

BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER
Chairman
WILLIAM A. MUNDELL
Commissioner
JEFF HATCH-MILLER
Commissioner
MIKE GLEASON
Commissioner
KRISTIN MAYES
Commissioner

IN THE MATTER OF QWEST)
CORPORATION'S FILING AMENDED)
RENEWED PRICE REGULATION PLAN.)
)
IN THE MATTER OF THE INVESTIGATION OF)
THE COST OF TELECOMMUNICATIONS)
ACCESS)
_____)

DOCKET NO. T-01051B-03-0454

DOCKET NO. T-00000D-00-0672

DIRECT

TESTIMONY

OF

JOEL M. REIKER

SENIOR PUBLIC UTILITIES ANALYST

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

NOVEMBER 18, 2004

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
SUMMARY OF TESTIMONY AND RECOMMENDATIONS	2
I. THE COST OF EQUITY	3
Comment on Capital Costs in General	3
Capital Structure and Risk.....	5
Fair and Reasonable Return on Equity	7
Discounted Cash Flow Model Analysis	8
<i>The Constant-Growth DCF</i>	9
<i>The Multi-Stage DCF</i>	17
Capital Asset Pricing Model.....	19
II. FINAL COST OF EQUITY ESTIMATES	23
The Effect of Qwest's Capital Structure on its Cost of Equity.....	24
III. ROE RECCOMENDATION.....	28
IV. COMMENT ON THE DIRECT TESTIMONY OF COMPANY WITNESS PETER C. CUMMINGS.....	29
Mr. Cummings' Decision to Ignore His Telco DCF Estimate.....	30
Mr. Cummings' Capital Structure/Financial Risk Adjustment.....	34
V. CONCLUSION.....	37

SCHEDULES

Summary of Cost of Equity Estimates.....	JR-1
Sample Telcos.....	JR-2
DCF and CAPM Cost of Equity Estimates for Sample Telcos	JR-3
Capital Structures of Sample Telcos.....	JR-4
Growth in Earnings and Dividends of Sample Telcos.....	JR-5
Intrinsic Growth of Sample Telcos	JR-6
Selected Financial Data of Sample Telcos.....	JR-7
Expected Infinite Annual Dividend Growth Sample Telcos	JR-8
Multi-Stage DCF Estimates for Sample Telcos.....	JR-9
Calculation of Unlevered Beta for Sample Telcos	JR-10
Calculation of Relevered Beta for Sample Telcos.....	JR-11
Calculation of Capital Structure/Financial Risk Adjustment for Sample Telcos	JR-12
Non-Telcos.....	JR-13

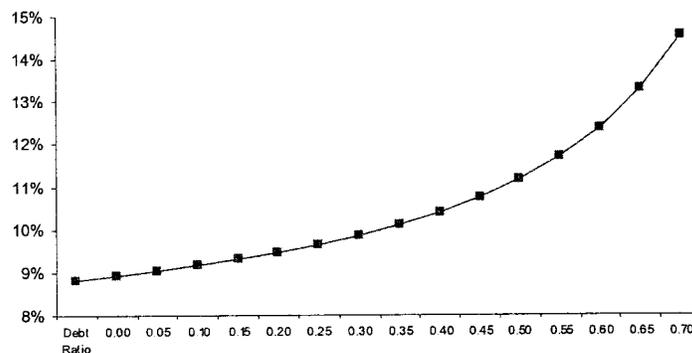
DCF and CAPM Cost of Equity Estimates for Non-Telcos	JR-14
Capital Structures of Non-Telcos.....	JR-15
Growth in Earnings and Dividends of Non-Telcos.....	JR-16
Intrinsic Growth of Non-Telcos.....	JR-17
Selected Financial Data of Non-Telcos	JR-18
Expected Infinite Annual Dividend Growth Non-Telcos	JR-19
Multi-Stage DCF Estimates for Non-Telcos.....	JR-20
Calculation of Unlevered Beta for Non-Telcos	JR-21
Calculation of Relevered Beta for Non-Telcos.....	JR-22
Calculation of Capital Structure/Financial Risk Adjustment for Non-Telcos	JR-23
Corrections to Mr. Cummings' Capital Structure/Financial Risk Adjustment.....	JR-24

Executive Summary

The direct testimony of Staff witness Joel M. Reiker addresses the following issues:

Cost of Equity – Staff recommends the Commission adopt a 14.6 percent return on equity (“ROE”) for Qwest. Staff bases its ROE recommendation on its discounted cash flow (“DCF”) and capital asset pricing model (“CAPM”) analyses. Staff’s recommendation is based on cost of equity estimates ranging from 9.5 percent to 12.0 percent, with a capital structure/financial risk adjuster of +3.7%. Staff’s ROE recommendation is dependent upon the capital structure adopted by the Commission for Qwest in this proceeding. Because the cost of equity increases with the use of debt, and Qwest has a higher debt ratio than other comparable telecommunications services companies on average, Qwest has a higher cost of equity than those companies. The following chart shows Staff’s estimate of the current relationship between Qwest’s cost of equity and its debt ratio:

Chart 3: Qwest’s Cost of Equity & Leverage



Staff’s ROE recommendation assumes the Commission will adopt a capital structure consisting of approximately 75 percent debt.

Comment on the Direct Testimony of Company Witness Peter C. Cummings - The Commission should reject Mr. Cummings’ proposed ROE of 21.4 percent for the following reasons:

Mr. Cummings’s capital structure/financial risk adjustment should be rejected because Mr. Cummings fails to “de-adjust” his beta estimates before unlevering and relevering them, and he uses the market value of equity to unlever beta, but uses a book value of equity to relever beta, creating a mismatch. After correcting these errors in Mr. Cummings’ analysis and giving equal weight to his telco DCF cost of equity estimate, Mr. Cummings analysis supports a cost of equity/authorized ROE for Qwest of 14.3 percent, not 21.4 percent.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Joel M. Reiker. I am a Senior Regulatory Analyst employed by the Arizona
4 Corporation Commission (“ACC” or “Commission”) in the Utilities Division (“Staff”).
5 My business address is 1200 West Washington Street, Phoenix, Arizona 85007.
6

7 **Q. Briefly describe your responsibilities as a Senior Regulatory Analyst.**

8 A. In my capacity as a Senior Regulatory Analyst, I perform studies to estimate the cost of
9 capital for utilities that are seeking rate relief. I also provide recommendations to the
10 Commission on mergers, acquisitions, financings, and sales of assets, and I have
11 occasionally acted as arbitrator in disputes brought before the Utilities Division.
12

13 **Q. Please describe your educational background and professional experience.**

14 A. In 1998, I graduated cum laude from Arizona State University, receiving a Bachelor of
15 Science degree in Global Business with a specialization in finance. My course of studies
16 included classes in corporate and international finance, investments, accounting, statistics,
17 and economics. I began employment as a Staff rate analyst in 1999. Since that time, I
18 have attended various classes on general regulatory and business issues, including the cost
19 of capital and the use of energy derivatives. In 2004, I attended the National Association
20 of Regulatory Utility Commissioners and the Institute of Public Utilities’ Annual
21 Regulatory Studies Program at Michigan State University.
22

23 **Q. What is the scope of your testimony in this case?**

1 A. I provide Staff's recommended rate of return on common equity (ROE) in this case.
2 Staff's recommended ROE is an estimate of Qwest Corporation's ("Qwest") cost of
3 equity.
4

5 **SUMMARY OF TESTIMONY AND RECOMMENDATIONS**

6 **Q. Briefly summarize how Staff's cost of equity testimony is organized.**

7 A. Staff's cost of equity testimony is organized into four sections. Section I discusses risk
8 and presents Staff's cost of equity capital analysis that uses the discounted cash flow
9 ("DCF") model and the capital asset pricing model ("CAPM"). Section II presents Staff's
10 final cost of equity estimates and discusses the effect of Qwest's capital structure on its
11 cost of equity. Section III presents Staff's return on equity ("ROE") recommendation.
12 Finally, Staff's comments on the Company's proposed ROE are presented in section IV.
13

14 **Q. Have you prepared any exhibits to your testimony?**

15 A. Yes. I prepared twenty-four schedules (JR-1 to JR-24) that support Staff's cost of equity
16 analysis.
17

18 **Q. What ROE Does Staff recommend?**

19 A. Staff recommends a 14.6 percent ROE.
20

21 **Q. Does Staff's ROE recommendation depend on the capital structure that is adopted?**

22 A. Yes. As Staff explains later in this testimony, the cost of equity decreases as leverage (the
23 percentage of debt in a capital structure) decreases. Therefore, Staff's recommended ROE
24 is *only* valid if the Commission adopts Staff's recommended capital structure of
25 approximately 75 percent debt and 25 percent equity.

1 **I. THE COST OF EQUITY**

2 **Comment on Capital Costs in General**

3 **Q. What has been the general trend of capital costs in recent years?**

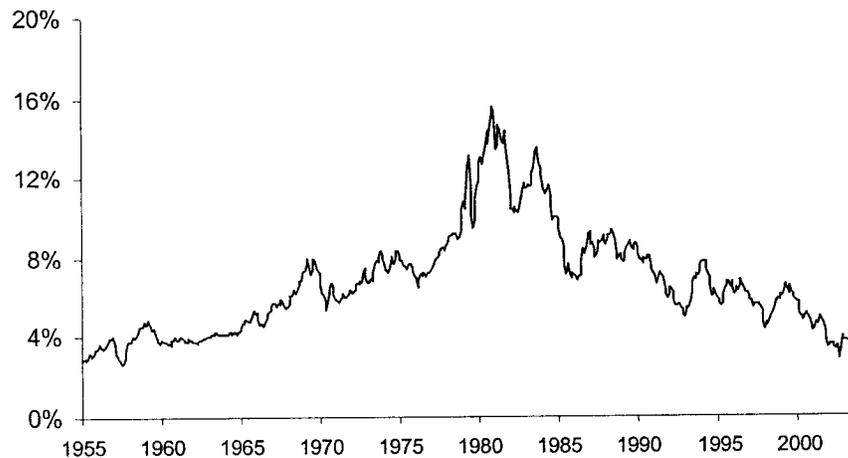
4 A. Interest rates have declined in recent years. Chart 1 graphs intermediate-term U.S.
5 Treasury rates from November 1999 to August 2004:

6 **Chart 1: Average Yield on 5-, 7-, & 10-Year Treasuries**



15 The following graph puts interest rates and capital costs in general, into historical
16 perspective. Interest rates have declined significantly in the past twenty years and are
17 currently at levels comparable to the 1950's and '60's.

18 **Chart 2: History of 5- and 10-Year Treasury Yields**



1 According to the capital asset pricing model, the cost of equity moves in the same
2 direction as interest rates. Chart 2 suggests that capital costs, including the cost of equity,
3 are quite low compared to recent history.

4
5 **Q. What is the effect of recently passed tax legislation on investors' required return on**
6 **stocks?**

7 A. The Jobs and Growth Tax Relief Reconciliation Act of 2003, which was signed on May
8 28, 2003, reduced the income tax rates on both capital gains and common stock dividends,
9 lowering required pre-tax stock returns.

10
11 **Q. What have historical returns been for average risk securities?**

12 A. Wharton School finance professor Jeremy Siegel published his findings that the average
13 compound and arithmetic annual returns on U.S. equities have been 8.3 percent and 9.7
14 percent, respectively, using 199 years of data from 1802 through 2001.¹

15
16 One should keep in mind that the above returns are actual returns, not expected returns
17 (which the cost of equity represents.) However, any request for an allowed ROE at or
18 above 10.0 percent exceeds the compound and arithmetic average historical return on U.S.
19 equities for the period mentioned above. The risk of a regulated public utility, as
20 measured by the capital asset pricing model beta, is typically below the theoretical average
21 beta for all stocks of 1.0. I discuss the average beta (1.00) of six publicly-traded local
22 telecommunications service providers later.

23

¹ Siegel, Jeremy J. *Stocks for the Long Run*, third edition. McGraw-Hill, New York. 2002. p.13.

1 **Q. Have investment professionals estimated the expected long-run return for equities in**
2 **general?**

3 A. Yes. In a 2003 *Journal of Portfolio Management* article, Antii Ilmanen, a Managing
4 Director of Citigroup, estimated future long-term stock returns in general to range from 5
5 percent to 8 percent.² In 2002, Dimson, Marsh, and Staunton published their estimate of
6 the long-run expected real return on global equities of 7 percent.³

7
8 **Capital Structure and Risk**

9 **Q. How is risk defined?**

10 A. Modern portfolio theory ("MPT") separates risk into two categories; market risk and
11 unique risk. Market risk is defined as the sensitivity of an investment's returns to market
12 returns. Market risk, also known as systematic risk, is the risk related to economy-wide
13 perils that threaten all businesses such as changes in interest rates, inflation, and general
14 business cycles. Market risk is the only type of risk that affects the cost of equity. The
15 most prevalent measure of market risk is "beta." Beta is the measurement of an
16 investment's market risk, and it reflects both the business risk and financial risk of a firm.

17
18 Unique risk, or firm-specific risk, is risk that can be eliminated by portfolio
19 diversification, i.e. buying securities in portfolios. Unique risk is not measured by beta
20 nor does it factor into the cost of equity because it can be eliminated through simple
21 shareholder diversification. Unique risks are peculiar to an individual company or
22 investment project. Investors who hold diversified portfolios do not require additional
23 return for unique risk; therefore, it does not affect the cost of capital. Additionally,

² Ilmanen, Antii. "Expected Returns on Stocks and Bonds." *Journal of Portfolio Management*. Winter 2003.

³ Dimson, Elroy, Marsh, Paul, and Mike Staunton. *Triumph of the Optimists*. 2002. Princeton University Press. p. 214.

1 investors who choose to be less than fully diversified cannot expect to be compensated for
2 unique risk, as it can be easily (and virtually costlessly) eliminated.

3
4 **Q. Please distinguish between business risk and financial risk.**

5 A. Business risk is the risk associated with the fluctuation in earnings before interest and
6 other fixed security obligations due to the basic nature of a firm's business. To the extent
7 a firm's earnings are affected by overall macroeconomic activity, its beta and cost of
8 equity will be affected.

9
10 Financial risk is the risk to shareholders caused by a firm's reliance on debt financing.
11 When a firm uses debt to finance its assets; demand, operating costs, and earnings before
12 interest and taxes are not affected. However, the fixed interest obligations associated with
13 debt increases the uncertainty of after-interest earnings. Hence, beta reflects both the
14 business risk and financial risk of the firm.

15
16 **Q. What is the relationship between the capital structure and financial risk?**

17 A. A greater percentage of debt in a capital structure results in a higher level of financial risk.

18
19 **Q. How does Qwest's capital structure compare to capital structures of publicly traded
20 local telecommunications service providers?**

21 A. Schedule JR-4 shows the capital structures of six publicly traded local telecommunications
22 service providers ("sample telcos") as of the first quarter of 2004, as well as Qwest's
23 capital structure. As of March 2004, the sample telcos were capitalized with
24 approximately 49 percent debt and 51 percent equity, while Qwest's capital structure
25 consists of approximately 75 percent debt and only 25 percent equity. Shareholders bear

1 financial risk to the extent a company uses debt to finance assets. Qwest's shareholders
2 bear a significantly greater amount of financial risk than shareholders in the sample telcos.
3 Staff addresses the effect of Qwest's capital structure on its cost of equity later in this
4 testimony.

5
6 **Fair and Reasonable Return on Equity**

7 **Q. Define the term "cost of equity."**

8 A. A firm's cost of equity is that rate of return that investors expect to earn on their equity
9 investment given the risk of the firm. An investor's expected return is equally defined as
10 the return on equity that she expects on other investments of similar risk.

11
12 **Q. What models did Staff use to estimate Qwest's cost of equity?**

13 A. The cost of equity is determined by the market. Therefore, Staff used two market-based
14 models: the discounted cash flow ("DCF") model and the capital asset pricing model
15 ("CAPM"). Staff applied these two models to publicly traded stocks to estimate Qwest's
16 cost of equity.

17
18 **Q. Did Staff apply the DCF model and the CAPM to Qwest directly?**

19 A. No, Staff did not apply the models directly to Qwest because Qwest Corporation does not
20 have publicly traded stock, and Staff therefore lacks the information necessary to apply
21 the market-based models. Staff used a sample of publicly traded local
22 telecommunications service providers as a proxy.

23
24 **Q. What companies did Staff select as proxies or comparables for Qwest?**

1 A. Staff selected the six sample telcos shown in Schedule JR-2. These companies are
2 followed by *The Value Line Investment Survey* ("Value Line") and are the same
3 companies used by Qwest in its cost of equity analysis.
4

5 **Discounted Cash Flow Model Analysis**

6 **Q. Please provide a brief summary of the theory upon which the DCF method of**
7 **estimating the cost of equity is based.**

8 A. The DCF method of estimating the cost of equity is based upon the theory that the market
9 price of a stock is equal to the present value of all expected future dividends. Through a
10 mathematical restatement, the discount rate, or cost of capital, can be derived from the
11 expected dividend, the stock price, and a dividend growth rate. The formula is generally
12 applied to a sample of companies that exhibit similar risk to the company in question, and
13 the resulting estimates for the discount rates (or costs of equity) are then averaged.
14

15 Use of the DCF method for estimating the cost of equity to a public utility was pioneered
16 by Professor Myron Gordon in the 1960's, and it has become the most widely used model.
17 In 1998, Professor Gordon said the following about the simplicity of his model when he
18 gave the keynote Address at the 30th Financial Forum of the Society of Utility and
19 Regulatory Financial Analysts:

20
21 On its simplicity, the model made it extremely difficult, if not
22 impossible, for a banker from Goldman Sachs or some other Wall
23 Street firm, or for a finance professor from a prestige university to
24 use the authority of his/her position to make extravagant claims
25 before a regulatory agency. An independent expert or a member of
26 a commission staff with far less impressive credentials could

1 politely, firmly and effectively deflate any bombast in their
2 testimony.⁴

3
4 **Q. How did Staff apply the DCF Model?**

5 A Staff applied the DCF model using two different approaches. Staff's first approach used
6 the constant-growth DCF model. Staff's second approach was to use a non-constant
7 growth, or multi-stage DCF. The advantage of the multi-stage DCF is that it does not
8 assume that dividends grow at a constant rate over time.

9
10 *The Constant-Growth DCF*

11 **Q. What is the constant-growth DCF formula used in Staff's analysis?**

12 A. The constant-growth DCF formula used in Staff's analysis is:

Equation 1:

$$K = \frac{D_1}{P_0} + g$$

where : K = the cost of equity
 D₁ = the expected annual dividend
 P₀ = the current stock price
 g = the expected infinite annual growth rate of dividends

13
14 The constant-growth DCF model shown in Equation 1 assumes that a company has a
15 constant payout ratio and that its earnings are expected to grow at a constant rate. Thus, if
16 a stock has a market price of \$5 per share, an expected annual dividend of \$.25 per share,
17 and if its dividends were expected to grow 3 percent per year, then the cost of equity to the

⁴ Gordon, M. J. Keynote Address at the 30th Financial Forum of the Society of Utility and Regulatory Financial Analysts. May 8, 1998. Transparency 2.

1 company would be 8.0 percent (the 5 percent dividend yield plus the growth rate of 3
2 percent per year).

3
4 **Q. How did Staff calculate the dividend yield component (D_1/P_0) of the constant-growth**
5 **DCF formula?**

6 A. Staff calculated the yield component of the DCF formula by dividing the expected annual
7 dividend by the spot stock price after the close of the market on August 18, 2004, as
8 reported by Yahoo Finance. Staff's estimate of the average expected dividend yield for
9 the sample telcos is 4.1 percent (see Schedule JR-3).

10
11 Staff used the spot stock price because it reflects all publicly available information.
12 According to the efficient markets hypothesis, the current stock price includes investors'
13 expectations of future returns and is the best indicator of these expectations.

14
15 **Q. How did Staff estimate the dividend growth (g) component of the DCF model?**

16 A. The DCF model is predicated on dividend growth, as shown by Equation 1. Therefore,
17 Staff examined a combination of historical dividends per share ("DPS") growth and
18 projections of future DPS growth provided by Value Line. Staff also examined historical
19 and projected growth in earnings per share ("EPS") as well as "intrinsic" growth.

20
21 **Q. How did Staff estimate DPS growth?**

22 A. Staff estimated historical DPS growth by calculating the average rate of growth in
23 dividends per share of the sample telcos from 1998 to 2003. The results of the analysis

1 are shown in Schedule JR-5. Staff's analysis indicates an average historical DPS growth
2 rate of 4.3 percent for the sample telcos.

3
4 **Q. What DPS growth rate does Value Line project for the sample companies?**

5 A. Value Line projects a 5.4 percent DPS growth rate for the sample telcos, shown in
6 Schedule JR-5.

7
8 **Q. Why did Staff examine EPS growth to estimate the expected dividend growth
9 component of the constant-growth DCF model?**

10 A. Staff examined EPS growth because dividend growth does not occur independently of
11 earnings. It would be virtually impossible for dividend growth to exceed earnings growth
12 over the long run, as it would ultimately lead to payout ratios in excess of 100 percent,
13 which are not sustainable. Therefore, Staff considered historical and projected growth in
14 EPS in estimating expected dividend growth.

15
16 **Q. What is Staff's historical EPS growth rate?**

17 A. Schedule JR-5 shows Staff's historical average rate of growth in EPS for the sample
18 telcos. Staff's average historical EPS growth rate for the period 1998 to 2003 is 3.6
19 percent for the sample telcos.

20
21 **Q. What EPS growth rate does Value Line project?**

22 A. Value Line projects a 6.1 percent EPS growth rate for the sample telcos, also shown in
23 Schedule JR-5.

24

1 One should note that analysts' projections of future earnings are generally high,⁵ and vary
2 widely depending on the source.

3
4 **Q. How did Staff calculate intrinsic growth?**

5 A. Intrinsic growth is the sum of the retention growth rate term, *br*, and the stock financing
6 growth rate term, *vs*. These terms are discussed below.

7
8 **Q. What is retention growth?**

9 A. Retention growth is simply the product of the percentage of earnings retained by the
10 company ("retention ratio") and the book/accounting return on equity. This concept is
11 based upon the theory that dividend growth can only be achieved if a company retains and
12 reinvests a portion of its earnings in itself to earn a return.

13
14 **Q. What is the formula for the retention growth rate?**

15 A. The retention growth rate formula is:

16
Equation 2 :

$$g = br$$

where : g = retention growth
 b = the retention ratio (1 – dividend payout ratio)
 r = the accounting/book return on common equity

17

⁵ See Seigel, Jeremy J. Stocks for the Long Run. 2002. McGraw-Hill. New York. p. 100. Malkiel, Burton G. A Random Walk Down Wall Street. 1999. W.W. Norton & Co. New York. p. 169. Dreman, David. Contrarian Investment Strategies: The Next Generation. 1998. Simon & Schuster. New York. pp. 97-98. Testimony of Professors Myron J. Gordon and Lawrence I. Gould, consultant to the Trial Staff (Common Carrier Bureau), FCC Docket 79-63, p. 95.

1 **Q. What retention (*br*) growth rate did Staff calculate for the sample telcos?**

2 A. Staff calculated an average retention (*br*) growth rate of 9.6 percent for the sample telcos,
3 as shown in Schedule JR-6. Staff calculated the rate by averaging the retention growth
4 rate for the five years 1999 to 2003.

5
6 **Q. Does Value Line project retention growth?**

7 A. Yes. Value Line projects a 7.8 percent retention growth rate for the sample telcos for the
8 2007 - 2009 period.

9
10 **Q. Under what circumstances is the *br* growth rate method a reasonable estimate of
11 future dividend growth?**

12 A. The *br* growth rate is a reasonable estimate of future dividend growth if the retention ratio
13 is fairly constant and if the market price to book value ("market-to-book") ratio is
14 expected to equal 1.0. The average retention ratio of the sample telcos has remained
15 relatively stable over the past several years. However, the average market-to-book ratio of
16 the sample telcos is 2.3. (See Schedule JR-7.) Staff assumes that investors expect the
17 market-to-book ratio to remain above 1.0.

18
19 **Q. What is the financial implication of a market-to-book ratio greater than 1.0?**

20 A. The implication is that investors expect the sample telcos to earn book/accounting returns
21 on equity greater than the companies' costs of equity.

22
23 **Q. How has Staff accounted for the assumption that investors expect the average
24 market-to-book ratio of the sample telcos to remain above 1.0?**

1 A. Staff adjusted the *br* growth rate to account for the assumption that investors expect the
2 average market-to-book ratio of the sample telcos to remain above 1.0 by adding a second
3 growth term to its *br* growth rate to arrive at the “intrinsic” growth rate.

4

5 **Q. What is the second growth term Staff used to account for the assumption that**
6 **investors expect the average market-to-book ratio of the sample telcos to remain**
7 **above 1.0?**

8 A. The second growth term, derived by Myron Gordon in his book, *The Cost of Capital to a*
9 *Public Utility*⁶, is found by multiplying a variable, *v*, by another variable, *s*. Staff will
10 refer to the product of *v* and *s* as the *vs*, or stock financing growth term. The *vs* growth
11 term represents the company’s dividend growth through the sale of stock.

12

13 **Q. What does the variable *v* represent and how is it calculated?**

14 A. The variable *v* represents the fraction of the funds raised from common stock sales that
15 accrues to existing shareholders. It is calculated as follows:

16

Equation 3 :

$$v = 1 - \left(\frac{\text{book value}}{\text{market value}} \right)$$

17

18 For example, if a share of stock with a \$10 book value is selling for \$13, the *v* term would
19 equal 0.23 (calculated as 1-[\$10/\$13]).

20

21 **Q. What does the variable *s* represent and how is it calculated?**

⁶ Gordon, Myron J. *The Cost of Capital to a Public Utility*. MSU Public Utilities Studies, Michigan, 1974. pp 31-35.

1 A. The variable s represents the expected rate of increase in common equity from stock sales.
2 For example, if a company has \$100 in equity and it sells \$10 of stock then s would equal
3 10 percent ($\$10/\100).
4

5 **Q. How does the νs term work?**

6 A. When a utility is expected to earn a book/accounting return equal to its cost of equity, its
7 market price will equal its book value and ν will equal zero (0.0) (calculated as $1 -$
8 $(\$10/\$10)$). If a utility is expected to earn more than its cost of equity, then its market-to-
9 book ratio will be greater than 1.0. When new shares are sold and the market-to-book
10 ratio is greater than 1.0 causing ν to be positive, then the book value per share of
11 outstanding stock is less than the per share contributions of new shareholders. The per-
12 share contribution in excess of book value per share accrues to the old shareholders in the
13 form of a higher book value. The resulting higher book value leads to higher expected
14 earnings and dividends. Thus, the growth term in the basic DCF model should include the
15 νs growth term when the market-to-book ratio is not expected to equal 1.0. Staff's νs
16 growth term for each of the sample telcos is shown in Schedule JR-6.
17

18 **Q. Shouldn't utilities' market-to-book ratios fall to 1.0 if their authorized ROEs are set**
19 **equal to their costs of equity?**

20 A. Yes. Utilities' market-to-book ratios should fall to 1.0, in theory, making the νs term
21 unnecessary. Setting the authorized return on equity for a utility equal to its cost of equity
22 should eventually result in a market price for that utility equal to its book value. In
23 principle, then, the νs term is unnecessary in the long run. In reality, rate orders do not
24 force market-to-book ratios to 1.0 for a variety of reasons. For example, regulatory
25 commissions do not issue orders simultaneously for multi-jurisdictional utilities, and a

1 company may have earnings that are unregulated. Therefore, Staff included the *vs* growth
2 term in its DCF analysis, even though the resulting growth rate estimate might be too high.
3 Staff's resulting estimates are too high to the extent that investors expect the sample's
4 average market-to-book ratio to fall to 1.0 because of falling authorized ROEs.

5
6 **Q. What is Staff's intrinsic growth rate and how was it calculated?**

7 A. Schedule JR-6 shows Staff's estimate of the intrinsic growth rate for the sample telcos.
8 Staff's intrinsic growth rate is 11.2 percent using historical retention growth and 9.5
9 percent using retention growth projected by Value Line. The intrinsic growth rate was
10 calculated by adding the *br* and *vs* growth rates.

11
12 **Q. What is Staff's expected infinite annual growth rate in dividends?**

13 A. Schedule JR-8 shows Staff's calculation of expected dividend growth. Staff's estimate of
14 the expected annual dividend growth rate is also shown in the following table:

15
16 **Table 1**

Growth Rate	g
Historical Dividends Per Share	4.3%
Projected Dividends Per Share	5.4%
Historical Earnings Per Share	3.6%
Projected Earnings Per Share	6.1%
Historical Intrinsic Growth	11.2%
Projected Intrinsic Growth	9.5%
Average	6.7%

1 **Q. What is the result of Staff's constant-growth DCF analysis?**

2 A. Schedule JR-3 shows the result of Staff's constant-growth DCF analysis. Staff's constant-
3 growth DCF cost of equity estimate is also shown below:

4
5 **Table 2**

D_1/P_0	+	g	=	k
4.1%	+	6.7%	=	10.8%

6
7 *The Multi-Stage DCF*

8 **Q. What is the multi-stage DCF formula?**

9 A. The multi-stage DCF formula is shown in the following equation:

10 Equation 4 :

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)} \right]^n$$

Where: P_0 = current stock price
 D_t = dividends expected during stage 1
 K = cost of equity
 n = years of non - constant growth
 D_n = dividend expected in year n
 g_n = constant rate of growth expected after year n

11
12 The multi-stage DCF model shown above incorporates at least two growth rates. It
13 assumes that investors expect a certain rate of non-constant dividend growth in the near
14 term known as "stage-1 growth", as well as a longer-term constant rate of growth known
15 as "stage-2 growth."

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

Q. How did Staff implement the multi-stage DCF model?

A. Staff forecasted a stream of dividends and found the cost of equity that equates the present value of the stream to the current stock price for each of the sample telcos, consistent with Equation 4.

Q. How did Staff calculate stage-1 growth?

A. Staff forecasted dividends four years out for each of the sample telcos using expected dividends over the next twelve months for the first year and *Value Line's* projected DPS growth rate for the subsequent three years.

Q. How did Staff estimate stage-2 growth?

A. For stage-2 growth, or constant growth, Staff used the rate of growth in gross domestic product ("GDP") from 1929 to 2003, which is 6.5 percent. Historical growth in GDP is reasonable because it ultimately assumes, in the long-term, that the local telecommunications services industry will neither grow faster, nor slower, than the overall economy.

Q. What is the result of Staff's multi-stage DCF analysis?

A. Staff's multi-stage DCF estimate of the cost of equity to the sample telcos is 9.5 percent as shown in Schedule JR-9.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

Capital Asset Pricing Model

Q. Please describe the capital asset pricing model.

A. The CAPM is the best-known model of risk and return and the most popular method of estimating the cost of equity. The CAPM is the work of Nobel prize-winning economists and provides a method to estimate the risk and expected return on a risky asset. The model concludes that the expected return on a risky asset is equal to the sum of the prevailing risk-free interest rate and the market risk premium adjusted for the riskiness of the investment relative to the market. The critical assumptions of the CAPM can be summed up in the following quote from the book, *The Stock Market: Theories and Evidence*:⁷

The [CAPM] model presents a simple and intuitively appealing picture of financial markets. All investors hold efficient portfolios and all such portfolios move in perfect lockstep with the market. Portfolios differ only in their sensitivity to the market. Prices of all risky assets adjust so that their returns are appropriate, in terms of the model, to their riskiness. This riskiness is measured by a simple statistic, beta, which indicates the sensitivity of the asset to market movements.

⁷ Lorie, James, Mary T. Hamilton. *The Stock Market: Theories and Evidence*. Richard D. Irwin, Inc. Homewood, Illinois. 1973. p. 202.

1 **Q. What is the CAPM formula?**

2 A. The CAPM formula is shown in the following equation:

Equation 5 :

$$K = R_f + \beta (R_m - R_f)$$

where : R_f = risk free rate
 R_m = return on market
 β = beta
 $R_m - R_f$ = market risk premium
 K = expected return

3

4 **Q. How was the CAPM implemented to estimate Qwest's cost of equity?**

5 A. Staff implemented the CAPM on the same sample telcos to which it applied the DCF
6 model.

7

8 **Q. What risk-free rate of interest did Staff estimate?**

9 A. Staff estimated the risk-free rate to be 3.8 percent. The estimate is based upon an average
10 of intermediate-term U.S. Treasury securities' spot rates published in *The Wall Street*
11 *Journal*. Published rates, as determined by the capital markets, are objective, verifiable,
12 and readily available, as opposed to rates published by a forecasting service which are not
13 necessarily objective, and are certainly not necessarily verifiable or readily available.
14 Staff averaged the yields-to-maturity of three intermediate-term⁸ (five-, seven-, and ten-

⁸ The use of intermediate-term securities is based on the theoretical specification that the time to maturity approximates the investor's holding period, and assumes that most investors consider the intermediate time frame (5-10 years) a more appropriate investment horizon. See Reilly, Frank K., and Keith C. Brown. Investment Analysis and Portfolio Management. 2003. South-Western. Mason, OH. p. 439.

1 year) U.S. Treasury securities quoted in the August 19, 2004, edition of *The Wall Street*
2 *Journal*. Intermediate-term rates averaged 3.8 percent.⁹
3

4 **Q. What beta (β) did Staff use?**

5 A. Staff used the average of the Value Line and Merrill Lynch betas for the six sample telcos
6 in its analysis. Column 'J' of Schedule JR-7 shows that the average of the Value Line and
7 Merrill Lynch betas for the sample telcos is 1.00.
8

9 **Q. Please describe the expected market risk premium ($R_m - R_f$).**

10 A. The expected market risk premium is the amount of additional return that investors expect
11 from investing in the market (or an average-risk security) over the risk-free asset.
12

13 **Q. What is Staff's estimate of the expected market risk premium?**

14 A. Staff's estimate for the market risk premium is 7.6 percent to 8.2 percent.
15

16 **Q. How did Staff calculate the expected market risk premium?**

17 A. Two approaches were used. The first approach is an estimate of the historical market risk
18 premium. The second approach is an estimate of the current market risk premium.
19

20 **Q. Please describe Staff's first approach to estimating the market risk premium:**
21 **estimating the historical market risk premium.**

⁹ Average yield on 5-, 7-, and 10-year Treasury notes according to the August 19, 2004, edition of *The Wall Street Journal*: 3.40%, 3.84%, and 4.22%, respectively.

1 A. For the first approach, Staff assumed that the average historical market risk premium is a
2 reasonable estimate of the expected market risk premium. If one consistently uses the
3 long-run average market risk premium to estimate the expected market risk premium, one
4 should, on average, be correct.

5
6 Staff used the historical intermediate-term market risk premium published in Ibbotson
7 Associates' *Stocks, Bonds, Bills and Inflation 2004 Yearbook* for the 78-year period from
8 1926 to 2003. Ibbotson Associates' calculation is the arithmetic average difference
9 between S&P 500 returns and intermediate-term government bond income returns. The
10 78-year period is used to eliminate shorter-term biases while at the same time including
11 unexpected past events including business cycles. Staff's market risk premium estimate
12 using this approach is 7.6 percent.

13
14 **Q. Please describe the second approach to estimating the market risk premium:
15 estimating the current market risk premium.**

16 A. Staff's second approach essentially boils down to inserting a DCF-derived ROE into the
17 CAPM equation, along with a beta and long-term risk-free rate, and solving the CAPM
18 equation for the implied market risk premium. Value Line projects the expected dividend
19 yield (next 12 months) and growth for all dividend-paying stocks under its review.
20 According to the August 13, 2004, edition of Value Line, the expected dividend yield is
21 1.7 percent and the expected annual growth in share price is 11.58 percent.¹⁰ Therefore,
22 the constant-growth DCF estimate of the cost of equity to all dividend-paying stocks

¹⁰ 3 to 5 year price appreciation potential is 55%. $1.55^{3/4} - 1 = 11.58\%$

1 followed by Value Line is 13.28 percent. Using a beta of 1.00 and the current long-term
2 risk-free rate of 5.03 percent, the implied current market risk premium is 8.25 percent.¹¹

3
4 **Q. What are the results of Staff's CAPM analysis?**

5 A. Schedule JR-3 shows the result of Staff's CAPM analysis. Staff's CAPM cost of equity
6 estimate is 11.7 percent.

7
8 **II. FINAL COST OF EQUITY ESTIMATES**

9 **Q. Please summarize the results of Staff's cost of equity analysis.**

10 A. The following table shows the results of Staff's cost of equity analysis:

11
12 **Table 3**

Method	Estimate
Average DCF Estimate	10.2%
Average CAPM Estimate	11.7%
Overall Average	10.9%

13
14 Staff's average estimate of the cost of equity to the sample telcos is 10.9 percent.

15
16 **Q. Did Staff examine any other companies in its cost of equity analysis?**

17 A. Yes. As a reasonableness check, Staff calculated DCF and CAPM estimates of the cost of
18 equity to a sample of twenty-five non-telecommunications companies ("non-telcos")
19 identified by the Company as "comparable to [Qwest Corporation] in the risk exposure

¹¹ 13.28% = 5.03% + 1.00 x (current market risk premium); 8.25% = current market risk premium (decimals may not match due to rounding.)

A long-term rate is used here because the constant-growth DCF model does not assume a holding period other than infinity. Therefore, a long-term risk-free rate is used for consistency.

1 offered to investors.” (See direct testimony of Peter C. Cummings. P. 32 at 1 – 14.)¹²
2 Staff’s average estimate of the cost of equity to the non-telcos is 10.8 percent, shown in
3 Schedule JR-14.
4

5 **The Effect of Qwest’s Capital Structure on its Cost of Equity**

6 **Q. Does Qwest’s cost of equity depend on its capital structure?**

7 A. Yes. As a company increases leverage (debt) its cost of equity goes up lockstep with beta.
8 The average capital structure of the sample telcos consists of approximately 49 percent
9 debt. As mentioned previously, Qwest’s capital structure is composed of 75 percent debt.
10 Therefore, Qwest’s shareholders bear a significantly greater amount of financial risk and
11 require a higher return on their equity investment.
12

13 **Q. Is there an accepted formula by which the effect of Qwest’s capital structure on its**
14 **cost of equity can be estimated?**

15 A. Yes. The effect that a company’s capital structure has on its cost of equity can be
16 estimated by using the methodology developed by Professor Robert Hamada of the
17 University of Chicago, which incorporates capital structure theory with the CAPM.
18

19 **Q. Please explain this methodology.**

20 A. The Value Line and Merrill Lynch betas for the sample telcos are “levered” betas – they
21 reflect investors’ perceptions of both the business risks and financial risks of the firms. In
22 other words, one portion of the levered beta is related to the business risk of the firm and
23 one portion of the levered beta is related to the financial risk of that firm. We already
24 know the capital structures and levered beta for each of the sample telcos. Therefore, if

¹² Staff eliminated companies not followed by Value Line and companies with negative equity.

1 we remove from each firm's beta that portion of risk related to the use of debt, we can
2 estimate what the firm's beta would be if it were financed entirely with equity capital.
3 This is known as the "unlevered" beta. The following equation is used to estimate the
4 unlevered beta for a firm:

$$\beta_{UL} = \frac{\beta_L}{1 + BD \div EC (1-t)}$$

5
6
7
8 Where:

9 β_{UL} = unlevered beta

10 β_L = levered beta

11 BD = book debt

12 EC = equity capital

13 t = tax rate

14
15 **Q. Did Staff calculate unlevered betas for the sample telcos?**

16 A. Yes. Schedule JR-10 shows how Staff calculated the unlevered beta for each of the
17 sample telcos. The following table shows that the average raw beta¹³ of the sample telcos
18 decreases from .98 to .59 with the removal of all risk related to the use of debt. Therefore,
19 a raw beta of .59 represents investors' perceptions of the business risks associated with the
20 sample telcos. Additionally, .59 represents what the sample telcos' average raw beta
21 would be if they were financed entirely with equity.
22

¹³ Betas published by Value Line and Merrill Lynch have been "adjusted" for their presumed long-term tendency to converge toward 1.0. The adjustment process pushes high betas down toward 1.0 and low betas up toward 1.0. For purposes of calculating the capital structure adjustment to the cost of equity, Staff first "de-adjusted" the Value Line and Merrill Lynch betas to arrive at the "raw" beta, then "readjusted" the raw beta consistent with the methods used by Value Line and Merrill Lynch. The Value Line adjustment formula is [(raw beta x 0.67) + 0.35]. The Merrill Lynch adjustment formula is [(raw beta x 0.66257) + 0.33743].

1

2

3

Table 5

Company	Avg. Value Line/Merrill Lynch (levered) Raw Beta	Unlevered Raw Beta
BellSouth	0.93	0.66
SBC Communications	0.93	0.71
Verizon	0.97	0.51
Alltel	0.89	0.59
CenturyTel Inc.	1.00	0.64
Citizens Communications	1.17	0.40
Average	0.98	0.59

4

5

6

Q. Is there a method by which the unlevered beta can be “relevered” using the capital structure of Qwest to arrive at a beta estimate that is representative of Qwest’s financial risk?

7

8

9

A. Yes. On average, the capital structures of the sample telcos are less leveraged, and reflect less financial risk than Qwest’s capital structure. In order to calculate a beta estimate that is representative of Qwest’s financial risk, the unlevered beta discussed above can be relevered using Qwest’s capital structure. The following formula is used to calculate the relevered beta:

10

11

12

13

14

$$\beta_{RL} = \beta_{UL} (1 + (1-t)BD \div EC)$$

15

16

Where:

17

β_{RL} = relevered beta

18

β_{UL} = unlevered beta

19

t = tax rate

BD = book debt

EC = equity capital

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

Schedule JR-11 shows Staff's calculation of the relevered beta. Staff has calculated the relevered raw beta to be 1.68. When adjusted, the relevered raw beta becomes 1.46.

Q. Can the relevered beta be used to estimate the effect of Qwest's capital structure on its cost of equity?

A Yes. Once the relevered beta has been determined, the CAPM can be used to estimate the impact of Qwest's capital structure on its cost of equity. Schedule JR-12 shows Staff's calculation of the CAPM risk premium ($\beta \times R_p$) using the average Value Line and Merrill Lynch levered beta (lines 1 – 3) as well as the relevered beta of 1.46 (lines 6 – 8) for Qwest's capital structure. Line 10, column D of the same schedule shows the required capital structure adjustment to the cost of equity. This is the simple difference between the risk premium estimate derived from the average Value Line/Merrill Lynch levered beta and the estimate derived from the relevered beta:

Table 6

	β	x	(R_p)	=	$[\beta \times R_p]$
Historical MRP	1.00	x	7.6%	=	7.6%
Current MRP	1.00	x	8.2%	=	8.2%
Average					7.9%
Historical MRP	1.46	x	7.6%	=	11.1%
Current MRP	1.46	x	8.2%	=	12.0%
Average					11.6%
Cap. Struc./Financial Risk Adjustment					3.7%

1 As shown in Table 6, Staff estimates Qwest's cost of equity to be approximately 370 basis
2 points, or 3.7 percent, higher than the average cost of equity to the sample telcos. Based
3 on Staff's estimate of the average cost of equity to the sample telcos of 10.9 percent
4 (Schedule JR-3) and Staff's capital structure/financial risk adjuster for Qwest of 3.7
5 percent, Staff's estimate of Qwest's cost of equity is 14.6 percent (10.9% + 3.7%).
6

7 III. ROE RECCOMENDATION

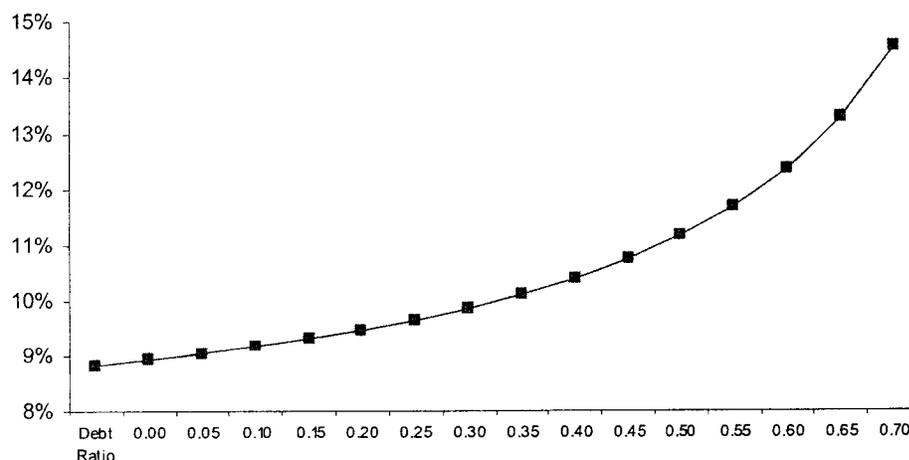
8 **Q. What is Staff's ROE recommendation for Qwest?**

9 A. Staff's estimate of Qwest's cost of equity is 14.6 percent assuming the Commission adopts
10 Qwest's actual capital structure of 75.2 percent debt. Therefore, Staff recommends a ROE
11 of 14.6 percent.
12

13 **Q. Is Staff's ROE recommendation for Qwest dependent upon the capital structure
14 adopted by the Commission?**

15 A. Yes. Because the cost of equity increases with the use of debt, Qwest has a higher cost of
16 equity than the sample telcos, on average. The following chart shows Staff's estimate of
17 the current relationship between Qwest's cost of equity and its debt ratio:
18

19 **Chart 3: Qwest's Cost of Equity & Leverage**



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

Assuming Qwest had a debt ratio of 49 percent (the average debt ratio of the sample telcos) Staff would recommend a ROE of 10.9 percent (the average estimate of the cost of equity to the sample telcos). Additionally, assuming Qwest had no debt, Staff would recommend a ROE of approximately 9.0 percent, just as Chart 3 suggests.

IV. COMMENT ON THE DIRECT TESTIMONY OF COMPANY WITNESS PETER C. CUMMINGS

Q. Please summarize Mr. Cumming’s ROE recommendations, analyses, and estimates.

A. Mr. Cummings recommends a 21.4 percent ROE. He calculates DCF and CAPM estimates of the cost of equity to the same sample of telephone companies used by Staff, as well as the same group of non-telecommunications companies mentioned previously. His results are shown in the following table:

Table 7

Sample	Method	Cost of Equity
		Estimate
Telephone Companies	DCF	7.0%
Telephone Companies	CAPM	12.1%
Non-Telephone Companies	DCF	12.8%
Non-Telephone Companies	CAPM	10.2%

Mr. Cummings eliminates his DCF estimate for the sample telcos (7.0%) as being “at odds with both financial theory and the history of capital markets data.” (See direct testimony of Peter C. Cummings. p. 33 at 20 – 21.) The average of his remaining estimates is 11.7 percent. He ultimately relies on the CAPM by relevering the average beta of both samples

1 (using the Hamada methodology) with Qwest's capital structure to arrive at a cost of
2 equity estimate for Qwest of 21.4 percent.

3
4 **Q. Does Staff disagree with Mr. Cummings' initial cost of equity estimates?**

5 A. No. Mr. Cummings' cost of equity estimates for the sample telcos average 9.6 percent
6 and his cost of equity estimates for the non-telcos average 11.5 percent. The average of
7 all of Mr. Cummings' cost of equity estimates is 10.5 percent. Staff agrees that 10.5
8 percent is a reasonable estimate of the average cost of equity to his sample.

9
10 **Q. Does Staff agree with the methods Mr. Cummings used to arrive at his initial cost of**
11 **equity estimates?**

12 A. No. Staff does not necessarily agree with the methods he uses to arrive at his initial
13 estimates.

14
15 Below, Staff explains why Mr. Cummings should give equal weight to his telco DCF
16 estimate rather than excluding it. Staff also explains how Mr. Cummings' capital
17 structure/financial risk adjustment contains errors which, when corrected, dramatically
18 lower his final cost of equity estimate for Qwest of 21.4 percent.

19
20 **Mr. Cummings' Decision to Ignore His Telco DCF Estimate**

21 **Q. Why does Mr. Cummings ignore his DCF cost of equity estimate for telephone**
22 **companies?**

23 A. According to page 33 of Mr. Cummings' direct testimony:

24
25 The Telephone Companies DCF estimates are clearly an anomaly in
26 the range of data. Even in the current economic environment of
27 narrow yield spreads between corporate debt and U.S. Treasury

1 securities and low interest rates, the Telco DCF equity return estimates
2 are at or near the cost of debt for these firms... In other words, the
3 DCF estimates imply little or no equity risk premium for investment in
4 the common stocks of the telephone companies... Accordingly, I am
5 giving no weight to the Telephone Company DCF estimates. (See
6 direct testimony of Peter C. Cummings. p. 33 at 13 – 22.)

7
8 **Q. Is Mr. Cummings' reason for ignoring his Telco DCF cost of equity estimate valid?**

9 A. No. Mr. Cummings justifies excluding his telco DCF cost of equity estimate by
10 comparing it to corporate bond yields. Mr. Cummings' reasoning is not valid because
11 corporate bond rates cannot meaningfully be compared to the cost of equity. Additionally,
12 evidence shows that Mr. Cummings' telco DCF cost of equity estimate does *not* violate
13 the general rule of thumb that the cost of equity is higher than the yield on debt. Finally,
14 Mr. Cummings's telco DCF cost of equity estimate is consistent with suggestions by
15 financial economists and academics that the current market risk premium is probably
16 lower than the historical market risk premium, and future long-term stock returns in the
17 range of 5 to 8 percent can reasonably be expected.

18
19 **Q. Why can't corporate bond rates be meaningfully compared to the cost of equity?**

20 A. Corporate bond rates cannot meaningfully be compared to the cost of equity because a
21 corporate bond contains some default risk which is diversifiable; therefore, the investor's
22 expected rate of return is lower than the bond's yield to maturity.¹⁴ Professor Laurence
23 Booth of the Rotman School of Management at the University of Toronto explains:

24
25 As for the premium over long term A bond yields, it has to be
26 pointed out here that corporate bonds are default risky. The
27 maximum return you can get from a corporate bond held to
28 maturity is the yield to maturity. Since corporate bonds are default
29 risky, the investor's expected rate of return is significantly lower
30 than the yield to maturity. As a result, *the yield to maturity on a*

¹⁴ Weston, J. Fred, Thomas E. Copeland. *Managerial Finance*. The Dryden Press. 1986. Chicago. Pp. 434 – 435.

1 *corporate bond is not an estimate of the investor's required rate of*
2 *return, and cannot be meaningfully compared to the [cost of*
3 *equity]. Only the yield to maturity on a default free government*
4 *bond is an estimate of a required rate of return, similar to the [cost*
5 *of equity]. This is why all risk comparisons should be to*
6 *government default free bonds, otherwise you mix apples and*
7 *oranges.*¹⁵ [emphasis added]

8
9 Regardless of whether corporate bond rates can meaningfully be compared to the cost of
10 equity, Mr. Cummings' reason for exclusion is not valid because his telco DCF cost of
11 equity estimate does not violate the general rule of thumb that the cost of equity is higher
12 than the yield on debt. Four of the six sample telcos are rated 'A' or higher by Standard &
13 Poor's. According to Value Line, the average yield on A-rated utility bonds for the period
14 March 19, 2004 to April 1, 2004 (the approximate period over which Mr. Cummings
15 estimates the cost of equity) was 5.51 percent – which is approximately 150 basis points
16 lower than Mr. Cummings' Telco DCF cost of equity estimate of 7.0 percent.

17
18 **Q. On page 33 (lines 20 – 22) of his direct testimony Mr. Cummings states that his Telco**
19 **DCF estimate of 7.0 percent is “at odds with... the history of capital markets data.**
20 **Accordingly, I am giving no weight to the Telephone Company DCF estimates.” Is**
21 **this a valid reason for Mr. Cummings to exclude his telco DCF estimate?**

22 A. No. According to Mr. Cummings' schedules the average beta of the telephone companies
23 is 1.01. A 7.0 percent average cost of equity for the telephone companies implies a 3.2
24 percent market risk premium (calculated as $(7.0\% - 3.8\%) / 1.01$). Such a market risk
25 premium is consistent with suggestions by both financial economists and academics that
26 the current equity risk premium is probably lower than the historical equity risk

¹⁵ Booth, Laurence. “The Importance of Market-to-Book Ratios in Regulation.” *NRRI Quarterly Bulletin*. Winter 1997. pp. 415 – 425.

1 premium.¹⁶ For example, Eugene Fama of the University of Chicago and Kenneth French
2 of the Massachusetts Institute of Technology argue that the equity risk premium in the last
3 half of the twentieth century was only 4 percent above Treasury bill rates, and they expect
4 stocks to outperform Treasuries by only 3 percent to 3.5 percent annually in the long
5 term.¹⁷ Mr. Cummings' telco DCF estimate is consistent with the belief among most
6 people who have studied the equity premium closely that "it is probably no more than a
7 few percentage points above Treasury bills."¹⁸

8
9 The Chairman of the United States Federal Reserve, Alan Greenspan, even agrees that the
10 equity risk premium has declined. In 1999, Chairman Greenspan gave a speech before a
11 conference sponsored by the Office of the Comptroller of the Currency in Washington,
12 D.C. in which he stated that the decline in the equity premium over the previous decade
13 was *not* in dispute.¹⁹

14
15 Finally, in Section I of this testimony, Staff cited a 2003 *Journal of Portfolio Management*
16 article in which Antii Ilmanen, a Managing Director of Citigroup, estimated future long-
17 term stock returns in general to range from 5 percent to 8 percent. According to published
18 CAPM betas, telephone companies are about as risky as the average security.

19
20 **Q. What are Mr. Cummings' final cost of equity estimates when his telco DCF estimate**
21 **is given proper weight?**

¹⁶ See Dimson, Elroy. Marsh, Paul & Mike Staunton. *Triumph of the Optimists: 101 Years of Global Investment Returns*. 1st edition. Princeton University Press. 2002. pp. 193. Siegel, Jeremy J. *Stocks for the Long Run*. 3rd edition. McGraw-Hill. 2002. pp. 121 – 122.

¹⁷ Jones, Charles P. *Investments*. 8th edition. 2002. pp. 147 – 148.

¹⁸ Jones. p. 148.

¹⁹ Remarks by Chairman Alan Greenspan before a conference sponsored by the Office of the Comptroller of the Currency, Washington, DC. October 14, 1999.

1 A As stated previously, Mr. Cummings' cost of equity estimates for the telcos average 9.6
2 percent and his cost of equity estimates for the non-telcos average 11.5 percent. The
3 average of all of his cost of equity estimates is 10.5 percent.
4

5 **Mr. Cummings' Capital Structure/Financial Risk Adjustment**

6 **Q. How does Mr. Cummings justify his 21.4 percent ROE recommendation?**

7 A. Mr. Cummings justifies his final ROE recommendation of 21.4 percent by calculating a
8 capital structure/financial risk adjustment using the Hamada methodology, similar to the
9 process Staff used. He unlevers the average beta of the sample telcos and comparable
10 companies and relevers it using Qwest's capital structure. He inserts his relevered beta
11 into the CAPM equation to produce a 21.4 percent cost of equity estimate.
12

13 **Q. Are there problems with Mr. Cummings' capital structure/financial risk
14 adjustment?**

15 A. Yes. There are two problems with Mr. Cummings' capital structure/financial risk
16 adjustment:

- 17 1. Mr. Cummings does not "de-adjust" his beta estimates before unlevering and
18 relevering them.
- 19 2. Mr. Cummings uses the market value of equity to unlever beta, but uses a book
20 value of equity to relever it, creating a mismatch.
21

22 As Staff explains below, correcting these problems dramatically decreases Mr.
23 Cummings' capital structure/financial risk adjustment and his final cost of equity estimate
24 for Qwest.
25

1 **Q. Should published beta estimates be “de-adjusted” before unlevering and relevering**
2 **them?**

3 A. Yes. Beta estimates published by Value Line and Merrill Lynch are “Bayesian” estimates.
4 Bayesian statistics provide a method of formally taking prior, often subjective,
5 information or belief about a parameter (such as the presumed long-term tendency for
6 betas to converge toward 1.0) into account in the estimation procedure.²⁰ De-adjusting
7 beta estimates out of Bayesian mode and back into their classical (and objective) raw
8 estimates gives us the original ordinary least squares (“OLS”) slope, or raw beta. The
9 classical estimate of the raw beta shows us how a particular security moved in relation to
10 the market over some time period. Because the purpose of the Hamada methodology is to
11 estimate how a security *would* have moved in relation to the market given different
12 degrees of leverage, it makes sense to “de-adjust” beta estimates out of Bayesian mode
13 and back into their classical (and objective) raw beta estimates before unlevering and
14 relevering them. After unlevering and relevering raw beta estimates, they can then be “re-
15 adjusted” back into Bayesian mode for comparison with betas published by Value Line
16 and Merrill Lynch.

17
18 **Q. Is it appropriate to unlever beta with a market value of equity and relever it with a**
19 **book value of equity, as Mr. Cummings does?**

20 A. No. It is not appropriate to unlever beta with a market value of equity and relever it with a
21 book value of equity when there is no reasonable basis to assume market values equal
22 book values. Mr. Cummings compares apples to oranges. In Exhibit PCC-3 of his direct
23 testimony Mr. Cummings calculates unlevered beta estimates for his sample companies
24 using capital structures consisting of *market* equity values which are significantly higher

²⁰ Wonnacott, Thomas H., & Ronald J. Wonnacott. *Introductory Statistics for Business and Economics*. 3rd ed. pp. 515, 570.

1 than their book values. He then relevers beta on page 36 of his direct testimony using a
2 *book* equity value for Qwest. This is inappropriate because it makes little intuitive sense
3 to unlever beta with a *market* equity ratio and relevel it with a *book* equity ratio when
4 evidence suggests market values are significantly higher than book values. Mr.
5 Cummings' calculation essentially assumes that if Qwest Corporation were publicly-
6 traded it would have a market-to-book ratio of just 1.0, compared to the average market-
7 to-book ratio of the sample telcos of 2.3, and an average market-to- book ratio of the non-
8 telcos of 11.8.²¹

9
10 **Q. Did Staff correct Mr. Cummings' capital structure/financial risk adjustment for**
11 **these errors?**

12 A. Yes. Schedule JR-24 shows Staff's corrections to Mr. Cummings' capital
13 structure/financial risk adjustment. Column 'U', line 41 of Schedule JR-24 shows Mr.
14 Cummings' relevered beta for Qwest recalculated to incorporate (1) the de-adjusting of
15 published betas before unlevering and relevering them, and (2) the use of book equity
16 values rather than market equity values in the calculation. Mr. Cummings' average
17 relevered beta for Qwest is 1.37 after making these corrections, compared to his original
18 average relevered beta estimate of 2.15. (See direct testimony of Peter C. Cummings. p.
19 36 at 13 – 27.) Inserting this corrected average relevered beta estimate into Mr.
20 Cummings CAPM produces a 15.0 percent CAPM cost of equity estimate.²² This 15.0
21 percent CAPM cost of equity estimate is 380 basis points, or 3.8 percent, higher than Mr.
22 Cummings' initial average CAPM cost of equity estimate for the sample telcos and non-
23 telcos of 11.2 percent. (See direct testimony of Peter C. Cummings. p. 34 at 3 – 4.)

²¹ It should also be noted that Qwest's parent, QCI, has a market value of equity that is substantially greater than its book value.

²² Calculated as $3.8\%(R_f) + 1.37(\beta) \times 8.2\%(R_p)$

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

Q. Can Mr. Cummings' final cost of equity estimate for Qwest of 21.4 percent be corrected?

A. Yes. Adding Mr. Cummings' corrected capital structure/financial risk adjuster of 380 basis points mentioned above, to his average DCF/CAPM cost of equity estimate for the sample telcos and non-telcos of 10.52 percent, produces a final cost of equity estimate for Qwest of 14.3 percent ($10.52\% + 3.8\% = 14.3\%$).

This 14.3 percent cost of equity estimate can, in turn, reasonably be used as the authorized ROE for setting rates for Qwest, assuming the Commission adopts a capital structure for Qwest consisting of approximately 75 percent debt.

V. CONCLUSION

Q. Please summarize your recommendations.

A. Staff recommends the Commission adopt an authorized ROE of 14.6 percent. Staff's ROE recommendation is dependent upon the capital structure adopted by the Commission in this proceeding, and assumes that the Commission will adopt Qwest's actual capital structure consisting of approximately 75 percent debt. Staff recommends the Commission give little weight to the testimony of the Company's witness, Peter C. Cummings. Mr. Cummings' final cost of equity estimate for Qwest and resulting ROE recommendation are demonstrably overstated and should not be relied upon.

Q. Does this conclude your direct testimony?

A. Yes, it does.

Qwest Corporation
 Summary of Cost of Equity Estimates
 Sample Telcos

Line No.	[A] Sample	[B] Methodology	[C] Cost of Equity Estimate	[D] Capital Structure/Financial Risk Adjustment	[E] Final Cost of Equity Estimate
1	Sample Telcos	DCF	10.2%		
2	Sample Telcos	CAPM	11.7%		
3		Average	10.9%	+	
4					
5					
6					
7					
8					
9				=	14.6%

Supporting Schedules: JR-3, JR-12

Qwest Corporation
Cost of Equity Analysis Sample Telcos

	[A]	[B]
Line No.	Sample Telcos	Industry
1	BellSouth	Telecom. Services
2	SBC Communications	Telecom. Services
3	Verizon	Telecom. Services
4	Alltel	Telecom. Services
5	CenturyTel Inc.	Telecom. Services
6	Citizens Communications	Telecom. Services

Qwest Corporation
 Docket No. T-01051B-03-0454

Qwest Corporation
 DCF and CAPM Cost of Equity Estimates
 Sample Telcos

Line No.	[A]	[B]	[C]	[D]	[E]
	DCF Method				
1	Constant Growth DCF Estimate		D_1/P_0	g	k
2	Multi-Stage DCF Estimate		4.1%	6.7%	10.8%
3	Average of DCF Estimates				9.5%
4					10.2%
	CAPM Method				
5	Historical Market Risk Premium	Rf	β	(Rp)	k
6	Current Market Risk Premium	3.8%	1.00	7.6%	11.4%
7		3.8%	1.00	8.2%	12.0%
8	Average of CAPM Estimates				11.7%
9					
10					
11					
12					
13				Average	10.9%

13 Source: The Wall Street Journal, Value Line, Yahoo Finance, Ibbotson Associates SBBI 2004 Yearbook
 14 Supporting Schedules: JR-7, JR-8, JR-9

Qwest Corporation
 Average Capital Structure of Sample Telcos

	[A]	[B]	[C]
Line No.	Company	Debt	Equity
1	BellSouth	39.1%	60.9%
2	SBC Communications	31.8%	68.2%
3	Verizon	56.7%	43.3%
4	Alltel	45.5%	54.5%
5	CenturyTel Inc.	47.3%	52.7%
6	Citizens Communications	75.2%	24.8%
7			
8	Average Sample Telcos	49.3%	50.7%
9			
10	Qwest Corporation	75.2%	24.8%
11			
12			
13			
14			
15			
16			
17			

Source: Value Line, Ramirez Direct Testimony

Qwest Corporation
Growth in Earnings and Dividends
Sample Telcos

[A]	[B]	[C]	[D]	[E]
	Dividends Per Share 1998 to 2003 DPS	Dividends Per Share Projected DPS	Earnings Per Share 1998 to 2003 EPS	Earnings Per Share Projected EPS
1	BellSouth	4.7%	4.9%	3.8%
2	SBC Communications	7.8%	0.4%	2.3%
3	Verizon	0.0%	0.8%	3.1%
4	Alltel	3.8%	4.0%	8.4%
5	CenturyTel Inc.	5.3%	16.9%	5.7%
6	Citizens Communications	n/a	n/a	13.2%
7				
8	Average Sample Telcos	4.3%	5.4%	6.1%
9				
10				
11				
12				

Source: Value Line

Qwest Corporation
 Docket No. T 01051B 03 0454

Qwest Corporation
 Intrinsic Growth
 Sample Telcos

Line No.	[A] Company	[B] Retention Growth 1999 to 2003 br	[C] Retention Growth Projected br	[D] Stock Financing Growth vs	[E] Intrinsic Growth 1999 to 2003 br + vs	[F] Intrinsic Growth Projected br + vs
1	BellSouth	12.1%	8.5%	0.0%	12.1%	8.5%
2	SBC Communications	11.2%	2.5%	0.6%	11.8%	3.1%
3	Verizon	11.9%	9.0%	1.8%	13.7%	10.8%
4	Alltel	8.1%	8.5%	0.3%	8.4%	8.8%
5	CenturyTel Inc.	9.3%	8.5%	0.2%	9.5%	8.7%
6	Citizens Communications	4.8%	10.0%	6.9%	11.7%	16.9%
7						
8	Average Sample Telcos	9.6%	7.8%	1.6%	11.2%	9.5%
9						
10						
11						
12						
13						
14						
15						
16						

Source: Value Line, MSN Money

Qwest Corporation
 Docket No. T-0105 1B-03-0454

Qwest Corporation
 Selected Financial Data of Sample Telcos

Line No.	(A) Company	(B) Symbol	(C) Spot Price 8/18/04	(D) Book Value 8/18/04	(E) Mkt To Book	(F) Merrill Lynch Beta		(G) Merrill Lynch Raw Beta	(H) Value Line Beta	(I) Value Line Raw Beta	(J) Average Merrill Lynch & Value Line Beta	(K) Average Merrill Lynch & Value Line Raw Beta
						Merrill Lynch Beta	Value Line Beta					
1	BellSouth	BLS	27.15	11.70	2.3	0.98	0.95	0.97	0.90	0.97	0.97	0.93
2	SBC Communications	SBC	25.58	11.72	2.2	0.88	1.05	0.82	1.04	0.97	0.97	0.93
3	Verizon	VZ	39.13	12.44	3.1	0.98	1.00	0.97	0.97	0.99	0.99	0.97
4	Alltel	AT	53.92	23.02	2.3	0.88	1.00	0.82	0.97	0.94	0.94	0.89
5	CenturyTel Inc.	CTL	31.55	24.46	1.3	0.92	1.10	0.88	1.12	1.01	1.01	1.00
6	Citizens Communications	CZN	12.45	5.27	2.4	1.25	1.00	1.38	0.97	0.97	1.13	1.17
7												
8	Average				2.3	0.98	1.02	0.97	1.00	1.00	1.00	0.98

10 Source: Yahoo Finance, Value Line, Merrill Lynch

Qwest Corporation
 Docket No. T-0105B-03-0454

Qwest Corporation
 Calculation of Expected Infinite Annual Growth in Dividends
 Sample Telcos

	[A]	[B]
Line No.		9
1	DPS Growth - Historical	4.3%
2	DPS Growth - Projected	5.4%
3	EPS Growth - Historical	3.6%
4	EPS Growth - Projected	6.1%
5	Intrinsic Growth - Historical	11.2%
6	Intrinsic Growth - Projected	9.5%
7		
8	Average	6.7%
9		
10		
11		
12		

Supporting Schedules: JR-5, JR-6

Qwest Corporation
Multi-Stage DCF Estimates
Sample Telcos

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]
Line No.	Current Mkt. Price (P ₀)	Projected Dividends ¹ (stage 1 growth) (D _t)				Stage 2 growth ² (g _n)	Equity Cost Estimate (K)
		d ₁	d ₂	d ₃	d ₄		
1	27.2	1.08	1.12	1.16	1.20	6.5%	10.2%
2	25.6	1.28	1.31	1.34	1.38	6.5%	11.0%
3	39.1	1.54	1.56	1.58	1.60	6.5%	9.9%
4	53.9	1.51	1.57	1.64	1.71	6.5%	9.1%
5	31.6	0.28	0.32	0.37	0.42	6.5%	7.5%
6	12.5	1.00	n/a	n/a	n/a	6.5%	n/a
7						Average	9.5%

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)^n} \right]$$

Where : P₀ = current stock price
 D_t = dividends expected during stage 1
 K = cost of equity
 n = years of non - constant growth
 D_n = dividend expected in year n
 g_n = constant rate of growth expected after year n

¹ d_t = "Estd Div'd next 12 mos." 08/13/2004, Value Line Summary & Index.

² Average annual growth in GDP 1929 - 2003 in current dollars. [http://www.bea.doc.gov/](http://www.bea.doc.gov)

Qwest Corporation
Calculation of Relevered Beta
Sample Telcos

$$\beta_{RL} = \beta_{UL} (1 + (1-t)BD + EC)$$

Where :

- β_{RL} = relevered beta
- β_{UL} = unlevered beta
- t = tax rate
- BD = book debt
- EC = equity capital

Line No.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
	Value Line Unlevered Raw Beta β_{UL}	Merrill Lynch Unlevered Raw Beta β_{UL}	Book Debt BD	Equity Cap EC	Tax Rate t	Value Line Relevered Raw Beta β_{RL}	Merrill Lynch Relevered Raw Beta β_{RL}	Average Value Line & Merrill Lynch Raw Relevered Beta $.35 + .67(\text{Raw Beta})$	Value Line Adjusted Relevered Beta β_{RL}	Merrill Lynch Adjusted Relevered Beta β_{RL}	Average Value Line & Merrill Lynch Adjusted Relevered Beta	
1	Qwest Corporation	0.61	0.57	0.75	38.3%	1.74	1.62	1.68	1.51	1.41	1.46	

Qwest Corporation
Required Capital Structure Adjustment
Sample Telcos

Line No.	[A]	[B]	[C]	[D]
	Sample Telcos Average Levered Beta	β	(Rp)	$[\beta \times Rp]$
1	Historical Market Risk Premium	1.00	7.6%	7.6%
2	Current Market Risk Premium	1.00	8.2%	8.2%
3	Average $[\beta \times Rp]$			7.9%
4				
5	Qwest Corp. Relevered Beta	β	(Rp)	$[\beta \times Rp]$
6	Historical Market Risk Premium	1.46	7.6%	11.1%
7	Current Market Risk Premium	1.46	8.2%	12.0%
8	Average $[\beta \times Rp]$			11.6%
9				
10	Capital Structure/Financial Risk Adjustment (8 - 3)			3.7%
11				
12				
13				
14				
15				

Supporting Schedules: JR-3, JR-11

Qwest Corporation
Cost of Equity Analysis Non-Telcos

[A] [B]

Line No.	Non-Telcos	Industry
1	Abbot Labs	Pharmaceuticals
2	AFLAC	Insurance
3	Air Products	Materials & Chemicals
4	Anheuser Busch	Beverages
5	Auto. Data Proc.	IT Services
6	Barrick Gold	Precious Metals
7	Brown-Forman	Beverages
8	California Water	Water Utility
9	Coca-Cola	Beverages
10	Colgate-Palmolive	Household Products
11	Danaher Corp.	Machinery
12	Ecolab Inc.	Materials & Chemicals
13	Emerson Electric	Electrical Equipment
14	E.W. Scripps	Media
15	Gillette	Personal Products
16	Illinois Tool Works	Machinery
17	Johnson & Johnson	Pharmaceuticals
18	Legget & Platt	Leggett & Platt
19	McDonald's Corp.	Hotels & Restaurants
20	MGIC Investment	Thriffs & Mortgage
21	Sherwin-Williams	Specialty Retail
22	UnitedHealth Grp.	Health Care Providers
23	UST Inc.	Tobacco
24	Vulcan Materials	Construction Materials
25	WPS Resources	Electric Utility

Qwest Corporation
 DCF and CAPM Cost of Equity Estimates
 Non-Telcos

Line No.	[A]	[B]	[C]	[D]	[E]
	DCF Method		D₁/P₀		k
1	Constant Growth DCF Estimate		1.9%	g	14.8%
2	Multi-Stage DCF Estimate			12.8%	8.2%
3	Average of DCF Estimates				11.5%
4					
	CAPM Method	Rf	β	(Rp)	k
5	Historical Market Risk Premium	3.8%	0.79	7.6%	9.8%
6	Current Market Risk Premium	3.8%	0.79	8.2%	10.3%
7	Average of CAPM Estimates				10.0%
8					
9					
10					
11					
12				Average	10.8%

13 Source: The Wall Street Journal, Value Line, Yahoo Finance, Ibbotson Associates S&P 500 2004 Yearbook
 14 Supporting Schedules: JR-18, JR-19, JR-20

Qwest Corporation
 Average Capital Structure of Non-Telcos

Line No.	(A) Company	(B) Debt	(C) Equity
1	Abbot Labs	33.0%	67.0%
2	AFLAC	17.3%	82.7%
3	Air Products	40.5%	59.5%
4	Anheuser Busch	72.1%	27.9%
5	Auto. Data Proc.	1.6%	98.4%
6	Barrick Gold	17.9%	82.1%
7	Brown-Forman	37.2%	62.8%
8	California Water	52.7%	47.3%
9	Coca-Cola	31.0%	69.0%
10	Colgate-Palmolive	89.0%	11.0%
11	Danaher Corp.	24.7%	75.3%
12	Ecolab Inc.	37.3%	62.7%
13	Emerson Electric	39.2%	60.8%
14	E.W. Scripps	19.6%	80.4%
15	Gillette	57.6%	42.4%
16	Illinois Tool Works	11.0%	89.0%
17	Johnson & Johnson	11.3%	88.7%
18	Legget & Platt	34.6%	65.4%
19	McDonald's Corp.	44.3%	55.7%
20	MGIC Investment	13.3%	86.7%
21	Sherwin-Williams	25.6%	74.4%
22	UnitedHealth Grp.	27.9%	72.1%
23	UST Inc.	98.6%	1.4%
24	Vulcan Materials	32.4%	67.6%
25	WPS Resources	46.6%	53.4%
26			
27			
28	Average Company Sample	36.7%	63.3%
29			
30	Qwest Corporation	75.2%	24.8%
31			
32			
33			

Source: Value Line, Ramirez Direct Testimony

Qwest Corporation
Growth in Earnings and Dividends
Non-Telcos

[A]	[B]	[C]	[D]	[E]
	Dividends Per Share 1998 to 2003 DPS	Dividends Per Share Projected DPS	Earnings Per Share 1998 to 2003 EPS	Earnings Per Share Projected EPS
1	10.1%	6.8%	7.9%	8.3%
2	18.2%	14.9%	19.4%	14.1%
3	6.6%	4.4%	0.0%	15.9%
4	9.0%	5.8%	14.3%	8.3%
5	13.0%	7.8%	11.0%	10.9%
6	4.1%	1.8%	-16.5%	13.4%
7	5.3%	4.8%	8.1%	8.1%
8	0.9%	1.0%	-3.6%	11.1%
9	8.0%	10.4%	6.5%	9.7%
10	10.4%	5.9%	13.4%	7.3%
11	10.8%	9.9%	19.3%	12.1%
12	8.8%	9.2%	12.2%	13.0%
13	5.9%	2.3%	-2.7%	10.9%
14	2.9%	9.6%	13.4%	12.8%
15	5.0%	1.8%	1.1%	11.4%
16	12.8%	5.6%	4.8%	16.4%
17	13.7%	11.2%	15.0%	10.8%
18	10.6%	4.2%	-3.3%	12.6%
19	17.3%	3.7%	2.6%	10.0%
20	5.4%	9.0%	7.0%	11.5%
21	6.6%	10.0%	7.6%	11.0%
22	14.9%	32.0%	35.0%	15.9%
23	4.3%	2.8%	3.8%	2.0%
24	7.3%	5.0%	-2.2%	10.6%
25	2.0%	1.8%	9.4%	5.7%
26				
27	8.5%	7.3%	7.3%	11.0%
28				
29				
30				
31				

Source: Value Line

Qwest Corporation
Intrinsic Growth
Non-Telcos

Line No.	[A] Company	[B] Retention Growth 1999 to 2003 br	[C] Retention Growth Projected br	[D] Stock Financing Growth vs	[E] Intrinsic Growth 1999 to 2003 br + vs	[F] Intrinsic Growth Projected br + vs
1	Abbot Labs	18.2%	13.0%	1.2%	19.3%	14.2%
2	AFLAC	11.8%	14.0%	0.4%	12.3%	14.4%
3	Air Products	10.6%	12.0%	1.4%	12.0%	13.4%
4	Anheuser Busch	33.2%	27.5%	2.6%	35.8%	30.1%
5	Auto. Data Proc.	14.4%	23.5%	3.0%	17.3%	26.5%
6	Barrick Gold	4.6%	4.5%	0.4%	5.0%	4.9%
7	Brown-Forman	13.7%	12.5%	0.4%	14.0%	12.9%
8	California Water	1.8%	5.5%	2.5%	4.3%	8.0%
9	Coca-Cola	18.9%	18.0%	1.5%	20.4%	19.5%
10	Colgate-Palmolive	127.3%	25.0%	71.4%	198.7%	96.4%
11	Danaher Corp.	14.4%	14.5%	5.1%	19.5%	19.6%
12	Ecolab Inc.	15.7%	17.0%	3.4%	19.1%	20.4%
13	Emerson Electric	8.7%	10.0%	0.0%	8.7%	10.0%
14	E.W. Scripps	9.7%	11.5%	0.0%	9.7%	11.5%
15	Gillette	24.7%	27.5%	2.9%	27.5%	30.4%
16	Illinois Tool Works	11.5%	14.0%	0.3%	11.8%	14.3%
17	Johnson & Johnson	17.0%	15.0%	1.6%	18.6%	16.6%
18	Legget & Platt	8.1%	7.0%	0.3%	8.4%	7.3%
19	McDonald's Corp.	15.2%	12.0%	0.0%	15.2%	12.0%
20	MGIC Investment	19.7%	12.5%	0.2%	19.9%	12.7%
21	Sherwin-Williams	14.5%	15.0%	1.4%	15.9%	16.4%
22	UnitedHealth Grp.	24.5%	29.0%	4.4%	28.9%	33.4%
23	UST Inc.	48.5%	27.0%	-10.9%	37.7%	16.1%
24	Vulcan Materials	8.7%	9.0%	0.0%	8.8%	9.0%
25	WPS Resources	2.2%	4.0%	4.8%	7.0%	8.8%
26						
27	Average Company Sample	19.9%	15.2%		23.8%	19.2%
28						
29						
30						
31						
32						
33						
34						
35						

Source: Value Line

Qwest Corporation
Selected Financial Data of Non-Telcos

Line No.	[A] Company	[B] Symbol	[C] Spot Price 8/18/04	[D] Book Value 8/18/04	[E] Mkt To Book	[F] Merrill Lynch Beta β	[G] Merrill Lynch		[H] Value Line Beta β	[I] Value Line Raw Beta β_{raw}	[J] Average Merrill Lynch & Value Line Beta β	[K] Average Merrill Lynch & Value Line Raw Beta β_{raw}
							Raw Beta β_{raw}	Beta β				
1	Abbot Labs	ABT	40.59	9.05	4.5	0.53	0.29	0.80	0.67	0.67	0.48	
2	AFLAC	AFL	39.54	14.08	2.8	0.70	0.55	0.95	0.90	0.83	0.72	
3	Air Products	APD	51.99	17.94	2.9	0.90	0.85	0.95	0.90	0.93	0.87	
4	Anheuser Busch	BUD	53.07	3.98	13.3	0.27	-0.10	0.60	0.37	0.44	0.14	
5	Auto. Data Proc.	ADP	40.12	9.04	4.4	1.06	1.09	0.95	0.90	1.01	0.99	
6	Barrick Gold	ABX	19.25	6.54	2.9	n/a	n/a	0.45	0.15	0.45	0.15	
7	Brown-Forman	BFB	45.94	9.85	4.7	n/a	n/a	0.65	0.45	0.65	0.45	
8	California Water	CWT	27.50	15.05	1.8	n/a	n/a	0.70	0.52	0.70	0.52	
9	Coca-Cola	KO	44.57	6.07	7.3	0.53	0.29	0.65	0.45	0.59	0.37	
10	Colgate-Palmolive	CL	52.13	0.86	60.4	0.65	0.47	0.70	0.52	0.68	0.50	
11	Danaher Corp.	DHR	50.20	13.15	3.8	0.90	0.85	1.00	0.97	0.95	0.91	
12	Ecolab Inc.	ECL	30.29	5.42	5.6	0.76	0.64	0.90	0.82	0.83	0.73	
13	Emerson Electric	EMR	62.43	16.26	3.8	0.95	0.92	1.05	1.04	1.00	0.98	
14	E.W. Scripps	SSP	101.15	24.30	4.2	0.68	0.52	0.90	0.82	0.79	0.67	
15	Gillette	G	40.85	2.27	18.0	0.50	0.25	0.65	0.45	0.58	0.35	
16	Illinois Tool Works	ITW	90.97	26.26	3.5	0.91	0.86	1.00	0.97	0.96	0.92	
17	Johnson & Johnson	JNJ	57.03	9.71	5.9	0.51	0.26	0.70	0.52	0.61	0.39	
18	Leggett & Platt	LEG	27.41	11.28	2.4	1.02	1.03	1.05	1.04	1.04	1.04	
19	McDonald's Corp.	MCD	26.48	10.07	2.6	0.86	0.79	1.05	1.04	0.96	0.92	
20	MGIC Investment	MTG	68.50	40.99	1.7	1.01	1.02	1.15	1.19	1.08	1.10	
21	Sherwin-Williams	SHW	39.93	10.85	3.7	0.81	0.71	1.00	0.97	0.91	0.84	
22	UnitedHealth Grp.	UNH	65.07	13.03	5.0	0.54	0.31	0.65	0.45	0.60	0.38	
23	UST Inc.	UST	38.77	0.31	125.1	0.58	0.37	0.90	0.82	0.74	0.59	
24	Vulcan Materials	VMC	47.72	18.52	2.6	0.83	0.74	1.05	1.04	0.94	0.89	
25	WPS Resources	WPS	47.70	28.08	1.7	n/a	n/a	0.75	0.60	0.75	0.60	
26												
27	Average				11.8	0.74	0.60	0.85	0.74	0.79	0.66	
28												
29												

Source: Yahoo Finance, Value Line, Merrill Lynch

Qwest Corporation
 Calculation of Expected Infinite Annual Growth in Dividends
 Non-Telcos

[A]	[B]
	g
DPS Growth - Historical	8.5%
DPS Growth - Projected	7.3%
EPS Growth - Historical	7.3%
EPS Growth - Projected	11.0%
Intrinsic Growth - Historical	23.8%
Intrinsic Growth - Projected	19.2%
Average	12.8%

Line No. 1 2 3 4 5 6 7 8 9 10 11 12

Supporting Schedules: JR-16, JR-17

Owest Corporation
Multi-Stage DCF Estimates
Non-Telcos

[A] Line No.	[B] Current Mkt. Price (P ₀)	[C] Projected Dividends ¹ (stage 1 growth) (D _t)	[E] d ₃	[F] d ₄	[G] Stage 2 growth ² (g _n)	[H] Equity Cost Estimate (K)
1	40.6	d ₁ 1.04	d ₃ 1.19	d ₄ 1.28	6.5%	9.1%
2	39.5	0.38	0.42	0.52	6.5%	7.5%
3	52.0	1.16	1.21	1.32	6.5%	8.6%
4	53.1	0.98	1.01	1.08	6.5%	8.2%
5	40.1	0.56	0.60	0.70	6.5%	7.9%
6	19.3	0.22	0.23	0.24	6.5%	7.4%
7	45.9	0.85	0.88	0.95	6.5%	8.2%
8	27.5	1.13	1.15	1.18	6.5%	10.1%
9	44.6	1.06	1.15	1.36	6.5%	9.0%
10	52.1	0.96	1.03	1.20	6.5%	8.4%
11	50.2	0.06	0.07	0.08	6.5%	5.6%
12	30.3	0.33	0.36	0.42	6.5%	7.8%
13	62.4	1.60	1.64	1.72	6.5%	8.8%
14	101.2	0.80	0.87	1.01	6.5%	7.1%
15	40.9	0.65	0.69	0.71	6.5%	7.9%
16	91.0	1.04	1.10	1.22	6.5%	7.5%
17	57.0	1.14	1.25	1.36	6.5%	8.6%
18	27.4	0.60	0.63	0.68	6.5%	8.0%
19	26.5	0.44	0.45	0.48	6.5%	6.6%
20	68.5	0.30	0.33	0.40	6.5%	8.4%
21	39.9	0.72	0.79	0.86	6.5%	5.3%
22	65.1	0.03	0.04	0.05	6.5%	11.4%
23	38.8	2.12	2.16	2.21	6.5%	8.6%
24	47.7	1.04	1.09	1.15	6.5%	10.6%
25	47.7	2.22	2.26	2.34	6.5%	8.2%
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)} \right]$$

Where : P₀ = current stock price
 D_t = dividends expected during stage 1
 K = cost of equity
 n = years of non - constant growth
 D_n = dividend expected in year n
 g_n = constant rate of growth expected after year n

¹ d₁ = "E10 D10" next 12 mos.² 08/13/2004, Value Line Summary & Index.
² Average annual growth in GDP 1929 - 2003 in current dollars. <http://www.bea.doc.gov/>

Qwest Corporation
 Calculation of Relevered Beta
 Non-Telcos

$$\beta_{RL} = \beta_{UL} (1 + (1 - t)BD/EC)$$

Where :

- β_{RL} = relevered beta
- β_{UL} = unlevered beta
- t = tax rate
- BD = book debt
- EC = equity capital

Line No.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
1	Qwest Corporation	Value Line Unlevered Raw Beta β_{UL}	Merrill Lynch Unlevered Raw Beta β_{UL}	Book Debt BD	Equity Cap EC	Tax Rate t	Value Line Relevered Raw Beta β_{RL}	Value Line Adjusted Relevered Beta β_{RL}	Merrill Lynch Relevered Raw Beta β_{RL}	Merrill Lynch Adjusted Relevered Beta β_{RL}	Average Value Line & Merrill Lynch Adjusted Relevered Beta
2		0.54	0.46	0.75	0.25	38.3%	1.54	1.38	1.31	1.21	1.29
3											
4											
5											
6											
7											
8											
9											

8 Tax Rate: Company Application Schedule C-3
 9 Supporting Schedules: JR-21

		Qwest Corporation Required Capital Structure Adjustment Non-Telcos			
Line No.	[A]	[B]	[C]	[D]	
	Non-Telcos Average Levered Beta				
1	Historical Market Risk Premium	β 0.79	(Rp) 7.6%	$[\beta \times Rp]$ 6.0%	
2	Current Market Risk Premium	0.79	8.2%	6.5%	
3	Average $[\beta \times Rp]$			6.2%	
4					
5	Qwest Corp. Relevered Beta				
6	Historical Market Risk Premium	β 1.29	(Rp) 7.6%	$[\beta \times Rp]$ 9.8%	
7	Current Market Risk Premium	1.29	8.2%	10.6%	
8	Average $[\beta \times Rp]$			10.2%	
9					
10	Capital Structure Adjustment (8 - 3)			4.0%	
11					
12					
13					
14					
15					

Supporting Schedules: JR-14, JR-22

