July 16, 2004

Elizabeth O'Donnell
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, Kentucky 40601

Re: In the Matter of: An Adjustment of the Rates of Delta Natural Gas Company, Inc., Case No. 2004-00067

Dear Ms. O'Donnell,

Filed under cover of this letter are the original and ten copies of the Corrected Direct Testimony and Exhibits of Charles W. King. This filing is made in lieu of filing a lengthy errata sheet. It acts to correct Mr. King's Direct Testimony and Exhibits to reflect that because he dropped Energy West from his list of comparable companies, he should have divided by 15 rather than by 16, as was done in the Testimony and Exhibits originally filed. This results in raising the return on equity to 10.3% from 10.05% and the overall return to 7.732% from 7.640%.

The Corrected Testimony and Exhibit was sent to undersigned Counsel by electronic mail yesterday evening in a track changes format that allowed review of each change. That document, with the track change function highlighting all changes, and the exhibits were forwarded electronically this morning to John Hall, Connie King, and Marian Carpenter at Delta Natural Gas Company, Inc., Robert Watt at Stoll, Keenon and Park, Leslye Bowman at the Lexington-Fayette Urban-County Government, and to Anita Mitchell and Isaac Scott at the Public Service Commission.

Those changes have been accepted and the finished documents have been printed and are presented herewith for filing. In addition to the changes shown in the track changes format, the figure 7.64% (appearing on line 10 of page 21) has been changed to 7.732% in the finished document to be consistent with all other changes. Hard copies of these documents are being served on all parties and on Commission staff this same day.

Sincerely,

Elizabeth E. Blackford
Assistant Attorney General
1024 Capital Center Drive, Suite 200
Frankfort, Kentucky 40601-8204

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

AN ADJUSTMENT OF THE	)	
RATES OF DELTA NATURAL	)	Case No. 2004-00067
GAS COMPANY, INC.	)	

CORRECTED DIRECT TESTIMONY AND EXHIBITS

OF CHARLES W. KING

FILED ON BEHALF OF THE ATTORNEY GENERAL

July 16, 2004

DIRECT TESTIMONY OF
CHARLES W. KING

1

2 **INTRODUCTION**

3

4 Q.   **PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

5

6 A.   My name is Charles W. King. I am President of the economic consulting firm of Snavely

7   King Majoros O'Connor & Lee, Inc. ("Snavely King"). My business address is 1220 L

8   Street, N.W., Suite 410, Washington, D.C. 20005.

9

10 Q.   **PLEASE DESCRIBE SNAVELY KING.**

11

12 A.   Snavely King, formerly Snavely, King & Associates, Inc., was founded in 1970 to

13   conduct research on a consulting basis into the rates, revenues, costs and economic

14   performance of regulated firms and industries. The firm has a professional staff of 12

15   economists, accountants, engineers and cost analysts. Most of its work involves the

16   development, preparation and presentation of expert witness testimony before federal and

17   state regulatory agencies. Over the course of its 34-year history, members of the firm

18   have participated in over 1000 proceedings before almost all of the state commissions

19   and all Federal commissions that regulate utilities or transportation industries.

20

21 Q.   **HAVE YOU PREPARED A SUMMARY OF YOUR QUALIFICATIONS AND**

22   **EXPERIENCE?**

23

24 A.   Yes. Attachment A is a summary of my qualifications and experience.

25

26 Q.   **HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN REGULATORY**

27   **PROCEEDINGS?**

28

1   A.   Yes. Attachment B is a tabulation of my appearances as an expert witness before state

2   and federal regulatory agencies.

3

4   Q.   **FOR WHOM ARE YOU APPEARING IN THIS PROCEEDING?**

5

6   A.   I am appearing on behalf of the Attorney General of Kentucky.

7

8   Q.   **WHAT IS THE OBJECTIVE OF YOUR TESTIMONY?**

9

10 A.   The objective of my testimony is to recommend the appropriate rate of return to common

11   equity for Delta Natural Gas Company ("Delta" or "the Company").

12

13 **SUMMARY**

14

15 Q.   **WHAT HAVE YOU FOUND TO BE THE APPROPRIATE RATE OF RETURN**

16   **FOR DELTA?**

17

18 A.   Based on the analyses presented in this testimony, I find that the appropriate return to the

19   equity capital of Delta Natural Gas is **10.05 percent.** Using the Company's capital

20   structure and debt costs, the return to overall capital is **7.64 percent.**

21

22 **STANDARDS FOR FINDING EQUITY CAPITAL COST**

23

24 Q.   **WHAT IS THE BASIS FOR FINDING A RATE OF RETURN TO DELTA'S**

25   **COMMON EQUITY SHAREHOLDERS?**

26

27 A.   In its landmark Hope Natural Gas decision, the United States Supreme Court established

28   the following standards for the return to equity that must be allowed a regulated public

29   utility:

30   ..the return to the equity owner should be commensurate with the
31   returns on investments in other enterprises having corresponding
32   risks. That return, moreover, should be sufficient to assure

1   confidence in the financial integrity of the enterprise, so as to
2   maintain its credit and to attract capital.[1]

3

4   It can be seen from this excerpt that there are essentially three standards for determining

5   an appropriate return to equity. The first is the "comparable earnings" standard, that the

6   earnings must be "commensurate with the returns on investments in other enterprises

7   having corresponding risks." The second is that they must be sufficient to assure

8   "confidence in the financial integrity of the enterprise," and the third is that they must

9   allow the utility to be able to attract capital.

10

11   **Q.   HOW CAN THE COMPARABLE EARNINGS STANDARD BE APPLIED IN**

12   **ESTIMATING THE RATE OF RETURN TO EQUITY CAPITAL?**

13

14   A.   There is a certain circularity to the comparable earnings standard because the competitive

15   nature of the capital markets virtually ensures that the returns to all enterprises having

16   corresponding risks are comparable with each other. Investors establish the price of each

17   traded stock based on that stock's present and prospective earnings in comparison with the

18   present and prospective earnings of all other stocks and other investments available to

19   them. If the earnings of a firm are depressed, then investors will pay only a low price for

20   that firm's stock. As a result, their return on the market value of that stock will be

21   comparable to the return on the market value of the stock of other highly profitable

22   companies which, as a consequence of their profitability, have been bid up to a very high

23   price. Thus, if "return" is defined as the earnings of an equity investment relative to its

24   current market price, then the comparable earnings test becomes a cipher. All returns are

25   comparable with all other returns.

26

27   In public utility regulation the conventional procedure for resolving this circularity is to

28   identify the required equity return based on the market value of a utility's stock. That

29   return is combined with the cost of debt and preferred stock, using either the actual or a

30   hypothetical minimum-cost capital structure. The blended return to total capital is then

---

[1] Federal Power Commission et. al. vs. Hope Natural Gas Company, 320 U.S. 592, at 603 (1944).

1   applied to a rate base reflective of the book value of the utility's investment. The book

2   value is the accountant's quantification of the original cost of the utility's assets adjusted

3   for ratepayer contributions such as deposits and deferred taxes. Under this procedure, the

4   market price of a stock is used only to determine the return that investors expect from that

5   stock. That expectation is then applied to the book value of the utility's investment to

6   identify the level of earnings which regulation will allow the utility's common

7   shareholders to recover.

8

9   Q.   **HOW CAN THE FINANCIAL INTEGRITY AND CAPITAL ATTRACTION**

10   **STANDARDS BE APPLIED IN ESTIMATING THE RATE OF RETURN TO**

11   **EQUITY CAPITAL?**

12

13   A.   If the utility can earn a return on its investment comparable to that required by enterprises

14   of comparable risk, then it should have no difficulty in attracting capital and maintaining

15   credit. Investors would have no reason to shun such a utility in favor of other investment

16   opportunities. Thus, if the comparable earnings test is met, then the financial integrity and

17   capital attraction standards are met as well.

18

19   Q.   **HOW WILL YOU IDENTIFY THE MARKET-DETERMINED RATE OF**

20   **RETURN TO THE DELTA'S EQUITY CAPITAL INVESTMENT?**

21

22   A.   I shall first apply the Discounted Cash Flow ("DCF") procedure, which I consider to be

23   the most accurate test of a market return. As I shall discuss, there are broadly two

24   versions of this test, one of which requires the use of the forecasts of investment analysts.

25   Because of Delta's small size, it has not been as intensively studied by investment analysts

26   as have other, larger gas distribution companies. For this test, I will therefore examine a

27   "peer group" of companies in addition to Delta. The other DCF formulation relies on

28   Delta-specific data. Additionally, I shall consider the capital asset pricing model,

29   recognizing that the inputs to this model require consider exercise of judgment However,

30   it does provide a useful check on the DCF results, and it can be applied specifically to

31   Delta.

32

1

2 **DISCOUNTED CASH FLOW PROCEDURE**

3

4

5 **Q.   PLEASE DESCRIBE THE DISCOUNTED CASH FLOW PROCEDURE.**

6

7 A.   The basic premise of the Discounted Cash Flow (" DCF") procedure is that the market

8   values each stock at the discounted present value of all future flows of cash that investors

9   expect from purchasing that stock. The discount rate that equates those future cash flows

10   with the market value of the stock is the investors' required rate of return.

11

12   The DCF approach is usually represented by the following formula:

13

14          $k = {}^d/_P + g$

15

16   where   k = required rate of return

17   d = dividend in the immediate period

18   P = market price

19   g = expected growth rate in dividends

20

21   While the DCF method is usually presented in mathematical notation format (as above), it

22   can also be described in narrative fashion. The formula says that the return that any

23   investor expects from the purchase of a stock consists of two components. The first is the

24   immediate cash flow in the form of a dividend. The second is the prospect for future

25   growth in dividends. The sum of the rates of these two flows, present and future, equals

26   the return that investors require. Investors adjust the price they are willing to pay for the

27   stock until the sum of the dividend yield and the annual rate of expected future growth in

28   dividends equals the rate of return they expect from other investments of comparable risk.

29   The DCF test thus determines what the investing community requires from the company

30   in terms of present and future dividends relative to the current market price.

31

32 **Q.   DON'T MOST INVESTORS REGARD CAPITAL APPRECIATION AS A**

33   **PORTION OF THEIR EXPECTED RETURN?**

34

35 A.   Yes. The expectation of capital appreciation is captured in the "g" or growth portion of

36   the DCF formula. If dividends grow, then it follows that the market price of the stock will

1   grow as well. It is this growth that most equity investors seek, at least in part, in

2   purchasing shares in a traded company.

3

4 **Q.   HOW IS THE FIRST TERM "d/p" DEVELOPED FOR PURPOSES OF THE DCF**

5 **PROCEDURE?**

6

7 A.   The "d" is the dividend in the next period, that is, the next year. There is a somewhat

8   mechanical procedure for predicting this value which applies a factor of .5 to the "g" or

9   growth factor, on the assumption that dividends will increase in lock step with earnings

10   growth. I have used this procedure for Delta because there are no other forecasts of

11   Delta's dividends. For the other companies studied, I have used an average of the 2004

12   and 2005 dividends as forecast by <u>Value Line</u>.

13

14   The "P" or price denominator of the dividend yield fraction requires the exercise of some

15   judgment. Given the volatility of the stock market, it is inappropriate to use any one

16   day's price, but it is also necessary to reflect market's current perception of each stock's

17   value. For purposes of this analysis, I have therefore used the average of three values: the

18   historical high for 2004 to date, the historical low for 2005 to date, and the market price

19   on June 24, 2004, the day of this writing.

20

21

22 **Q.   IS THERE A CONVENTIONAL PROCEDURE FOR CALCULATING THE "g"**

23 **GROWTH COMPONENT OF THE DCF FORMULATION?**

24

25 A.   Yes. There is a conventional procedure for calculating equity return under the DCF

26   formula that is often referred to as the "classic" DCF calculation. The Federal

27   Communications Commission ("FCC") concluded that this method should be given the

28   greatest weight in determining the rate of return to equity.[2] I agree with this conclusion.

29

---

[2] *Notice Initiating a Prescription Proceeding and Notice of Proposed Rulemaking,* CC Docket No. 98-166, October 5, 1998.

1   According to the DCF theory, the relevant measure of "g" should be the growth in

2   dividends. Dividends, however, are largely a function of management discretion, and they

3   do not necessarily reflect the underlying driver of earnings. Simply by changing the

4   dividend payout ratio, a company's management can create a rate of dividend growth that

5   is unsustainable. For this reason, it is generally accepted that earnings per share ("EPS")

6   is the most reliable indicator of the "g" factor.

7

8   The classic DCF calculation employs predictions of EPS growth, usually in the three to

9   five year time horizon. Investment analysts routinely attempt to forecast future earnings of

10   traded companies. Value Line provides such forecasts based on the research of its own

11   and other organizations' analysts. It is those forecasts that I have used for my

12   development of the gas distribution industry's DCF return.

13

14   Q.   **HAVE YOU PRESENTED SUCH A "CLASSIC" DCF FORMULATION FOR**

15   **DELTA GAS?**

16

17   A.   Yes. I have developed a "classic" DCF return for Delta, which is presented on the first

18   line of Exhibit____(CWK-1). I derived the $1.20 2004 dividend by multiplying the 2003

19   dividend of $1.18 by one-half Value Line's three percent growth forecast. I applied the

20   same inflator to the 2004 dividend to arrive a t a $1.22 dividend for 2005. The average

21   dividend for the coming year is therefore predicted to be $1.21. Delta's highest stock

22   price during 2004 has been $27.78, and its lowest price has been $23.00. Its price on June

23   24, 2004 was $23.31. The average of those three prices is $24.70. The result of the

24   fraction $1.21/24.70 is a dividend yield of 4.9 percent.

25

26   Value Line states that the consensus 5–year earnings growth forecast for Delta is 3

27   percent.[3] The sum of 4.9 percent dividend yield and 3.0 percent future growth is 7.9

28   percent.

29

1   Q.   DO YOU PLACE MUCH CREDIBILITY IN THIS RESULT?

2

3   A.   No. Value Line concedes that the three percent growth estimate is based on only one

4   analyst's estimate. Unlike other growth forecasts, this figure does not represent the

5   consensus of multiple analysts each examining the company independently.

6

7   Q.   IS THERE AN ALTERNTIVE WAY TO APPLY THE CLASSIC DCF

8   FORMULATION TO DELTA?

9

10 A.   Yes. The preferred alternative is to apply the classic DCF formulation to enterprises

11   having comparable levels of risk to Delta but for which there is a broader consensus of

12   estimates of future growth.

13

14 Q.   FOR PURPOSES OF THIS INQUIRY, WHAT TYPES OF ENTERPRISES HAVE

15   COMPARABLE RISK TO DELTA?

16

17 A.   The enterprises likely to have business risks most comparable to Delta are those engaged

18   in the same business, that is, the distribution of gas to retail customers under rate

19   base/rate-of-return regulation.

20

21 Q.   HAVE YOU IDENTIFIED SPECIFIC GAS DISTRIBUTION COMPANIES FOR

22   WHICH THERE ARE MORE ANALYSTS' FORECASTS OF EARNINGS

23   GROWTH?

24

25 A.   Yes. Value Line lists 19 "Peer Group" gas distribution companies that trade on the New

26   York Stock Exchange.   Since these Companies trade on the Big Board, they

27   unquestionably receive more attention from investment analysts than does Delta.

28

---

[3] Delta's rate-of-return witness Blake asserts that Value Line's earnings growth forecast was 6.5% at the time he prepared his testimony. The Value Line sheet he provided shows that the consensus forecast at that time was 4.0%. The 6.5% that Dr. Blake used was the historical rate of earnings growth over the past five years.

1   However, since we are attempting to find a rate of return sufficient to maintain credit and

2   attract capital, we cannot examine utilities that are financially weak. Two of the 19 <u>Value</u>

3   <u>Line</u> gas distribution companies (Semco Energy and NUI Corporation) are rated by <u>Value</u>

4   <u>Line</u> as below "B" for "financial strength," and for this reason I have excluded them. The

5   remaining 17 companies are as follows:

6   AGL Resources
7   Atmos Energy
8   Cascade Natural Gas
9   Energen
10   Energy West
11   KeySpan
12   Laclede Group
13   New Jersey Resources
14   NICOR
15   Northwest Natural Gas
16   People's Energy
17   Piedmont National
18   RGC Resources
19   Southern Union
20   South Jersey Industries
21   Southwest Gas
22   UGI Corp
23   WGL Holdings
24

25   Q.   **HAVE YOU DEVELOPED CLASSIC DCF RESULTS FOR THESE**

26   **COMPANIES?**

27

28   A.   Yes. The result of my analysis of 16 of these companies is presented in

29   Exhibit_____(CWK-1). It was necessary to drop two companies, Southern Union,

30   because it issues no dividends, nor is it forecast to by <u>Value Line, and Energy West,</u>

31   <u>because Value Line provides no earnings forecast</u>. Since the DCF procedure is intended

32   to reflect the discount rate of present and future dividend flows, Southern Union cannot

33   reasonably be considered in the peer group for purposes of the DCF calculation.

34

35   As the exhibit demonstrates, I used the same procedure for identifying the DCF return for

36   the 15 peer group companies as I used for Delta, with one exception. For these

1   companies, I used the 2004 and 2005 dividends forecast by <u>Value Line</u> (columns A and
2   B) to derive the expected dividend yield.

3

4   The exhibit reveals that the DCF returns range from 5.7 percent to 14.1 percent, with an
5   average of 10.0 percent.

6

7   **Q.   IS THIS 10.0 PERCENT APPROPRIATE FOR DELTA?**

8

9   A.   That is likely to be the subject of considerable controversy. Delta's rate of return
10   witness, Dr. Blake, asserts that there are three reasons to believe that Delta's rate of
11   return should be higher than those of other gas distribution utilities. First, he states that
12   Delta is more leveraged, that is, it has a much higher ratio of debt to equity, than other
13   gas distribution utilities. Second, he argues that the rural nature of Delta's service
14   territory and its consequent heavy reliance on highly weather-sensitive consumption
15   increases Delta's risk relative to utilities that serve more urban areas with larger non-
16   weather sensitive commercial and industrial loads. Finally, he argues that the small size
17   of Delta justifies an "adder" to its rate of return.

18

19   **Q.   IS DELTA MORE LEVERED THAN OTHER UTILITIES?**

20

21   A.   No. Exhibit _____(CWK-2) presents the capital structures of the 16 gas distribution
22   companies in Exhibit_____(CWK-1) plus two small companies, Energy West and RGC
23   Resources, that Dr. Blake included in his exhibits. In this exhibit, I have shown the
24   equity percentage inclusive and exclusive of short-term debt, and I have shown Delta's
25   capital structure on September 30, 2003, December 31, 2003 and March 31, 2003.

26

27   The exhibit reveals that on September 30, 2003, Delta's equity percentage was lower than
28   all but four of the 18 comparison companies when short-term debt is included and all but
29   five of the companies when it is excluded. However, by March 31, 2004, Delta's equity
30   proportion had increased above the average for the 18 companies when short-term debt is
31   included, and it approached the average when short-term debt is excluded.

1

2   I conclude that there is no justification for any adjustment to Delta's rate of return on

3   account of its capital structure.

4

5   Q.   **DOES THE RURAL NATURE OF DELTA'S SERVICE TERRITORY JUSTIFY**

6   **ANY ADJUSTMENT TO ITS RATE OF RETURN?**

7

8   A.   The principal effect of Delta's rural service territory is that the absence of commercial or

9   industrial customers makes the Company unusually dependent upon highly temperature-

10   sensitive heating loads. That might have been a valid reason to increase Delta's rate of

11   return prior to 1999, but in that year, the Commission adopted a weather normalization

12   adjustment that largely protects Delta from the effect of temperature variations. When

13   the weather is unusually warm, Delta is permitted to increase its base rate charge to

14   account for the low volume of heating gas it sells. When the weather is unusually cold,

15   Delta reduces its charge to recognize the excessive sales of gas. This protection has been

16   cited in a number of analysts' reports as a reason to consider Delta as being somewhat

17   less risky than gas utilities that do not have such rate feature.[4]

18

19 Q.   **DOES DELTA'S SMALL SIZE JUSTIFY AN "ADDER" TO ITS RATE OF**

20   **RETURN?**

21

22 A.   Again, this question is certain to be an area of considerable controversy. Anyone with

23   even a passing familiarity with the stock indices knows that the NASDAQ index,

24   composed principally of small companies, is far more volatile than is the NYSE index,

25   the S&P 500 index, or the Dow Jones index, all of which are composed of the nation's

26   largest companies. Ibbotson Associates reports a study by the Center for Research in

27   Securities Prices of the University of Chicago's Business School that reveals that small

28   companies have over time earned higher rates of return to equity than large companies.

29   Moreover, the variation in those rates of return has been higher as well – implying greater

30   risk.

---

[4] See response to AG Data Request No. 133.

1

2   Whether these general observations justify some sort of small size increment in Delta's

3   rate of return is another matter. Small companies tend to bit players in the competitive

4   market, subject to the marketing (and sometimes the pricing) power of the larger

5   companies that dominate their industries. Delta does not face direct competition for its

6   gas distribution service within its service area.

7

8   Small companies also tend to have very unstable earnings. Delta's earnings may not

9   have been as high as the Company could wish, but they have remained within a band of

10    $.75 to $1.49 per share over the last 10 years. More important, since the institution of the

11   weather normalization adjustment in 1999, the Company's annual earnings have varied

12   within the range of $1.42 to $1.49 per share, suggesting a very stable level of profit.

13

14 **Q.**   **DO YOU HAVE ANY INDEPENDENT SUPPORT FOR YOUR BELIEF THAT**

15   **DELTA EXPERIENCES VERY LOW EARNINGS RISK?**

16

17 **A.**   Yes. In a report dated June 13, 2003, the analyst firm of Stifel, Nicolaus & Company

18   made the following comments concerning Delta:

19   We consider DGAS [Delta's ticker symbol] to be very stable, both operationally
20   and financially. The company has several strategic positives in place, including
21   extensive storage capacity enabling the company to better manage its natural gas
22   supply, a rate structure that adjusts based on temperature deviations from
23   historical averages, and a customer base that is growing at an annual rate
24   approximately in line with the national average. In addition, we anticipate that
25   DGAS will be filing a general rate case with Kentucky regulators in FY '04,
26   which likely result in increased allowable revenues. The strong operating history
27   of DGAS is reflected in the stability of dividend, which has been paid every year
28   since 1964.
29

30   A report by Edward Jones, dated June 19, 2002 recommended that investors maintain

31   their Delta shares for growth and income purposes. It cited the protection of the weather

32   normalization program, customer growth and an attractive dividend yield.

33

34 **Q.**   **IS THERE ANY COUNTER-ARGUMENT THAT A "SMALL COMPANY"**

35   **ADJUSTMENT SHOULD BE ADDED TO DELTA'S RATE OF RETURN?**

1

2   A.   Yes. A number of analysts have recommended Delta to investors because of its high

3   dividend yield. The high dividend yield suggests that the Company's stock is under-

4   priced relative to other companies of comparable risk. One analyst (Edward Jones) noted

5   that this underpricing might be due to the Company's small size. Thus, an argument

6   could be made that Delta's small size does have an impact on its required rate of return.

7

8   Q.   **WHAT DO YOU RECOMMEND WITH RESPECT TO THE SMALL COMPANY**

9   **ADJUSTMENT FOR DELTA GAS?**

10

11   A.   I recommend that the Commission look at both size-adjusted and non-size-adjusted

12   comparable industry returns as outer limits on the DCF return that could reasonably be

13   applied to Delta.

14

15   Q.   **ASSUMING THAT COMPANY SIZE DOES HAVE AN INFLUENCE ON**

16   **DELTA'S REQUIRED RETURN, WHAT ADJUSTMENT WOULD BE**

17   **APPROPRIATE FOR THAT EFFECT?**

18

19   A.   Most of the gas distribution companies that I have used for comparison purposes are

20   classified as "mid-cap," with market capitalization in the range of $1.5 to $5 billion.

21   Delta, with a market capitalization of about $75 million, is in the "micro-cap" range. The

22   University of Chicago study reveals that the historical difference between the geometric

23   means of the earnings of these two categories of companies is 1.4 percentage points.[5]

24   Assuming that this figure is the appropriate company size adjustment for the peer group's

25   DCF results, the indicated size-adjusted rate of return for Delta is 10.8 percent, as shown

26   on Exhibit____(CWK-1). On this basis, the range of the DCF return appropriate for

27   Delta is between 10.0 and 11.4 percent.

28

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[5] As reported in Ibbotson Associates 2004 SBBI Yearbook, page 128.

1   **Q.   IS THERE ANY OTHER DCF FORMULATION THAT IS LESS DEPENDENT**

2   **UPON COMPARISONS WITH COMPANIES OF VERY DIFFERENT SIZES**

3   **FROM DELTA?**

4

5   A.   Yes. It is possible to estimate the "g" or growth component in the DCF formula by

6   examining Delta's ability to generated increases in the book value of its stock. While

7   book value and market value rarely match,[6] they do have a relationship, particularly for a

8   company that is subject to rate-base/rate-of-return regulation. As I have discussed

9   earlier, regulation sets the company's allowed earnings based on book value. As long as

10   that is the case, market value will in large measure be driven by book value.

11

12   There are two ways in which the book value per share of a regulated company can

13   increase. One is through retained earnings, that is, the portion of earnings that is not

14   declared out as dividends. The other is to sell new shares of stock at prices that exceed

15   book value. The premium on the new shares then increases the book value of the existing

16   shares.

17

18   These terms can be expressed by the following formula:

19        $g = (R*B) + (S*V)$

20   where:

21   R = the fraction of earnings retained by the company, i.e. the retention ratio

22   B = the return on the book value of common equity

23   S = the increase in common shares outstanding that have been sold at market value

24   V = the per-share premium or discount on the shares sold

25

26   **Q.   WHAT HAS BEEN THE HISTORY OF RETAINED EARNINGS BY DELTA?**

27

28   A.   Lines 1, 2 and 3 of Exhibit_____(CWK-3) show the record of Delta's dividends and

29   earnings per share and the consequent earnings retention ratios since 1999. The exhibit

1   reveals that except for the very poor earnings year 1999, the earnings retention ratio has

2   remained in a rather tight range between .192 and .224.

3

4   Q.   **WHAT RETENTION RATIO DO YOU PROPOSE TO USE TO CALCULATE**

5   **THE BOOK GROWTH POTENTIAL OF DELTA'S STOCK?**

6

7   A.   It appears that the Company has adopted a policy of retaining approximately 20 percent

8   of its annual earnings. I assume that this policy will continue into the future.

9

10   Q.   **WHAT IS THE RECORD OF RETURN TO THE BOOK VALUE PER SHARE**

11   **FOR DELTA?**

12

13   A.   On lines 4 through 7, I calculate the return on book value per share for Delta in each year

14   since 1999. The two "down" years are 1999 and 2003, both of which prompted rate

15   cases. During the intervening years, Delta did not seek rate relief, so I assume it was

16   satisfied with the earnings it experienced in those years. Those earnings averaged

17   approximately 11 percent. For purposes of this exercise, I use 11 percent as the forecast

18   maximum earnings level for equity capital.

19

20   Q.   **WHAT DO YOU FORECAST AS THE EARNINGS RETENTION GROWTH**

21   **FOR DELTA?**

22

23   A.   With retained earnings of 20 percent and an 11 percent annual return to book equity, the

24   growth that can be expected from retained earnings is 2.2 percent annually.

25

26   Q.   **WHAT IS THE HISTORY OF BOOK VALUE GROWTH FROM PREMIUMS**

27   **ON NEW SHARES OF STOCK?**

28

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[6] If the Company is earning is required rate of return, the market value of its stock should exceed the book value. That is because investors do not require that the full rate of return be earned in the current period, only that the prospects for future earnings correspond to their growth expectations.

1   A.   That history is displayed on lines 9 and 10 of Exhibit____(CWK-3). During each of the

2   years 1999 through 2002, the premium on new shares issued through employee stock

3   purchase plans and dividend reinvestment plans averaged about $650,000 annually,

4   yielding an increase in per-share book value of approximately two percent. In 2003, the

5   Company sold 600,000 at a premium over book value of $12.5 million. This resulted in

6   an increase in the book value of the existing shares of 28.6 percent. Averaged over the

7   five year period, 1999-2003, the increase in book value per share from issuing new shares

8   was 7.34 percent annually.

9

10   Q.   **WHAT IS THE LIKELY FUTURE GROWTH IN PER-SHARE VALUE DUE TO**

11   **NEW STOCK ISSUES?**

12

13   A.   The 7.34 percent average for the past five years is not particularly relevant as an indicator

14   of future growth from new stock issues, as it was heavily influenced by the sale of

15   600,000 new shares in 2003. However, it would be inappropriate to assume that the

16   routine two percent growth is representative of the future either. Such an assumption

17   presupposes that the Company would never conduct another stock sale such as it did in

18   2003. For this reason, I have assumed that investors would expect an annual growth in

19   book value from new share issues in the range of 3 to 4 percent. Admittedly, this is a

20   judgment call, but I know of no other way to quantify this effect.

21

22   Q.   **WHAT IS THE DCF RETURN USING THE BOOK VALUE GROWTH MODEL?**

23

24   A.   Exhibit____(CWK-3) shows that the DCF return using the book value growth model is

25   in the range of 10.1 to 11.1 percent.

26

27   **CAPITAL ASSET PRICING MODEL**

28

29   Q.   **WHAT IS THE CAPITAL ASSET PRICING MODEL?**

30

1   A.   The Capital Asset Pricing Model ("CAPM") employs a measure called "beta," which

2   tests the covariance of the stock at issue with that of the overall market, to assess the

3   relative risk of the stock against the market. As conventionally used by rate-of-return

4   analysts, the beta is assumed to measure the cost of the company's equity on a continuum

5   between the average required return of the overall equity market and a risk-free return.

6

7   The CAPM formula, including a size premium as suggested in the academic literature, is

8   as follows:

9                  $k = R_f + \beta(R_m - R_f) + SP$

10   Where

11   k = the prospective market cost of common equity for a specific investment
12   R_f = the "risk-free" rate of return
13   β = the company-specific beta
14   R_m = the overall stock market return on stocks for the prospective period
15   SP = a size premium or discount for the market capitalization of the firm relative
16   to the overall market
17
18

19   Q.   WHAT IS YOUR ASSESSMENT OF THE CAPM?

20

21   A.   I believe that CAPM has value in assessing the relative risk of different stocks and

22   portfolios of stocks. It can therefore be useful in checking the results of other, more

23   reliable methods of measuring equity return, such as the DCF procedure. However,

24   because of the extensive requirement for judgment in selecting each of the inputs, I

25   question its value in directly estimating a return to equity.

26

27   Q.   WHAT JUDGMENT IS REQUIRED FOR THE FIRST INPUT, β, OR BETA?

28

29   A   As noted, beta measures the degree of covariance of the stock with that of the market

30   overall. But neither the fluctuations of the stock nor those of the market are constant, or

31   even be consistent with each other over any extended period of time. As a result, there

32   are as many estimates of beta for a given company as there are analysts making the

33   measurement.

34

1   Q.   **WHAT JUDGMENT IS REQUIRED TO IN SELECTING THE INPUT R$_f$, THE**
2   **RISK-FREE RATE OF RETURN?**
3

4   A.   There is general consensus that yields to U.S. government securities are risk-free in the
5   sense that they are free from the risk of default. The difficulty is that there are quite a
6   number of U.S. government securities of differing maturities that have very different
7   yields. Most utility-sponsored rate-of-return witnesses assert that because stocks exist in
8   perpetuity, the yield of long-term government bonds is the appropriate risk-free rate. The
9   difficulty with this argument is that long-term bonds are not free from risk. To the
10   contrary, they carry a substantial risk that inflation will erode their eventual value at
11   maturity. Stocks do no bear this inflation risk because generally the stock market rises
12   when inflation rises. Moreover, while equity investment may exist in perpetuity, few
13   investors buy stocks with the intention of holding them in perpetuity. To the contrary,
14   the NYSE has an annual turnover rate of over 100 percent, suggesting that the average
15   holding time of a share of stock is about a year.
16

17 Q.   **WHAT JUDGMENT IS REQUIRED IN SELECTING THE INPUT R$_m$, THE**
18   **RETURN TO THE OVERAL MARKET?**
19

20 A   The complexities and uncertainties associated with measuring the return to equity of an
21   individual company are not reduced when the object of the analysis is expanded to the
22   entire market for equities. Generally, CAPM analysts use one of two procedures. Either
23   they perform simplistic DCFs for a wide variety of stocks, in which case why not use the
24   same DCF for the stock under study? Or they use the historical return to market equities,
25   which assumes, totally unrealistically, that the investors in the equity markets during the
26   period under study actually realized the return that they were expecting. This approach
27   tells us nothing about future expectations from the market.
28

29 Q.   **WHAT JUDGMENT IS REQUIRED IN SELECTING THE INPUT SP, THE SIZE**
30   **PREMIUM OR DISCOUNT?**
31

1   A.   I have already discussed this problem. While there is no question that small companies,

2   in general, are more risky than large companies, it is by no means certain that this

3   generalization can be applied to a franchised gas distribution company such as Delta.

4   Furthermore, the selection of the size premium (or discount, for a large company) is

5   complicated by the fact that the University of Chicago has developed two schedules of

6   size premiums, one based on geometric means, the other based on arithmetic means, and

7   that both schedules can be expressed using decile averages or quartile averages.

8

9   Q.   **HAVE YOU ATTEMPTED TO APPLY THE CAPM TO DELTA?**

10

11   A.   Yes, although this attempt has involved a considerable application of judgment in the

12   selection of inputs. The results of this effort are set forth in Exhibit _____(CWK-4).

13

14   Q.   **WHAT CAPM INPUTS DID YOU SELECT?**

15

16   A.   In determining the risk-free rate of return, I relied on the NYSE's evidence that the shares

17   on that exchange experienced a 106 percent turnover during the 12 months ending May

18   2004 (line 1). This implies an average holding time, or "investment horizon" of one year

19   (line 2). I therefore selected the one-year Treasury fixed maturity bond rate as the risk-

20   free rate (line 3).

21

22   I then constructed a Discounted Cash Flow return for the entire marketl based on <u>Value</u>

23   <u>Line</u>'s report that the median dividend yield for the dividend-paying stocks among the

24   1700 companies that it follows is 1.7 percent (line 4), and that the median appreciation

25   potential during the next three to five years is 50 percent (line 5). This latter value

26   translates into a compound annual growth rate of 10.7 percent (line 6). The overall

27   market return prospectively is therefore assumed to be 12.7 percent (line 7), and the risk

28   premium over the risk-free rate is 10.6 percent (line 8).

29

30   I used <u>Value Line</u>'s most recent calculation of Delta's beta of .50 (line 9) to set Delta's

31   risk premium at 5.3 percent (line 10). When added to the risk free rate, Delta's CAPM

1   return, without a size adjustment, is 7.1 percent (line 11). I then added the difference

2   between the geometric means of the micro-cap stock returns and the overall market from

3   the University of Chicago study (as reported by Ibbotson Associates) to derive a size

4   premium for Delta of 2.6 percent (line 13).

5

6   Based on these highly judgmental inputs, I derive a CAPM return for Delta of 9.7

7   percent.

8

9 Q. **WOULD YOU PLEASE SUMMARIZE YOUR FINDINGS WITH REGARD TO**

10   **DELTA'S COST OF EQUITY CAPITAL?**

11

12 A. Yes. I can summarize my findings in declining order of reliability:

13   • DCF of peer group companies using analysts' forecasts of "g"   10.0% - 11.4%

14   • DCF of Delta using book value growth model   10.1% – 11.1%

15   • Capital Asset Pricing Model   9.7%

16   • DCF using Value Line's forecast for Delta   8.9%

17

18 Q. **WHAT DO YOU DERIVE AS THE RATE OF RETURN FOR DELTA'S EQUITY**

19   **CAPITAL?**

20

21 A. I have assigned weightings to these results, and I have used the mid-points of the range

22   values, as follows:

23

Method	Weighting	Result	Weighted Result
DCF Peer Group	5	10.7%	53.5
DCF Book Value Growth	3	10.6%	31.8
Capital Asset Pricing Model	2	9.7%	19.4
DCF Delta Value Line Forecast	1	8.9%	8.9
Total	11		113.6
Average			**10.3%**

31

1

2

3

4   **OVERALL RATE OF RETURN**

5

6   **Q.   WHAT   IS   THE   OVERALL   COST   OF   CAPITAL   USING   YOUR**

7   **RECOMMENDED RATE OF RETURN TO EQUITY?**

8

9   A.   Using the capital structure and cost of debt shown in Schedule 9 under Tab 27 of the

10   Filing Requirements, I calculated the overall return to capital as 7.732 percent, as

11   follows:

12   Percentage   Cost   Weighted Cost

13   Equity   37.15%   10.3%   3.826%

14   Long-term Debt   47.51%   7.422%   3.526%

15   Short-term Debt   15.35%   2.478%   0.380%

16   Total   100.00%   7. 732%

17

18   **Q.   DOES THIS CONCLUDE YOUR TESTIMONY?**

19

20   A.   Yes. It does.

21

22

23

In the matter of

AN ADJUSTMENT OF THE   )
RATES OF DELTA NATURAL   CASE NO. 2004-00067
GAS COMPANY, INC.   )

AFFIDAVIT

Comes the affiant, Charles W. King, and being duly sworn states that the

foregoing revised testimony and attached schedules were prepared by him or under his

direction and are, to the best his information and belief, true and correct. The revisions

occur in Exhibit CWK-1, and they raise Mr. King's recommended return to equity from

10.05 percent to 10.3 percent and his recommended return to total capital from 7.640

percent to 7.732 percent.

District of Columbia
City of Washington

Subscribed and sworn to before me by the Affiant Charles W. King this 16th day

of July, 2004.

_____
Notary Public
My Commission Expires: March 14, 2006

Retail Gas Distribution Companies
"Classic" Discounted Cash Flow Analysis

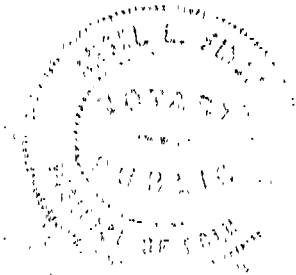| Company	A Value Line Dividend 2004	B Value Line Dividend 2005	C Average Dividend	D Stock Price 2004 High	E Stock Price 2004 Low	F Stock Price Current	G Average	H Dividend Yield	I Value Line Growth Forecast	J Indicated DCF Return
Delta Natural Gas (000)	1.20	1.22	1.21	27.78	23.00	23.31	24.70	4.9%	3.0%	7.9%
AGL Resources (2002)	1.12	1.12	1.12	30.60	27.90	28.85	29.12	3.8%	6.5%	10.3%
Atmos Energy	1.22	1.24	1.23	27.00	24.30	24.98	25.43	4.8%	5.0%	9.8%
Cascade Natural Gas	0.96	0.96	0.96	23.00	21.00	21.52	21.84	4.4%	9.0%	13.4%
Energen	0.75	0.77	0.76	44.70	40.70	46.95	44.12	1.7%	4.2%	5.9%
KeySpan	1.78	1.78	1.78	38.60	35.70	36.04	36.78	4.8%	6.5%	11.3%
Laclede Group	1.36	1.36	1.36	31.90	28.30	27.06	29.09	4.7%	5.0%	9.7%
New Jersey Resources	1.28	1.32	1.30	40.00	36.80	39.80	38.87	3.3%	8.0%	11.3%
NICOR	1.86	1.86	1.86	37.40	32.50	34.77	34.89	5.3%	0.5%	5.8%
Northwest Natural Gas	1.30	1.33	1.32	33.00	30.00	30.20	31.07	4.2%	4.5%	8.7%
People's Energy	2.16	2.20	2.18	46.00	41.40	42.38	43.26	5.0%	4.0%	9.0%
Piedmont Natural Gas	1.72	1.78	1.75	43.80	40.40	42.75	42.32	4.1%	7.5%	11.6%
South Jersey Industries	1.62	1.67	1.65	42.30	40.20	43.30	41.93	3.9%	6.0%	9.9%
Southwest Gas	0.82	0.82	0.82	24.10	21.50	23.40	23.00	3.6%	10.5%	14.1%
UGI Corp	1.23	1.33	1.28	34.30	29.80	31.45	31.85	4.0%	7.5%	11.5%
WGL Holdings	1.30	1.30	1.30	30.10	27.20	29.21	28.84	4.5%	3.5%	8.0%
Average										10.0%
Mid Cap/Micro Cap Adder										1.4%
Adjusted Average										11.4%

Gas Distribution Utilities
Capital Structures
(Dollars in Millions)

9/30/2003	A Short-term Debt	B Long-term Debt	C Preferred Stock	D Common Equity	E Capital Including S-T Debt	F Equity/ Total Capital	G Equity/ Capital - S-T Debt
AGL Resources	306.4	956.1		710.1	1,972.6	36.0%	42.6%
Atmos Energy	118.6	863.9		857.5	1,840.0	46.6%	49.8%
Cascade Natural Gas	3.8	142.9		112.6	259.3	43.4%	44.1%
Energen	11.0	552.8		699.0	1,262.8	55.4%	55.8%
Energy West	6.1	14.8		15.3	36.2	42.3%	50.8%
KeySpan	481.9	5,611.4	83.6	3,745.5	9,922.4	37.7%	39.7%
Laclede Group	218.2	259.6	1.3	345.3	824.4	41.9%	57.0%
New Jersey Resources	185.8	257.9		418.9	862.6	48.6%	61.9%
NICOR	575.0	495.1	1.8	756.4	1,828.3	41.4%	60.4%
Northwest Natural Gas	85.2	500.3		506.3	1,091.8	46.4%	50.3%
People's Energy	55.9	744.4		862.6	1,662.9	51.9%	53.7%
Piedmont National	555.1	460.0		630.2	1,645.3	38.3%	57.8%
RGC Resources	13.0	30.2		33.9	77.1	43.9%	52.9%
Southern Union	251.5	1,611.7		1,176.5	3,039.7	38.7%	42.2%
South Jersey Industries	112.8	308.8		299.7	721.3	41.5%	49.3%
Southwest Gas	52.0	1,221.2		630.5	1,903.7	33.1%	34.0%
UGI Corp	56.6	1,158.5		569.8	1,784.9	31.9%	33.0%
WGL Holdings	166.7	636.7		842.7	1,646.1	51.2%	57.0%
Average						**42.8%**	**49.6%**
Delta Natural Gas ($000)							
September 30, 2003	17,708	54,824		44,030	116,562	**37.8%**	**44.5%**
December 31,2003	19,358	53,174		44,030	116,562	**37.8%**	**45.3%**
March 30, 2004	7,658	53,133		47,080	107,871	**43.6%**	**47.0%**

Delta Natural Gas Company
Book Value Growth Model - DCF Return

	1999	2000	2001	2002	2003	Historical Average	Forecast
1 Dividend per Share	1.14	1.14	1.14	1.16	1.18		
2 Earnings per Share	0.90	1.42	1.47	1.45	1.46		
3 Earnings Retention Ratio	(0.267)	0.197	0.224	0.200	0.192	0.109	0.200
4 Shareholders' Equity	29,912,007	31,297,418	32,754,560	34,182,277	45,892,597		
5 No of Shares Outstanding	2,394,181	2,433,397	2,477,983	2,513,804	2,641,829		
6 Book Value per Share	12.49	12.86	13.22	13.60	17.37		
7 Return on Book Equity	7.20%	11.04%	11.12%	10.66%	8.40%	9.69%	11.00%
8 Growth from Retained Earnings						1.1%	2.2%
9 Premium on new shares issued	641,067	652,801	618,313	673,022	13,132,103		
10 Per-share growth from premiums	2.14%	2.09%	1.89%	1.97%	28.61%	7.34%	3.0%-4.0%
11 Growth Potential per Share						8.40%	5.2% - 6.2%
12 Dividend Yield							4.9%
13 DCF Return							10.1%- 11.1%

Delta Natural Gas Company
Capital Asset Pricing Model Rate of Return

		Source	
1	NYSE Turnover Rate, 12 Mos. Ending May 2004	www.nyse.com/marketinfo	106%
2	Average Holding Time	Based on Line 1	1 year
3	Yield on 1-year Treasury Bonds, May 2004	www.federalreserve.gov/releases_H15	1.78%
4	Value Line Median Esitmate Dividend Yield, Next 12 Mos.	www.valueline.com/secure	1.7%
5	Value Line Median Appreciation Potential 3 to 5 Years Hence	"	50.0%
6	Value Line AprecIation Potential Annualized at 4 Years		10.7%
7	Total Market DCF Return	Line 5 to 4th Root Line 4 + Line 6	12.4%
8	CAPM Market Risk Premium	Line 7 - Line 3	10.6%
9	Delta's beta as per Value Line	www.valuline.com	0.50
10	Delta's Risk Premium	Line 8*Line 9	5.3%
11	Delta's Raw CAPM Return	Line 3+Line 10	7.1%
12	Average Return 1926 to 2003, NYSE/AMEX/NASDAQ	Ibbotson Assoc, 2004 Yearbook p.128	10.1%
13	Micro-cap Return 1926 to 2003, NYSE/AMEX/NASDAQ	"	12.7%
13	Small-size Premium	Line 13-Line 12	2.6%
14	Delta's Size-Adjusted CAPM Return	Line 11+Line 13	9.7%