGE. The Office of the Public Counsel did not sponsor ROR testimony in this case. I will address the issue of the appropriate cost of common equity, cost of debt and capital structure to be applied to MGE for ratemaking purposes in this proceeding.

EXECUTIVE SUMMARY

Q. Please provide an executive summary of your rebuttal testimony.

A. Mr. Hanley's proposed use of a hypothetical capital structure and hypothetical debt costs to set rates for MGE should be rejected. Mr. Hanley claims that he used a hypothetical capital structure because Southern Union is a diversified gas company, and its current capital structure doesn't reflect how a natural gas distribution company "should be" financed. I will show that Southern Union has always used a liberal amount of leverage dating back to when it acquired the MGE properties. If anything, the common equity ratio in my proposed capital structure is higher than how Southern Union thought its operations "should be" financed even when it was predominately a natural gas distribution company.

Mr. Hanley's recommended cost of common equity is upwardly biased due to his removal of estimated costs of common equity from his discounted cash flow (DCF) model and capital asset pricing model (CAPM) that fall below the lowest authorized return on common equity (ROE) for natural gas distribution companies from January 1, 2004 through December 31, 2005. Although one may review authorized ROEs to gain some perspective as to what commissions in other jurisdictions are authorizing, it is important for the rate of return witness to provide information to commissions about the required ROE currently implied in utility companies' stock prices. The only way to do this is to apply cost of common equity models to utility companies and determine if investors are bidding the price of stocks up, which may result in a lower cost of common equity to utility companies, if it is due to factors other than the fundamentals of the companies.

Mr. Hanley's use of arithmetic averages rather than geometric averages to measure historical equity risk premiums causes higher estimated costs of common equity for both his risk premium analysis and CAPM analysis. I will explain and provide academic support as to

why it is more appropriate to use geometric averages when evaluating long-term asset classes, such as utility stocks.

Mr. Hanley also proposed two specific adjustments to his proxy groups' estimated cost of common equity. The first upward adjustment of 30 basis points is based on Mr. Hanley's claim that MGE's small size causes it to be riskier than his proxy group. Mr. Hanley relies on a study that was done on small publicly-traded companies that operate in a competitive environment. MGE does not operate in a competitive environment. Therefore, this adjustment is not appropriate. Additionally, MGE is not a stand-alone company, so it is not appropriate to pretend that it is a small publicly-traded company. The second upward adjustment of 15 basis points Mr. Hanley made was based on MGE's current rate design. Although rate designs can have an impact on the risk level of utilities, I believe it is important to focus on the aggregate risk level of the utility. However, MGE and Staff are proposing rate designs that will in fact protect MGE's fixed cost recovery from the vagaries of weather. If a rate design of this type is approved by the Commission, then it appears that Mr. Hanley should instead make a downward adjustment to his recommendation in this case.

DIRECT TESTIMONY REVISIONS

Q. Do you have any revisions to make to your direct testimony?

A. Yes. The fourth footnote in my direct testimony (p. 30) should be dated June 16, 2003 rather than June 16, 2006.

COST OF COMMON EQUITY, CAPITAL STRUCTURE AND EMBEDDED COST OF LONG-TERM DEBT

Q. Is there agreement between Staff and MGE on the cost of long-term debt?

A. No. MGE witness Hanley used a hypothetical cost of long-term debt and Staff used an embedded cost of long-term debt. While Mr. Hanley's approach may be reasonable when applied to a hypothetical capital structure, it would not be reasonable when applied to an actual capital structure. It is important to match company-specific capital costs with a company's capital structure.

Q. Is there an agreement between Staff and MGE on the appropriate capital structure to use to estimate a fair and reasonable rate of return?

A. No. Staff has used Southern Union's actual capital structure as of the test year, December 31, 2005. MGE used a hypothetical capital structure based on the average capital structure of the proxy groups.

Q. Is there an agreement between Staff and MGE on MGE's cost of common equity?

A. No. Mr. Hanley recommends a cost of common equity of 11.95 percent. I recommend a cost of common equity of 8.65 percent to 9.25 percent.

MR. HANLEY'S RECOMMENDED CAPITAL STRUCTURE FOR MGE

Q. Please summarize Mr. Hanley's recommended capital structure for MGE.

A. Mr. Hanley recommends the use of a hypothetical capital structure based on the average capital structure of his proxy groups. He maintains this is necessary because MGE is a division of Southern Union, and therefore, has no meaningful stand-alone capital structure. He also believes that Southern Union's capital structure is "not meaningful as an indication of the risk of the gas distribution business and how it should be financed." Mr. Hanley supports this position by providing information regarding Southern Union's

transformation from a natural gas distribution utility to a natural gas transportation and service company. Mr. Hanley believes that Southern Union's capital structure is not an appropriate proxy for how a natural gas distribution company, such as MGE, "should be" financed.

Q. How has Southern Union typically been financed the past five years?

A. Southern Union has consistently used a considerable amount of financial leverage for the capitalization of its investments. Southern Union's common equity ratio has consistently been around 30 percent. A review of Schedule 7 attached to my direct testimony shows that Southern Union's average annual common equity ratio from 2001 through 2005 was 30.86 percent.

Q. When did Southern Union start transitioning into a diversified natural gas company?

A. Southern Union's transition started with its acquisition of Panhandle Energy in June 2003.

Q. Doesn't the average from 2001 through 2005 capture part of Southern Union's transition period?

A. Yes.

Q. When did Southern Union acquire the MGE properties?

A. Southern Union purchased the MGE properties on January 31, 1994.

Q. What was Southern Union's average annual common equity ratio during the period 1994 through 2002, which is the period in which Southern Union was predominately a natural gas distribution utility?

A. As can be seen on Schedule 1 attached to this rebuttal testimony, Southern Union's average annual common equity ratio from 1994 through 2002 was only 29.36 percent.

Q. What is your recommended common equity ratio in this case?

A. It is 36.31 percent, which is higher than Southern Union's average annual historical common equity ratios even when it was predominately a natural gas distribution utility.

Q. Did Mr. Hanley indicate that he didn't believe that Southern Union was a good proxy for MGE's capital structure because it is not representative of how a natural gas distribution company "should be" financed?

A. Yes.

Q. Does this mean that Southern Union was not financing MGE's operations appropriately?

A. Not necessarily. Some companies tend to be more aggressive with their use of financial leverage. Perhaps this is because the company believes they can achieve a lower overall cost of capital by utilizing more leverage. If a utility company endeavors to use more financial leverage and hence achieve a lower cost of capital, then this should be reflected in the recommended rate of return. My recommended capital structure allows for this recognition. Mr. Hanley's hypothetical capital structure does not.

Q. Does a more leveraged capital structure tend to increase financial risk?

A. Yes. However, the amount of debt alone should not be the only characteristic reviewed to determine the amount of financial risk. A company may be able to increase its financial leverage to a higher level during periods in which the cost of debt is relatively low

compared to previous periods. It is the amount of increased fixed charges from this higher amount of debt that causes the increase in financial risk. This is the same reason that one should compare interest expense coverage ratios along with capital structure ratios when comparing companies' financial risk. Some companies may be able to use more leverage if they are able to obtain debt at a lower cost than other companies.

Q. Has Southern Union's liberal use of debt caused it to have more financial risk, and therefore, affected MGE's cost of debt?

A. Yes. I believe this is one of the primary reasons that Southern Union's credit rating of BBB has been a full category less than the average credit rating of A for my proxy group of natural gas distribution companies.

Q. How long has Southern Union had a BBB credit rating?

A. At least since it acquired the MGE properties. Southern Union's credit rating did improve to BBB+ from April 1998 through December 2002. However, it has remained in the BBB rating category this entire period.

Q. Do you believe it is appropriate to match Southern Union's capital structure with the costs of capital associated with this capital structure?

A. Yes. This is why I have applied the embedded cost of long-term debt figure to the percentage of debt in Southern Union's capital structure. I also applied the cost of common equity that I believe is appropriate for this more leveraged capital structure.

Q. How did you adjust your estimated proxy group cost of common equity to account for Southern Union's more leveraged capital structure?

A. As I explained on page 37, lines 9 through 18 of my direct testimony, I made a 30 basis point upward adjustment to reflect MGE's increased risk implied by Southern

Union's lower credit rating as compared to my proxy group. Although I did not label this increase in my recommended ROE as an adjustment for financial risk, because Southern Union's BBB credit rating encompasses both financial risk and business risk, this adjustment is an indirect consideration of MGE's increased risk due to Southern Union's liberal use of debt.

Q. Have any of MGE's previous ROR witnesses deemed it appropriate to use Southern Union's more leveraged actual capital structure when recommending an appropriate ROR for MGE?

A. Yes. I provided this information on page 19, lines 7 through 23 of my direct testimony, but this information bears repeating. In Case Nos. GR-96-285 and GR-98-140, MGE's ROR witness, Bruce H. Fairchild, used the actual capital structure of Southern Union when recommending an appropriate ROR. In Case No. GR-96-285, Mr. Fairchild cited the following reasons for his use of Southern Union's actual capital structure to determine MGE's cost of capital:

- These ratios reflect the mix of capital currently employed to finance MGE's investment in assets used to provide gas service in Missouri;
- Although this capital structure deviates from industry standards for local gas distribution companies (LDCs), it is consistent with Southern Union's entrepreneurial spirit, acquisition orientation, and earnings retention practices; and
- While Southern Union's higher debt ratio, and lower common equity ratio, impart additional financial risks, these are offset by the greater

use of cheaper debt and preferred stock capital, and less use of significantly more expensive common equity capital.

Although not verbatim, Mr. Fairchild stated essentially the same reasons for the use of Southern Union's actual capital structure in Case No. GR-98-140.

Q. What was Mr. Fairchild's recommended common equity ratio in Case Nos. GR-96-285 and GR-98-140?

A. Mr. Fairchild recommended a common equity ratio of 29.88 percent in Case No. GR-96-285. This compared to Mr. Fairchild's estimated common equity ratio of 50.40 percent for the natural gas distribution industry for the 5-year period 1990 through 1994 based on 19 natural gas distribution utilities covered by Value Line.

Mr. Fairchild recommended a common equity ratio of 36.06 percent in Case No. GR-98-140. This compared to Mr. Fairchild's estimated common equity ratio of 50.60 percent for the natural gas distribution industry for the 5-yeear period 1992 through 1996 based on 17 natural gas distribution utilities covered by Value Line.

Q. Is the differential between Southern Union's common equity ratio and the natural gas distribution industry average common equity ratio similar in this rate case?

A. Yes. According to Schedule 20 attached to my direct testimony, my proxy group has an average common equity ratio of 55.23 percent. According to page 6 of Mr. Hanley's Schedule FJH-1 attached to his direct testimony, the common equity ratio of his proxy group of four companies is 45.00 percent. According to page 8 of Mr. Hanley's Schedule FJH-1 attached to his direct testimony, the common equity ratio of his proxy group of eight companies is 47.43 percent.

MR. HANLEY'S RECOMMENDED COST OF COMMON EQUITY FOR MGE

Q. Please summarize Mr. Hanley's recommended cost of common equity for MGE's natural gas utility operations.

A. Mr. Hanley used four models to estimate the cost of common equity for his proxy groups, which was 11.50 percent. He then adjusted his estimated cost of common equity for two risk factors that he believes are specific to MGE. These risk factors are the smaller size of MGE relative to the average size of his proxy group and MGE's lack of protection from the vagaries of weather as compared to some companies in his proxy group. He estimated the need for a 30 basis point adjustment for MGE's smaller size and a 15 basis point adjustment for MGE's lack of protection from the vagaries of weather. After this adjustment, Mr. Hanley's recommended ROE for MGE was 11.95 percent.

Mr. Hanley used the Discounted Cash Flow (DCF) model, the Capital Asset Pricing Model (CAPM), the Risk Premium Model (RPM), and the Comparable Earnings Model (CEM) to estimate the ROE for MGE. Mr. Hanley applied the DCF, CAPM and RPM to two proxy groups, a narrow group of four companies (hereinafter referred to as the "narrow group") and a broad group of eight companies (hereinafter referred to as the "broad group"). Mr. Hanley applied the CEM to three proxy groups of non-price regulated companies. The first proxy group was based on risk comparisons to Mr. Hanley's narrow group of natural gas distribution companies. The second proxy group was based on risk comparisons to Mr. Hanley's broad group of natural gas distribution companies and the final group was based on risk comparisons to Southern Union.

A good summary of Mr. Hanley's cost of common equity analysis is contained on page 2 of Schedule FJH-1 attached to his direct testimony. The results for Mr. Hanley's

narrow group were as follows: unadjusted DCF-10.43 percent, RPM-10.53 percent, CAPM-10.44 percent, CEM-14.26 percent and an adjusted DCF-11.69 percent. The first four results were averaged for an indicated cost of common equity of 11.42 percent for the narrow group. The results for Mr. Hanley's broad group were as follows: unadjusted DCF-10.41 percent, RPM-10.48 percent, CAPM-10.25 percent, CEM-14.37 percent and an adjusted DCF-11.60 percent. The first four results were averaged for an indicated cost of common equity of 11.38 percent. After reviewing these results, Mr. Hanley ultimately estimated a proxy group cost of common equity of 11.50 percent.

Q. From page 32, line 12 through page 39, line 3 of Mr. Hanley's direct testimony, Mr. Hanley presents testimony that discusses the fact that the current market valuation of his proxy group's common equity results in market values that are well in excess of the book value of the common equity. He maintains that because of this fact, the unadjusted DCF model result should not be relied upon as heavily because it results in downward-biased estimates of the cost of common equity. Do you agree with this conclusion?

A. No. There has been much debate on the implications of the level of market-to-book ratios on recommending a just and reasonable rate of return. Mr. Hanley believes that if market-to-book ratios are in excess of one, then the unadjusted DCF model will understate investors' required ROE. He maintains that because the DCF model relies on the stock price of a given company to determine investors' required ROE, this causes problems when applying this rate of return to the book value of common equity because the return applied to this book value will not generate the return expected by investors on the market value of common equity.

While this argument may have some intuitive appeal, it does not address the reason investors will expect the market-to-book ratio to remain significantly above one. If the cost of capital for a utility is at a certain level and it is still allowed to earn an ROE above this cost, then it is only natural that investors will bid up the price of the stock to a point where the market-to-book ratio is above one. This is especially true in today's low interest rate environment. While investors may expect some commissions to continue to allow an ROE above a utility's cost of capital, I do not think this Commission should adopt upward adjustments to DCF results because I believe that this would send a message to investors that if they bid the prices of utility stocks up, the Commission will make adjustments to support these higher market valuation levels.

Q. Are you aware of any sources that support the position that if the market-to-book ratio of a company is above one, then this means that a company is earning more than its cost of capital?

A. Yes. In the textbook by Aswath Damodaran, INVESTMENT VALUATION: Tools and Techniques for Determining the Value of *Any* Asset, 1996, there are many citations that indicate if a company is earning more than its cost of capital, then the market-to-book ratio for that company will be above one. Page 320 of this textbook states the following:

> The PBV [price/book value] ratio of a stable firm is determined by the differential between the return on equity and the required rate of return on its projects. If the return on equity exceeds the required rate of return, the price will exceed the book value of equity; if the return on equity is lower than the required rate of return, it will be lower than the book value of equity. The advantage of this formulation is that it can be used to estimate the PBV ratios for firms that do not pay out dividends.

Another relevant and applicable quotation in the same book on page 326 reads as follows:

> The PBV ratio is also influenced by the required rate of return, with higher required rates of return leading to lower PBV ratios. The influence of the return on equity and the required rate of return can be consolidated in one measure by taking the difference between the two rates. The larger the return on equity relative to the required rate of return, the greater the PBV ratio...

Q. Are you aware of any other sources that support the proposition that market-to-book ratios imply that utility companies are earning more than their cost of common equity?

A. Yes. This is also discussed in the Eugene F. Fama and Kenneth R. French (Fama and French) article, "The Equity Premium" published in the *Journal of Finance* in April 2002. Fama and French discuss the increased valuation levels of equities during the period 1951 to 2000 and conclude that investors have earned a return which is higher than their cost of common equity. Specifically, the authors state: "Since, on average, the market value of equity is substantially higher than its book value, it seems safe to conclude that, on average, the expected return on investment exceeds the cost of capital."

Consequently, by no means is there an agreement in the financial literature about what inferences should be drawn from market-to-book ratios that are significantly above one. While it is true that market-to-book ratios are higher for the entire stock market, the Fama and French article provides an explanation as to why these ratios are higher. If investors expect the valuation levels to revert back to the book value, then events other than the fundamentals of companies will cause stock prices to either rise more slowly than historical averages or even decline.

Q. What type of adjustment does Mr. Hanley make to his DCF analysis to address current higher market-to-book ratios in the natural gas distribution industry?

A. Mr. Hanley explains his adjustment in detail on pages 3 through 5 of Schedule FJH-1 attached to his direct testimony. The methodology that Mr. Hanley uses is based on theory that allows for the estimation of the cost of common equity if a company is financed by 100 percent equity. This methodology is based on Franco Modigliani's and Merton Miller's famous M&M Proposition II theory.[1] Assuming that the cost of common equity is only affected by the introduction of financial leverage, this methodology allows for the estimation of the cost of common equity for a specific capital structure. This methodology also assumes that the increase in the cost of common equity is a linear function of the capital structure.

On page 44, lines 6 through 7 of his direct testimony, Mr. Hanley claims that this methodology is supported in the academic literature. In a response to Staff Data Request No. 0241.1, Mr. Hanley stated that the methodology he used is "precisely the formula accepted by the Pennsylvania Public Utility Commission. It is Mr. Hanley's understanding that it is based on the referenced article by Hamada." However, after reading the article cited by Mr. Hanley, I determined that this article did not specifically address market-to-book ratio issues in utility rate case proceedings.

The approach proposed by Mr. Hanley to attempt to reconcile market value capital structures with book value capital structures is yet another tactic that has been introduced to this Commission to attempt to discredit the unadjusted constant-growth DCF model. In essence, Mr. Hanley is suggesting that rates should be set based on a market value capital

[1] Stephen A. Ross, Randolph W. Westerfield and Bradford D. Jordan, *Fundamentals of Corporate Finance*, Richard D. Irwin, Inc. 1992, pp. 524-534.

structure rather than the Commission's traditional approach of using a book value capital structure. Although Mr. Hanley's adjusted DCF is only meant to be a test of reasonableness of his other four models, the Commission should expressly dismiss this methodology.

Q. Are investors aware that authorized ROE's are normally applied to book value capital structures?

A. Yes. Therefore, if reasonable inputs are used in a traditional DCF analysis, an unadjusted DCF should still provide a reliable estimation of investors' required ROE.

Q. Has Mr. Hanley sponsored rate-of-return testimony when market-to-book ratios were below one?

A. Yes. I reviewed testimony that Mr. Hanley filed on August 4, 1980 for Kentucky Power Company in Case No. 7900 before the Energy Regulatory Commission of Kentucky. This was a period in which utility industry market-to-book ratios were generally below one.

Q. Did Mr. Hanley make downward adjustments to his DCF analysis in 1980 because the book value capital structures contained less risk than the market value capital structures?

A. No.

Q. Was the methodology that Mr. Hanley used to adjust his DCF analysis available at the time that Mr. Hanley sponsored testimony in Case No. 7900?

A. Yes. The formula that Mr. Hanley used to make his adjustment to his DCF analysis in this case was available in 1980. The M&M Proposition II theory, in which corporate taxes were considered, was first introduced in 1963.

Q. Did Mr. Hanley comment on market-to-book ratios in his testimony in Case No. 7900?

A. Yes. On page 6, lines 20 through 25 of his direct testimony, Mr. Hanley stated the following:

> There is a correlation between adequate achieved return rates on book common equity and coverage of fixed charges, and market/book ratios. The return rate on book common equity provides the margin by which fixed charges are earned more than one time. **Because achieved earnings rates on the book equity of electric utilities have been too low, investors have been consistently discounting the prices of stocks to below book value.** (emphasis added)

Mr. Hanley's testimony in 1980 claims that because market-to-book ratios were below one, this meant that utilities were earning returns on their book equity that were too low. If this were the case, then one would conclude that if the prices of the stock are significantly above their book value, then the companies are earning returns on their book equity that are too high.

Mr. Hanley also stated that the market-to-book ratio is directly affected by regulatory decisions. Mr. Hanley specifically stated: "In the final analysis, the market/book ratio is the end result of regulatory decisions." If this is the case, then the only thing that will be accomplished by this Commission adjusting the authorized ROE because Mr. Hanley's proxy companies are currently trading at higher market-to-book ratios is the continued support of over earnings by utility companies.

Q. What are the current market-to-book ratios of Mr. Hanley's proxy groups?

A. Based on the information that Mr. Hanley provided on page 6 of Schedule FJH-1 attached to his direct testimony, his narrow group currently has a market-to-book ratio

of 2.01 and his broad group currently has a market-to-book ratio of 1.99. These ratios imply that Mr. Hanley's proxy companies are earning well in excess of their cost of common equity.

Q. What is the average market-to-book ratio of your comparable companies?

A. As can be seen on Schedule 20 attached to my direct testimony, the average market-to-book ratio of my comparable companies is 1.92.

Q. What was the earned return on book common equity for 2005 for your comparable companies and what is the projected earned return on book common equity for your comparable companies?

A. The earned return on book common equity for 2005 was 12.62 percent and the projected earned return on book common equity for 2006 is 12.33 percent.

Q. What does this imply?

A. These companies are earning more than their cost of common equity.

Q. What is your major concern with Mr. Hanley's analysis using the DCF model to arrive at his estimated cost of common equity of 10.43 percent for his narrow group and 10.41 percent for his broad group?

A. My primary concern is his decision to exclude DCF results from his proxy groups that are lower than 9.45 percent because this was the lowest allowed ROE for an LDC during the two years ended December 31, 2005. This implies that a utility company's cost of common equity cannot fall below the lowest commission authorized ROE. If all commissions followed this logic, then allowed ROEs would never fall below 9.45 percent because by the mere exclusion of cost of capital results that are below this number, the average cost of common equity result would always be somewhere above 9.45 percent. If commissions continued to use this logic on an ongoing basis, then the 9.45 percent allowed ROE would

eventually drop off and then the lowest number would be higher than 9.45 percent and this trend would continue until no cost of common equity estimation could be considered because the capital markets continued to drive valuation levels high enough to where the cost of common equity results were below all authorized ROEs. The Commission should avoid relying on Mr. Hanley's logic that the cost of common equity can't be below the lowest authorized ROE because of its inherent circularity.

Q. After excluding companies that have a DCF indicated cost of common equity less than 9.45 percent, how many companies did Mr. Hanley rely on for his estimated cost of common equity of 10.43 percent for his narrow group?

A. He relied on two companies (see page 1 of Schedule FJH-9 attached to Mr. Hanley's direct testimony).

Q. After excluding companies that have a DCF indicated cost of common equity less than 9.45 percent, how many companies did Mr. Hanley rely on for his estimated cost of common equity of 10.41 percent for his broad group?

A. He relied on three companies (see page 1 of Schedule FJH-9 attached to Mr. Hanley's direct testimony).

Q. How many of the broad companies he used were also in the narrow group?

A. Two.

Q. How many companies did he rely on in total then?

A. Three.

Q. What would Mr. Hanley's DCF results have been if he didn't exclude cost of common equity estimates below 9.45 percent?

A. As can be seen in column 5 on page 1 of Schedule FJH-9 attached to Mr. Hanley's direct testimony, the DCF cost of common equity for Mr. Hanley's narrow group was 9.64 percent and his DCF cost of common equity for his broad group was 9.12 percent. These estimates are fairly close to my recommendation in this case. However, because the average credit rating of Mr. Hanley's comparable companies is below that of MGE's, through Southern Union, I would make an upward adjustment of 35 basis points (I will discuss this adjustment in more detail when responding to Mr. Hanley's risk premium analysis) because the average credit rating of his comparable companies is in the middle of the A to A+ range. This results in a cost of common equity estimate of 9.99 percent for his narrow group and 9.47 percent for his broad group.

Q. Even though you made appropriate adjustments to Mr. Hanley's DCF analysis, the adjusted cost of common equity results you arrived at are higher than your recommended cost of common equity. Why is this?

A. Mr. Hanley's estimated dividend yield for his narrow group is higher than what I estimated for my proxy group. His narrow group also has a higher growth rate than what I estimated for my proxy group. This results in a higher overall estimated cost of common equity than my recommendation.

Mr. Hanley's broad group also has a dividend yield that is higher than my estimate. Even though his estimated growth rate is towards the low end of my estimate, the higher dividend yield results in a higher estimated cost of common equity estimate.

Q. Have you changed your recommendation as a result of the adjustments you made to Mr. Hanley's DCF analysis?

A. No. I believe my proxy group is the appropriate proxy group to use to estimate the cost of common equity for MGE's natural gas distribution operations. My proxy group cost of common equity estimate is more current than Mr. Hanley's by the mere fact that I was able to prepare my testimony at a later date than he did.

Q. Do you have any concerns with Mr. Hanley's analysis using the Risk Premium Model (RPM)?

A. Yes. I believe it is more appropriate to use a recent average yield on Baa utility bonds as the starting point in his risk premium analysis because there have been many predictions of increases in long-term interest rates by economists in the recent past that haven't come to fruition. I use this same approach when estimating the cost of common equity using the CAPM. Because investors can easily observe current bond yields and apply their current required equity risk premiums to these yields, using current yields allows for a more reliable measure of the current cost of common equity. While it is possible that long-term interest rates may increase in the future, it is also possible that they will decrease. In fact, long-term rates, as measured by public utility bond yields, have decreased over the last three months. If MGE's cost of capital should increase dramatically because of an increase in long-term interest rates, then it can file a rate case and have all of its revenues, expenses, and rate base data reviewed at that time.

Q. What was a recent average yield on Moody's Baa public utility bonds?

A. The average Baa public utility bond yield was 6.24 percent for October 2006. Moody's Baa rating is equivalent to S&P's BBB rating.

Q. How much would use of this current information reduce Mr. Hanley's RPM estimates?

A. 38 basis points.

Q. Do you have any concerns with Mr. Hanley's risk premium estimate using historical data?

A. Yes. I do not agree with Mr. Hanley's position that arithmetic means should be used when estimating the risk premium going forward. For the most part, it is assumed that investors in utility stocks are buying for the long-term. Investors are not buying and selling shares every year. Consequently, the investor should not be assumed to be realizing any of the gains and losses that occur year-to-year.

Q. Please provide a simple example to illustrate why you don't believe investors use arithmetic means when determining the amount of risk premium they will require on a given stock or a portfolio of stocks.

A. Suppose that an investor makes a $1 stock investment over a three-year period. If an investor pays $1 for a stock in year 1 and in year 2 the stock increases to $1.50, then the investor would have a 50 percent growth rate. In year three the price of the stock decreases by 50 percent to $.75. If an investor performed a simple arithmetic average of these two returns, then he would think that he received 0 percent [(50 percent + -50 percent)/2] growth in his investment over the three-year period. However, in reality the investor actually had a 25 percent decline in his investment over this three-year period. This is why using the arithmetic mean to measure risk premiums is questionable.

Q. You have given an intuitive reason as to why you believe that geometric means are more realistic in measuring equity risk premiums, but Mr. Hanley cited Ibbotson Associates to support his claim that the arithmetic average should be used. Do you have any academic support for your use of the geometric mean?

A. Yes. The first is *Investment Analysis & Portfolio Management*, seventh edition, 2003, written by Frank K. Reilly and Keith C. Brown. Reilly and Brown stated the following:

> The geometric mean is appropriate for long-run asset class comparisons, whereas the arithmetic mean is what you would use to estimate the premium for a given year (e.g. the *expected* performance next year).

The second textbook is *Investment Valuation*, 1996, written by Aswath Damodaran. Dr. Damodaran stated the following in his textbook:

> The geometric mean generally yields lower premium estimates than the arithmetic mean. In the context of valuation, where cash flows over a long time horizon are discounted back to the present, the geometric mean provides a better estimate of the risk premium. Thus, the premium of 5.50% (the geometric mean of the premium over Treasury bonds) is used throughout this book for calculating expected returns.

The third textbook is *Analysis of Equity Investments: Valuation*, 2002, written by John D. Stowe, Thomas R. Robinson, Jerald E. Pinto and Dennis W. McLeavey. The text states the following:

> In taking a historical approach, we face a choice between using arithmetic mean return (typically, the average of one-year rates of return) and using the geometric mean return (the compound rate of growth of the index over the study period). The arithmetic mean more accurately measures average one-period returns; the geometric mean more accurately measures multiperiod growth. The dilemma is that the CAPM (as well as the APT) is a single-period model, suggesting the use of the arithmetic mean; but common stock investment often has a long time horizon, and valuation involves discounting cash flows over many periods, suggesting the use of geometric mean…
>
> …Although the debate is inconclusive, this book uses geometric means, not only for the previously given reasons but also because geometric means produce estimates of the equity risk premium that are more consistent with the predictions of economic theory.

The above-mentioned textbooks were used in the Chartered Financial Analyst (CFA) Program sponsored by the CFA Institute. As I mentioned in my direct testimony, the CFA Program is internationally recognized and considered by many employers and investors as the "definitive standard for measuring competence and integrity in the fields of portfolio management and investment analysis." Many individuals that are pursuing their CFA designation may either work in the investment field or intend to work in the investment field. If these individuals employ a risk premium estimate as used in these textbooks, their valuation analysis will be based in part on historical geometric average risk premiums.

Q. If Mr. Hanley had used a geometric mean of historical returns to estimate the required risk premium for the natural gas distribution industry, what would his results have been?

A. Although Mr. Hanley used Ibbotson Associates, Inc.'s *Stocks, Bonds, Bills and Inflation 2005 Yearbook Valuation Edition (2005 Yearbook Valuation Edition)* in his RPM analysis, I chose to use the 2006 edition of Ibbotson Associates, Inc.'s *Stocks, Bonds, Bills and Inflation 2006 Yearbook Market Results for 1926-2005 (2006 Yearbook)*. It is likely that Mr. Hanley did not have the newer edition of the yearbook available at the time he prepared his testimony. I also chose to use the Long-Term Corporate Bond yields published in the *2006 Yearbook* because this appears to be a close approximation to the yields calculated by Mr. Hanley on page 6, line 2 of Schedule FJH-13, attached to his direct testimony. Based on the difference in geometric means of Large Company Stocks (10.40 percent) and Long-Term Corporate Bonds (5.90 percent), the historical equity risk premium was 4.50 percent. If this risk premium is averaged with Mr. Hanley's forecasted equity risk premium of 4.24 percent, the average risk premium would be 4.37 percent. After applying the Value Line beta of .85

for his narrow group to this risk premium, the estimated risk premium would be 3.71 percent. After applying the Value Line beta of .83 for his broad group, Mr. Hanley's estimated risk premium would be 3.63 percent.

Q. Did Mr. Hanley use arithmetic averages for his estimated equity risk premiums discussed on page 54, lines 5 through 19 of his direct testimony?

A. Yes.

Q. Would his results be much different if he had used geometric averages?

A. Yes. I converted his arithmetic averages to geometric averages, which is accomplished by subtracting half the variance of return from the arithmetic average return.[2] I used Mr. Hanley's supporting workpapers for Schedule FJH-13 attached to his direct testimony to determine the variance of the arithmetic average returns, which is simply the standard deviation squared. Schedule 2 attached to this rebuttal testimony contains the calculations for the conversion of arithmetic average returns to geometric average returns. Based on a geometric average return of 8.15 percent on the S&P Utility Index for the period 1928 through 2003, his equity risk premium would only be 1.57 percent for A-rated utilities.

Q. What would his final equity risk premium estimates be if he had averaged the 1.57 percent equity risk premium with the equity risk premium estimates for both proxy groups?

A. The equity risk premium estimate for the narrow group would be 2.64 percent, which is the average of 1.57 percent and 3.71 percent. The equity risk premium estimate for the broad group would be 2.60 percent, which is the average of 1.57 percent and 3.63 percent.

[2] Richard A. DeFusco, Dennis W. McLeavey, Jerald E. Pinto and David E. Runkle, *Quantitative Methods For Investment Analysis*, CFA Institute 2004, p. 155.

Q. What estimated cost of common equity would result from these estimates if Mr. Hanley had used current A-rated utility bond yields?

A. The most recent average A-rated utility bond yield available was from the November 2006 issue of the Mergent Bond Record. The average A-rated utility bond yield for October was 5.98 percent. If you add the above-mentioned equity risk premiums to this yield, the estimated cost of common equity for the narrow group is 8.62 percent (2.64 + 5.98). The estimate for the broad group would be 8.58 percent (2.60 + 5.98).

Q. Do these results need to be adjusted to estimate MGE's cost of common equity?

A. Yes. Although I only made a 30 basis point adjustment to my proxy group cost of common equity to consider Southern Union's lower credit rating, Mr. Hanley made an adjustment of 40 basis points. For purposes of my analysis of Mr. Hanley's comparable companies, I will make an adjustment of 35 basis points because his comparable companies have an average credit rating in between an A and an A+. Using a 35 basis point adjustment results in a final estimated cost of common equity of 8.93 percent for the broad group and 8.97 percent for the narrow group based on my revised equity risk premium estimates.

Q. Do you have concerns with Mr. Hanley's CAPM analysis?

A. Yes. My concerns about his CAPM analysis are much the same as my concerns about his risk premium analysis because of his use of arithmetic averages. Therefore, I will not go into the detail that I did in my discussion about his risk premium analysis.

Q. What concerns about his CAPM analysis are different than that of his risk premium analysis?

A. First, Mr. Hanley chose to use only the income return on long-term U.S. Government Securities when calculating an historical earned risk premium difference between equities and risk-free securities. However, an investor will receive only the income return if he holds the bond until maturity. Otherwise investors will receive a total return, which is based on changes in the price of the bond and reinvestment returns. Therefore, if one is going to use earned return spreads to estimate forward-looking risk premiums, it is appropriate to measure the market risk premium by comparing total returns on stocks to total returns on risk-free treasuries because this is what investors will expect to receive.

Second, Mr. Hanley chose once again to eliminate any cost of common equity estimations if they were below the lowest authorized ROE in the past two years. For reasons I have already discussed, I do not believe it is appropriate to dismiss such results when estimating the cost of common equity. However, only one company's result (the same company in both groups) was excluded in Mr. Hanley's CAPM analysis. Therefore, Mr. Hanley's CAPM analysis is based on three companies in his narrow group and seven companies in his broad group.

Q. If you made the above changes and also used geometric averages to calculate the difference between earned returns on equities and earned returns on risk-free securities, what is your indicated cost of common equity for Mr. Hanley's comparable companies using his Traditional CAPM analysis?

A. Once again, I used Ibbotson Associates, Inc.'s *2006 Yearbook* rather than Ibbotson Associates, Inc.'s *2005 Yearbook Valuation Edition* because this information is more current. I arrived at an indicated cost of common equity of 9.19 percent for his narrow group and 9.10 percent for his broad group (see Schedule 3). As can be seen from Schedule 3, these

results even include NICOR's much higher indicated cost of common equity than the rest of the companies because of its much higher beta. Because Mr. Hanley's comparable companies have an average credit rating of an A to A+, it would be appropriate to adjust this estimated cost of common equity by 35 basis points to consider Southern Union's lower credit rating. This would result in an indicated cost of common equity of 9.54 percent for Mr. Hanley's narrow group and 9.45 percent for his broad group.

Q. Did you include Mr. Hanley's Empirical CAPM (ECAPM) results in Schedule 3?

A. No, not all financial textbooks suggest the use of the ECAPM. The textbook by Aswath Damodaran, INVESTMENT VALUATION: Tools and Techniques for Determining the Value of *Any* Asset, 1996, does not recommend an adjustment to beta for the CAPM. This textbook follows the traditional execution of the CAPM throughout the text. However, even if I had adjusted Mr. Hanley's ECAPM by using geometric means, the impact on the results in Schedule 3 would have been minor.

Q. Does the Comparable Earnings Model (CEM) analysis performed by Mr. Hanley necessarily reflect the cost of common equity capital to the companies in his study?

A. No. The use of the CEM is an analysis of past actual returns or future expected returns on common equity. In the case of Mr. Hanley's analysis, it analyzes future expected returns on common equity made by Value Line. First, there is an inherent problem with using expected returns on common equity from Value Line because while investors use Value Line to evaluate their investment opportunities, Value Line's predictions may not be consistent

with that of investors. Second, expected returns are not necessarily synonymous with the cost of common equity; i.e., required ROE.

If the allowed returns are set based on expected returns, then it is possible that these returns will remain above the cost of capital. This results in providing support for current market valuation levels rather than setting the ROE equivalent or close to the cost of common equity. If a company is earning more than its cost of capital, then the company is recovering more than its cost of service. The intent of rate of return/rate base regulation is to allow the utility to recover its cost of service. While reviewing what other companies may be earning may be informative in testing the reasonableness of a witness's DCF results, it should not be relied upon for a cost of common equity recommendation because of the above explanation.

Q. Have any other commissions rejected the CEM for basically the same reason that you cited above?

A. Yes. In a case involving AmerenUE, Docket Nos. 02-0798, 03-0008 and 03-0009, the Illinois Commerce Commission stated the following:

> Staff objects to Ameren's comparable earnings analysis because Staff believes the comparable earnings methodology is based on the erroneous assumption that earned returns on book equity are acceptable substitutes for investor-required returns. Staff claims there is no basis for this implication, since investor-required returns are only loosely related to accounting returns; they are not interchangeable. Staff asserts that the return on book value of common equity is unaffected by changes in the investor-required rate of return. Staff claims that in some circumstances investors could bid up the price of a stock, thereby reducing the implied required rate of return, but the anticipated return on book equity would not change.
>
> As Staff notes, the Commission has consistently and repeatedly rejected the comparable earnings methodology. In the Commission's view, Ameren has provided no new argument in favor of this flawed methodology. Stated simply, the Commission does not believe it is appropriate to estimate CIPS' and UE's forward looking cost of

> common equity by looking to historical earned returns on common equity earned by competitive industrial firms of similar risk. The constantly changing economic environment alone, which is well documented in the record, prevents the Commission from relying on historical earned returns to establish a forward looking return on common equity.
>
> As stated above, the objective of this proceeding is to establish a net original cost rate base and provide common equity investors the opportunity to earn the market required rate of return on the proportion of net original cost rate base financed by common equity investors. The comparable earnings test proposed by Ameren is inconsistent with this object[ive] and is rejected.

Q. Is there any other logical reason to dismiss the estimated cost of common equity using the CEM?

A. Yes. A review of page 2 of Mr. Hanley's Schedule FJH-1 attached to his direct testimony shows that he averaged lines 1 through 4 to arrive at his estimated cost of common equity of 11.42 percent for his narrow group and 11.38 percent for his broad group. Mr. Hanley's CEM is the only model that shows an estimated cost of common equity that is not in the 10 percent range. Because of the large difference between this model compared to the other three models, he should have dismissed the results.

Q. What would Mr. Hanley's results have been if he had dismissed his CEM estimates?

A. Without the adjustments I made to his other models, his average cost of common equity for the first three models would have been 10.47 percent for his narrow group and 10.38 percent for his broad group. After incorporating the adjustments I made to these models, the cost of common equity for his narrow group would have been 9.15 percent and 8.93 percent for his broad group (see Schedule 4).

Q. Would any further adjustments need to be made to the above results if they were to be applied to Southern Union's capital structure?

A. Yes. As I mentioned earlier in my rebuttal testimony, I would adjust the proxy group cost of common equity by 35 basis points before applying it to Southern Union's capital structure. This would result in a cost of common equity of 9.50 for the narrow group and a cost of common equity of 9.28 percent for the broad group (see Schedule 4).

Q. Are you revising your recommended cost of common equity to consider the adjusted results of Mr. Hanley's analysis?

A. No. I believe my recommended cost of common equity recommendation is more reliable because it is based on my application of the DCF model to a proxy group that reflects the business risk of natural gas distribution operations. My DCF analysis incorporates recent information on the dividend yields and growth rates of my proxy group.

Q. Mr. Hanley makes some additional adjustments to his proxy group cost of common equity. How do you respond?

A. Mr. Hanley recommends an upward adjustment of 30 basis points because of MGE's smaller size. The adjustment for size premium that Mr. Hanley advocates is based on a study of all of the stocks in the New York Stock Exchange, the American Stock Exchange and the Nasdaq National Market. The study did not apply specifically to regulated utilities. Annie Wong, associate professor at Western Connecticut State University, performed a study that was published in the *Journal of the Midwest Finance Association*, Volume 22, which refutes the need for an adjustment based upon the smaller size of public utilities. She indicates:

> First, given firm size, utility stocks are consistently less risky than industrial stocks. Second, industrial betas tend to decrease with firm size but utility betas do not. These findings may be attributed to the fact that all public utilities operate in an environment with regional monopolistic power and regulated financial structure. As a result, the business and financial risks are very similar among the utilities regardless of their size. Therefore, utility betas would not necessarily be expected to be related to firm size.

Because smaller utilities operate in a regulated environment, just as large utilities do, making an adjustment for firm size is not appropriate. Additionally, MGE is a division of a larger company and has access to capital through Southern Union. Consequently, even if the Commission were to consider a size adjustment, it would also need to consider that the study on size premium was done on publicly-traded companies, not divisions and/or subsidiaries of larger companies.

Q. Did Mr. Hanley propose any further adjustments that would need special attention if the Commission accepts either the Company's or Staff's proposed rate design?

A. Yes. Mr. Hanley proposes a 15 basis point increase to his proxy group's cost of common equity because MGE doesn't have a weather normalization clause. It is not clear if Mr. Hanley was aware that the proposed rate design in this proceeding of Company witness Russell A. Feingold would reduce the risk of under recovery of fixed costs from year-to-year due to weather compared to past rate designs ordered for MGE. Mr. Hanley also could not have been aware that Staff would propose a straight fixed-variable rate design in its case. If the rate design ultimately approved in this case reduces MGE's risk of under recovery of fixed costs from year-to-year due to weather, then one would presume that Mr. Hanley would in turn recommend that his proxy group cost of common equity be reduced rather than increased, as he currently proposed in his direct testimony.

SUMMARY AND CONCLUSIONS

Q. Please summarize the conclusions of your rebuttal testimony.

A. My conclusions regarding the capital structure and cost of common equity are listed below:

1. The use of a hypothetical capital structure and hypothetical capital costs as proposed by Mr. Hanley should be rejected. Southern Union has always been a highly leveraged company. Southern Union is not financed any differently than it was financed when it was predominately a natural gas distribution company. Actually, the common equity ratio in my recommended capital structure is higher than Southern Union's average annual common equity ratio dating back to 1994. The calculation of the cost of capital for MGE should be based on Southern Union's actual consolidated capital structure as of December 31, 2005, as shown on Schedule 9 attached to my direct testimony;

2. My cost of common equity stated in Schedule 22 attached to my direct testimony, which is 8.65 percent to 9.25 percent, would produce a fair and reasonable rate of return of 8.01 percent to 8.23 percent for the Missouri jurisdictional natural gas utility rate base for MGE.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

MISSOURI GAS ENERGY
CASE NO. GR-2006-0422

Historical Capital Structures for Southern Union Company
Consolidated Basis
(Thousands of Dollars)

Capital Components	1994	1995	1996	1997	1998	1999	2000	2001	2002
Common Equity	$208,975	$225,664	$245,915	$267,462	$296,834	$301,058	$735,854	$721,857	$685,346
Preferred Stock	$0	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Long-Term Debt	$479,937 [1]	$463,273 [1]	$386,009 [1]	$386,844 [1]	$408,184 [1]	$392,997 [1]	$735,967 [1]	$1,335,544 [1]	$1,190,413 [1]
Short-Term Debt	$0	$0	$190,600	$131,800	$251,500	$699,000	$420,000	$190,600	$131,800
Total	$688,912	$788,937	$922,524	$886,106	$1,056,518	$1,493,055	$1,991,821	$2,348,001	$2,107,559

Capital Structure	1994	1995	1996	1997	1998	1999	2000	2001	2002	7-Year Average
Common Equity	30.33%	28.60%	26.66%	30.18%	28.10%	20.16%	36.94%	30.74%	32.52%	**29.36%**
Preferred Stock	0.00%	12.68%	10.84%	11.29%	9.47%	6.70%	5.02%	4.26%	4.74%	**7.22%**
Long-Term Debt	69.67%	58.72%	41.84%	43.66%	38.63%	26.32%	36.95%	56.88%	56.48%	**47.68%**
Short-Term Debt	0.00%	0.00%	20.66%	14.87%	23.80%	46.82%	21.09%	8.12%	6.25%	**15.73%**
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	**100.00%**

Notes:
1. The amount of long-term debt includes current maturities.

Source: Southern Union Company's Stockholders 2002, 2000, 1998, 1996 and 1995 Annual Reports.

SCHEDULE 1

MISSOURI GAS ENERGY
CASE NO. GR-2006-0422

Conversion of Arithmetic Average Returns to Geometric Average Returns to Determine Historical Equity Risk Premium Estimates

	S&P PUBLIC UTILITY COMMON STOCKS	A RATED PUBLIC UTILITY BOND YIELDS
Arithmetic Average	10.77%	6.63%
Standard Deviation	22.91%	3.27%
Variance	5.25%	0.11%
Geometric Average	8.15%	6.58%

Risk Premium: 8.15% - 6.58% = 1.57%

Source: Frank J. Hanley's Supporting Workpapers for Schedule FJH-13

SCHEDULE 2

MISSOURI GAS ENERGY
CASE NO. GR-2006-0422

Capital Asset Pricing Model (CAPM) Cost of Common Equity Estimates Based on Frank J. Hanley's Comparable Companies Using Geometric Averages to Estimate Historical Equity Risk Premiums and the Expected Equity Risk Premium Provided by Frank J. Hanley on Page 4 of Schedule FJH-15 (Historical Information Based on Table 2-1 Published in Ibbottson Associates' Stocks, Bonds, Bills and Inflation 2006 Yearbook Market Results for 1926-2005)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Proxy Group of Four Companies	Risk Free Rate	Company's Value Line Beta	Geometric Average Market Risk Premium (1926-2005)	Value Line Forecasted Equity Risk Premium	Geometric CAPM Cost of Common Equity (1926-2005)	Value Line CAPM Cost of Common Equity	Average
Cascade Natural Gas Corporation	4.98%	0.80	4.90%	5.01%	8.90%	8.99%	8.94%
NICOR Inc.	4.98%	1.15	4.90%	5.01%	10.62%	10.74%	10.68%
Northwest Natural Gas Company	4.98%	0.70	4.90%	5.01%	8.41%	8.49%	8.45%
Piedmont Natural Gas Co.	4.98%	0.75	4.90%	5.01%	8.66%	8.74%	8.70%
Average		**0.85**			**9.15%**	**9.24%**	**9.19%**
Proxy Group of Eight Companies							
Cascade Natural Gas Corporation	4.98%	0.80	4.90%	5.01%	8.90%	8.99%	8.94%
The Laclede Group, Inc.	4.98%	0.80	4.90%	5.01%	8.90%	8.99%	8.94%
New Jersey Resources Corp.	4.98%	0.80	4.90%	5.01%	8.90%	8.99%	8.94%
NICOR Inc.	4.98%	1.15	4.90%	5.01%	10.62%	10.74%	10.68%
Northwest Natural Gas Company	4.98%	0.70	4.90%	5.01%	8.41%	8.49%	8.45%
Peoples Energy Corporation	4.98%	0.85	4.90%	5.01%	9.15%	9.24%	9.19%
Piedmont Natural Gas Co., Inc.	4.98%	0.75	4.90%	5.01%	8.66%	8.74%	8.70%
WGL Holdings, Inc.	4.98%	0.80	4.90%	5.01%	8.90%	8.99%	8.94%
Average		**0.83**			**9.05%**	**9.14%**	**9.10%**

Column 1 = Page 2 of Frank J. Hanley's Schedule FJH-15 Attached to Direct Testimony

Column 2 = Page 2 of Frank J. Hanley's Schedule FJH-15 Attached to Direct Testimony

Column 3 = The Market Risk Premium represents the expected return from holding the entire market portfolio less the expected return from holding a risk free investment. The appropriate Market Risk Premium for the period 1926 - 2005 was determined to be 4.90% based on a geometric average as calculated in Ibbotson Associates, Inc.'s Stocks, Bonds, Bills, and Inflation: 2006 Yearbook.

Column 4 = Page 4 of Frank J. Hanley's Schedule FJH-15 Attached to Direct Testimony

Column 5 = (Column 1 + (Column 2 * Column 3)).

Column 6 = (Column 1 + (Column 2 * Column 4)).

Column 7 = ((Column 5 + Column 6)/2)

SCHEDULE 3

MISSOURI GAS ENERGY
CASE NO. GR-2006-0422

REVISED COST OF COMMON EQUITY ESTIMATES

If Applied to Mr. Hanley's Hypothetical Capital Structure

	Narrow Group	Broad Group	**Average**
DCF	9.64%	9.12%	9.38%
RISK PREMIUM	8.62%	8.58%	8.60%
CAPM	9.19%	9.10%	9.15%
Average	9.15%	8.93%	9.04%

If Applied to Southern Union's Capital Structure

	Narrow Group	Broad Group	**Average**
DCF	9.99%	9.47%	9.73%
RISK PREMIUM	8.97%	8.93%	8.95%
CAPM	9.54%	9.45%	9.50%
Average	9.50%	9.28%	9.39%

SCHEDULE 4