Exhibit No. ___ (JHV-1T)
Docket No. UT-023003

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Review of Unbundled Loop and Switching Rates; the Deaveraged Zone Rate Structure; and Unbundled Network Elements, Transport, and Termination	))))))	DOCKET NO. UT-023003

DIRECT TESTIMONY OF DR. JAMES H. VANDER WEIDE ON BEHALF OF VERIZON NORTHWEST INC.

COST OF CAPITAL

June 26, 2003

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I. INTRODUCTION

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is James H. Vander Weide. I am a Research Professor of Finance and Economics Emeritus at the Fuqua School of Business of Duke University. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to clients in the electric, gas, insurance, telecommunications, and water industries. My business address is 3606 Stoneybrook Drive, Durham, North Carolina.

Q. WOULD YOU PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PRIOR ACADEMIC EXPERIENCE?

A. I graduated from Cornell University in 1966 with a Bachelor's Degree in Economics. I then attended Northwestern University where I earned a Ph.D. in Finance. In January 1972, I joined the faculty of the School of Business at Duke University and was named Assistant Professor, Associate Professor, and then Professor.

Since joining the faculty, I have taught courses in corporate finance, investment management, and management of financial institutions. I have taught a graduate seminar on the theory of public utility pricing and lectured in executive development seminars on the cost of capital, financial analysis, capital budgeting, mergers and acquisitions, cash management, short-run financial planning, and competitive strategy. I have also served as Program Director of several executive education programs at the Fuqua School of Business, including the Duke Advanced Management Program, the Duke Executive

Program in Telecommunications, Competitive Strategies in Telecommunications, and the Duke Program for Manager Development for managers from the former Soviet Union.

I have conducted seminars and training sessions on financial analysis, financial strategy, cost of capital, cash management, depreciation policies, and short-run financial planning for a wide variety of U.S. and international companies, including ABB, Accenture, Allstate, Ameritech, AT&T, Bell Atlantic, BellSouth, Carolina Power & Light, Contel, Fisons, Glaxo Wellcome, GTE, Lafarge, MidAmerican Energy, New Century Energies, Norfolk Southern, Pacific Bell Telephone, The Rank Group, Siemens, Southern New England Telephone, TRW, and Wolseley PLC.

In addition to my teaching and executive education activities, I have written research papers on such topics as portfolio management, the cost of capital, capital budgeting, the effect of regulation on the performance of public utilities, and cash management. My articles have been published in *American Economic Review*, *Financial Management*, *International Journal of Industrial Organization*, *Journal of Finance, Journal of Financial and Quantitative Analysis*, *Journal of Bank Research*, *Journal of Accounting Research*, *Journal of Cash Management*, *Management Science*, *The Journal of Portfolio Management*, *Atlantic Economic Journal*, *Journal of Economics and Business*, and *Computers and Operations Research.* I have written a book titled *Managing Corporate Liquidity: an Introduction to Working Capital Management*, and a chapter for *The Handbook of Modern Finance*, "Financial Management in the Short Run."

Q. HAVE YOU PREVIOUSLY TESTIFIED ON FINANCIAL OR ECONOMIC ISSUES?

A. Yes. As an expert on financial and economic theory, I have testified on the cost of capital, competition, risk, incentive regulation, forward-looking economic cost, economic pricing guidelines, depreciation, accounting, valuation, and other financial and economic issues in more than 325 cases before the U.S. Congress, the Canadian Radio-Television and Telecommunications Commission, the Federal Communications Commission ("FCC"), the National Telecommunications and Information Administration, the Federal Energy Regulatory Commission, the public service commissions of 39 states including Washington, the insurance commissions of five states, the Iowa State Board of Tax Review, and the National Association of Securities Dealers. In addition, I have testified as an expert witness in proceedings before the U.S. District Court, District of Nebraska; U.S. District Court, Eastern District of North Carolina; Superior Court, North Carolina; the U.S. Bankruptcy Court, Southern District of West Virginia; and the United States District Court for the Eastern District of Michigan. With respect to implementation of the Telecommunications Act of 1996, I have testified in 26 states and in Washington, D.C. on issues relating to the pricing of unbundled network elements and universal service cost studies. I have also consulted with Bell Canada, Deutsche Telekom, and Telefónica on similar issues.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been asked by Verizon Northwest Inc. ("Verizon NW") to make an independent appraisal of the appropriate weighted average cost of capital to be

used in studies of the forward-looking economic cost of providing unbundled network elements ("UNEs"). As part of my appraisal, I estimated the weighted average cost of capital for a group of companies with less than average risk operating in the competitive market environment required by the FCC's forward-looking economic cost standard. I also performed a study of the return Verizon NW would have to earn to compensate it for the additional risk it faces as a result of: (1) the FCC's requirement that UNE rates be based on the cost of constructing a telecommunications network using the most efficient technology to meet the entire demand for telecommunications service; and (2) the CLECs' real option to either cancel their UNE lease with Verizon NW and build their own facilities or renew their lease at lower rates when UNE rates are reset to reflect the supposedly lower cost of new telecommunications technologies.

II. SUMMARY

Q. CAN YOU SUMMARIZE YOUR COST OF CAPITAL TESTIMONY IN THIS PROCEEDING?

A. Yes. My cost of capital testimony may be summarized as follows.

A. THE FCC'S FORWARD-LOOKING COST STANDARD.

The FCC has determined that rates for unbundled network elements should satisfy three basic economic principles. Specifically, UNE rates should: (1) be based on forward-looking economic costs, not embedded or accounting costs; (2) approximate the rates the incumbent LEC would be able to charge in a competitive market for UNEs; and (3) provide correct economic signals for the investment decisions of both competitive and incumbent local exchange carriers. The cost of capital input in UNE cost studies must be consistent with these three basic economic principles.

My recommended cost of capital in this proceeding is conservative and consistent with all three of the FCC's economic principles for setting UNE rates. It is conservative because, even with the added risk premium, it does not fully account for all the risks imposed on Verizon NW. It is consistent with the forward-looking economic cost principle because it reflects market interest rates, the required market return on equity investments of comparable risk, and the average market value percentages of debt and equity in the capital structure of

competitive companies.[1/] It is consistent with the FCC's competitive market principle because it reflects the weighted average cost of capital of a large sample of companies with less than average risk operating in competitive markets. It is consistent with the FCC's economic signal principle because it reflects the unique and specific risks inherent in the FCC's TELRIC costing standard, *i.e.*, the risks the incumbent LEC would incur to construct a telecommunications network under the TELRIC standard while offering competitors the option to cancel their use of the network on a monthly basis. If the cost of capital input in UNE cost studies is less than my recommended cost of capital, it will send the wrong economic signals. Incumbents will have no incentive to invest in their telecommunications networks because they will not recover their costs for doing so, and competitors will have no incentive to build their own telecommunications networks because they could provide service more cheaply by leasing UNEs from Verizon NW.

B. THE COST OF CAPITAL

Economists unanimously agree that the forward-looking economic cost of capital must be calculated using market interest rates, the market required return on equity investments of comparable risk, and the market value percentages of debt and equity in the target firm's capital structure. My recommended weighted average cost of capital is consistent with this economic definition, while the traditional regulatory definition of the average cost of capital is not. The forward-

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[1/] Market values are always forward looking because market participants look to the future rather than the past to value investments. In contrast, book values are backward looking because they reflect the historical costs of the company's activities.

looking economic cost of capital should be higher than the traditional rate of return cost of capital because the former reflects market values rather than book values and competitive rather than less-than-competitive market conditions.

C. RISK IMPLIED BY ACTUAL COMPETITIVE MARKET CONDITIONS

The risk of investing in the facilities required to provide UNEs in Washington depends on operating leverage, demand uncertainty, rapidly changing technology, the regulatory environment, and the cancelable nature of the typical monthly UNE lease contract. Taken as a whole, these factors mean that the risk of investing in the facilities required to provide UNEs in Washington is significantly greater than both the risk of providing local exchange service and the forward-looking risk of investing in the S&P Industrials.

D. RISK IMPLIED BY THE FCC'S TELRIC STANDARD

The FCC's forward-looking economic cost standard requires that UNE rates reflect the costs—not of the existing network that is used to provide UNEs—but the costs that *would be incurred* to provide UNEs from a telecommunications network constructed using the most efficient technology at each moment of time. The Washington Utilities and Transportation Commission ("WUTC") should recognize that basing rates on the TELRIC standard, while at the same time permitting competitors to either cancel their lease altogether or renew at lower rates when new lower-cost technologies become available, is an exceedingly risky proposition. No rational investor would incur the significant cost of constructing the network contemplated in UNE cost studies without being compensated for the significant risk they incur in making such an investment.

E. THE FORWARD-LOOKING COST OF CAPITAL FOR COMPANIES OPERATING IN COMPETITIVE MARKETS

I calculated the forward-looking economic cost of capital for companies operating in competitive markets by using the yield to maturity on A-rated industrial bonds and the average market value capital structure of both a large sample of S&P Industrials and a group of telecommunications companies with incumbent local exchange subsidiaries. To estimate the cost of equity component of the competitive market weighted average cost of capital, I applied the Discounted Cash Flow ("DCF") approach to a large sample of companies operating in competitive markets. My estimate of the weighted average cost of capital for these companies is 12.03%. However, this estimate does not consider the additional risk Verizon NW faces for making long-term fixed investments in network facilities while offering its customers the real option to either cancel their lease contract and build their own facilities or to renew their lease at lower rates when UNE rates are reset to reflect the supposedly lower cost of new telecommunications technologies.

F. COST OF CAPITAL FOR USE IN UNE COST STUDIES

To reflect the additional risk of making long-term fixed investments in a telecommunications network, while offering customers an ongoing option to either build their own facilities or renew their lease at lower rates, the weighted average cost of capital for use in UNE cost studies must be greater than the weighted average cost of capital for my proxy group of industrial companies. I estimated the additional return required to compensate Verizon NW for the unique and special risks it faces in providing UNEs under the TELRIC standard

while offering competitors an ongoing real option to either build their own facilities or renew their lease at lower rates by applying option pricing formulas used by many financial market participants. My estimate of the required risk premium is 3.95%. Thus, my recommended cost of capital for use in UNE cost studies in Washington is 15.98% (12.03% + 3.95% = 15.98%). As I explain below, this is a conservative estimate and does not fully account for all of the risks faced by Verizon NW under market conditions, regulatory mandates, and the TELRIC UNE regime.

III. FUNDAMENTAL ECONOMIC PRINCIPLES

A. THE FCC'S FORWARD-LOOKING ECONOMIC COST STANDARD

Q. HAS THE FCC DETERMINED WHAT ECONOMIC PRINCIPLES SHOULD BE USED IN SETTING RATES FOR UNBUNDLED NETWORK ELEMENTS?

A. Yes. The FCC determined the basic economic principles for setting rates for unbundled network elements in its First Report and Order, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996* ("*Local Competition Order*"). In that order, the FCC decided that three fundamental economic principles should be used to set rates for unbundled network elements. First, the FCC decided that rates for unbundled network elements should be based on forward-looking economic costs, not embedded or accounting costs. Second, the FCC decided that rates for unbundled network elements should approximate the rates the incumbent LEC would be able to charge in a competitive market for unbundled network elements. Third, the FCC decided that rates for unbundled network elements should provide correct economic signals for the investment decisions of both competitive and incumbent local exchange carriers.

Q. HAS THE WUTC ESTABLISHED THAT THE FCC'S TELRIC RULES SHALL BE USED TO SET UNE RATES?

A. Yes. The WUTC has stated: "We agree that . . . [TELRIC] is the correct costing standard, and that the cost estimates should be based upon the cost of satisfying

the total demand for elements rather than some lesser level of incremental demand."[2/]

Q. DO THE FCC'S RULES ADDRESS THE COST OF CAPITAL THAT SHOULD BE USED IN A FORWARD-LOOKING COST STUDY?

A. Yes. Rule 51.505(b)(2) provides that a "forward-looking cost of capital shall be used in calculating the total element long-run incremental cost of an element." Forward-looking costs are the costs "that a carrier would incur in the future," and do not include embedded or historical costs. (*Local Competition Order* ¶¶ 683, 704.)

Q. DOES YOUR INDEPENDENT ANALYSIS REFLECT THE FCC'S FORWARD-LOOKING COST PRINCIPLE?

A. Yes. I calculated the forward-looking cost of capital using a forward-looking cost of debt, forward-looking cost of equity, and forward-looking capital structure. The cost of capital I compute is appropriate for use in determining the forward-looking cost of providing UNEs through the application of correct economic principles.

Q. DO THE FCC'S RULES PRESCRIBE THE ECONOMIC PURPOSE OF FORWARD-LOOKING COST STUDIES?

A. Yes. The FCC has held that forward-looking economic costs should simulate the results of a competitive market for unbundled network elements. For example, at ¶ 679 of the *Local Competition Order*, the FCC states:

[2/] Eighth Supplemental Order, *In the Matter of the Pricing Proceeding for Interconnection, Unbundled Elements, Transport and Termination, and Resale*; Docket Nos. UT-960369, UT-960370 & UT-960371; ¶ 38, April 16, 1998.

> Adopting a pricing methodology based on forward-looking, economic costs best replicates, to the extent possible, the conditions of a competitive market . . . ***Because a pricing methodology based on forward-looking costs simulates the conditions in a competitive marketplace,*** it allows the requesting carrier to produce efficiently and to compete effectively, which should drive retail prices to their competitive levels. [Emphasis added.]

And at ¶ 738, the FCC states:

> In this proceeding, we are establishing pricing rules that should produce rates for monopoly elements and services ***that approximate what the incumbent LEC would be able to charge if there were a competitive market for such offerings***. [Emphasis added.]

Q. HAS THE FCC REITERATED ITS DECISION THAT FORWARD-LOOKING ECONOMIC COSTS "SHOULD REFLECT THE RISKS ASSOCIATED WITH A COMPETITIVE MARKETPLACE"?

A. Yes. In its ruling on Verizon Massachusetts' Section 271 Petition, the FCC reiterated that it has

> determined that new entrants "should make their decisions whether to purchase unbundled elements...based on the relative economic costs of these options," and that such competitors would not be able to make such decisions "efficiently" unless the BOC was offering UNEs based on forward-looking economic costs. The Commission equated "efficient entry" with the availability of UNEs at forward-looking economic costs, which *"replicates...the conditions of a competitive market."* "Efficient entry" simply means that competitors seeking entry *will face the same sorts of costs they would face in a fully competitive market*, that is, TELRIC-based UNE rates. [*Memorandum, Opinion, and Order in CC Docket No. 01-9, FCC 01-130*, adopted April 16, 2001 ("Mass. 271 Order"), ¶ 42 (Emphasis added).]

Moreover, in a more recent announcement, the FCC stated: "The Order clarifies that the risk-adjusted cost of capital used in calculating UNE prices *should reflect the risks associated with a competitive market.*" (Attachment to the

FCC's Triennial Review Press Release, February 20, 2003, page 4, emphasis added.)

Q. DO THE FCC'S RULES ADDRESS THE APPROPRIATE ROLE FOR UNE RATES IN SENDING CORRECT ECONOMIC SIGNALS TO PARTICIPANTS IN A COMPETITIVE TELECOMMUNICATIONS MARKET?

A. The FCC's rules clearly establish that UNE rates should send correct economic signals for the investment and operating decisions of new entrants and incumbent LECs alike. For example, in ¶ 620 of the *Local Competition Order*, the FCC states:

> In dynamic competitive markets, firms take action based . . . on the relationship between market-determined prices and forward-looking economic costs. If market prices exceed forward-looking economic costs, new competitors will enter the market. If their forward-looking economic costs exceed market prices, new competitors will not enter the market and existing competitors may decide to leave. . . . New entrants should make their decisions whether to purchase unbundled elements or to build their own facilities based on the relative economic costs of these options.

Q. DOES YOUR COST OF CAPITAL RECOMMENDATION IN THIS PROCEEDING PROVIDE CORRECT ECONOMIC SIGNALS FOR THE INVESTMENT DECISIONS OF NEW ENTRANTS AND THE INCUMBENT LECS?

A. Yes. My 15.98% weighted average cost of capital recommendation in this proceeding reflects the forward-looking risk and required return on the incumbent LEC's investment in the network facilities required to provide unbundled network elements in a competitive market where the customer has the option to cancel its lease and use other facilities or cancel its lease and renew at lower rates when

rates are reset to reflect the lower cost of new technologies. If UNE rates were based on a lower cost of capital, new entrants would find it advantageous to purchase unbundled network elements rather than to build their own facilities, even if they could provide telecommunications service more efficiently than the incumbent LEC. In addition, if rates were based on a lower cost of capital, the incumbent LEC would have no incentive to continue to invest in its network.

B. THE COST OF CAPITAL

Q. DOES THE COST OF CAPITAL PLAY ANY ROLE IN THE FCC'S GUIDELINES FOR FORWARD-LOOKING COST STUDIES?

A. Yes. As noted above, the FCC requires that unbundled network element cost studies be based on the forward-looking economic cost of providing unbundled network elements. The forward-looking economic cost of providing unbundled network elements includes both capital costs and expenses. The capital costs, in turn, include three elements: (1) the LECs' investment in the telecommunications facilities required to provide unbundled network elements; (2) the economic depreciation on these facilities; and (3) the required rate of return, or cost of capital, associated with these facilities.

Q. HOW DO ECONOMISTS DEFINE THE REQUIRED RATE OF RETURN, OR COST OF CAPITAL, ASSOCIATED WITH PARTICULAR INVESTMENT DECISIONS, SUCH AS THE DECISION TO INVEST IN THE BUILDING OF TELECOMMUNICATIONS NETWORK FACILITIES?

A. Economists define the required rate of return on a particular investment as the return that investors forego by making that investment instead of an alternative investment of equal risk.

Q. HOW DOES THE COST OF CAPITAL AFFECT A FIRM'S INVESTMENT DECISIONS?

A. The goal of a firm is to maximize the value of the firm. This goal can be accomplished by accepting all investments in plant and equipment with an expected rate of return greater than or equal to the cost of capital. Thus, a firm should continue to invest in plant and equipment only so long as the return on its investment is greater than or equal to its cost of capital.

Q. HOW DOES THE COST OF CAPITAL AFFECT INVESTORS' WILLINGNESS TO INVEST IN A COMPANY?

A. The cost of capital measures the return investors can expect on investments of comparable risk. Rational investors will not invest in a particular investment opportunity if the expected return on that opportunity is less than the cost of capital. Thus, the expected rate of return on an investment in a company must exceed, or at least be equal to, the cost of capital before investors will be willing to invest in that company.

Q. DO ALL INVESTORS HAVE THE SAME POSITION IN THE FIRM?

A. No. Debt investors have a fixed claim on a firm's assets and income that must be paid prior to any payment to the firm's equity investors. Since the firm's equity investors have a residual claim on the firm's assets and income, equity

investments are riskier than debt investments. Thus, the cost of equity exceeds the cost of debt.

Q. WHAT IS THE OVERALL OR WEIGHTED AVERAGE COST OF CAPITAL?

A. The overall or weighted average cost of capital is a weighted average of the cost of debt and cost of equity, where the weights are the percentages of debt and equity in a firm's capital structure.

Q. CAN YOU ILLUSTRATE THE CALCULATION OF THE OVERALL OR WEIGHTED AVERAGE COST OF CAPITAL?

A. Yes. Assume that the cost of debt is 7%, the cost of equity is 14%, and the percentages of debt and equity in the firm's capital structure are 25% and 75%, respectively. Then the weighted average cost of capital is expressed by (0.25 times 7%) plus (0.75 times 14%), or 12.25%.

Q. HOW DO ECONOMISTS DEFINE THE COST OF DEBT COMPONENT OF THE WEIGHTED AVERAGE COST OF CAPITAL?

A. Economists define the cost of debt as the market interest rate that a firm would have to pay on newly-issued debt obligations with the appropriate maturity.[3/] In efficient markets, the market interest rate is also the best estimate of future interest rates. The correct economic definition of the cost of debt is thus forward-looking and market-oriented.

Q. HOW DO ECONOMISTS DEFINE THE COST OF EQUITY COMPONENT OF THE WEIGHTED AVERAGE COST OF CAPITAL?

[3/] It is generally appropriate to match the duration of the company's debt to the duration of the company's assets. Thus, companies with long-term assets rely heavily on long-term debt to finance those assets.

A. Economists define the cost of equity as the return investors expect to receive on alternative equity investments of comparable risk. Since the return on an equity investment of comparable risk is not fixed by contract, the cost of equity is more difficult to measure than the cost of debt. There is agreement, however, as I have already noted, that the cost of equity is greater than the cost of debt. There is also agreement among economists that the cost of equity, like the cost of debt, is both forward-looking and market-based.

Q. WHAT APPROACHES DO ECONOMISTS EMPLOY TO OBTAIN NUMERICAL ESTIMATES OF THE COST OF EQUITY?

A. Economists generally use market models such as the DCF Model to estimate a firm's cost of equity. The DCF Model is based on the assumption that the market price of a firm's stock is equal to the present value of the stream of cash flows that investors expect to receive from owning the stock. The cost of equity in the DCF Model is that discount rate which equates the firm's stock price to the present value of the future stream of cash flows investors expect from owning the stock.

Q. HOW DO ECONOMISTS MEASURE THE PERCENTAGES OF DEBT AND EQUITY IN A FIRM'S CAPITAL STRUCTURE?

A. Economists measure the percentages of debt and equity in a firm's capital structure by first calculating the market value of the firm's debt and the market value of its equity. Economists then calculate the percentage of debt by the ratio of the market value of debt to the combined market value of debt and equity, and the percentage of equity by the ratio of the market value of equity to the

combined market values of debt and equity. For example, if a firm's debt has a market value of $25 million and its equity has a market value of $75 million, then its total market capitalization is $100 million, and its capital structure contains 25% debt and 75% equity.

Q. WHY DO ECONOMISTS MEASURE A FIRM'S CAPITAL STRUCTURE IN TERMS OF THE MARKET VALUES OF ITS DEBT AND EQUITY?

A. Economists measure a firm's capital structure in terms of the market values of its debt and equity because that is the best measure of the amounts of debt and equity that investors have invested in the company on a going-forward basis. Furthermore, economists generally assume that the goal of management is to maximize the value of the firm, where the value of the firm is the sum of the market value of the firm's debt and equity. Only by measuring a firm's capital structure in terms of market values can its managers choose investment and financing strategies that both maximize the value of the firm and allow investors to earn a return on their investment that is commensurate with returns on other investments of comparable risk.

Q. DOES THE ECONOMIC LOGIC BEHIND THE DEFINITION OF THE COST OF CAPITAL HAVE ANY IMPLICATIONS FOR COMPETITIVE ENTRY IN THE LOCAL EXCHANGE MARKET IN WASHINGTON?

A. Yes. If the WUTC wants to encourage efficient facilities-based competitive entry in the market for local exchange services, the cost of capital input in Verizon NW's forward-looking cost studies must be at least as large as the return those potential facilities-based competitors can earn on other investments of similar

risk. If potential competitors can lease local exchange facilities from Verizon NW at rates that include a 10% rate of return on investment, for example, they will have no incentive to invest in their own facilities if they can earn returns greater than 10% on other investments of comparable risk. In short, it would make more sense for those competitors to lease the undervalued unbundled network elements from Verizon NW than to build their own facilities. To provide correct incentives for entry into local exchange markets, the WUTC should measure Verizon NW's cost of capital in the same way that potential competitors measure their own costs of capital. Because Verizon NW faces unique risks as the provider of UNEs, however, even this approach will produce a conservative cost of capital.

Q. DOES THE ECONOMIC DEFINITION OF THE COST OF CAPITAL HAVE ANY IMPLICATIONS FOR THE POLICY GOAL OF ENCOURAGING INVESTMENT AND INNOVATION IN TELECOMMUNICATIONS SERVICES?

A. Yes. The WUTC should likewise use a market definition of the cost of capital if it wishes to promote efficient investment and innovation in telecommunications services. In competitive markets, the incumbent and its competitors can only be encouraged to invest in new technologies, products, and services if the rate of return they can earn on the market value of their investments exceeds the rate of return they could earn on the market value of other investments of the same risk.

Q. WHY DO INVESTORS MEASURE THE RETURN ON THEIR INVESTMENT PORTFOLIOS USING MARKET VALUE WEIGHTS RATHER THAN BOOK VALUE WEIGHTS?

A. Investors measure the return on their investment portfolios using market value weights because market value weights are the best measure of the amounts the investors currently have invested in each security in the portfolio. From the point of view of investors, the historical cost or book value of their investment is entirely irrelevant to the current risk and return on their portfolios because if they were to sell their investments, they would receive only market value and not historical cost. Thus, the return can only be measured in terms of market values.

Q. IS THE ECONOMIC DEFINITION OF THE WEIGHTED AVERAGE COST OF CAPITAL CONSISTENT WITH REGULATORS' TRADITIONAL DEFINITION OF THE AVERAGE COST OF CAPITAL?

A. No. The economic definition of the weighted average cost of capital is based on the market costs of debt and equity, the market value percentages of debt and equity in a company's capital structure, and the future expected risk of investing in the company. In contrast, regulators have traditionally defined the weighted average cost of capital using the embedded cost of debt, the book values of debt and equity in a company's capital structure, and the risk of investing in a franchised provider of telecommunications services.

Q. WHAT IS THE DIFFERENCE BETWEEN THE MARKET COST OF DEBT AND A COMPANY'S EMBEDDED COST OF DEBT?

A. The market cost of debt is the rate of interest a company would have to pay if it issued debt under today's market conditions. The embedded cost of debt is the company's total interest expense divided by the total book value of its debt.

Thus, the embedded cost of debt is an average of the interest rates the company has paid in the past to issue debt securities. This calculation of the embedded cost of debt, however, provides no basis for measuring the market (i.e., forward-looking) cost of debt.

Q. WHAT IS THE DIFFERENCE BETWEEN THE MARKET VALUE AND THE BOOK VALUE OF A COMPANY'S DEBT?

A. The market value of a company's debt represents the current price in the capital markets of the company's debt obligations. The book value of a company's debt is the historical face value of its debt adjusted for the accounting amortization of premiums and discounts. The market value of a company's debt is approximately equal to the book value of its debt when market interest rates are approximately equal to the average interest rate of the company's previous debt issuances.

Q. WHAT IS THE DIFFERENCE BETWEEN THE MARKET VALUE AND THE BOOK VALUE OF A COMPANY'S EQUITY?

A. The market value of a company's equity is simply the market price of the company's stock times the number of shares outstanding. The book value of equity is more complex: it represents the sum of paid-in capital and retained earnings, where paid-in capital represents the amount of capital a firm has historically obtained from stock issuances, and retained earnings represent the cumulative earnings over the life of the company that have not been paid out as dividends. In addition, the book value of a company's equity is adjusted

periodically for accounting events such as changes in accounting rules and regulations, write-offs, and extraordinary events.

Q. DOES THE BOOK VALUE OF A COMPANY'S EQUITY REFLECT THE HISTORICAL COST OF ITS ASSETS?

A. Yes. According to basic accounting principles, the book value of a company's assets, liabilities, and equity are measured using historical costs. For example, Kieso, Weygandt, and Warfield state in their widely-used text that the historical cost principle is one of four basic principles of accounting: "GAAP requires that most assets and liabilities be accounted for and reported on the basis of acquisition price. This is often referred to as the *historical cost principle*."[4/] (Emphasis in original.) Thus, by definition, the book value of a company's equity reflects the historical cost of the company's assets.

Q. WHY HAVE STATE AND FEDERAL REGULATORS TRADITIONALLY DEFINED THE AVERAGE COST OF CAPITAL IN TERMS OF EMBEDDED COSTS AND BOOK VALUES RATHER THAN FORWARD-LOOKING COSTS AND MARKET VALUES?

A. State and federal regulators have traditionally defined a company's average cost of capital in terms of embedded costs and book values because rates have traditionally been based on the historical or embedded costs of the regulated firm's assets, or rate base. In contrast, the TELRIC model requires regulators to

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[4/] Donald, E. Kieso, Jerry J. Weygandt, & Terry D. Warfield, *INTERMEDIATE ACCOUNTING*, 44 (10th ed., John Wiley & Sons 2001).

set rates based on the ***forward-looking economic cost***, or the ***market value***, of the company's investment in network facilities.

Q. IS THE TRADITIONAL REGULATORY DEFINITION OF THE AVERAGE COST OF CAPITAL CONSISTENT WITH THE FORWARD-LOOKING ECONOMIC COST PRINCIPLES ADOPTED BY THE FCC AND THE WUTC?

A. No. The FCC and the WUTC have determined that UNE rates must be based on forward-looking economic costs, not historical or embedded costs. As the FCC states: "Embedded costs are the costs that the incumbent LECs carry on their accounting books that reflect historical purchase prices, regulatory depreciation rates, system configurations, and operating procedures." *Local Competition Order* at ¶ 632. Furthermore, the FCC has specifically stated that UNE rates cannot be based on embedded or historical costs. (See, for example, *id.* at ¶ 673: "In this section, we describe this forward-looking, cost-based pricing standard in detail. ...[W]e address potential cost measures that ***must not be included in a TELRIC analysis, such as embedded (or historical) costs.***" (Emphasis added.))

Thus, the economic principles underlying a forward-looking economic cost study require that the average cost of capital be calculated using a ***market*** interest rate, a ***market value*** capital structure, and a cost of equity that measures the return investors require in ***competitive*** markets on other investments of the same risk. In contrast, the traditional regulatory definition of the weighted average cost of capital is based on an embedded interest rate, a book value capital structure, and a cost of equity that measures the return investors require

in markets that are at least partially protected from competition. The traditional regulatory definition of the weighted average cost of capital is inconsistent with the economic principle that economic costs are forward looking and market based, not backward looking and accounting based.

Q. IS IT REASONABLE FOR THE COST OF CAPITAL INPUT IN UNE COST STUDIES IN WASHINGTON TO EXCEED THE AUTHORIZED RATE OF RETURN FOR VERIZON NW'S REGULATED RETAIL OPERATIONS?

A. Yes. Recall that Verizon NW's retail rates are based on historical cost, rather than forward-looking economic cost. Thus, the cost of capital for retail rate making is based on a book value capital structure that reflected the historical cost of Verizon NW's assets, an embedded cost of debt, and a cost of equity appropriate to a regulated company serving a franchised area prior to the passage of the Act.

In contrast, the FCC has clearly stated that the cost of capital input in UNE cost studies must be based on the principle of forward-looking economic costs. Unlike the historically-oriented cost of capital used in retail rate making, the forward-looking economic cost of capital must necessarily be based on the market values of debt and equity in the company's capital structure, the market cost of debt, and the cost of equity for a company operating in a competitive marketplace.

In addition, the FCC's forward-looking economic cost standard requires that UNE rates reflect the forward-looking economic cost of constructing a local exchange network using the most efficient technology for satisfying the entire

market demand over the life of the telecommunications network. At the same time, UNE contracts give CLECs the opportunity to cancel their lease contract with Verizon NW on a monthly basis. The combination of the FCC's UNE cost standard, the unique nature of the UNE lease contract, and the periodic repricing of UNEs, create a significant risk that Verizon NW will be unable to recover its investment in the network facilities required to provide UNEs to its competitors. Thus, the UNE market contains additional risks that are not present in the local exchange market.

Given the significant differences between historical-cost retail rate making principles and forward-looking economic cost rate making principles, it is not surprising that the forward-looking economic cost of capital can be significantly higher than the allowed rate of return for retail rate making. Indeed, the appropriate cost of capital input for use in UNE cost studies exceeds the authorized retail rate of return because: (1) the target market value capital structure of competitive companies contains less debt and more equity than the historical cost, book value capital structure used for setting retail rates; (2) the cost of equity for a company operating in a competitive marketplace exceeds the cost of equity for a company operating in a franchised marketplace; and (3) the risk of investing under TELRIC regulation is significantly greater than the risk of investing under the regulatory regime used to set retail rates in Washington.

Q. IN SUM, THEN, WHAT IS THE PROPER DEFINITION OF THE AVERAGE COST OF CAPITAL FOR USE IN VERIZON NW'S FORWARD-LOOKING COST STUDIES?

A. The Act removes all barriers to entry in the local exchange market and opens the market to full competition. In a competitive market for local exchange service, forward-looking economic cost is the appropriate cost benchmark for forward-looking cost studies. Furthermore, the FCC has determined that forward-looking economic costs should approximate the costs the incumbent LEC would incur in a competitive market for UNEs. Thus, for use in Verizon NW's forward-looking economic cost studies, the average cost of capital should be defined in terms of the market costs of debt and equity, the market values of debt and equity in the company's capital structure, and investors' expectations regarding the future risk of investing in the company in a competitive environment. This is the only definition of the average cost of capital that is consistent with the underlying assumptions of Verizon NW's forward-looking cost studies.

IV. RISK

A. RISK IMPLIED BY ACTUAL COMPETITIVE MARKET CONDITIONS

Q. WHAT ARE THE PRIMARY RISKS VERIZON NW FACES WHEN IT INVESTS IN THE FACILITIES REQUIRED TO PROVIDE UNES TO CLECS?

A. Verizon NW faces the risks associated with operating leverage, demand uncertainty, technological change, regulation (including successive ratesetting), and the cancelable nature of the lease contract with CLECs.

Q. WHAT IS OPERATING LEVERAGE?

A. Operating leverage refers to the relationship between the company's revenues, on the one hand, and the company's fixed and variable costs on the other. The provision of facilities-based telecommunications services is a business that requires a large commitment to fixed costs in relation to variable costs, a situation called high operating leverage. The relatively high degree of fixed costs in the provision of facilities-based telecommunications service exists because of the average LEC's large investment in fixed assets such as central office, transport, and loop facilities. High operating leverage causes Verizon NW's net income to be highly sensitive to fluctuations in revenues. There is a positive correlation between operating leverage and risk: as operating leverage rises, so does the risk of operation.

Q. IS THE DEMAND FOR VERIZON NW'S SERVICES RELATIVELY CERTAIN?

A. No. The demand for local exchange, toll, and carrier access services provided by Verizon NW is becoming increasingly uncertain due to a number of factors. First, as Harold West explains in his testimony, Verizon NW faces expanding

competition in the telecommunications market from a variety of technologies and providers. Second, Verizon NW is sensitive to the general level of economic activity. In addition, the TELRIC standard requires that Verizon NW's rates for UNEs approximate the rates Verizon NW would be able to charge in a fully competitive market for UNEs, in which demand necessarily would be uncertain. Thus, the demand for UNEs is highly uncertain under the TELRIC regulatory regime.

Q. ARE YOU AWARE OF THE ACTUAL STATE OF COMPETITION IN WASHINGTON?

A. Yes. As explained in the accompanying testimony of Harold West, competition with Verizon NW's services is significant and expected to continue to grow.

Q. DOES RAPIDLY CHANGING TECHNOLOGY AFFECT THE RISK OF INVESTING IN INCUMBENT LOCAL EXCHANGE COMPANIES SUCH AS VERIZON NW?

A. Yes. Rapidly changing technology increases Verizon NW's risk in two ways. First, it threatens Verizon NW's ability to recover the investment cost of its new telecommunications plant. Second, it reduces the cost of entry for competitors. Rapid advances in fiber optics, wireless, Internet, data, and multimedia transmission technologies, for example, have shortened the economic lives of Verizon NW's current investments and have allowed cable TV, interexchange, and wireless companies to compete efficiently to offer local exchange service. Advances in these technologies will further threaten Verizon NW's heavy investment in landline telecommunications equipment and facilities.

Q. IS VERIZON NW ABLE TO COMPETE ON EQUAL TERMS WITH COMPETITORS?

A. No. Verizon NW faces a number of disadvantages in its efforts to compete in a fully competitive market. First, as the incumbent LEC, Verizon NW has the unique obligation to incur the large capital expenditures required to provide telecommunications services to customers in Washington. Competitors, on the other hand, are able to serve customers in Washington without necessarily making any investment in network facilities. Thus, Verizon bears the considerable risks associated with a large sunk investment in a telecommunications network, while its competitors are free to enter and exit the market without incurring any fixed or sunk costs. The additional risks Verizon incurs as a result of its large investment in the telecommunications network disadvantages Verizon relative to its competitors.

Second, Verizon NW has the unique obligation to make significant investments in the technology and software needed to provide unbundled network elements to competitors, and to sell them at prices that are — to date — below the company's actual costs of providing the elements. Verizon NW's competitors, however, have no obligation to lease UNEs from Verizon for more than one month at a time. Indeed, many of Verizon NW's competitors are in the process of developing their own facilities for providing local exchange service to Verizon NW's most profitable customers. Thus, Verizon NW faces the considerable risk that its investments in the technology and software needed to

provide unbundled network elements to competitors will not be recovered, and is therefore at an additional cost disadvantage relative to its competitors.

Third, Verizon NW has the unique obligation to share the benefits of network investments with competitors. When Verizon NW invests to upgrade the technology in its network, Verizon NW may be compelled to share the benefits of this investment with competitors through resale and through leasing of unbundled network elements. However, when Verizon NW's competitors invest to upgrade the technology in their networks, Verizon NW receives no benefit from the CLECs' investments because Verizon NW's competitors are not required to unbundle their networks. For example, if cable companies compete with Verizon NW by providing a complete package of video, Internet, and voice services from their cable networks, they are not required to share the benefits of investments in their cable networks with Verizon NW. However, when Verizon NW enhances the local portion of its service offerings through upgrades of its network, it is required to share these benefits with all competitors, including the cable operators.

Q. HOW DOES REGULATION AFFECT THE RISK OF VERIZON NW?

A. Verizon NW's UNE rates are regulated under the FCC's TELRIC cost standard, which, as described below, requires Verizon NW to provide UNEs to its competitors at rates that will likely not permit Verizon NW an opportunity to recover its investment in network facilities. Thus, regulation greatly increases the risk that Verizon NW will be unable to earn even the cost of capital for my proxy group of companies operating in competitive markets.

Q. HOW DOES THE CANCELABLE NATURE OF VERIZON NW'S LEASE CONTRACT WITH CLECS AFFECT ITS RISK?

A. As a facilities-based provider, Verizon NW must make a large, long-lived, sunk investment in the network facilities required to offer UNEs to CLECs, and its investment may not be recovered if CLECs cancel their leases and move to other facilities, or cancel their leases and renew at lower rates when rates are reset under the TELRIC standard. Thus, the cancelable nature of the CLECs' contracts greatly increases Verizon NW's risk in offering UNEs.

B. RISK IMPLIED BY THE FCC'S TELRIC COST STANDARD

Q. HOW DOES THE FCC'S TELRIC STANDARD AFFECT THE APPROPRIATE VIEW OF INVESTMENT RISK USED TO ESTIMATE THE COST OF CAPITAL COMPONENT OF TELRIC COST STUDIES?

A. The FCC's TELRIC standard affects the appropriate view of investment risk in several ways. First, the FCC has specifically stated that its cost standard should produce rates that "approximate what the incumbent LEC would be able to charge if there were a competitive market for such offerings." Firms in a fully competitive environment would certainly face higher investment risk and higher costs of capital than firms in a less competitive environment.

Second, the FCC has stated that its TELRIC standard should reflect the forward-looking investment and operating costs of reconstructing the incumbent LEC's telecommunications network using the most efficient available technology each time rates are set. If UNE rates are reset every four or five years to reflect the supposedly lower cost of reconstructing and operating Verizon NW's network

using a more efficient technology, but Verizon NW is required to depreciate its investment over a much longer time period, Verizon NW will earn a return on its investment that is significantly less than its market cost of capital.

Third, Verizon NW's investment in the facilities required to provide UNEs is generally long lived and largely sunk once the investment is made. Yet there is nothing in the UNE lease contract that requires the CLEC to lease UNEs at fixed rates for the life of the network. Indeed, the typical lease contract gives the CLEC the option to either cancel its lease and build its own facilities or renew its lease at lower rates each time rates are reset. In addition, the CLEC has this option on an on-going basis every month. The risk that the CLEC will either cancel its lease for network facilities entirely or renew its lease at lower lease payments after Verizon NW has made a significant fixed investment to construct its network must be considered when estimating the cost of capital component for use in TELRIC cost studies.

Fourth, state commissions have frequently used the TELRIC standard as a justification for using highly optimistic revenue and expense forecasts in UNE cost studies. For example, UNE cost studies are frequently based on the assumption that Verizon NW will not lose any revenues if CLECs build their own facilities and that Verizon NW will be able to achieve large switch discounts on every switch when it reconstructs its network from scratch. Since Verizon NW is unlikely to achieve these optimistic revenue and expense forecasts, it faces the likelihood that its return on investment will be less than its cost of capital.

Q. IS IT POSSIBLE TO HAVE "COMPETITIVE MARKET" RATES IF THE EXPENSE AND INVESTMENT COMPONENTS OF UNE COSTS REFLECT HIGHLY COMPETITIVE MARKET CONDITIONS, WHILE THE DEPRECIATION AND COST OF CAPITAL COMPONENTS REFLECT LESS THAN COMPETITIVE MARKET CONDITIONS?

A. No. If the WUTC assumes the market is fully competitive when determining the expense and investment components in UNE cost models, but not when determining depreciation rates and the cost of capital, the resulting forward-looking economic cost studies ***will not replicate*** the results of a competitive market. Indeed, since the resulting forward-looking economic costs would then be less than the costs competitors would face in building their own networks, there would be no incentive for facilities-based competition. Similarly, there would be no incentive for incumbent LECs to continue to invest in and upgrade their networks. Thus, customers would be deprived of the advanced technologies that the authors of the Telecommunications Act envisioned.

Q. CAN YOU ILLUSTRATE HOW THE FCC'S TELRIC STANDARD AFFECTS VERIZON NW'S RISKS OF INVESTING IN THE FACILITIES REQUIRED TO PROVIDE UNES TO CLECS?

A. Yes. Suppose that Verizon NW's initial UNE rates are based on the assumption that Verizon NW could reconstruct its network by committing to a stream of TELRIC costs, including operating expenses and investment, which have a discounted present value of $15 billion. Since the present value of Verizon NW's lease revenues must equal the present value of its operating expenses plus

investment at the time rates are reset, the present value of Verizon NW's lease revenues must also be $15 billion.

Now suppose that a new telecommunications technology appears that would allow Verizon NW to reconstruct its network once again, at a lower discounted present value of $12 billion. Under the TELRIC standard, Verizon NW's UNE rates will be reduced to the level where the present value of Verizon NW's lease revenues is $12 billion. Of course, Verizon NW would not find this second reconstruction of its network to be economically attractive because it would incur a large investment just to achieve a small savings in operating expenses. However, since TELRIC rates are based on the forward-looking economic cost of the most efficient current technology, Verizon NW's UNE rates will be reduced. As a result, Verizon NW will not be able to recover the forward-looking economic cost of the network it was presumed to construct the first time UNE rates were set.

Q. WHAT ARE THE ECONOMIC IMPLICATIONS OF THE FCC'S TELRIC STANDARD?

A. Under the TELRIC standard, the present value of Verizon NW's lease revenues will almost certainly be less than the present value of Verizon NW's network expenses and investment. In terms of the previous example, the present value of Verizon NW's revenues will equal $15 billion if no new lower-cost technology appears, but only $12 billion if a new lower cost technology appears. Yet, once Verizon NW reconstructs its network the first time, Verizon NW's costs are fixed at $15 billion. As shown in Table 2 below, assuming a 50/50 probability that a

new lower cost technology will appear, the expected value of Verizon NW's stream of lease payments will equal $13.5 billion, while its expenses will still be $15 billion. Thus, the expected (i.e., probability weighted) present value of Verizon NW's revenues will be less than the present value of its expenses plus investment.

Table 1

PRESENT VALUE OF LEASE REVENUES AND TELRIC COSTS WITH AND WITHOUT ARRIVAL OF NEW LOWER-COST TECHNOLOGY

Outcome	Probability	PV Revenues	PV Expenses Plus Investment
No new technology	0.5	$15B	$15B
New technology	0.5	$12B	$15B
Expected value[5/]		$13.5B	$15B

Q. WHAT DOES YOUR ILLUSTRATION SAY ABOUT VERIZON NW'S INVESTMENT RISK UNDER THE TELRIC STANDARD?

A. The implication of my illustration is that, under the TELRIC standard, the expected present value of Verizon NW's revenues will be less than the present value of its expenses plus investment. Whenever the present value of revenues is less than the present value of expenses plus investment, a company's return on investment is less than its cost of capital. Thus, Verizon NW's investment risk is high under the TELRIC standard.

5/ The expected value is the probability weighted average of the two outcomes. Thus, the expected PV revenues equals .5(15) + .5(12) = $13.5B.

Q. DO UNREGULATED COMPANIES IN COMPETITIVE MARKETS ALSO FACE THE RISK THAT THEIR RETURNS ON INVESTMENT WILL BE LESS THAN THEIR COST OF CAPITAL?

A. Yes. Competitive companies always face some risk that their returns on investment will be less than their costs of capital. However, unregulated competitive companies also have a significant probability that they will earn a return on investment that *exceeds* their cost of capital. Moreover, unlike Verizon NW, unregulated competitive companies are free to set prices that reflect realistic assumptions regarding investment, expenses, and depreciation, and realistic estimates of the risks and costs of technological change. In addition, competitive companies can use realistic demand forecasts and, if those forecasts are exceeded, their revenues will be higher than expected. And unregulated competitive companies do not have an obligation to provide facilities to competitors under cancelable leases that by design are intended to facilitate the transition by those competitors to alternative facilities or technologies. Unregulated competitive companies will not undertake investments when the expected rate of return on investment is less than their cost of capital.

Q. WHY IS THE RISK OF INVESTING IN THE FACILITIES NECESSARY TO PROVIDE UNES UNDER THE TELRIC STANDARD GREATER THAN THE RISK OF INVESTING IN THE AVERAGE COMPETITIVE COMPANY?

A. The risk of investing in the facilities required to provide UNEs under the TELRIC standard is greater than the risk of investing in the average competitive company because: (1) TELRIC rates are initially set to recover investments over a long

time frame, but rates are re-set every few years in order to reflect the supposedly lower costs of building a new network using the latest available technology; (2) TELRIC rates are based on idealized economic assumptions that are often unachievable in the real world; (3) TELRIC rates are based on the unrealistic assumption that the telecommunications network can be reconstructed each time a new technology appears and companies incur no costs in transitioning to new technologies; (4) TELRIC rates do not reflect the higher costs and risks of making large sunk investments in network facilities when customers have the option to either build their own facilities or renew their lease of network facilities at lower rates whenever new lower-cost technologies become available; and (5) under the FCC's rules, ILECs are unable to achieve a competitive advantage by investing in new technologies because they must immediately share the benefits of new technologies with competitors.

Q. HOW CAN THE WUTC SET RATES SO AS TO ALLOW THE TELECOMMUNICATIONS COMPANY UNDER THE TELRIC STANDARD TO HAVE THE OPPORTUNITY TO EARN ITS WEIGHTED AVERAGE COST OF CAPITAL OVER TIME?

A. The WUTC must adopt a cost of capital that reflects the additional regulatory risk of operating under the TELRIC standard. Such a cost of capital would of course be greater than the average competitive market cost of capital because competitive companies do not face the additional risk of regulation under the TELRIC standard.

Q. WHY IS REGULATORY RISK AN IMPORTANT ISSUE IN THIS PROCEEDING?

A. Regulatory risk is an important issue because the Commission's TELRIC standard greatly increases the risk that Verizon NW will be unable to earn a fair rate of return on its investment in network facilities.[6/] If Verizon NW is not compensated for regulatory risk, it will have no incentive to invest in network facilities, and CLECs will have the incorrect incentive to lease UNEs from Verizon NW, even if they could construct and operate telecommunications facilities more efficiently than Verizon NW.

Q. HAS THE FCC ITSELF RECOGNIZED THAT THE REGULATORY RISK OF THE UNE COST MODEL MUST BE CONSIDERED WHEN ESTIMATING THE COST OF CAPITAL COMPONENT OF UNE COST STUDIES?

A. Yes. In its reply brief filed in the TELRIC cases before the Supreme Court, the FCC stated that "an appropriate cost of capital determination takes into account not only existing competitive risks...but also ***risks associated with the regulatory regime to which a firm is subject.***"[7/]

Q. HAS THE U. S. SUPREME COURT ALSO ACKNOWLEDGED THAT REGULATORY RISK MUST BE CONSIDERED IN ESTIMATING THE COST OF CAPITAL FOR USE IN RATE MAKING?

[6/] In the *Hope Natural Gas Case*, the U.S. Supreme Court defined a fair rate of return as a return that is "commensurate with returns on investments in other enterprises having corresponding risks." *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944).

[7/] Reply Brief for Petitioners United States and the FCC, *Verizon Communications, Inc. et al. v. FCC et al.* (Nos. 00-551, 00-555, 00-587, 00-590, and 00-602) at 12 n.8. (Emphasis added.)

A. Yes. In the *Duquesne* decision, the U.S. Supreme Court explicitly recognizes that regulatory risk should be considered in setting the cost of capital for use in ratemaking:

> The loss to utilities from prudent but ultimately unsuccessful investments under such a system is greater than under a pure prudent investment rule, but less than under a fair value approach. Pennsylvania's modification slightly increases the overall risk of investments in utilities over the pure prudent investment rule. *Presumably the PUC adjusts the risk premium element of the rate of return on equity accordingly. Duquesne Light Co. v. Barasch*, 488 U.S. 299, 311-12 (1989) (emphasis added).

Q. WHAT IS THE COMBINED EFFECT OF THE COMPETITIVE RISKS FACED BY VERIZON AND THE TELRIC AND REGULATORY RISKS YOU HAVE IDENTIFIED?

A. Combined, these risks create a significant increase in risk for Verizon NW, as compared to companies not regulated in the same way. As Mr. West describes, expanding competition from other technologies (wireless, Internet, cable telephony) are taking traffic off of Verizon NW's network and reducing the volumes of services it sells. Yet TELRIC and other regulatory mandates require Verizon NW to maintain a modern network reaching all customer locations and capable of accommodating all possible demand, while requiring the company to allow competitors to use that network at rates that will not fully recover Verizon NW's costs.

C. THE REGULATORY RISK OF THE TELRIC STANDARD IS NOT COMPENSATED IN THE MARKET COST OF CAPITAL.

Q. IS THE REGULATORY RISK OF THE TELRIC STANDARD ALREADY INCLUDED IN MARKET ESTIMATES OF THE COST OF CAPITAL?

A. No. The market cost of capital is estimated from models such as the DCF and risk premium that are incapable of considering the regulatory risk that arises when customers have the option to cancel their lease contract at any time. Indeed, Professors Black and Scholes developed their world-famous Black Scholes option pricing model specifically because traditional valuation models such as the DCF and risk premium models fail to reflect the economics of investments that involve real options.

Q. WHY DO TRADITIONAL VALUATION MODELS SUCH AS THE DCF AND RISK PREMIUM FAIL TO REFLECT THE ECONOMICS OF INVESTMENTS THAT INVOLVE REAL OPTIONS?

A. An option gives an investor the right, but not the obligation, to make decisions at a later time, that may increase the investor's return on investment. Examples of such options include the option to cancel lease payments when lower cost alternatives become available, the option to expand investment if initial results are favorable, the option to abandon if initial results are unfavorable, and the option to delay investment until a later time. In contrast, the DCF and risk premium models are based on the assumption that investors have no ability to make follow-on decisions once their investment is made. Since an option to make follow-on decisions that enhance the return on investment is valuable, and the DCF and risk premium models do not allow for these options, the DCF and risk premium models do not reflect the risks associated with decisions involving real options such as the CLECs' option to either build their own facilities or renew their lease of UNEs at lower rates.

Q. DO FINANCE PROFESSIONALS RECOGNIZE THAT TRADITIONAL MODELS SUCH AS THE DCF AND RISK PREMIUM FAIL TO ACCOUNT FOR THE VALUE AND RISK OF OPTION CONTRACTS?

A. Yes. In their text, *Principles of Corporate Finance*, 6th edition, Brealey and Myers state at p. 622:

> Discounted cash flow (DCF) implicitly assumes that firms hold real assets passively. It ignores the options found in real assets—options that sophisticated management can act to take advantage of. You could say that DCF does not reflect the value of management.
>
> Remember that the DCF valuation method was first developed for bonds and stocks. Investors in these securities are necessarily passive: with rare exceptions, there is nothing investors can do to improve the interest rate they are paid or the dividends they receive. A bond or common stock can be sold, of course, but that merely substitutes one passive investor for another.
>
> Options and securities which contain options, such as convertible bonds, are fundamentally different. Investors who hold options do not have to be passive. They are given a right to make a decision, which they can exercise to capitalize on good fortune or to mitigate loss. This right clearly has value whenever there is uncertainty. However, calculating that value is not a simple matter of discounting. Option pricing theory tells us what the value is, but the necessary formulas do not look like DCF.

V. ESTIMATE OF THE WEIGHTED AVERAGE COST OF CAPITAL FOR USE IN UNE COST STUDIES

Q. HOW DID YOU CALCULATE THE WEIGHTED AVERAGE COST OF CAPITAL THAT YOU RECOMMEND FOR USE IN VERIZON NW'S FORWARD-LOOKING COST STUDIES?

A. I calculated the weighted average cost of capital to be used in Verizon NW's forward-looking cost studies in two steps. First, I estimated the competitive market cost of capital by analyzing the market-based percentages of debt and equity in the capital structures of competitive firms, the market cost of debt, and the market-required rate of return on an equity investment in a large sample of companies with less than average risk operating in the competitive market environment required by the FCC's forward-looking economic cost standard. Second, I estimated the additional return, or risk premium, required to compensate Verizon NW for the unique risk of having to make large sunk investments in the telecommunications facilities required to provide UNEs, while their customers have the option to cancel their lease contract on a monthly basis.

A. TARGET CAPITAL STRUCTURE

Q. HOW DID YOU DETERMINE AN APPROPRIATE TARGET CAPITAL STRUCTURE FOR USE IN VERIZON NW'S FORWARD-LOOKING COST STUDIES?

A. To determine an appropriate target capital structure for use in Verizon NW's forward-looking cost studies, I examined capital structure data for both my proxy group of S&P Industrials and a group of telecommunications companies with

incumbent local exchange subsidiaries. I examined the most current available data for these companies, and I also reviewed data for the past five years.

Q. WHAT ARE THE AVERAGE MARKET VALUE CAPITAL STRUCTURES OF THE S&P INDUSTRIALS AND THE TELECOMMUNICATIONS COMPANIES WITH INCUMBENT LOCAL EXCHANGE OPERATIONS?

A. Table 2 below shows the average year-end market value capital structures of the S&P Industrials and the telecommunications companies for the five-year period 1998 through 2002. These data show that both groups on average generally have market value capital structures that contain 75% or more equity.

Table 2

Capital Structure of the S&P Industrials and Telecommunications Companies at Year End ($ in Millions)

	S&P Industrials			Telecom Companies		
Year End	Market Value	Total Debt	%Equity	Market Value	Total Debt	%Equity
1998	2,091,436	375,052	84.79%	286,225	46,966	85.90%
1999	2,463,210	433,174	85.04%	349,250	62,533	84.81%
2000	2,114,218	452,639	82.37%	373,828	104,323	78.18%
2001	2,267,945	571,038	79.89%	331,916	110,617	75.00%
2002	1,850,815	593,937	75.71%	244,352	93,517	72.32%
Total	**10,787,624**	**2,425,840**	**81.64%**	**1,585,572**	**417,956**	**79.14%**

Q. DO THE TOTAL DEBT DATA SHOWN IN TABLE 2 INCLUDE BOTH SHORT-TERM DEBT AND LONG-TERM DEBT?

A. Yes. To be conservative, I included both short-term and long-term debt in my calculations of the average total debt in the capital structures of both the S&P Industrials and the telecommunications companies. If I had excluded short-term debt from total capital, the percentage of debt in the capital structure of my proxy

companies would have been even lower, and the percentage of equity would have been higher.

Q. IS THERE ANY REASON WHY SHORT-TERM DEBT SHOULD BE EXCLUDED FROM THE MARKET VALUE CAPITAL STRUCTURES USED TO DETERMINE THE COST OF CAPITAL INPUT IN UNE COST STUDIES?

A. Yes. My proxy companies primarily use short-term debt to finance working capital requirements, including investment in inventories and receivables. Short-term debt is generally not used to finance investments in long-term assets such as Verizon NW's investment in telecommunications network facilities. In addition, working capital is not included in the investment component of UNE costs. Thus, it would not be appropriate to include short-term debt in the capital structure when calculating the weighted average cost of capital for use in UNE cost studies.

Q. WHAT IS YOUR RECOMMENDED CAPITAL STRUCTURE FOR USE IN VERIZON NW'S FORWARD-LOOKING COST STUDIES?

A. I recommend the use of a market value capital structure in forward-looking economic cost studies in Washington because a market value capital structure is the only capital structure that is consistent with the forward-looking economic cost principles adopted by the FCC and this Commission. Market value capital structures are always forward looking because investors look only to the future to determine the value of their stocks and bonds. Unlike a market value capital structure, a book value capital structure is based on the embedded or historical costs of Verizon NW's assets. As the FCC states: "Embedded costs are the

costs that the incumbent LECs carry on their accounting books that reflect historical purchase prices, regulatory depreciation rates, system configurations, and operating procedures." *Local Competition Order* at ¶ 632. Furthermore, the FCC has specifically stated that UNE rates cannot be based on embedded or historical costs. (See, for example, *id.* at ¶ 673: "In this section, we describe this forward-looking, cost-based pricing standard in detail. ...[W]e address potential cost measures that ***must not be included in a TELRIC analysis, such as embedded (or historical) costs.***" (Emphasis added).)

As demonstrated by the information provided above in Table 2, a reasonable target market value capital structure for Verizon NW contains 25% debt and 75% equity. Thus, I recommend that a capital structure containing 25% debt and 75% equity be used to calculate Verizon NW's weighted average cost of capital.

B. COST OF DEBT

Q. HOW DID YOU MEASURE THE MARKET COST OF DEBT INVESTMENTS?

A. I used the 6.26% average yield to maturity on Moody's A-rated industrial bonds for April 2003, as reported in the Mergent Bond Record. This estimate is conservative because it does not include the flotation costs that must be paid to issue the debt securities required to finance the building of local exchange facilities on a forward-looking basis.

Q. DID YOU INCLUDE THE INTEREST RATE ON SHORT-TERM DEBT IN YOUR ESTIMATE OF THE MARKET COST OF DEBT FOR USE IN UNE COST STUDIES?

A. No. As noted above, short-term debt should not be included in the capital structure component of the cost of capital used in UNE cost studies because Verizon NW uses short-term debt primarily to finance working capital, and working capital is not included in the investment component of UNE cost studies.

C. COST OF EQUITY

Q. HOW DID YOU MEASURE THE MARKET COST OF AN EQUITY INVESTMENT IN VERIZON NW?

A. I applied the DCF Model to the S&P Industrials.

Q. WHY DID YOU APPLY THE DCF MODEL TO THE S&P INDUSTRIALS?

A. A proper definition of the cost of capital for use in Verizon NW's forward-looking cost studies is based on the assumption that the market for Verizon NW's services is competitive. As previously noted, the FCC stated in the *Local Competition Order* that it sought to establish UNE pricing rules that simulate conditions in a competitive marketplace. However, at the present time, there are no publicly-traded companies that have built telecommunications networks solely for the purpose of providing unbundled network elements in a competitive market. Since the S&P Industrials are a large, well-known sample of publicly traded companies operating in competitive markets, I believe the S&P Industrials are the best available proxy for determining the cost of capital component of UNE cost studies.

Q. HOW DOES THE FORWARD-LOOKING RISK OF INVESTING IN THE FACILITIES REQUIRED TO PROVIDE UNBUNDLED NETWORK ELEMENTS

UNDER THE TELRIC STANDARD COMPARE TO THE FORWARD-LOOKING RISK OF INVESTING IN THE S&P INDUSTRIALS?

A. The forward-looking risk of investing in the facilities required to provide unbundled network elements in Washington under the TELRIC standard is significantly greater than the forward-looking risk of investing in the S&P Industrials. As I noted above, the risk of investing in the facilities to provide unbundled network elements depends on operating leverage, demand uncertainty, rapidly changing technology, the regulatory environment, and the nature of the contract between the firm and its customers. The degree of operating leverage required to provide facilities-based telecommunications services far exceeds the average degree of operating leverage required to provide the goods and services offered by companies in the S&P Industrials because the average industrial company has a much lower investment in long-term fixed assets than the average telecommunications company.

The demand for telecommunications services is also becoming increasingly uncertain as competitors attract customers by offering comparable service at lower rates and new technologies allow customers to bypass wireline networks. On a forward-looking basis, demand uncertainty in the telecommunications industry is approaching that of the S&P Industrials.

Furthermore, telecommunications is a high technology business that is particularly sensitive to the risks of demand uncertainty and rapidly changing technology. To be sure, the combination of demand uncertainty and rapidly changing technology has forced many companies in the telecommunications

industry into bankruptcy in recent years. In addition, a regulatory environment that requires Verizon NW to provide UNEs to its competitors at rates that very likely will not allow it to cover the cost of its investment in network facilities, including the cost of capital, and that places restrictions on Verizon NW in its ability to compete on equal terms with its competitors, exacerbates the risks.

Finally, the lease contract between Verizon NW and its competitors requires that Verizon NW make large sunk investments to build telecommunications network facilities while its competitors are able to cancel their UNE lease contract with Verizon NW at any time or renew their lease at lower rates when rates are reset. The financial community recognizes that cancelable operating leases are significantly more risky for the lessor than non-cancelable financial leases. These factors—high operating leverage, demand uncertainty, rapidly changing technology, the regulatory environment, and the cancelable nature of the operating lease Verizon NW offers to its customers—make the risk of investing in the facilities required to provide unbundled network elements greater than the risk of investing in the S&P Industrials.

Q. IS THE RISK OF PROVIDING UNBUNDLED NETWORK ELEMENTS GREATER THAN THE RISK OF PROVIDING LOCAL EXCHANGE SERVICE IN THE CURRENT REGULATORY ENVIRONMENT?

A. Yes. In their eagerness to promote competition for local exchange service at the residential level, regulators have generally set rates for unbundled network elements based on forward-looking economic cost studies that include: (1) aggressive assumptions about the expenses and amount of investment

required to build a telecommunications network using the most efficient technology currently available; and (2) conservative estimates of the appropriate rate of depreciation and cost of capital for that forward-looking network. As a result of these contradictory approaches to estimating these four components of the forward-looking economic cost of providing unbundled network elements (that is, expenses, investment, cost of capital, and depreciation), local exchange carriers such as Verizon NW have been required to lease unbundled network elements at rates that are below the cost of providing these elements in a competitive environment. Thus, the risk of providing unbundled network elements has exceeded the risk of providing local exchange service.

Furthermore, the provision of unbundled network elements presents its own unique risk. Verizon NW's investment in its telecommunications network is large, long-lived, and largely sunk once the investment is made, while its revenues will certainly decline if CLECs cancel their lease or renew their lease at lower rates when new lower-cost technologies become available. Under these circumstances, Verizon NW will have little or no opportunity to recover its investment in network facilities, let alone to earn a fair rate of return on its investment in the network.

Q. WHAT DCF RESULT DID YOU OBTAIN FROM YOUR APPLICATION OF THE DCF MODEL TO THE S&P INDUSTRIALS?

A. As shown in Exhibit JHV-2, I obtained a market-weighted average DCF cost of equity of 13.95% for the S&P Industrials.

D. WEIGHTED AVERAGE COST OF CAPITAL

Q. WHAT IS YOUR ESTIMATE OF VERIZON NW'S OVERALL WEIGHTED AVERAGE COST OF CAPITAL, WITHOUT CONSIDERING THE UNIQUE RISKS OF THE UNE REGULATORY AND OPERATING ENVIRONMENT?

A. I estimate Verizon NW's overall weighted average cost of capital, without considering the unique risks of the UNE regulatory and operating environment, to be 12.03%. This estimate is based on a 6.26% market cost of debt, a target market value capital structure containing 25% debt and 75% equity, and a cost of equity of 13.95% (see Table 3).

Table 3

Weighted Average Cost of Capital
Using 25% Debt/75% Equity Capital Structure

Source of Capital	Cost Rate	Percent	Weighted Cost
Debt	6.26%	25.00%	1.57%
Equity	13.95%	75.00%	10.46%
WACC			12.03%

E. REQUIRED RISK PREMIUM

Q. HAVE YOU BEEN ABLE TO QUANTIFY THE IMPACT OF THE COMMISSION'S TELRIC STANDARD ON THE APPROPRIATE COST OF CAPITAL FOR USE IN UNE COST STUDIES?

A. Yes. I have been able to estimate the risk premium Verizon NW requires to compensate for the risk of providing UNEs under the TELRIC standard, rather than under the simple competitive market standard I assumed when I prepared my 12.03% estimate of the appropriate cost of capital for use in UNE cost

studies. However, this estimate is conservative because some risks are still not captured by my risk premium analysis.

Q. HOW DID YOU ESTIMATE THIS REQUIRED RISK PREMIUM?

A. I estimated this required risk premium by: (1) recognizing the difference between a non-cancelable financial lease and a cancelable operating lease; (2) obtaining data from Verizon NW on its forward-looking investment, operating expenses, and depreciation for the network required to provide UNEs in Washington; (3) using a standard methodology for valuing the CLECs' option to cancel their lease one month at a time; and (4) comparing the required rate of return on a financial lease for Verizon NW's network to the required rate of return on a cancelable operating lease for this network.

Q. WHAT IS THE DIFFERENCE BETWEEN A NON-CANCELABLE FINANCIAL LEASE AND A CANCELABLE OPERATING LEASE?

A. The financial literature distinguishes between two types of lease. The financial lease is a long-term, non-cancelable, fixed rate lease, whose term is approximately equal to the expected economic life of the leased property. The fixed lease payments in a financial lease contract must be sufficient to cover the original cost of the property, as well as the operating expenses. The operating lease, on the other hand, is a cancelable lease, that has an expected term much less than the expected economic life of the leased property. Under the operating lease, the lessee has the option to cancel the lease at short notice. The cancellation feature of the operating lease increases the risk that the lessor will be unable to recover its investment and earn a fair return on that investment.

The lease payments on an operating lease must therefore be larger than the lease payments on a financial lease in order to cover not only the initial investment and operating expenses, but also the value of the option to cancel the lease.

Q. WHY IS THE DISTINCTION BETWEEN A NON-CANCELABLE FINANCIAL LEASE AND A CANCELABLE OPERATING LEASE IMPORTANT FOR THE PURPOSE OF ESTIMATING THE APPROPRIATE COST OF CAPITAL FOR USE IN UNE COST STUDIES?

A. The distinction is important because the lessor's investment risk is significantly higher for a cancelable operating lease than for a non-cancelable financial lease. If the WUTC does not properly recognize the higher risk Verizon NW faces in offering CLECs cancelable operating leases, UNE rates will not send correct economic signals to market participants. CLECs will be encouraged to lease UNEs rather build their own facilities, even if they could build and operate a telecommunications network more efficiently than the incumbent LEC, and the incumbent will have no incentive to make additional investments in the network.

Q. WHY DO CANCELABLE OPERATING LEASES INVOLVE SIGNIFICANTLY HIGHER RISK FOR VERIZON NW?

A. Verizon NW's network investment is a large, long-lived, and largely sunk once the investment is made. If CLECs either build their own facilities or use alternative facilities or technologies, Verizon NW's revenues will decline, but its investment and operating expenses remain the same. Thus, under the UNE regime, the risk that Verizon NW will not be able to earn a fair return on its

investment is very high. Indeed, it is fair to say that under the UNE regime and TELRIC standard, Verizon NW is virtually certain to earn a rate of return on investment that is significantly less than its market cost of capital.

Q. DOES YOUR REGULATORY RISK PREMIUM DEPEND ENTIRELY ON THE POSSIBILITY THAT CLEC CUSTOMERS WILL LEAVE VERIZON NW'S NETWORK AFTER THEY BUILD THEIR OWN FACILITIES?

A. No. Verizon NW faces considerable residual value risk under the TELRIC standard whether or not CLEC customers continue to lease Verizon NW's facilities. In practice, the TELRIC standard has been applied to periodically reset rates at successively lower prices based on state commissions' views of the costs of a hypothetical network using the most efficient technology currently available. Under this standard, Verizon NW suffers an economic loss every time rates are reset to reflect a new lower cost technology, even if all CLEC customers continue to be served from Verizon NW's facilities. Thus, Verizon NW faces a significant risk of earning less than its cost of capital under the TELRIC standard whether or not competitors build their own facilities. The cost of capital premium for TELRIC risk is associated with the CLEC's option to obtain network services at a lower cost every time a new technology arrives and rates are lowered.

Q. DO FINANCIAL MARKET PARTICIPANTS RECOGNIZE THAT CANCELABLE OPERATING LEASES INVOLVE SIGNIFICANTLY HIGHER RISK THAN NON-CANCELABLE FINANCIAL LEASES?

A. Yes. The higher risk of cancelable operating leases is widely recognized in the financial community. Examples of such recognition include:

- Car lessors require significantly higher monthly lease payments on short-term operating leases than on longer-term financial leases.
- Wireless service providers offer lower rates for customers who are willing to sign longer-term contracts.
- Independent power producers can only obtain financing to build new electric generation facilities if they can prove they have long-term purchase power agreements with utilities that commit utilities to purchasing power from the IPP at fixed rates over the life of the generating facilities. Without such agreements, the risks of building new generation facilities are simply too high to justify investment.
- Bond rating agencies consider interstate pipeline companies to have lower business risk if they have long-term, fixed-rate contracts for pipeline capacity.

Q. CAN YOU PROVIDE ANY REAL WORLD EXAMPLES OF THE RISKS OF MAKING HUGE FIXED INVESTMENTS IN A TELECOMMUNICATIONS NETWORK WHEN DEMAND IS UNCERTAIN AND TECHNOLOGICAL CHANGE IS RAPID?

A. Yes. Over the last several years, companies such as WorldCom, Global Crossing, Qwest, Teligent, Allegiance, Covad, Rythms, Level 3, Metromedia Fiber Network, Williams Communications, McLeodUSA and others have invested billions of dollars in constructing telecommunications networks both here and abroad. These companies have found that telecommunications demand was not as large as they originally forecast, and advances in technology may soon make some parts of their networks obsolete. As a result, these companies have lost anywhere from 80% to 100% of their market value as investors have come to realize that these networks were built on overly optimistic demand and cost forecasts. The companies and their investors are now aware of the enormous

risk of making high-cost, fixed investments in new telecommunications technology.

Q. WHY DOESN'T VERIZON NW CHOOSE TO REDUCE ITS INVESTMENT RISK BY OFFERING ITS CUSTOMERS DISCOUNTS FOR LONGER-TERM CONTRACTS?

A. Verizon NW has no incentive to offer discounts on long-term UNE lease contracts since current UNE rates do not compensate Verizon NW for the additional risks it incurs in providing UNEs under the TELRIC standard. Verizon NW would only offer discounts for longer term leases if long-term leases reduced Verizon NW's risk of investment in the facilities required to provide UNEs. But this statement implies that short-term leases increase Verizon NW's risk of investing in UNE facilities. Verizon NW cannot reasonably be expected to offer discounts for longer-term leases if the additional risk premium for shorter-term leases is not reflected in the cost of capital input used in UNE cost studies.

Q. WHAT METHODOLOGY DID YOU USE TO VALUE THE CLECS' ABILITY TO CANCEL OR RENEW THEIR UNE LEASE AT LOWER RATES?

A. I used the binomial option pricing methodology described in an article by Copeland and Weston, "A Note on the Evaluation of Cancellable Operating Leases," published in the Summer 1982 issue of *Financial Management* and provided as Exhibit JHV-3. This methodology is widely employed by financial analysts to value the options that are traded in financial markets and is more flexible than its predecessor, the Black-Scholes model. It is based on the assumptions that (1) the value of the underlying asset can either increase or

decrease at discrete points in time, and (2) lessees can exercise the option to renew the lease at lower rates or cancel altogether once they observe the new value of the underlying asset. In the context of my analysis of regulatory risk, the binomial option pricing methodology is conservative because it assumes that the value of the network can either increase or decrease, whereas, under TELRIC, the value of the network is likely only to decrease as new lower-cost technologies become available.

Q. DOES YOUR METHODOLOGY APPLY EVEN IF THE CLECS CONTINUE TO LEASE UNES FROM VERIZON NW AND NEVER BUILD THEIR OWN NETWORK FACILITIES?

A. Yes. Under the TELRIC standard, CLECs are able to achieve the benefits of new lower cost technologies whether or not they choose to build their own facilities. If CLECs continue leasing UNEs, my methodology can best be thought of as a way to estimate the value CLECs receive by having the option to renew their lease at a lower lease payment whenever rates are reset.

Q. PLEASE DESCRIBE IN MORE DETAIL YOUR METHODOLOGY FOR CALCULATING THE REGULATORY RISK PREMIUM ASSOCIATED WITH THE UNE REGIME AND THE TELRIC STANDARD.

A. I estimated this regulatory risk premium in several steps. First, I used the same forward-looking investment, operating expenses, depreciation, and asset lives presented by Verizon NW in this proceeding.

Second, I calculated the minimum lease payments that would allow Verizon NW to recover the TELRIC cost of its network investment, pay its

operating expenses and taxes, and earn a fair rate of return on its network investment under the assumption that CLECs cannot renew or cancel their lease of network facilities. In short, the lease payments in this step were calculated as if the CLECs' lease contract with Verizon NW were a financial lease rather than an operating lease.

Third, I calculated the market value of the CLECs' option to renew their lease at lower rates using the binomial option pricing methodology noted above and described in the Copeland and Weston article provided in Exhibit JHV-3.

Fourth, using the value of the CLECs' option as an input, I calculated the minimum lease payment that would allow Verizon NW to recover the cost of its network investment, pay its operating expenses and taxes, and earn a fair rate of return on its network investment when regulators periodically lower UNE rates.

Finally, from this information, I calculated the regulatory risk premium required to compensate Verizon NW for some of the additional risk they incur under the UNE regime and the TELRIC standard.

Q. PLEASE DESCRIBE THE DATA YOU OBTAINED FROM VERIZON NW.

A. The data I obtained from Verizon NW are shown in Exhibit JHV-4. The data, which is the same that Verizon NW has presented as its TELRIC costs in this case, show that Verizon NW would have to invest approximately $1.86 billion to reconstruct its telecommunications network in Washington using the most efficient technology currently available, that its annual operating expenses would be approximately $208 million, and that the average life of this network would be approximately 17.1 years.

Q. HOW DID YOU CALCULATE THE MINIMUM LEASE PAYMENTS THAT WOULD ALLOW VERIZON NW TO RECOVER THE TELRIC COST OF ITS NETWORK INVESTMENT, PAY ITS OPERATING EXPENSES AND TAXES, AND EARN A FAIR RATE OF RETURN ON ITS NETWORK INVESTMENT, UNDER THE ASSUMPTION THAT THE CLECS SIGN A NON-CANCELABLE FINANCIAL LEASE FOR THE USE OF VERIZON NW'S NETWORK FACILITIES?

A. I calculated the lease payments by equating the present value of the cash inflows under the lease to the present value of Verizon NW's cash outflows for investments, operating expenses, and taxes. Specifically, the calculation of the lease payments was made using the equation:

$$I = \sum_{t=1}^{T} \frac{(1-\tau_c)(L_t - O_t) + \tau_c D_t}{(1+ATWACC)^t} + \frac{MV}{(1+ATWACC)^T} \quad (1)$$

where:

I	=	investment in the network on total network basis
τ_c	=	composite corporate tax rate
L_t	=	monthly lease payment
D_t	=	monthly depreciation amount
O_t	=	monthly operating expense
T	=	number of months in life of asset
MV	=	salvage value of asset and
ATWACC	=	after-tax weighted average cost of capital

Using the data shown in Exhibit JHV-4 and my estimate of Verizon NW's after-tax weighted average cost of capital,[8/] Equation (1) can be solved for the unknown monthly lease payments.

Q. WHY DID YOU USE VERIZON NW'S AFTER-TAX WEIGHTED AVERAGE COST OF CAPITAL TO DISCOUNT LEASE CASH FLOWS IN YOUR ANALYSIS?

A. I used Verizon NW's after-tax weighted average cost of capital to discount lease cash flows because it best reflects the financing mix and cost rates that Verizon NW would need to use to finance its investment in the facilities required to provide UNEs. Since CLECs use the leasing of UNEs as a substitute for building and owning their own telecommunications facilities (or of using other alternative facilities or technologies), the after-tax weighted average cost of capital provides correct economic signals for the lease versus build decision.

Q. SOME ECONOMISTS SUGGEST THAT A FINANCIAL LEASE IS A SUBSTITUTE FOR DEBT FINANCING RATHER THAN FOR A MIX OF DEBT AND EQUITY FINANCING AS YOU HAVE ASSUMED. IN THIS APPLICATION, WHY IS IT APPROPRIATE TO ASSUME A MIX OF DEBT AND EQUITY FINANCING RATHER THAN PURE DEBT FINANCING?

A. In this application it is appropriate to assume a mix of debt and equity financing because a company investing approximately $1.86 billion to reconstruct Verizon NW's network in Washington could never finance this investment entirely with

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8/ The after-tax weighted average cost of capital reflects the tax deductibility of interest. Thus, for example, if the interest rate is 7% and the tax rate is 50%, the after-tax weighted average cost of capital will reflect 3.5% interest.

debt. Even if CLECs sign a financial lease that requires them to purchase UNEs at a fixed rate for the entire life of the network, there is no guarantee that CLECs could fulfill their contract. Indeed, Verizon NW would still face the considerable risk that CLECs would default on their lease payments due to bankruptcy. Verizon NW could only reduce its investment risk through a mix of debt and equity financing. A financial lease is really a substitute for owning an asset and is only a substitute for debt financing if the lessee could realistically finance the asset with debt if they did not lease the asset. In the case of a telecommunications network investment, it is simply unrealistic to assume that either the CLEC or Verizon NW could finance ownership of the network entirely with debt.

Q. IS IT EVER APPROPRIATE TO CONSIDER A FINANCIAL LEASE AS A SUBSTITUTE FOR DEBT FINANCING?

A. Yes. For relatively small purchases such as automobiles, the financially secure consumer can finance the purchase entirely with debt. Thus, a financial lease in this instance is a substitute for debt financing.

Q. WHAT ARE THE DIFFERENCES BETWEEN A CONSUMER'S DECISION TO INVEST IN AN AUTOMOBILE AND VERIZON NW'S DECISION TO INVEST IN A TELECOMMUNICATIONS NETWORK IN WASHINGTON?

A. The differences between the consumer's decision to invest in an automobile and Verizon NW's decision to invest in a telecommunications network relate to: (1) the size of the investment; (2) the ability to sell the investment in the case of financial difficulties; and (3) the risk of default on the financial contract. In the

case of the automobile investment, the amount of the investment is small relative to the lessee's wealth; the asset is relatively easy to sell if the lessee defaults on his contract; and the likelihood of default is relatively small. In contrast, Verizon NW's investment in its network in Washington represents its entire wealth; it would be difficult to sell the network if the CLECs as lessees were to default on their contracts; and the likelihood of the CLECs' default under a financial lease would be high.

Q. WHAT CONCLUSIONS DO YOU DRAW FROM YOUR ANALYSIS OF THESE DIFFERENCES?

A. I conclude that a financial lease is really a substitute for owning an asset, and that it is only a substitute for debt financing if the lessee could realistically finance the asset with debt if they did not lease the asset. In the case of an automobile, it is realistic to assume that a customer can finance ownership of the asset with debt. However, in the case of a telecommunications network investment, it is simply unrealistic to assume that either the CLEC or Verizon NW could finance ownership of the network entirely with debt.

Q. HOW DID YOU CALCULATE THE MINIMUM LEASE PAYMENT THAT VERIZON NW WOULD HAVE TO CHARGE IF THE CLECS CAN RENEW THEIR UNE LEASE WHEN A REGULATORY BODY SETS LOWER RATES?

A. I calculated this minimum lease payment by equating the present value of the lease cash inflows to the sum of the present value of Verizon NW's cash outflows for network investment, operating expenses, and taxes; and the value of the

option to renew the lease at lower rates when rates are reset. Specifically, the calculation of the lease payment in this scenario was made using the equation:

$$I = \sum_{t=1}^{T} \frac{(1-\tau_c)(L_t - O_t) + \tau_c D_t}{(1+ATWACC)^t} + \frac{MV}{(1+ATWACC)^T} - P_A \qquad \textbf{(2)}$$

where P_A is the value of the option to cancel, calculated according to Copeland/Weston, and the remaining variables are defined as in Equation (1).

Q. HOW DID YOU CALCULATE THE REGULATORY RISK PREMIUM REQUIRED TO COMPENSATE VERIZON NW FOR THE ADDITIONAL RISK THEY INCUR BECAUSE CLECS CAN CANCEL THEIR LEASES AND REGULATORS CAN LOWER UNE RATES AT ANY TIME?

A. I calculated this regulatory risk premium by substituting the value of the lease payments (obtained from the previous step) into Equation (1) and solving for the after-tax weighted average cost of capital. The required regulatory risk premium is the difference between the required rate of return on the cancelable operating lease and the required rate of return on the financial lease. Using the Verizon NW data, the regulatory risk premium is 3.95%.

Q. DOES THIS RISK PREMIUM FULLY REFLECT THE RISKS ASSOCIATED WITH THE UNE REGIME AND THE ACCOMPANYING TELRIC PRICING STANDARD?

A. No. My risk premium only reflects the additional regulatory risk associated with the regulators' option to lower UNE rates at any time to reflect the lower cost of a hypothetical network using the then-most efficient available technology and the CLEC option to cancel. It does not reflect all of the risks associated with the TELRIC pricing standard, such as the optimistic revenue, expense, and

investment assumptions that are frequently used in implementing the TELRIC standard. In addition, my regulatory risk premium does not reflect the risk that under the TELRIC standard Verizon NW will be unable to recover the actual costs it incurs in building and operating its network.

Q. WHAT IS THE QUANTITATIVE IMPACT OF TELRIC RISK ON THE APPROPRIATE COST OF CAPITAL FOR USE IN TELRIC COST STUDIES?

A. My studies indicate that TELRIC risk increases the cost of capital by 3.95%. If the cost of capital input in Verizon NW's TELRIC cost studies does not include this regulatory risk premium, Verizon NW will not have an opportunity to earn a fair rate of return on its network investment. Furthermore, if this risk premium is not included in the cost of capital input, Verizon NW will have no incentive to invest in network facilities and CLECs will have no incentive to invest in their own facilities to offer local exchange service. Thus, without this risk premium, UNE rates will not send correct economic signals to incumbent LECs and CLECs.

Q. WHAT IS YOUR CONCLUSION REGARDING THE COST OF CAPITAL APPROPRIATE FOR USE IN UNE COST STUDIES IN WASHINGTON?

A. I conclude that an appropriate yet conservative weighted average cost of capital for use in UNE cost studies in Washington is 15.98%. My recommended weighted average cost of capital is based on my 12.03% estimate of the weighted average cost of capital without considering the risk that Verizon NW incurs when CLECs have the option to cancel their lease on a monthly basis and on my 3.95% estimate of the required risk premium to compensate Verizon NW

for the risk it incurs when CLECs are able to cancel their leases on a monthly basis.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.