

**BEFORE THE
TENNESSEE REGULATORY AUTHORITY**

ATMOS ENERGY CORPORATION

Docket No. 05-00258

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REBUTTAL TESTIMONY

OF

DONALD A. MURRY, Ph.D.

ON BEHALF OF

ATMOS ENERGY CORPORATION

August 2006

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Q. What is your name?

A. My name is Donald A. Murry.

Q. Are you the same Donald A. Murry who has previously testified in this proceeding?

A. Yes, I am.

Q. What is the purpose of your testimony?

A. I am filing rebuttal testimony to the prefiled direct testimonies of TRA Economist Jerry Kettles and Consumer Advocate and Protection Division Witness Steve Brown.

Rebuttal to Mr. Jerry Kettles

Q. What issues of Staff Witness Jerry Kettles do wish to rebut?

A. My rebuttal of Mr. Kettles addresses several key issues. First, his Discounted Cash Flow (DCF) analysis contains a theoretical error that understates the model's estimates of the cost of common stock. Second, Mr. Kettles' Capital Asset Pricing Model (CAPM) omits an adjustment to account for a statistical bias

1 in its application. Finally, Mr. Kettles appears to have been overly influenced by a
2 DCF method that produced illogically low estimates of the cost of common
3 equity.

4 **Q. What theoretical error did Mr. Kettles make in his DCF analysis that you**
5 **referred to in the above statement?**

6 A. Mr. Kettles used 2005 dividends when calculating the yield portion of his DCF
7 model. However, the underlying theory of the DCF calls for a measure of the
8 perceived, expected valuation by investors at the time of the investment. The
9 expectations of the future may be influenced by historical events, but obviously
10 expectations for the future may be quite different from the past. As such, Mr.
11 Kettles should apply the dividend from the current year in his DCF analysis.

12 **Q. You mentioned a statistical bias in Mr. Kettles' CAPM analysis. What**
13 **statistical bias did Mr. Kettles leave uncorrected in his CAPM analysis?**

14 A. Mr. Kettles overlooked Ibbotson Associates' recommended adjustment for a
15 statistical bias when using their data for a CAPM analysis. This is surprising
16 because, Mr. Kettles noted in his response to Atmos Request for Information 7iii
17 that the source for his prevailing market return of 12.5 percent was Ibbotson
18 Associates' 2004 SBBI Yearbook. On page 127, that publication states, "One of
19 the most remarkable discoveries of modern finance is the finding of a relationship
20 between firm size and return. On average, small companies have higher returns
21 than large ones."¹ With regard to the CAPM in particular, that source used by Mr.
22 Kettles, also states on page 128, that "the greater risk of small stocks does not, in

¹ "Chapter 7: Firm Size and Return," Ibbotson Associates' Stocks, Bonds, Bills, and Inflation: 2004 Yearbook, edited by James Licato, (2004: Ibbotson Associates, Chicago), p. 127.

1 the context of the Capital Asset Pricing Model, fully account for their higher
2 returns over the long term.² This is a statistical bias in the CAPM analysis that
3 the financial literature generally recognizes.

4 **Q. What is the nature of this statistical bias?**

5 A. As I outlined in my direct testimony at page 29, line 3 through page 30, line 30,
6 the economics and financial literature has for a long time recognized that the
7 CAPM has a statistical bias that understates the cost of capital of smaller firms.³
8 Ibbotson Associates recommends a specific size adjustment to the CAPM results
9 when using their data to compensate for this bias. I have included the appropriate
10 and current table from Ibbotson Associates as Rebuttal Schedule DAM-R1.

11 **Q. Are you certain that Ibbotson Associates recommends for analysts to apply**
12 **the small-firm-bias adjustment to regulated utilities?**

13 A. Yes. The example that Ibbotson Associates uses to explain the calculation is of a
14 smaller electric utility.⁴

15 **Q. Were you able to correct Mr. Kettles' CAPM analysis using the Ibbotson**
16 **Associates' recommended adjustment for this size bias?**

17 A. Yes. I applied the size-bias correction to Mr. Kettles' CAPM estimates, which I
18 illustrated in my Rebuttal Schedule DAM-R2.

19 **Q. When you applied this correction to Mr. Kettles' CAPM analysis, what were**
20 **the results using his method?**

² Ibid, p. 128.

³ The most recent *Value Line Investment Survey* for Atmos Energy (June 16, 2006) identifies the Company's market capitalization at \$2.2 billion. Ibbotson Associates' Table C-1 (See Rebuttal Schedule DAM-R3) designates companies with market capitalization between \$1.7 billion and \$7.2 billion as Mid-Cap stocks requiring an adder of 102 basis points to the CAPM estimate of returns on equity.

⁴ Ibid, p. 60.

1 A. Applying this correction to Mr. Kettles' CAPM analysis produces a corrected
2 estimate of the cost of common equity for Atmos Energy of 11.85 percent.
3 Likewise, I corrected the CAPM estimates for Mr. Kettles' comparable group
4 using his methodology. This increased the average return on common equity for
5 that group using his CAPM methodology to 13.34 percent.

6 **Q. You stated that Mr. Kettles' capital structure recommendation was correct**
7 **in some key respects. What did you mean by that statement?**

8 A. For example, Mr. Kettles, at page 5, lines 3-5, of his direct testimony stated that
9 he recognizes that Atmos does not use short-term debt as permanent capital.
10 Consequently, he excluded short-term debt from his recommended capital
11 structure in this proceeding. Contrary to Dr. Brown's treatment of Atmos' short-
12 term debt, this is the correct interpretation of Atmos' use of short-term debt.
13 Frequently, Atmos has no short-term debt outstanding, which indicates that
14 Atmos cannot use it to support permanent assets providing service to gas utility
15 customers.

16 **Q. Please explain why you said that Mr. Kettles was overly influenced by a DCF**
17 **analysis that produced illogically low results. What was the basis for that**
18 **statement?**

19 A. At page 14, lines 6-7, of his direct testimony, Mr. Kettles stated, "I chose the
20 CAPM result of 10.75% equity return as it represents a loose midpoint between
21 the DCF estimates." Consequently, he used the 6.17 percent and 7.00 percent
22 dividend growth rate DCF reported in his Exhibit 1 JLK-1 to establish the low end
23 of that bracket. However, this is an illogically low return for common stock equity

1 of a gas distribution utility, and he should have known this. His Exhibit 1,
2 Schedule JLK-3 shows that the May 1st rate for AAA corporate bond yields was
3 5.95 percent. It is not logical for the common stock of Atmos, a BBB rated
4 company, to have virtually no risk premium differential with AAA corporate
5 bonds. In addition, Mr. Kettles' own schedule JLK-8 clearly shows how dividend-
6 growth rate DCFs can be misleading. His dividend-growth DCF calculations for
7 Atmos are actually lower than current rates for utility BBB bonds of 6.76 percent.
8 This is clearly illogical.

9 **Q. Was Mr. Kettles aware that his dividend growth rate DCF result was**
10 **extremely low?**

11 A. Yes. On page 13 of his direct testimony, he noted that Atmos' dividend-growth-
12 rate DCF was low. As an explanation, he also noted that Atmos' dividends have
13 increased by a constant \$0.02 per year since 2000, and the company plans to
14 maintain this increase until 2010.

15 **Q. Are dividend-growth-rate DCF calculations typically low?**

16 A. Yes. At the present time this is the case. As I stated in my direct testimony, a DCF
17 using dividend growth estimates is not reliable in current markets. Because of
18 business risks in the natural gas business, gas distribution utilities are lowering the
19 percentage of dividend payouts and retaining a greater percentage of common
20 equity returns for reinvesting in the companies. Consequently, dividend growth
21 rates alone do not reveal investors' expectations. With low dividend growth rates,
22 investors probably, necessarily defer their anticipated returns, and the total
23 earnings growth is a more accurate representation of investor expectations.

1 **Q. Taking these adjustments that you discussed into account, what did you**
2 **conclude about Mr. Kettles' direct testimony?**

3 A. I noted that Mr. Kettles' CAPM analysis, when adjusted for the size bias, resulted
4 in a return of 11.85 percent for Atmos. Disregarding his flawed dividend-growth
5 DCF results, his DCF calculations for Atmos using earnings per share growth rate
6 calculate returns between 11.17 to 12.00 percent. I believe that these CAPM and
7 DCF results produce a very reasonable range of the estimated cost of common
8 equity for Atmos in today's market.

9 **Rebuttal of Dr. Steve Brown**

10 **Q. What is the nature of your rebuttal of Dr. Brown's direct testimony?**

11 A. Dr. Brown called a recommended allowed return of 8 percent for Atmos
12 "reasonable," but he failed to present any support for this conclusion. He
13 apparently reached this conclusion because at several points in his direct
14 testimony he relied on theoretical or mechanical errors in his DCF and risk
15 premium analyses. Consequently, his recommended allowed return is not reliable
16 for a ratemaking decision in this proceeding. In addition, his recommended capital
17 structure is not supported by the facts of Atmos' operations.

18 **Q. You said that Dr. Brown's capital structure commendation was not**
19 **supported by the facts of Atmos' operations. Please explain your statement**
20 **regarding Atmos' capital structure.**

21 A. Contrary to Mr. Kettles' and my recommendations, Dr. Brown included 12.6
22 percent short-term debt in Atmos' capital structure for ratemaking. However,
23 Atmos clearly does not use short-term debt, which frequently falls to zero, to

1 support the long-term assets that provide service to gas distribution customers. Dr.
2 Brown's capital structure recommendation is punitive to Atmos because it
3 replaces necessary equity with short-term debt for ratemaking purposes, thereby
4 denying the Company an appropriate return.

5 **Q. You stated that Dr. Brown did not have support for his statement that an 8**
6 **percent return for common equity for Atmos was reasonable. Can you**
7 **explain your assertion regarding Dr. Brown's conclusion?**

8 A. Dr. Brown stated, in response to the question, "What further evidence supports
9 your opinion that 8% is a reasonable equity return?" (Direct testimony, page 9,
10 lines 1-3), "In my *opinion* there is ample evidence. The return of 8% is well above
11 Atmos's [sic] debt cost of 5.52%." (Direct testimony, page 9, lines 5-7)
12 [Emphasis added.]

13 **Q. What is wrong with Dr. Brown's conclusion regarding the reasonableness of**
14 **his recommended 8 percent allowed return on equity?**

15 A. Dr. Brown used an incorrect benchmark of the market debt cost for Atmos. The
16 current cost of debt for a BBB utility such as Atmos is 6.76 percent. Contrary to
17 Dr. Brown's assertion, by any measure, an 8 percent return on common stock
18 does not produce a "reasonable" differential with Atmos' current debt costs. Dr.
19 Brown's recommended allowed return is inconsistent with the current market
20 returns.

21 **Q. Could you tell by Dr. Brown's testimony why he would mistake the current**
22 **debt cost of Atmos?**

1 A. From my review of his testimony, I cannot be certain; however, on pages 16 and
2 17 he seemed to mistakenly identify Atmos as a triple-A rated company. He
3 stated, "Atmos has said in its most recent SEC 10-K that its bonds are 'investment
4 grade,' which corresponds to 'triple A' or 'AAA' rating." In fact, Atmos Energy's
5 2005 10K lists its bond rating at BBB and Baa for both Standard & Poor's and
6 Moody's on page 53.

7 **Q. Other than comparing his recommended 8 percent return with the current**
8 **cost of debt, were other indicators available to Dr. Brown that would have**
9 **indicated whether his recommendation was "reasonable?"**

10 A. Perhaps most surprising, Dr. Brown called 8 percent "reasonable" without even
11 knowing the current and forecasted returns to common stock of the gas
12 distribution utilities that he used for comparative purposes in his study.

13 **Q. How do you know that Dr. Brown did not know the current and forecasted**
14 **returns to common stock of the gas distribution utilities that he used in his**
15 **analysis?**

16 A. Dr. Brown stated that he did not know the returns to common stock of the
17 comparable utilities in his analysis. In response to the following question (Request
18 No. 60):

19 On page 6, lines 16 through 21 of the Direct Testimony of CAPD Witness
20 Steve Brown, he identifies a group of companies. What are the current
21 estimated 2006 returns on common stock equity of each of these
22 companies? Please provide copies of any DOCUMENTS used to compile
23 this information.

24
25 He provided the following answer:

26
27 "Dr. Brown does not know."
28

1 **Q. Do you know the 2006 estimated returns on common stock equity of each of**
2 **Dr. Brown's comparable gas distribution utilities?**

3 A. Yes. I have illustrated the current *Value Line* estimates of the returns to common
4 stock equity of Dr. Brown's comparable gas distribution utilities in Schedule
5 DAM- R3. Only one company of Dr. Brown's comparable group has an estimated
6 2006 return on common equity estimated by *Value Line* as low as his
7 recommended 8 percent. All of the others have estimated returns that are higher;
8 the highest estimated common equity return of a gas utility in Dr. Brown's
9 comparable group is 16 percent. The average estimated return on common stock
10 of this comparable group is 11.05 percent. If Dr. Brown had reviewed the returns
11 on common equity of the comparable companies that he selected for his analysis,
12 he could have seen that 8 percent is an extreme recommendation. Again, at
13 minimum, Dr. Brown should have at least explained any analysis that led to his
14 assertion that his extreme recommendation is "reasonable."

15 **Q. Was there other information that was available to Dr. Brown that should**
16 **have caused him to question whether his recommended allowed return was**
17 **"reasonable"?**

18 A. Yes. He could have simply reviewed the returns being allowed by other
19 regulatory authorities. If he had done so, he would have seen that his
20 recommended allowed return on common equity was exceptionally low; at least
21 this should have caused him to review his calculations and recommendation.

22 **Q. What are the recent allowed returns for utilities that Dr. Brown might have**
23 **taken into account?**

1 A. I have shown allowed returns for electric and gas utilities reported by *Regulatory*
2 *Focus* for the year 2005 in Rebuttal Schedule DAM-R4. As this schedule shows,
3 the range of allowed returns in 2005 ranged between 9.45 percent for Centerpoint
4 to 11.5 percent for Wisconsin Power & Light. Obviously, an 8 percent allowed
5 return would be an outlier, significantly below the allowed returns for gas utilities
6 during this period. At minimum, when recommending an allowed return for
7 Atmos that is so far outside the allowed returns for gas utilities, Dr. Brown should
8 explain how he could call his extreme recommendation “reasonable.”

9 **Q. What theoretical problems with Dr. Brown’s DCF analysis were you**
10 **referring to previously?**

11 A. Dr. Brown focused entirely on historical dividend growth rates rather than the
12 realistic expectations of investors, which is a prerequisite of the DCF analysis. For
13 example, Dr. Brown stated at page 3, lines 3-5, of his direct testimony, “In my
14 *opinion* the best forecast of future financial performance is past performance.”
15 [Emphasis added.] Of course, investors may be more interested in the prospects of
16 a company in which they are considering an investment than its history. In fact,
17 contrary to Dr. Brown’s opinion, as I pointed out in my direct testimony, at page
18 23, line 15 through page 25, line 13, research supports that published forecasts are
19 very important to investors. Moreover, Dr. Brown has substituted his opinion
20 regarding relative returns for those of investors who may be considering an
21 investment in utility companies.

22 **Q. What do you mean that Dr. Brown substituted his opinion regarding relative**
23 **returns for those of investor?**

1 A. Dr. Brown stated at page 2, lines 9-14, of his direct testimony, “In my *opinion*
2 Tennessee’s ratepayers are obliged to fund Atmos’ investments through a return
3 to equity motivated by wealth-creation through dividends rather than wealth-
4 creation through capital-gains speculation.” [Emphasis added.] Dr. Brown’s
5 limitation of returns to investors to dividends only is a rather cavalier disregard
6 for investors who may be interested in returns through capital gains. He ignores
7 that some investors may wish to avoid immediate taxation to their returns or may
8 have any different investment objectives than he would permit them. In doing so,
9 he is ignoring the prospective growth in the value of companies associated with
10 the reinvestment of earnings in the companies. Ignoring that capital gains are
11 more attractive than dividends to some investors is especially surprising because
12 Dr. Brown himself stated at page 10, lines 21-24, of his direct testimony, “... just
13 58% of the NYSE equity-listed companies paid dividends in the Fiscal Year
14 2005.”

15 **Q. Did Dr. Brown’s failure to recognize the importance of capital gains affect**
16 **his conclusions in any way?**

17 A. Yes. He ignored the importance of earnings per share growth in his DCF analysis.
18 In fact he reached precisely the wrong conclusion regarding company risk
19 because of his confused analysis. Remarkably, at page 13, lines 10-13 of his direct
20 testimony, he stated that the low dividend growth rates of the comparable utilities
21 are a sign of “low risk.” This is an incredible, upside-down argument that
22 deferring returns to investors lowers their risks.

1 **Q. Did you identify theoretical problems with Dr. Brown’s risk premium**
2 **analysis?**

3 A. Dr. Brown’s “risk premium” method links the current cost of debt of the company
4 being studied, in this case Atmos, to his measure of the risk-premium difference
5 between market rate of return and a market risk free rate of return. At best, this
6 calculation is unorthodox, and Dr. Brown provides no citations or references to
7 sources for any other similar calculations. Also, he uses a geometric mean rather
8 than an arithmetic mean to estimate the market growth rate for his risk premium
9 analysis.

10 **Q. Can you explain why Dr. Brown’s use of the geometric mean to estimate the**
11 **market growth rate is in error?**

12 A. Dr. Brown presented a 9.93 percent estimate of the “...annual rate of growth in
13 the value of the S&P 500 companies...” which he used in his risk premium
14 method. Using the annual growth rate, or geometric mean, to estimate the
15 historical market return is contrary to accepted theory, and it is contrary to the
16 TRA’s finding in the Order in Docket No. 04-00034 at page 53. The TRA based
17 this finding, as explained in the Order, on consideration of the well documented
18 financial literature that the arithmetic mean is the correct method for estimating
19 investor expectations based on historical information.

20 **Q. Can you provide a reference to theoretical literature that recognizes that the**
21 **arithmetic mean is the correct method to estimate expected market returns**
22 **rather than the geometric mean proposed by Dr. Brown?**

1 A. A good source is Ibbotson Associates; this is also a source that Dr. Brown cited.

2 Ibbotson Associates explains the appropriate use of the two means in *The SBB*
3 *2006 Yearbook: Valuation Edition*:

4 The equity risk premium data presented in this book are arithmetic
5 average risk premia as opposed to geometric average risk premia. *The*
6 *arithmetic average equity risk premium can be demonstrated to be most*
7 *appropriate when discounting future cash flows. For use as the expected*
8 *equity risk premium in either the CAPM or the building block approach,*
9 *the arithmetic mean or the simple difference of the arithmetic means of*
10 *stock market returns and riskless rates is the relevant number.*⁵ [Emphasis
11 added.]

12
13 **Q. What mechanical errors did Dr. Brown make that may have led to is**
14 **inordinately low recommended allowed return?**

15 A. The number that he used for a market return is not the correct number from the
16 source that he cited. On page 17 lines 15 and 16, of his direct testimony, Dr.
17 Brown stated:

18 My Schedule 16, near the bottom, displays a figure of 9.93%, the actual
19 historical returns to the S&P500 since 1925. This figure is taken from
20 Ibbotson Associates Yearbook- Stocks, Bonds, Bills, and Inflation for
21 2005, as noted at the bottom of the schedule.

22
23 His data source, Ibbotson Associates, reports different figures. My Rebuttal
24 Schedule DAM-R6 is Table 6-7 from that publication. It shows returns of 10.4
25 and 12.4 percent for large company stocks. As noted previously, the correct
26 number for use in a risk premium analysis is the arithmetic mean which is 12.4
27 percent.

28 **Q. Did you identify other mechanical problems in Dr. Brown's DCF analysis?**

⁵ "Chapter 5: The Equity Risk Premium," Ibbotson Associates' *Stocks, Bonds, Bills, and Inflation: 2006 Yearbook Valuation Edition*, edited by James Harrington and Michael Barad, (2006: Ibbotson Associates, Chicago, IL), p. 77.

1 A. Yes. Dr. Brown performed only one DCF analysis which used an average
2 dividend growth rate for the past five years. Prudent analysts apply more than one
3 type of DCF analysis to recognize the broader range of investors' expected
4 returns.

5 **Q. Could Dr. Brown have developed another DCF analysis other than the one in**
6 **his Schedule 6?**

7 A. Yes, his Schedule 6 had data in it that would have made a good comparison to his
8 historical dividend growth rate DCF. Dr. Brown also left out data about the
9 historical growth of earnings for his comparable companies in his Schedule 6. I
10 have taken the data from that schedule and calculated a historical earnings growth
11 rate DCF using Dr. Brown's exact same methodology. As my Rebuttal Schedule
12 DAM-R5 shows, the historical earnings growth rate DCF produces an average
13 estimated return on common stock equity for his comparable companies of 14.98
14 percent.

15 **Q. In Data Response No. 20, Consumer Advocate witness Dan McCormac**
16 **provided the following statements as support for the Consumer Advocate's**
17 **use of a historic test period in this case with no adjustments for attrition:**

18 **In the early years of my career, the Public Service**
19 **Commission used an historical test period in all rate**
20 **cases. As high inflation, high toll revenue growth rates,**
21 **and other factors made the historical test year approach**
22 **less reliable, the use of historical test periods adjusted**
23 **for "attrition" or forecast test periods became more**
24 **prevalent. Now that inflation and growth rates are**
25 **more subdued, the historical test period again seems to**
26 **produce a reasonable measure of earnings. This is**
27 **made clear by Dr. Brown's analysis of ATMOS's**
28 **earnings for the years since the earnings of United**
29 **Cities Gas Company were last examined in 1995**

1 (Exhibit CAPD-SB filed with our petition on September
2 15, 2005). Since there is no clear trend in earnings or
3 "attrition," there is no clear need to forecast earnings or
4 provide an "attrition" adjustment to supplement the use
5 of an historical test period.
6

7 **Do you agree with Mr. McCormac's statements?**

8
9 A. No. Mr. McCormac has mischaracterized, without any justification, the generally
10 accepted view of current and expected levels of the economic activity and
11 inflation. As I pointed out in my direct testimony at page 8, lines 5-6, the U. S.
12 economy has been strong, but it is showing signs of inflation after several years of
13 stable prices. I noted, at page 8, lines 22-24, that in May 2006, the Consumer
14 Price Index (CPI) "...jumped 0.3 percent for the third consecutive month." I also
15 noted that this "...is the largest consecutive three-month increase in over ten
16 years, and it reveals a broadening of inflationary pressures in the economy." For
17 the future, I also noted that *Blue Chip Financial Forecasts* is forecasting a CPI
18 increase in the range of 2.5 and 4.4 percent in 2006.

19 With crude oil prices up over 20 percent from a year ago, one would think
20 it only logical that the economy would be exhibiting inflationary signs, and it is.
21 In short, Mr. McCormac's economic opinions are not in agreement with either the
22 evidence regarding current economic conditions or the predictions by reputable
23 forecasters.

24 **Q. Is your rebuttal testimony now complete?**

25 A. Yes, it is.