

1 **Q Please state your name, address, and occupation.**

2 A My name is Marci L. Norby. My business address is 2515 Warren Ave., Suite 304,
3 Cheyenne, Wyoming, 82002. I am employed as a Senior Rate Analyst with the Office
4 of Consumer Advocate.

5
6 **Q Please describe your educational background, occupation, and experience.**

7 A I received a Master of Science degree in Finance from the University of Wyoming in
8 1999. The area of emphasis in my graduate work was the value of timing options in
9 capital budgeting using the Black-Scholes model. After graduating I was employed as
10 a financial analyst in the banking profession, where my duties included accounting,
11 capital budgeting, financial budgeting, bond portfolio management and administration,
12 institutional investing, economic analysis, and financial operations. I came to the
13 Wyoming Public Service Commission in August of 2000 and then to the Office of
14 Consumer Advocate in May of 2003.

15
16 **Q Have you testified before the Commission in previous proceedings?**

17 A Yes. I have testified in ten cases prior to this proceeding. I have testified in six general
18 rate cases, one unbundled network element telecommunications cost case, two
19 TSLRIC telecommunications cases, one telecommunications service quality case, and
20 one Commission investigation.

21
22 **Q On whose behalf do you appear today?**

23 A I appear in this case on behalf of the Office of Consumer Advocate (OCA).

24
25 **Q As a member of the OCA do you advocate the interests of certain groups of
26 consumers over others?**

27 A No. As a member of OCA it is my obligation to represent the interests of all Wyoming
28 citizens and all classes of utility customers in the state.

1 **Q What is the purpose of your testimony in this proceeding?**

2 A The purpose of my testimony is to present evidence supporting the stipulation between
3 the OCA and Pinedale Natural Gas, Inc. (Pinedale or the Company).

4

5 **Q Do you sponsor any exhibits in this proceeding?**

6 A Yes, I sponsor OCA Exhibits MLN-1 through MLN-13 in this proceeding. I will refer to
7 my exhibits throughout my testimony.

8

9 **Q How is your testimony organized?**

10 A First I will present the OCA work papers and the stipulated cost of equity capital, capital
11 structure, cost of debt and appropriate rate of return on rate base. I will then present
12 the stipulated revenue requirement, rate design, and impact to average customer bills.

13

14

15 **Q What is the result of your review of Pinedale's cost of debt?**

16 A I reviewed the Pinedale's cost of debt of 7% used in this rate case and found that the it
17 accurately reflects the Company's actual cost of debt. Pinedale's cost of debt is
18 comparable to the national average for utilities companies with a rating of Baa
19 (Moody's) of 6.9% in 2003.

20

21 **Q Why is the stipulated cost of equity capital in this case reasonable?**

22 A The OCA conducted an analysis of the appropriate cost of equity capital in this case.
23 The result of this analysis illustrates an average cost of equity capital of 10.46%, with a
24 range of reasonableness of 9.5% to 10.9%(OCA Exhibit MLN-6). The stipulated cost
25 of equity capital is 10.9%.

26

27 **Q Please give an overview of the theory of estimating the cost of equity capital.**

28 A The cost of equity capital is the return on investment that equity holders expect to
29 receive from a given equity investment. The return is based on the investor's

1 perceived risk associated with the risk and the returns on similar investments.
2 Investors want to maximize the return on investment. In order to maximize the return,
3 they will invest or stay invested if the expected return on investment is similar to
4 alternative investments with comparable risk (opportunity cost). A company will be
5 able to attract capital if the expected return on equity capital is the same or better than
6 those competing investments with similar risk. Estimating the cost of equity capital in
7 the future is a matter of judgment based on the estimated returns of comparable assets
8 in the market, relative risk, and the nature of the market itself.

9
10 There are several methods in which the cost of equity capital can be estimated. Since
11 no one method, or model, will provide an infallible estimation, it is prudent to use
12 several methodologies in the estimation. It is appropriate to use more than one
13 method and several comparables in the analysis, as well as informed judgment to
14 validate the estimation. The results of each of the methods can also be used to check
15 the results of the other methods.

16
17 **Q How did the OCA conduct its analysis in this case?**

18 **A** I first selected a group of comparable companies for use in the analysis. I then
19 computed an average cost of equity capital by using the constant growth Discounted
20 Cash Flow Model (DCF), non-constant growth Discounted Cash Flow Model (NDCF),
21 and the Capital Asset Pricing Model (CAPM). Specifically, I averaged my results from
22 my 3 DCF models, 3 NDCF models, and my CAPM analysis.

23
24 The 3 DCF models I used in my analysis have different growth rates. I used a
25 calculated growth rate from 2003 through 2007, a calculated growth rate from 2003
26 through 2008, and the Value Line analysts' forecasted growth rates (OCA Exhibit MLN-
27 2, 3, and 4). The 3 NDCF models I used also incorporated the same growth rates for
28 the second stage of growth, as I will discuss further later in my testimony (OCA Exhibit
29 MLN-5). I used a risk premium analysis to provide a check of these 7 models (OCA

1 Exhibit MLN-8).

2
3 **Q How did you select the comparable companies for your analysis?**

4 A In selecting the appropriate comparable companies it is important to select those
5 companies that most closely resemble the subject company. In this case I used all of
6 the natural gas distribution companies covered by Value Line as a representative
7 sample of the natural gas distribution companies in the market. In a perfect world it
8 would be desirable to have several comparable companies that are exactly the same in
9 every aspect to Pinedale. In the real world, there are not many companies similar to
10 Pinedale. In addition, these small natural gas distribution companies are usually
11 privately held companies in which the data is not available for analysis in the manner
12 conducted here. Therefore, in conducting an analysis such as this, the publicly
13 available data for those companies in the natural gas distribution industry is
14 appropriate in estimating the cost of equity capital for a natural gas distribution
15 company in Wyoming. The results of my analysis based on the Value Line industry
16 data illustrate a reasonable cost of equity capital for the natural gas distribution
17 industry.

18
19 **Q Why is it important to use comparable companies when conducting a cost of
20 capital analysis?**

21 A Comparable companies are used to estimating the cost of equity capital because
22 investors want to maximize the return on investment and those investors will stay
23 invested if the expected return of a company is similar to other investments that are
24 comparable nature. The use of comparable companies is acceptable practice in the
25 regulation of utilities as stated by the U.S. Supreme Court in Federal Power
26 Commission versus Hope Natural Gas Company, in which the court said,

27 *...the return to the equity owner should be commensurate with returns*
28 *on investments in other enterprises having corresponding risk.*

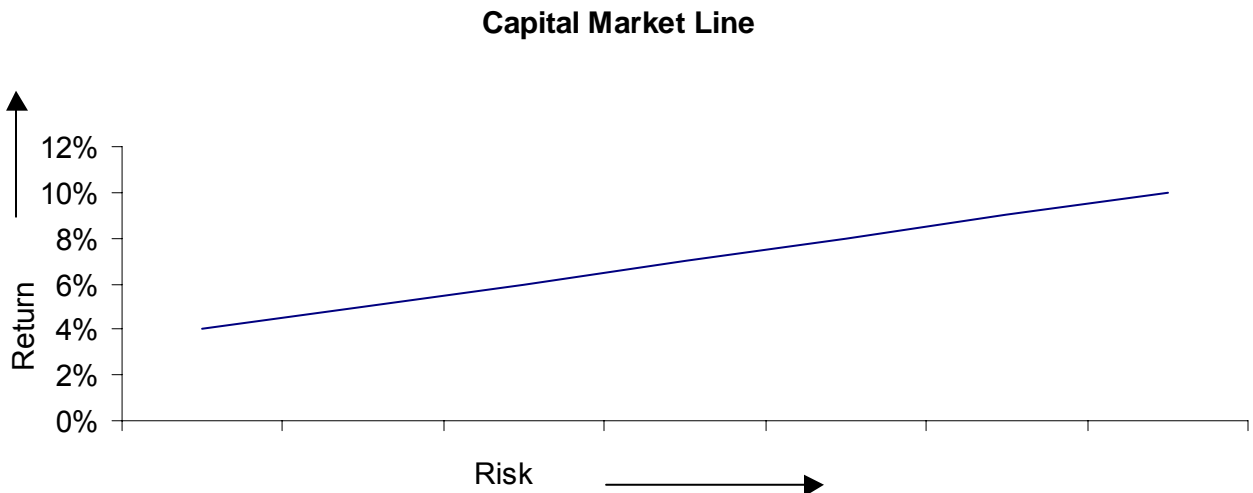
29 The comparable companies used in the analysis will never be an exact replica of

1 Pinedale, however, the comparables do provide a means of prudent estimation of the
2 cost of capital. Appropriate comparable companies provide a basis for establishing the
3 cost of equity capital. Because of the imperfect comparability, analysis must be
4 conducted using several estimating calculations as well as informed judgment of those
5 calculations and the nature of the relevant market to make an appropriate estimation.
6

7 **Q Why is the measure of risk so important in this analysis?**

8 **A** Investors expect to earn a rate of return commensurate with the risk of holding the
9 security. It is important in this proceeding to estimate and recommend a rate of return
10 on equity that allows the company the opportunity to earn a return similar to
11 comparable companies within its industry. The risk return trade off is an important
12 concept in estimating the cost of equity capital.
13

14 Generally, investors are risk averse. In order to hold securities with a higher degree of
15 risk, the investor will demand a higher return for that security. The Capital Market Line
16 (CML) illustrates this concept:
17



18 The CML, which is noted in most college finance textbooks, demonstrates that as the
19 perceived risk of an investment increases, the expected rate of return for that
20

1 investment also increases. This graph does not depict the exact relationship for any
2 one investment, yet shows the general relationship between risk and return. The slope
3 of this line reflects the aggregate attitude investors have toward risk. This concept is
4 important to the various models in which the cost of equity capital is calculated.
5

6 **Q What resources did you use in gathering data on the comparable companies in
7 your analysis?**

8 A I primarily used the Value Line Investment Survey and C.A. Turner Utility Reports to
9 gather financial data on the comparable companies. This information, as well as a list
10 of the comparables themselves, is shown on OCA Exhibit MLN-1. I also used
11 information from The Federal Reserve Bank in St. Louis economic data, Mergent Bond
12 Record, and Ibbotson Associates to gather further information.
13

14 **Q What capital structure is included in the stipulation?**

15 A The stipulation uses an average capital structure of the comparable companies in the
16 OCA analysis, which is 53% debt and 47% equity as seen in OCA Exhibit MLN-1, 6,
17 and 9 and Stipulation Exhibit 3. The actual capital structure of Pinedale is 72% debt
18 and 28% equity as of December 31, 2002.¹
19

20 **Q Why use an average capital structure based on comparable companies?**

21 A Use of a capital structure based on the average of the comparable companies is
22 representative of the market. A capital structure that is representative of the industry
23 capital structure for ratemaking purposes represents the market in which companies
24 compete for capital. However, in this case, Pinedale will not be competing in the open
25 market to issue equity and sell bonds. The appropriate comparable capital structure is
26 still appropriate due to the fact that the capital structure of a company should be
27 reasonable and such that ratepayers are not paying distorted costs. Using the
28 industry average capital structure for ratemaking purposes alleviates distortion of costs

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1 to ratepayers.

2 **Q Please describe the models used in your analysis and the results of your**
3 **analysis based on the use of these models.**

4 **A**

5 **I. Constant Growth Discounted Cash Flow Model**

6
7 I used the **constant growth Discounted Cash Flow (DCF)** model in estimating the
8 cost of equity capital (OCA Exhibit MLN-2, 3, and 4). The DCF model measures the
9 investor's discount rate or required rate of return based on the estimated future cash
10 flows of the investment. The cash flow associated with the investment in equity is
11 dividend payments and changes in the equity's price. The DCF model used in this
12 analysis is in the form $E(r) = (D_1/P_0) + g$, where:

13
14 $E(r)$ = expected return, cost of equity capital

15 D_1 = Dividend at the end of period one

16 P_0 = current stock price

17 g = expected growth rate

18
19 This equation states that the expected return on equity is the expected dividend yield
20 plus the growth rate. This approach includes the estimation of the return from an
21 observable share price, expected future dividends, and capital appreciation.

22
23 In this model, the growth rate is constant, and important. The growth rate of equity
24 capital is not based solely on the growth of dividends; therefore, I have calculated the
25 growth rates using a weighted average of earnings per share (3), dividends per share
26 (1), and book value per share (2). Because this analysis is based on this weighted
27 average it provides a more comprehensive picture of the average growth rate of the
28 sample. This weighting is an accurate reflection of the projected overall growth rates in
29 the next five years. I have used earnings per share, dividends per share, and book

1 value per share in the calculation of the growth rate due to the fact that investors not
2 only look at the dividend growth, investors look at the overall financial health of a
3 company and its prospects for growth. It is important to calculate the growth rate of a
4 company based on several factors, not just one. For instance, if a company has a
5 policy to decrease its dividend payout in the near future, a growth rate reflecting only
6 the dividends would yield an unreasonable rate of return. Including the projected
7 dividends, earnings per share, and book value per share in the growth projection gives
8 a more accurate reflection of the overall prospect for growth for the company.

9
10 I use three different constant growth DCF models in my analysis. I calculated a
11 constant growth DCF using the Value Line analysts' projected growth rates for
12 dividends, earnings per share, and book value per share (OCA Exhibit MLN-2). I also
13 calculated growth rates using the Value Line data for 2003 through 2007 (OCA Exhibit
14 MLN-4) as well as 2003 through 2008 (OCA Exhibit MLN-3). Included in these
15 analyses is the average stock price for 2003 (OCA Exhibit MLN-7).

16 17 **II. Capital Asset Pricing Model**

18
19 I also used the **Capital Assets Pricing Model (CAPM)** in my estimation of the cost of
20 equity capital in this case. The CAPM approach calculates the expected return by
21 adding the risk premium of the investment to the risk free rate of return. The CAPM
22 equation is $E(r) = R_f + \beta(R_m - R_f)$, where:

23
24 $E(r)$ is the expected return, cost of equity capital

25 R_f is the risk free rate

26 R_m is the required rate of return on the overall market

27 B is the beta risk measurement.
28

29 The CAPM model illustrates a basic concept that investors expect incremental

1 increasing returns in exchange for assuming incremental increasing risks. In using the
2 CAPM approach we assume that the cost of equity is equal to the risk free rate plus a
3 risk premium that is based on the stock's beta coefficient and the market risk premium.

4 Under the CAPM approach, a security's risk is measured by its beta coefficient. Beta
5 is a measure of systematic risk (non-diversifiable), or the asset's covariance with the
6 market. Beta is calculated by dividing the covariance of the security with the market
7 divided by the variance of the market returns. The tendency of an individual equity to
8 move with the market constitutes a non-diversifiable risk, as the market does and will
9 fluctuate, which cannot be diversified away. This measure reflects investor's
10 expectations of the future volatility in relation to that of the market.

11
12 The results of the CAPM analysis appear in OCA Exhibit MLN-1. The average of the
13 estimates is 9.53% (column T). Although I have conducted a short-term analysis in my
14 CAPM approach, I have excluded it in the Composite CAPM in column T due to the
15 more appropriate measure of the risk free rate being represented by the long-term
16 Treasury Bond yield. If a short-term bond yield is used in this analysis (as well as in
17 the risk premium approach) the short-term inflationary expectations embedded in these
18 instruments are incorporated into the analysis. These short-term expectations do not
19 coincide with the long-term expectations of common stock returns and are therefore
20 excluded.

21 22 **III. Non-Constant Discounted Cash Flow Model**

23
24 I conducted a third analysis using the **Non constant growth Discounted Cash Flow**
25 **(NDCF) model**, the formula for which is stated below:

$$26$$
$$27 P_0 = D_1/(1+E(r)) + D_2/(1+E(r))^2 + \dots + D_n/(1+E(r))^n + ((D_n(1+g))/(E(r) - g)) * (1/(1 +$$
$$28 E(r))^n.$$

29

1 This model illustrates the calculation of the cost of equity where non-constant growth is
2 expected before year “n” and constant growth is expected thereafter. I conducted
3 three different NDCF analyses. I used a calculated growth rate from 2003 through
4 2007, a calculated growth rate from 2003 through 2008, and the Value Line analysts’
5 forecasted growth rate for that portion of the model that reflects a secondary period of
6 constant growth (OCA Exhibit MLN-5). The non-constant portion of growth in my
7 model is reflected in the change in dividends in each year. I used a average stock
8 price for 2003, and the projected dividends from Value Line Investment Survey, both of
9 which I used in the constant DCF models. The result of my 2003 through 2008, 2003
10 through 2007, and Value Line analyst’s forecasted growth NDCF are 9.67%, 11.02%,
11 and 10.02% respectively. The NDCF models are solved iteratively.

12 13 **IV. Risk Premium Analysis**

14
15 **Q What is the risk premium?**

16 **A** The risk of the asset must offer a “risk premium” above that of a risk free rate of return
17 to compensate investors for assuming additional risk associated with holding the asset.
18 The rate of return demanded by investors to compensate for the additional risk of
19 holding the security (risk premium) can be added to a risk free rate of return to find the
20 total required rate of return of the asset. In practice the risk premium must be
21 calculated and must include compensation for all uncertainty and risk involved in the
22 asset.

23
24 **Q What are the results of your risk premium analysis?**

25 **A** The result of my risk premium analysis is shown on OCA Exhibit MLN-8. I have
26 calculated a risk premium of 4.81%. I used the average Value Line comparable
27 company statistics return on common equity for each year of the analysis. Additionally,
28 I used the 20-year Constant Maturity Treasury Bond yield in calculating a ten-year
29 average risk premium. I added this risk premium to a recent 30 year Treasury bond

1 yield used in my CAPM analysis (5.21%) to calculate an indicated equity return of
2 9.95%.

3
4 I used a 30-year Treasury bond to indicate the risk free rate due to the fact that it
5 incorporates the long-term inflationary expectations without the need to adjust for
6 default risk differentials as when a corporate bond is used. The long-term Treasury
7 bond yield is a more appropriate measure of a risk free rate than a short-term bond.
8 The return on equity is based on long-term expectation, even if the investor does not
9 hold the investment long term. Therefore, it is more appropriate to use a long-term
10 bond in developing the risk premium. The long-term government bond does possess
11 interest rate risk. However, this risk will only affect investors if the bond is sold before
12 maturity. The use of a short-term treasury bill may not give an accurate picture of the
13 risk premium as it includes a premium for short-term inflationary expectations rather
14 than the long-term expectations of the long-term Treasury bond. Moreover, short-term
15 treasury bills are volatile in that they are influenced by short-term monetary policies
16 such as a change in the Federal Funds rate.

17
18 **Q How did you use the risk premium analysis in this case?**

19 **A** The risk premium analysis result is used as a check of the 7 other models used in the
20 analyses.

21
22 **Q What is your final recommendation of the appropriate cost of equity capital and
23 weighted average cost of capital?**

24 **A** I recommend the stipulated return on equity capital of 10.9% and weighted average
25 cost of capital of 8.8%, which is the recommended authorized rate of return on rate
26 base (OCA exhibit MLN-9 and Stipulation Exhibit 3). The stipulated cost of equity
27 capital and the resulting weighted average cost of capital are the result of negotiations
28 between parties and are within the range of reasonableness in the OCA analysis.

1 **Q What is the result of your review of the normalizations in the test year presented**
2 **by the Company in this case?**

3 A I reviewed the Company's test year and the normalized results and found that the
4 results of the test year are appropriate. The Company has lengthened its depreciation
5 rates to coincide with its recent debt obligation of 20-years. Lengthening the
6 depreciation of the assets more accurately depicts the life of the assets as well as
7 decreases the annual expenses of the Company and thus produces lower rates for
8 customers. The test year includes normalized results that are in line with the
9 Company's past expenses and known and measurable changes.

10
11 **Q What is the revenue requirement for Pinedale in this case?**

12 A The revenue requirement is stipulated to be a revenue decrease of \$59,202 from that
13 of the test year with current rates (OCA Exhibit MLN-10 and Stipulation Exhibit 1).
14 OCA Exhibit MLN-11 and Stipulation Exhibit 2 illustrates the adjustments made to the
15 revenue, taxes, and return that coincide with the stipulation in this case. All other
16 projections and normalizations presented by the Company in this case are reasonable
17 and prudent and, therefore, have not been adjusted.

18
19 **Q What is the recommended rate design for Pinedale?**

20 A The rate design illustrated in OCA Exhibit MLN-12 and Stipulation Exhibit 4 is the
21 stipulated rate design in this case. Parties have stipulated that this rate design moves
22 toward the cost to serve the rate classes. The fixed charge per month for the all
23 customers is \$10 per month. This is an increase of \$3.75 from the current \$6.25 per
24 month. The new Large Commercial class will consist only of the school system in
25 Pinedale, which has 5 meters. The Large Commercial class is separated from the other
26 customers to recognize the efficiency of service the large volume customer. The total
27 increase in revenues that is attributed to the increase in the customer charge is
28 \$29,250.

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3

Annual Revenue Changes From Fixed Rates					
	Current Revenues		Stipulated Revenues		Change
Residential	\$	48,375	\$	77,400	\$ 29,025
School	\$	375	\$	600	\$ 225
Total Revenue	\$	48,750	\$	78,000	\$ 29,250

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The volumetric portion of rates has been reduced for all customers in this case. The Large Commercial class volumetric charge is reduced from \$5.95 to \$4.00 per decatherm, which decreases the volumetric revenues to the Company by \$38,610. The residential volumetric charge is decreasing from \$5.95 to \$5.24 per decatherm, which decreases the volumetric revenues to the Company by \$49,842. The total decrease in revenues attributed to the change in volumetric rates is \$88,452.

Annual Revenue Changes From Volumetric Rates					
	Current Revenues		Stipulated Revenues		Change
Residential	\$	417,690	\$	367,848	\$ (49,842)
School	\$	117,810	\$	79,200	\$ (38,610)
Total Revenue	\$	535,500	\$	447,048	\$ (88,452)

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The total decrease in revenues is \$59,202 per annum. This decreases the original request of the Company of \$11,232 per annum.

Q How will the rate design effect customer's bills?

A The impact on customer's bills is illustrated in OCA Exhibit MLN-13 and Stipulation Exhibit 5. The average winter residential customer bill will decrease by \$4.82 or 3.38%. The average summer residential customer bill will increase by \$2.74 or 12.30%.

1 The average bill for the Large Commercial class, or school will decrease by \$2,633 or
2 17.10% in the winter and \$293 or 15.94% in the summer. The parties have chosen to
3 illustrate both of these monthly average bill calculations in order to reflect customer
4 bills in two extreme months in the service area.

5
6 **Q Please give a summary of the stipulated recommendations in this case.**

7 **A**The OCA recommends that the Commission approve the stipulation between parties in
8 this case. The parties have agreed that the rates presented in the stipulation are just
9 and reasonable. The parties are also recommending that the Commission approve the
10 stipulated authorized return on rate base of 8.8% and authorized return on equity of
11 10.9%. The parties have further agreed that tariff language will be added that
12 specifically defines the new Large Commercial class and are recommending an
13 effective date for usage on or after December 1, 2003.

14
15 **Q DOES THIS CONCLUDE YOUR TESTIMONY?**

16 **A**Yes it does.