ORIGINAL

**Kimberly Caswell**
Vice President and General Counsel, Southeast
Legal Department

verizon

FLTC0007
201 North Franklin Street (33602)
Post Office Box 110
Tampa, Florida 33601-0110

Phone 813 483-2606
Fax 813 204-8870
kimberly.caswell@verizon.com

February 4, 2003

Ms. Blanca S. Bayo, Director
Division of Commission Clerk
and Administrative Services
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

FPSC-COMMISSION CLERK
03 FEB -4 PM 12:47

Re: Docket No. 981834-TP
Petition of Competitive Carriers for Commission Action to Support Local Competition in BellSouth Telecommunications Inc.'s Service Territory

Docket No. 990321-TP
Petition of ACI Corp. d/b/a Accelerated Connections, Inc. for generic investigation to ensure that BellSouth Telecommunications, Inc., Sprint-Florida, Incorporated, and GTE Florida Incorporated comply with obligation to provide alternative local exchange carriers with flexible, timely, and cost-efficient physical collocation

Dear Ms. Bayo:

Please find enclosed for filing an original and 15 copies of the Direct Testimonies of Barbara K. Ellis, Allen E. Sovereign and James H. Vander Weide on behalf of Verizon Florida Inc. in the above matters. Exhibits BKE-1 and BKE-2 to Ms. Ellis' testimony are Verizon's proprietary and confidential cost studies and will be filed under separate cover. Service has been made as indicated on the Certificate of Service. If there are any questions regarding this filing, please contact me at 813-483-2617.

Sincerely,

Kimberly Caswell

Enclosures

AUS
CAF
CMP Fulwood
COM 5 Original
CTR
ECR
GCL 1
OPC
MMS
SEC 1
OTH

ELLIS
DOCUMENT NUMBER-DATE
01117 FEB-4 03
FPSC-COMMISSION CLERK

SOVEREIGN
DOCUMENT NUMBER-DATE
01118 FEB-4 03
FPSC-COMMISSION CLERK

VANDER WEIDE
DOCUMENT NUMBER-DATE
01119 FEB-4 03
FPSC-COMMISSION CLERK

**CERTIFICATE OF SERVICE**

I HEREBY CERTIFY that copies of the Direct Testimonies of Barbara K. Ellis, Allen E. Sovereign and James H. Vander Weide on behalf of Verizon Florida Inc. in Docket Nos. 981834-TP and 990321-TP were sent via U. S. mail on February 4, 2003 to the parties on the attached list.

Kimberly Caswell

Staff Counsel
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Nancy Sims
BellSouth Telecomm. Inc.
150 S. Monroe Street, Suite 400
Tallahassee, FL 32301-1556

Rodney L. Joyce
Shook Hardy & Bacon LLP
600 14th St NW, Suite 800
Washington, DC 20005-2004

Richard D. Melson
Gabriel E. Nieto
Hopping Law Firm
123 S. Calhoun Street
Tallahassee, FL 32314

Virginia C. Tate/Lisa A. Riley
AT&T
1200 Peachtree Street N.E.
Suite 8066
Atlanta, GA 30309-3523

Norton Cutler
Development Specialists Inc.
c/o Steve Victor
70 West Madison Street
Suite 2300
Chicago, IL 60602-4250

Peter M. Dunbar
Barbara Auger
Pennington Law Firm
215 S. Monroe St., 2nd Floor
Tallahassee, FL 32301

Nanette S. Edwards
ITC^DeltaCom
4092 S. Memorial Parkway
Huntsville, AL 35802-4343

Kenneth Hoffman
Rutledge Law Firm
215 S. Monroe St., Suite 420
Tallahassee, FL 32302

Andrew Isar
Telecomm. Resellers Assn.
c/o Miller Isar, Inc.
7901 Skansie Ave., Suite 240
Gig Harbor, WA 98335

C. Pellegrini/Patrick Wiggins
Katz Kutter Law Firm
106 E. College Avenue
12th Floor
Tallahassee, FL 32301

Terry Monroe/Genevieve Morelli
CompTel
1900 M Street N.W.
Suite 800
Washington, DC 20036

Michael A. Gross
Florida Cable Telecomm. Assn.
246 E. 6th Avenue, Suite 100
Tallahassee, FL 32303

Vicki Kaufman/Joe McGlothlin
McWhirter Law Firm
117 S. Gadsden Street
Tallahassee, FL 32301

David Tobin
Fla. Public Telecomm. Assn.
c/o Tobin & Reyes
7251 W. Palmetto Park Road
#205
Boca Raton, FL 33433-3487

John D. McLaughlin, Jr.
KMC Telecom Inc.
1755 North Brown Road
Lawrenceville, GA 30043-8119

Deborah Eversole
General Counsel
Kentucky Public Service Comm.
P. O. Box 615
Frankfort, KY 40602

Donna McNulty
MCI WorldCom
1203 Governors Square Blvd.
Suite 201
Tallahassee, FL 32301-2960

Floyd R. Self/Tracy Hatch
Messer Law Firm
P. O. Box 1876
Tallahassee, FL 32302

David Woodsmall
Mpower Comm. Corp.
175 Sully's Trail, Suite 300
Pittsford, NY 14534-4558

Mark E. Buechele
Supra Telecommunications
2620 SW 27th Avenue
Miami, FL 33133

Laura L. Gallagher
MediaOne Florida Tele.
101 E. College Avenue
Suite 302
Tallahassee, FL 32301

Don Sussman
Network Access Solutions Corp.
Three Dulles Tech Center
13650 Dulles Technology Drive
Herndon, VA 20171-4602

William H. Weber
Covad Communications Co.
1230 Peachtree Street N.E.
19th Floor
Atlanta, GA 30309-3574

S. Masterton/C. Rehwinkel
Sprint-Florida Incorporated
1313 Blairstone Road
MC FLTLHO0107
Tallahassee, FL 32301

Carolyn Marek
Time Warner Telecom
233 Bramerton Court
Franklin, TN 37069

Bettye Willis
ALLTEL Communications
Services Inc.
One Allied Drive
Little Rock, AR 72203

J. Jeffry Wahlen
Ausley & McMullen
227 S. Calhoun Street
Tallahassee, FL 32302

Anu Seam
U.S. Department of Justice
Telecom Task Force
Antitrust Division
1401 H Street N.W., Suite 8000
Washington, DC 20530

Anita L. Fourcard
Lockheed Martin IMS
Comm. Industry Services
1200 K Street, N.W.
Washington, DC 20005

Brent McMahan
Network Telephone Corporation
815 South Palafox Street
Pensacola, FL 32501

Matthew Feil
Florida Digital Network Inc.
390 N. Orange Avenue
Suite 2000
Orlando, FL 32801

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

| | |
|---|---|
| In re: Petition of Competitive Carriers for Commission action to support local Competition in BellSouth Telecommunications Inc.'s service territory | Docket No. 981834-TP |
| In re: Petition of ACI Corp. d/b/a Accelerated Connections, Inc. for generic investigation to ensure that BellSouth Telecommunications, Inc., Sprint-Florida, Incorporated, and GTE Florida Incorporated comply with obligation to provide alternative local exchange carriers with flexible, timely, and cost-efficient physical collocation. | Docket No. 990321-TP |

# DIRECT TESTIMONY OF

# JAMES H. VANDER WEIDE

# ON BEHALF OF

# VERIZON FLORIDA INC.

## SUBJECT: COST OF CAPITAL

**February 4, 2003**

DOCUMENT NUMBER-DATE
01119 FEB-4 8
FPSC-COMMISSION CLERK

## TABLE OF CONTENTS

## I. INTRODUCTION

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. My name is James H. Vander Weide. I am 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 300 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, and the insurance commissions of five states. 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 interconnection, 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 florida inc. ("verizon florida") 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 collocation arrangements. As part of my appraisal, i estimated the weighted average cost of capital for an average risk company 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 florida would have to earn to compensate them for the additional risk they face as a result of making a long-lived sunk investment in the telecommunications facilities required to provide collocation at the same time that ALECS have the ability to cancel their collocation lease on a monthly basis.

## 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.

For purposes of this proceeding, Verizon Florida is filing collocation cost studies, which include a cost of capital, that comply with the same FCC forward-looking economic principles used for pricing unbundled network elements ("UNEs"). Thus, Verizon Florida's proposed collocation rates:

(1) are 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 telecommunications market; and (3) provide correct economic signals for the investment decisions of both competitive and incumbent local exchange carriers.

My recommended cost of capital is therefore consistent with the forward-looking economic cost principle because it reflects current 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. It is consistent with the FCC's competitive market principle because it reflects the weighted average cost of capital of a large sample of competitive companies of comparable risk, as well as the risks inherent in the FCC's TELRIC costing standard. 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. More specifically, it reflects the risks the incumbent LEC would incur to construct telecommunications facilities, including collocation facilities, under the TELRIC standard, while offering competitors the option to cancel their use of these facilities on a monthly basis. If the cost of capital input in TELRIC cost studies is less than my recommended cost of capital, it will send the wrong economic signals. Incumbents will have no economic incentive to invest in telecommunications facilities because they will not recover their costs for doing so, and competitors will have no economic

incentive to build their own telecommunications networks because they could provide service more cheaply by leasing telecommunications facilities from Verizon Florida.

## 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 rate of return definition of the average cost of capital is not. The forward-looking economic cost of capital should be higher than the traditional rate of return cost of capital because it reflects market values rather than book values and competitive rather than less-than-competitive market conditions.

## C. RISK IMPLIED BY THE TELRIC STANDARD

The FCC's forward-looking economic cost standard requires that collocation rates reflect the forward-looking economic costs of constructing the facilities to provide collocation arrangements. The Florida Public Service Commission ("Florida PSC") should recognize that the risk of basing rates on the TELRIC standard, while at the same time offering competitors a cancelable lease on the use of collocation facilities is an exceedingly risky proposition. No rational investor would

incur the significant cost of constructing the collocation facilities contemplated in collocation cost studies without being compensated for the considerable risk incurred in making such an investment. The Florida PSC should recognize that the investment risk under the FCC's cost standard is considerably greater than investment risk under the traditional rate of return standard.

## D. RISK IMPLIED BY ACTUAL COMPETITIVE MARKET CONDITIONS

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

## E. THE FORWARD-LOOKING COST OF CAPITAL FOR A COMPETITIVE COMPANY OF AVERAGE RISK

I calculated the forward-looking economic cost of capital for a competitive company of average risk 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. (For an explanation of the DCF approach, see discussion on p. 20.) My estimate of the weighted average cost of capital for these companies is 12.45%. However, this estimate does not consider the additional risk Verizon Florida faces for making long-term fixed investments in collocation facilities while offering its customers the option to cancel their lease contract on a monthly basis.

## F. COST OF CAPITAL FOR USE IN TELRIC COST STUDIES

To reflect the additional risk of making long-term fixed investments in collocation facilities, while offering customers an option to cancel their lease contract on a monthly basis, the weighted average cost of capital for use in TELRIC 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 Florida for the unique and special risks it faces in offering competitors an option to cancel their lease on a monthly basis by applying option pricing formulas used in the financial markets. As discussed below, my estimate of the required risk premium is 5.92%. Thus, my recommended cost of capital for use in the collocation cost studies used to set Verizon Florida's rates is 18.36% [12.45% + 5.92% = 18.36%

(difference due to rounding)].

## 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 COLLOCATION ARRANGEMENTS?**

A. Yes. For purposes of this proceeding, Verizon Florida's collocation cost studies follow the basic economic principles for setting rates set forth in the FCC's 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 interconnection services and UNEs:

1. Rates for interconnection and UNEs should be based on forward-looking economic costs, not embedded or accounting costs;
2. Rates for interconnection and UNEs should approximate the rates the incumbent LEC would be able to charge in a competitive market for interconnection and UNEs arrangements; and
3. Rates for interconnection and UNEs should provide correct economic signals for the investment decisions of both competitive and incumbent local exchange carriers.

**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 at ¶¶ 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 collocation through the application of correct economic principles.

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

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

> 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 "SIMULATE[S] THE CONDITIONS IN 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 UNEs rates. [Memorandum, Opinion, and Order in CC Docket No. 01-9, FCC 01-130, adopted April 16, 2001 ("Mass. 271 Order"), ¶ 42 (Emphasis added).]

**Q. DO VERIZON FLORIDA'S ALEC CUSTOMERS SUPPORT THE OPINION THAT THE USE OF THE FORWARD-LOOKING ECONOMIC COST STANDARD REPLICATES CONDITIONS IN A COMPETITIVE MARKET FOR INTERCONNECTION AND UNES?**

A. Yes. The ALECs have repeatedly stated that forward-looking costs must replicate the conditions of a competitive market. For example, in her direct testimony on behalf of AT&T and WorldCom in the Virginia arbitration proceeding before the FCC, Terry L. Murray stated:

> First, as is consistent with the Commission's Total Element Long Run Incremental Cost ("TELRIC") methodology, the prices for UNEs should mimic the prices that would prevail if Verizon sold the same functionalities in a competitive market. Competitive market forces would drive prices down to efficient forward-looking economic costs. Thus, to allow all providers of local exchange service to purchase inputs as if they were doing so in a competitive market, the

Commission should establish prices for UNEs that do not exceed forward-looking economic costs. [Murray Direct Testimony filed July 31, 2001, p. 5 (emphasis added), Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc. and For Expedited Arbitration, CC Docket No. 00-218; Petition of Cox Virginia Telecom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc. and For Arbitration, CC Docket No. 00-249; Petition of AT&T Communications of Virginia, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., CC Docket No. 00-218, DA 02-1731.]

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

A. Yes. The FCC's rules clearly establish that TELRIC-based 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 18.36% 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 interconnection and UNEs in a competitive market where the ALEC has the option to cancel its lease of network facilities on a monthly basis. If collocation rates were based on a lower cost of capital,

new entrants would find it advantageous to collocate in the incumbent LEC's central office and lease UNEs 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 economic incentive to continue to invest in interconnection facilities.

## B. THE COST OF CAPITAL

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

A. Yes. As noted above, Verizon Florida's collocation cost studies follow the FCC's forward-looking economic cost principles. The forward-looking economic cost of providing collocation arrangements 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 collocation; (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 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 9%, the cost of equity is 15%, 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 9% plus 0.75 times 15%, or 13.5%.

**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. 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?**

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 a financing strategy that maximizes the value of the firm.

**Q. IS THE ECONOMIC DEFINITION OF THE COST OF CAPITAL, WHICH FOCUSES ON THE MARKET VALUES OF DEBT AND EQUITY, WIDELY ACCEPTED IN OTHER CONTEXTS BY CAPITAL**

**MARKET PARTICIPANTS?**

A. Yes. Homeowners measure the value of their homes in terms of market values, not historical cost or book values. Investors measure the return and risk on their portfolios in terms of market values, not book values. Companies use a market value definition of the cost of capital to make entry, investment, and innovation decisions.

**Q. IS THE ECONOMIC DEFINITION OF THE WEIGHTED AVERAGE COST OF CAPITAL CONSISTENT WITH THE WAY COMPETITIVE FIRMS DETERMINE THE REQUIRED RATE OF RETURN ON INVESTMENT DECISIONS?**

A. Yes. Managers also use a market value definition of the weighted average cost of capital in making investment decisions. From the manager's perspective, the firm's cost of capital is equal to the return investors can earn on the market value of other investments of the same risk. Rational managers, like rational investors, will not commit resources to investments in new markets or technologies unless the expected return on the market value of these investments in new markets or technologies is greater than or equal to the firm's cost of capital, measured on a market value basis, for projects with the same degree of 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 FLORIDA?**

A. Yes. If the Florida PSC wants to encourage efficient facilities-based competitive entry in the market for local exchange services, the cost of capital input in Verizon Florida's forward-looking economic cost studies must be at least as large as the return those potential facilities-based competitors can earn on other investments of the same risk. If potential competitors can lease collocation and other local exchange facilities from Verizon Florida at rates that include a ten percent 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 ten percent on other investments of comparable risk. In short, it would make more sense for those competitors to lease collocation and other local exchange facilities from Verizon Florida than to build their own facilities. To provide correct incentives for entry into local exchange markets, the Florida PSC should measure Verizon Florida's cost of capital in the same way that potential competitors measure their own costs 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 Florida PSC 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. As noted above, 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. Regulators, in contrast, 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 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 equity is equal to the book value of a company's assets minus the book value of the company's debt. But accountants measure the book value of a company's assets based on the historical cost of those assets. Thus, 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

that rates reflect the forward-looking economic cost of constructing a long-lived local telecommunications network using currently available technologies in an environment in which ALECs have the opportunity to cancel their lease contract with Verizon Florida on a monthly basis. The combination of the FCC's TELRIC cost standard and the cancelable nature of the lease contract creates a significant risk that Verizon Florida will be unable to recover its investment in the facilities required to provide interconnection to its competitors. Thus, the collocation investment contains additional risks that are not present in the retail local exchange market under historical cost ratemaking principles.

Given the significant differences between historical-cost ratemaking principles and forward-looking economic cost ratemaking principles, it is not surprising that the forward-looking economic cost of capital can be significantly higher than the traditional regulated rate of return cost of capital. Indeed, the appropriate cost of capital input for use in TELRIC cost studies exceeds the last 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 regulated companies under rate of return regulation; (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 in the telecommunications facilities required to provide interconnection and collocation is significantly greater than the risk of investing in the local

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 TELRIC COST STUDIES IN FLORIDA TO EXCEED THE LAST AUTHORIZED RETURN SET UNDER TRADITIONAL RATE OF RETURN REGULATION FOR VERIZON FLORIDA'S REGULATED RETAIL OPERATIONS?**

A. Yes. Recall that Verizon Florida's retail rates under rate of return regulation were based on historical cost, rather than forward-looking economic cost. Thus, the cost of capital input under traditional rate of return regulation was based on a book value capital structure that reflected the historical cost of Verizon Florida'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 TELRIC cost studies must be based on the principle of forward-looking economic costs. Unlike the historically-oriented cost of capital used in traditional rate of return regulation, 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

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 set rates based on the forward-looking economic cost, or the market value, of the company's investment in network facilities. Defining the cost of capital in terms of a book value capital structure is inconsistent with the use of forward-looking economic costs and market values to measure the regulated company's investment in telecommunications facilities.

**Q. IS A DEFINITION OF THE AVERAGE COST OF CAPITAL THAT IS BASED ON AN EMBEDDED BOOK VALUE CAPITAL STRUCTURE CONSISTENT WITH THE FORWARD-LOOKING ECONOMIC COST PRINCIPLES ADOPTED BY THE FCC?**

A. No. As noted above, Verizon Florida's collocation studies are based on forward-looking economic costs, not historical or embedded costs. 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

exchange market.

**Q. HOW DO YOU INTERPRET THE FCC'S STATEMENT IN ¶ 702 OF THE LOCAL COMPETITION ORDER THAT CURRENTLY ALLOWED RATES OF RETURN CAN BE A USEFUL STARTING POINT FOR THE DETERMINATION OF THE COST OF CAPITAL INPUT IN TELRIC COST STUDIES?**

A. Paragraph 702 only states that currently allowed rates of return may be a useful starting point for measuring the appropriate cost of capital in TELRIC cost studies. As the FCC stated, parties may demonstrate "to a state commission that either a higher or lower level of cost of capital is warranted, without that commission conducting a rate-of-return or other rate based proceeding." In this testimony, I demonstrate why the cost of capital used to establish rates in this proceeding must be higher than the currently authorized retail regulatory return.

**Q. ARE THERE ANY GROUNDS FOR RECOMMENDING THAT THIS COMMISSION USE A HIGHER COST OF CAPITAL INPUT THAN THE CURRENTLY AUTHORIZED RATE OF RETURN AT THE FEDERAL OR STATE LEVEL?**

A. Yes. An appropriate ground for recommending a cost of capital that is higher than the last federal or state authorized return is that the last authorized retail return was established prior to the passage of both the Act and the adoption of the Local Competition Order, which mandates that rates for interconnection and UNEs replicate conditions in a

competitive market. As further explained below, the FCC's TELRIC pricing rules greatly increase the risk of offering collocation arrangements above the risks of providing local exchange service under historical cost ratemaking principles. Furthermore, the FCC has stated in its reply brief before the U.S. Supreme Court that the additional risk of the FCC's TELRIC cost standard should be included in the cost of capital.

**Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING THE PROPER DEFINITION OF THE AVERAGE COST OF CAPITAL FOR USE IN VERIZON FLORIDA'S FORWARD-LOOKING ECONOMIC 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 economic 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 interconnection and UNEs. Thus, for use in Verizon Florida's forward-looking economic cost studies, the average cost of capital should be defined in terms of market interest rates, the market values of debt and equity in a 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

Florida's forward-looking economic cost studies.

## IV. RISK

**Q. DOES THE REQUIRED RATE OF RETURN ON AN INVESTMENT VARY WITH THE RISK OF THAT INVESTMENT?**

A. Yes. Investors require a higher rate of return on investments with greater risk.

**Q. HOW DO THE FCC'S FORWARD-LOOKING ECONOMIC COST STANDARDS AFFECT THE APPROPRIATE VIEW OF INVESTMENT RISK USED TO ESTIMATE THE COST OF CAPITAL COMPONENT OF TELRIC COST STUDIES?**

A. The FCC's forward-looking economic cost standards affect 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 also stated that its forward-looking economic cost standard should reflect the forward-looking investment and operating costs of constructing a long-lived local telecommunications network. Yet there is nothing in Verizon Florida's lease contracts with ALECs that require the ALECs to continue leasing from Verizon Florida over the life

of the network. Indeed, the typical lease contract gives the ALEC the option to discontinue its lease of Verizon Florida's network on a monthly basis. The risk that the ALEC will cancel its lease for network facilities after Verizon Florida has incurred significant fixed investments to construct these facilities, as contemplated by the FCC's TELRIC standard, must be considered when estimating the cost of capital component for use in TELRIC cost studies.

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

A. Verizon Florida is unlikely to achieve the revenue and expense forecasts embedded in the TELRIC assumptions. If competitors cancel their lease, Verizon Florida's revenues will be less than they were forecasted to be when rates were set. Thus, under the TELRIC assumptions, Verizon Florida will almost certainly earn a return on investment that is significantly less than its cost of capital.

**Q. DO COMPETITIVE COMPANIES ALSO FACE THE RISK THAT THEIR RETURN ON INVESTMENT WILL BE LESS THAN THEIR COST OF CAPITAL?**

A. Yes. Competitive companies always face some risk that their return on investment will be less than their cost of capital. However, competitive companies also have a significant probability that they will earn a return on investment that exceeds the cost of capital. Indeed, competitive companies generally will not undertake investments where the expected

rate of return on investment is less than their cost of capital.

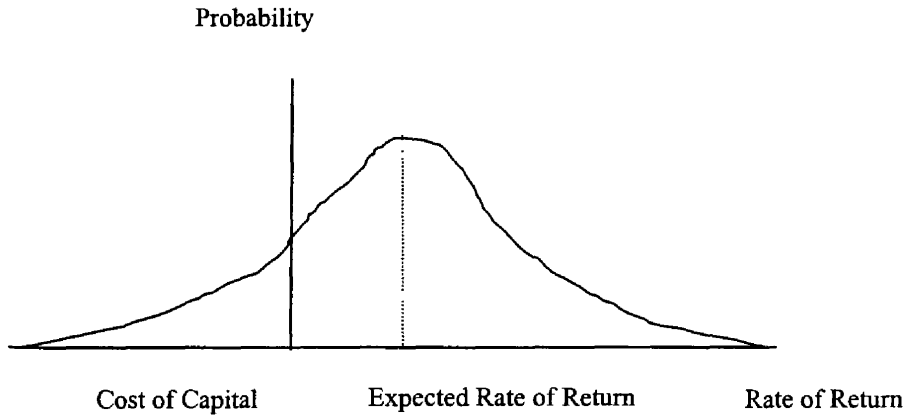
**Q. CAN YOU SPECIFY THE RISKS FACED BY COMPETITIVE COMPANIES IN TERMS OF THE PROBABILITY DISTRIBUTION OF THEIR FUTURE RATES OF RETURN ON INVESTMENT?**

A. Yes. In terms of the probability distribution of future rates of return on investment, the situation for competitive companies is generally that shown in Figure 1 below. Note that the probability distribution of future rates of return on investment is symmetric about the expected value of the future rates of return, and the expected value is greater than the company's cost of capital.

Figure 1

Probability Distribution of Competitive Company's

Rate of Return on Investment




**Q. WHY IS THERE A SIGNIFICANT PROBABILITY THAT COMPETITIVE COMPANIES WILL ACHIEVE RETURNS ON INVESTMENT THAT EXCEED OR EQUAL THEIR COSTS OF CAPITAL?**

A. There is a significant probability that competitive companies will achieve returns on investment that exceed or equal their cost of capital because competitive companies: (1) frequently achieve a short-term competitive advantage, and, hence, higher returns, through the introduction of new technologies; (2) set rates that reflect realistic revenue forecasts, realistic expense and investment forecasts, and realistic depreciation rates; (3) set rates that reflect the higher costs and risks of making sunk investments in long-lived facilities when customers have the option to cancel service one month at a time; and (4) set rates that reflect the costs of transitioning to a new technology, should a new technology appear. In short, competitive companies price their products and services at levels that give them a high probability of earning a return on investment that exceeds their cost of capital. If they cannot price products and services at these levels, they will simply decide not to invest.

**Q. WHY DO COMPETITIVE COMPANIES SOMETIMES EARN RATES OF RETURN ON INVESTMENT THAT ARE LESS THAN THEIR COSTS OF CAPITAL?**

A. Competitive companies sometimes earn rates of return that are less than their costs of capital because, despite their best efforts to use realistic estimates of revenues, expenses, and investments, the actual values of revenues, expenses, and investments may differ from the company's best estimates. However, again, it should be remembered that competitive companies generally will not undertake investments

where the expected rate of return on investment is less than the company's cost of capital.

**Q. WHY IS THE RISK OF INVESTING IN THE COLLOCATION FACILITIES NECESSARY TO PROVIDE ACCESS TO 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 access to 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 supposedly lower costs; (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 cancel their lease of network facilities one month at a time; and (5) under the FCCs' 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.

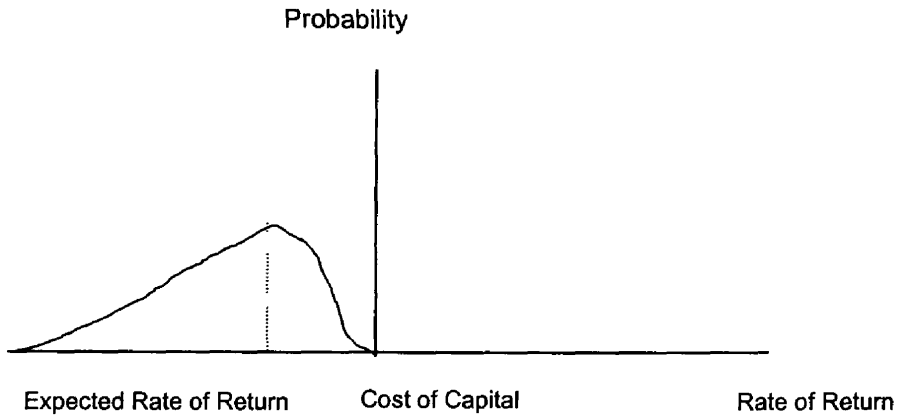
**Q. WHAT IS THE EFFECT OF THE TELRIC ASSUMPTIONS ON THE PROBABILITY THAT THE ILEC WILL EARN A RATE OF RETURN ON ITS INVESTMENT IN THE FACILITIES REQUIRED TO ACCESS UNES THAT IS LESS THAN ITS COST OF CAPITAL?**

A. Under the TELRIC assumptions, it is virtually certain that the ILEC will earn a rate of return on investment that is less than its cost of capital. The ILEC can only earn a rate of return on its investment equal to its cost of capital if: (1) the optimistic revenue, expense, and investment assumptions of the TELRIC standard unexpectedly turn out to be accurate; and (2) rates are not re-set until the ILEC is able to fully recover its long-lived investment in network facilities. Since depreciation lives have generally been set in the range of 12 to 16 years, while commissions have been reviewing TELRIC-based rates every three or four years, the probability of the ILEC ever recovering its initial investment, let alone earning a reasonable rate of return on its investment, is virtually zero. In terms of the probability distribution of future returns on investment, the situation for the ILEC operating under the TELRIC standard is generally that shown in Figure 2 below. Note that there is almost zero probability that the ILEC will earn a return on investment greater than its cost of capital, and the expected rate of return on investment is significantly less than the ILEC's cost of capital.

Figure 2

Probability Distribution of ILEC's

Rate of Return on Investment under TELRIC Standard




**Q. WHAT INCENTIVE DOES THE ILEC HAVE TO INVEST IN NEW TELECOMMUNICATIONS FACILITIES IF ITS EXPECTED RATE OF RETURN ON INVESTMENT IS LESS THAN ITS COST OF CAPITAL?**

A. The ILEC has no rational economic incentive to invest in new telecommunications facilities under these circumstances. Thus, the effect of the FCC's TELRIC standard will almost certainly be to reduce the ILECs' investments in new telecommunications technologies.

**Q. ARE THE LIKELY RATES OF RETURN FOR TELECOMMUNICATIONS COMPANIES OPERATING UNDER THE TELRIC STANDARD CONSISTENT WITH THE REQUIREMENTS OF THE HOPE AND BLUEFIELD DECISIONS?**

A. No. The Hope and Bluefield decisions require that the expected rate of

return on investment be equal to the company's weighted average cost of capital. [Federal Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944); Bluefield Water Works and Improvement Co. v. Public Service Comm'n. 262 U.S. 679, 692 (1923)] Under the TELRIC standard, the telecommunications company's expected rate of return on investment is significantly less than its weighted average cost of capital.

**Q. HOW CAN THE FLORIDA PSC SET RATES SO THAT A CARRIER UNDER THE TELRIC STANDARD WILL HAVE THE OPPORTUNITY TO EARN ITS WEIGHTED AVERAGE COST OF CAPITAL OVER TIME?**

A. The Florida PSC must use a cost of capital input in forward-looking cost models 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. HAVE YOU BEEN ABLE TO QUANTIFY THE IMPACT OF THE FCC'S TELRIC STANDARD ON THE APPROPRIATE COST OF CAPITAL FOR USE IN TELRIC COST STUDIES?**

A. Yes. I have been able to conservatively estimate the risk premium Verizon Florida requires to invest in the collocation facilities required to provide access to UNEs under the TELRIC standard.

**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 Florida on its forward-looking investment, operating expenses, and depreciation for the facilities required to provide access to UNEs in Florida; (3) using a standard methodology for valuing the ALECs' option to cancel their lease one month at a time; and (4) comparing the required rate of return on a financial lease for Verizon Florida'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 lease, whose term is approximately equal to the expected economic life of the leased property. The 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 on short notice. The lease payments on an operating lease must be sufficient 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 TELRIC COST STUDIES?**

A. The distinction is important because expert witnesses, including me, have previously estimated the cost of capital for use in TELRIC cost studies under the assumption that the lease contract with the ALECs is a non-cancelable financial lease, when, in fact, the contract is a cancelable operating lease. Since cancelable operating leases involve higher risk to the lessor, this increased risk should have compensated with a higher estimate of the appropriate cost of capital for use in TELRIC cost studies.

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

A. There are at least three reasons why Verizon Florida's investment risk is significantly greater under a cancelable operating risk than under a financial lease. First, Verizon Florida's network investment is large, long-lived, and largely sunk once the investment is made. If the ALECs cancel their lease of Verizon Florida's collocation arrangements, there are few alternative uses for Verizon Florida's collocation facilities. Second, the TELRIC standard increases the likelihood that Verizon Florida's rates will be insufficient to either allow Verizon Florida to recover its network investment or earn a reasonable rate of return on its

investment. By setting rates based on optimistic revenue, expense, and investment forecasts and long depreciation lives, and then allowing rates to be reset every few years to reflect supposed lower costs, the TELRIC standard virtually assures that the ILEC will be unable to earn a reasonable rate of return on its investment. Third, under the operating lease environment, Verizon Florida's customers are only committed to the lease on a monthly basis.

The mismatch between the size and maturity of Verizon Florida's investment and the short-term maturity of its customers' lease commitment increases the risk that Verizon Florida's return on investment will be less than its cost of capital.

**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 ("IPPs") 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 over the life of the generating facilities. Without such agreements, the risks of building new generation facilities are simply too high to justify investment.

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

A. Verizon Florida has no incentive to offer discounts on long-term lease contracts since current rates do not compensate Verizon Florida for the additional risks it incurs in providing interconnection under the TELRIC standard. Verizon Florida would only offer discounts for longer term leases if long-term leases would reduce Verizon Florida's risk of investment in the facilities required to provide interconnection and UNEs. Verizon Florida 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 TELRIC cost studies. A cost of capital appropriate only for long-term leases should not be applied to short-term leases.

**Q. ARE THE REGULATORY RISKS OF THE FCC'S FORWARD-LOOKING ECONOMIC COST STANDARD ALREADY INCLUDED IN THE COST OF CAPITAL ESTIMATE FOR YOUR PROXY COMPANY GROUP?**

A. No. There are two reasons why the regulatory risks of the FCC's

forward-looking economic cost standard are not included in my cost of capital estimate for the proxy companies. First, while the proxy companies operate in competitive markets, their prices are not set by regulation, and certainly not by using the FCC's TELRIC standard. Thus, they are not subject to the unique regulatory risks associated with the FCC's forward-looking economic cost standard. Second, the DCF formula that I employed to estimate the cost of equity considers only the present value of expected future dividends for the proxy companies. It does not consider the risks of making long-term fixed investments in telecommunications facilities while ALECs can cancel their operating lease on a monthly basis.

**Q. WHY IS IT IMPORTANT TO CONSIDER THE SIGNIFICANT RISKS OF THE FCC'S FORWARD-LOOKING ECONOMIC COST STANDARDS, IF INVESTORS—NOT REGULATORS—DETERMINE THE COST OF CAPITAL IN THE CAPITAL MARKETS?**

A. There are at least two reasons for considering the significant risks of the FCC's cost standards. First, there are no publicly-traded companies whose sole business is constructing and operating a telecommunications network for the purpose of offering interconnection and UNEs. Thus, one must necessarily use cost of capital proxies whose stock is publicly traded, and whose risk approximates the risk of investing in the facilities to provide interconnection and UNEs. Furthermore, one must thoroughly understand the risks of the regulatory approach to setting TELRIC-based rates in order to properly evaluate

the results of applying cost of capital methodologies to these proxy companies. In short, the appropriate proxy companies may well depend on the regulator's approach to setting the expense and investment components of TELRIC-based costs.

Second, the cost of capital depends on the risk of the economic environment assumed in the TELRIC cost study. If one develops a TELRIC cost model based on a more risky economic environment, then the analyst must include this higher risk in the estimate of the cost of capital input for this cost model to be consistent. If the analyst does not include the higher risk in estimating the cost of capital input, the results of the economic cost study will be economically meaningless.

**Q. WHAT DO YOU MEAN WHEN YOU SAY THAT THE RESULTS OF AN ECONOMIC COST STUDY WILL BE ECONOMICALLY MEANINGLESS IF THE ANALYST DOES NOT CONSIDER THE RISK OF THE REGULATORY APPROACH WHEN ESTIMATING THE COST OF CAPITAL?**

A. The results would be economically meaningless because the resulting rates for interconnection and UNEs would not provide correct economic signals to either new entrants or incumbent LECs. If the Florida PSC adopts a cost of capital input for its TELRIC cost studies that does not reflect the full risks of providing access to UNEs under the FCC's TELRIC cost standard, then the resulting rates would be significantly less than the cost a new entrant would face in building its own network,

even if it is more efficient in building and operating the new network than the incumbent LEC. Thus, there would be no economic incentive for efficient entry.

With respect to the incumbent, a failure to include the full regulatory risk of the FCC's cost standard in the cost of capital input would cause rates for providing access to UNEs to be significantly less than the forward-looking economic cost of such access to UNEs. Thus, the LEC would have no economic incentive to continue to invest in the local exchange network, and the goal of the Telecommunications Act to bring the benefits of advanced technology and competition in the telecommunications market would be thwarted.

**Q. HAS THE FCC RECOGNIZED THAT THE REGULATORY RISK OF ITS TELRIC COST STANDARD MUST BE CONSIDERED WHEN ESTIMATING THE COST OF CAPITAL COMPONENT OF TELRIC-BASED 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." (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.)

**Q. IN ADDITION TO THE RISK OF THE TELRIC MODEL ASSUMPTIONS, WHAT ARE THE MAJOR FACTORS THAT AFFECT THE RISK OF INVESTING IN THE FACILITIES REQUIRED TO PROVIDE INTERCONNECTION AND UNES IN FLORIDA?**

A. The risk of investing in the facilities required to provide interconnection and UNEs in Florida depends on operating leverage, demand uncertainty, rapidly changing technology, the regulatory environment, and the features of Verizon Florida's lease contract with the ALECs.

**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 Florida'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 LOCAL EXCHANGE SERVICE RELATIVELY CERTAIN?**

A. No. The demand for local exchange service is becoming increasingly uncertain as a result of: (1) its sensitivity to the general level of economic activity; and (2) increased competition in the local exchange market.

**Q. WHAT ARE THE SOURCES OF LOCAL EXCHANGE COMPETITION IN FLORIDA?**

A. Numerous competitors have the facilities required to provide local exchange service in Florida. In addition, Florida is served by several wireless carriers that provide local and long distance telecommunications services at prices that are very competitive to the prices charged by Verizon Florida. In many cases, Florida customers can obtain a package of local and toll service from wireless carriers that may, in fact, cost less than Verizon Florida's service.

**Q. IS VERIZON FLORIDA ABLE TO COMPETE ON EQUAL TERMS WITH COMPETITORS IN THE LOCAL EXCHANGE?**

A. No. Verizon Florida faces a number of disadvantages in its efforts to compete in a fully competitive local exchange market. First, as the incumbent LEC, Verizon Florida has the unique obligation to incur the large capital expenditures required to provide telecommunications services to customers in Florida. Competitors, on the other hand, are able to serve customers in Florida without necessarily making any investment in network facilities. Thus, Verizon Florida bears the considerable risks associated with a large investment in a fixed cost

telecommunications network, while its competitors are free to enter and exit the market without incurring any fixed costs. The additional risks Verizon Florida incurs as a result of its large investment in the telecommunications network places Verizon Florida at a cost disadvantage relative to its competitors.

Second, Verizon Florida has the unique obligation to make significant investments in the facilities needed to provide interconnection and access to UNEs to competitors. Verizon Florida's competitors, however, have no obligation to lease these facilities from Verizon Florida for more than one month at a time. Thus, Verizon Florida faces the considerable risk that its investments in the network facilities needed to provide interconnection and access to UNEs to competitors will not be recovered.

Third, Verizon Florida has the unique obligation to share the benefits of network investments with competitors. When Verizon Florida invests to upgrade the technology in its network, Verizon Florida must share the benefits of this investment with competitors through resale and through leasing of UNEs. However, when Verizon Florida's competitors invest to upgrade the technology in their networks, Verizon Florida receives no benefit from the ALECs' investments because Verizon Florida's competitors are not required to unbundle their networks.

**Q. HOW DOES THE EXISTING REGULATORY REGIME AFFECT VERIZON FLORIDA'S RISK?**

A. It increases Verizon Florida's risk in several ways. First, as the incumbent local exchange provider, Verizon Florida's rates and services are still subject to regulation, while its competitors' rates and services are not. Being a regulated company in a competitive market is a highly risky proposition, as California's electric utilities and their investors have discovered.

Second, the FCC's TELRIC cost standard requires Verizon Florida to provide interconnection and UNEs to its competitors at rates that very likely will not allow it to cover the cost of its investment in network facilities.

Third, as the provider of last resort, Verizon Florida has the obligation to provide services to all customers, whether they are profitable or not. Each of these factors increases the risk of investing in Verizon Florida and thus increases Verizon Florida's cost of capital.

**Q HOW DOES THE NATURE OF VERIZON FLORIDA'S LEASE CONTRACT WITH THE ALECS AFFECT THE RISK OF INVESTING IN THE FACILITIES REQUIRED TO PROVIDE INTERCONNECTION AND UNES?**

A. As noted above, the cancelable nature of Verizon Florida's lease contract with the ALECs greatly increases Verizon Florida's risk of

investing in the facilities required to provide interconnection and UNEs. The financial markets recognize that a cancelable operating lease involves significantly more risk than a financial lease, and that, as a result, investors demand a higher rate of return on a cancelable operating lease than on a financial lease.

**Q. HOW DOES THE FORWARD-LOOKING RISK OF INVESTING IN THE FACILITIES REQUIRED TO PROVIDE INTERCONNECTION AND 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 interconnection and access to UNEs in Florida 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 interconnection and access to UNEs 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.

Telecommunications is also 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 addition, a regulatory environment that requires Verizon Florida to provide interconnection and access to UNEs to its competitors at rates that very likely will not allow it to cover the cost of its investment in network facilities, and that places restrictions on Verizon Florida in its ability to compete on equal terms with its competitors, exacerbates the risks.

Finally, the lease contract between Verizon Florida and its competitors requires that Verizon Florida make large fixed investments to build telecommunications network facilities while its competitors are able to cancel their service contract with Verizon Florida on a monthly basis. 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 Florida offers to its customers—make the risk of investing in the facilities required to provide interconnection and UNEs greater than the risk of investing in the S&P Industrials.

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

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

A. I calculated the weighted average cost of capital 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 competitive firms of comparable risk. Second, I estimated the additional return, or risk premium, required to compensate Verizon Florida for the unique risk of having to make large, fixed investments in the telecommunications facilities required to provide interconnection and access to 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 FLORIDA'S FORWARD-LOOKING ECONOMIC COST STUDIES?**

A. To determine an appropriate target capital structure for use in Verizon Florida's forward-looking economic 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. In all periods, the average market value capital structure for these companies contains no more than 25% debt, and no less than 75% equity.

**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 1997 through 2001. These data show that both groups, on average, have at least 75% equity (and generally have more than 75% equity) in their capital structures.

Table 1

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

| | S&P Industrials | | | Telecom Companies | | |
|---|---|---|---|---|---|---|
| | Market Value | Total Debt | Percent Equity | Market Value | Total Debt | Percent Equity |
| 1997 | 2,080,904 | 235,259 | 89.8% | 204,402 | 50,221 | 80.3% |
| 1998 | 2,502,222 | 270.628 | 90.2% | 308,895 | 53,124 | 85.3% |
| 1999 | 2,639,323 | 308,404 | 89.5% | 381,867 | 68,495 | 84.8% |
| 2000 | 2,617,768 | 317,985 | 89.2% | 398,400 | 112,479 | 78.0% |
| 2001 | 2,383,103 | 343,324 | 87.4% | 355,718 | 117,626 | 75.1% |
| Total | 12,223,319 | 1,475,600 | 89.2% | 1,649,282 | 401,946 | 80.4% |

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

A. I recommend the use of a market value capital structure in forward-looking economic cost studies in Florida 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. Unlike a market value capital structure, a book value capital structure is based on the embedded or historical costs of Verizon Florida'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 collocation rates cannot be based on embedded or historical costs. (See, for example, the Local Competition Order 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 Florida contains 25% debt and 75% equity. Thus, I recommend that a capital structure containing 25% debt and 75% equity be used to calculate Verizon Florida'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 7.40% average yield to maturity on Moody's A-rated industrial bonds for April 2002, 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.

## C. COST OF EQUITY

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

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 Florida's forward-looking economic cost studies is based on the assumption that the market for local exchange services is competitive. As previously noted, Verizon Florida's collocation studies are consistent with the FCC's pricing rules, which 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 UNEs in a competitive market. Since the S&P Industrials are a well-known sample of publicly traded competitive companies whose risk, on average, approximates the risk the incumbent LECs actually face in providing telecommunications services in a competitive market, I believe the S&P Industrial group is a conservative

proxy for the risks of investing in the facilities required to provide local exchange services on a forward-looking basis.

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

A. As shown in Exhibit JVW-1, I obtained a market-weighted average DCF cost of equity of 14.13% for the S&P Industrials.

## D. WEIGHTED AVERAGE COST OF CAPITAL

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

A. I estimate Verizon Florida's overall weighted average cost of capital, without considering the unique risks of the TELRIC regulatory and operating environment, to be 12.45%. This estimate is based on a 7.40% market cost of debt, a target market value capital structure containing 25% debt and 75% equity, and a cost of equity of 14.13% (see Table 3).

Table 2

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

| Source of Capital | Cost Rate | Percent | Weighted Cost |
|---|---|---|---|
| Debt | 7.40% | 25.00% | 1.85% |
| Equity | 14.13% | 75.00% | 10.60% |
| WACC | | | 12.45% |

## E. ESTIMATE OF THE REQUIRED RISK PREMIUM

**Q. WHAT METHODOLOGY DID YOU USE TO VALUE THE ALECS' OPTION TO CANCEL THEIR LEASE ONE MONTH AT A TIME?**

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 Attachment 1. This methodology is widely employed by financial analysts to value the options that are traded in financial markets.

**Q. HOW DID YOU ESTIMATE THE REQUIRED RISK PREMIUM ON AN INVESTMENT IN THE FACILITIES REQUIRED TO PROVIDE INTERCONNECTION AND ACCESS TO UNBUNDLED NETWORK ELEMENTS UNDER THE TELRIC STANDARD WHEN CUSTOMERS**

**HAVE THE OPTION TO CANCEL THEIR LEASE OF VERIZON FLORIDA'S TELECOMMUNICATIONS FACILITIES ONE MONTH AT A TIME?**

A. I estimated the required risk premium in several steps. First, I obtained data from Verizon Florida on its forward-looking investment, operating expenses, depreciation, and asset lives for the telecommunications facilities required to provide collocation in Florida.

Second, I calculated the minimum lease payments that would allow Verizon Florida to recover the cost of its investment, pay its operating expenses and taxes, and earn a fair rate of return of 12.45% on its investment under the assumption that ALECs cannot cancel their lease of Verizon's collocation facilities. In short, the lease payments in this step were calculated as if the ALECs' lease contract with Verizon Florida were a financial lease rather than an operating lease. Recall that a financial lease involves a commitment to lease an asset for its entire economic life, while an operating lease may be cancelled prior to the end of the economic life of the asset.

Third, I calculated the market value of the ALECs' option to cancel their lease contract with Verizon Florida using the binomial option pricing methodology noted above and described in the Copeland and Weston article provided in Attachment 1.

Fourth, I calculated the minimum lease payment that would allow

Verizon Florida to recover the cost of its investment, pay its operating expenses and taxes, and earn a fair rate of return on its investment if the ALECs have the option to cancel their lease contract on a monthly basis.

Fifth, I calculated the risk premium required to compensate Verizon Florida for the additional risk they incur when ALECs can cancel their lease on a monthly basis.

**Q. HOW DID YOU CALCULATE THE MINIMUM LEASE PAYMENTS THAT WOULD ALLOW VERIZON FLORIDA TO RECOVER THE COST OF ITS INVESTMENT, PAY ITS OPERATING EXPENSES AND TAXES, AND EARN A FAIR RATE OF RETURN ON ITS INVESTMENT UNDER THE ASSUMPTION THAT THE ALECS SIGN A NON-CANCELABLE FINANCIAL LEASE FOR THE USE OF VERIZON FLORIDA'S TELECOMMUNICATIONS 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 Florida's cash outflows for investments, operating expenses, and taxes. Specifically, the calculation of the lease payments was made using the equation:

$$0 = -I + \sum_{t=1}^{T} \frac{(1-\tau_c)(L_t - O_t) + \tau_c D_t}{(1+ATWACC)^t} + \frac{MV}{(1+ATWACC)^T} \qquad (1)$$

where:

I = investment in the network on total network basis.

$\tau_c$ = 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.

Using the data shown in Exhibit JVW-2 and my estimate of Verizon Florida's after-tax weighted average cost of capital, Equation (1) can be solved for the unknown annual lease payments.

**Q. AS NOTED IN EQUATION (1), YOU USE VERIZON FLORIDA'S AFTER-TAX WEIGHTED AVERAGE COST OF CAPITAL TO DISCOUNT LEASE CASH FLOWS IN YOUR ANALYSIS. WHY DID YOU DO THIS?**

A. I used Verizon Florida's after-tax weighted average cost of capital to discount lease cash flows because the after-tax weighted average cost of capital best describes the financing mix and cost rates that Verizon Florida would need to use to finance its investment in the facilities required to provide interconnection and UNEs. ALECs who build their own facilities rather than leasing Verizon Florida's telecommunications facilities would likely face a higher weighted average cost of capital. Since ALECs lease from Verizon Florida as a substitute for building and owning their own telecommunications facilities, the after-tax weighted average cost of capital provides correct economic signals for the lease versus build decision.

**Q. HOW DID YOU CALCULATE THE MINIMUM LEASE PAYMENT THAT VERIZON FLORIDA WOULD HAVE TO CHARGE IF THE ALECS HAVE THE OPTION TO CANCEL THEIR LEASE ON A MONTHLY BASIS?**

A. The minimum lease payment required when ALECs have the option to cancel their lease contract on a monthly basis was found by equating the present value of the lease cash inflows to the sum of the present value of Verizon Florida's cash outflows for investment, operating expenses and taxes; and the value of the option to cancel the lease on short notice. Specifically, the calculation of the lease payment in this scenario was made using the equation:

$$0 = -I + \sum_{t=1}^{T} \frac{(1-\tau_c)(L_t - O_t) + \tau_c D_t}{(1+ATWACC)^t} + \frac{MV}{(1+ATWACC)^T} - P_A \qquad (2)$$

where $P_A$ is the value of the option to cancel and the remaining variables are defined as in Equation (1).

**Q. HOW DID YOU CALCULATE THE RISK PREMIUM REQUIRED TO COMPENSATE VERIZON FLORIDA FOR THE ADDITIONAL RISK THEY INCUR WHEN ALECS CAN CANCEL THEIR LEASE ON A MONTHLY BASIS?**

A. I calculated the risk premium required to compensate Verizon Florida for the additional risk they incur when ALECs can cancel their lease on a monthly basis by substituting the value of the lease payments (obtained from Equation (2)) into Equation (1) and solving for the internal rate of return on investment. The resulting internal rate of return on a before-tax basis is 18.36%. The required 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.

**Q. WHAT IS YOUR CONCLUSION REGARDING THE COST OF CAPITAL APPROPRIATE FOR USE IN TELRIC COST STUDIES IN FLORIDA?**

A. I conclude that the appropriate weighted average cost of capital for use in TELRIC collocation cost studies in Florida is 18.36%. My recommended weighted average cost of capital is based on my 12.45% estimate of the weighted average cost of capital without considering the risk that Verizon Florida incurs when ALECs have the option to cancel their lease on a monthly basis, and on my 5.92% estimate of the required risk premium to compensate Verizon Florida for the risk it incurs when ALECs are able to cancel their leases on a monthly basis.

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

A. Yes, it does.

## Discounted Cash Flow Analysis of the S&P Industrials

| Company | Price | Dividend | Growth | Cost of Equity |
|---|---|---|---|---|
| 3m Co | 120.20 | 2.48 | 11.7% | 14.15% |
| Abbott Laboratories | 53.29 | 0.84 | 12.8% | 14.68% |
| Air Products & Chemicals Inc | 48.87 | 0.80 | 10.4% | 12.31% |
| Albertsons Inc | 34.13 | 0.76 | 10.9% | 13.52% |
| Allegheny Technologies Inc | 16.50 | 0.80 | 8.9% | 14.57% |
| Anheuser-Busch Cos Inc | 52.30 | 0.72 | 11.0% | 12.62% |
| Autodesk Inc | 20.29 | 0.12 | 14.7% | 15.42% |
| Avery Dennison Corp | 61.95 | 1.32 | 11.4% | 13.92% |
| Avon Products | 55.40 | 0.80 | 11.6% | 13.31% |
| Bard (C.R.) Inc | 56.77 | 0.84 | 11.8% | 13.55% |
| Bausch & Lomb Inc | 38.38 | 1.04 | 10.3% | 13.48% |
| Baxter International Inc | 57.58 | 0.58 | 14.0% | 15.21% |
| Becton Dickinson & Co | 37.35 | 0.39 | 12.0% | 13.24% |
| Bemis Co | 54.83 | 1.04 | 10.3% | 12.52% |
| Black & Decker Corp | 47.41 | 0.48 | 14.2% | 15.42% |
| Bristol Myers Squibb | 34.50 | 1.12 | 10.0% | 13.81% |
| Brunswick Corp | 26.90 | 0.50 | 10.2% | 12.37% |
| Carnival Corp | 32.02 | 0.42 | 13.1% | 14.67% |
| Caterpillar Inc | 55.92 | 1.40 | 11.8% | 14.78% |
| Centex Corp | 53.90 | 0.16 | 13.6% | 13.96% |
| Centurytel Inc | 30.73 | 0.21 | 12.0% | 12.81% |
| Cigna Corp | 105.14 | 1.28 | 13.4% | 14.86% |
| Circuit City Str Crct Cty Gp | 20.31 | 0.07 | 14.7% | 15.12% |
| Clorox Co/De | 44.31 | 0.84 | 10.6% | 12.82% |
| Coca-Cola Co | 53.77 | 0.80 | 12.1% | 13.87% |
| Colgate-Palmolive Co | 55.94 | 0.72 | 12.4% | 13.93% |
| Compaq Computer Corp | 10.20 | 0.10 | 14.4% | 15.59% |
| Conagra Foods Inc | 24.86 | 0.94 | 9.9% | 14.34% |
| Conoco Inc | 28.24 | 0.76 | 9.6% | 12.74% |
| Cooper Industries Inc | 43.77 | 1.40 | 11.3% | 15.10% |
| Cvs Corp | 33.69 | 0.23 | 12.5% | 13.31% |
| Darden Restaurants Inc | 38.33 | 0.08 | 15.3% | 15.55% |
| Deere & Co | 44.42 | 0.88 | 10.1% | 12.41% |
| Delphi Corp | 15.93 | 0.28 | 11.4% | 13.48% |
| Disney (Walt) Co | 23.64 | 0.21 | 12.6% | 13.66% |
| Dover Corp | 38.97 | 0.54 | 13.1% | 14.76% |
| Dow Chemical | 31.76 | 1.34 | 8.8% | 13.71% |
| Dow Jones & Co Inc | 56.86 | 1.00 | 11.4% | 13.48% |
| Du Pont (E I) De Nemours | 45.63 | 1.40 | 9.8% | 13.39% |
| Eastman Kodak Co | 32.60 | 1.80 | 7.0% | 13.36% |
| Emerson Electric Co | 55.49 | 1.55 | 11.2% | 14.51% |
| Engelhard Corp | 31.10 | 0.40 | 11.0% | 12.51% |
| Equifax Inc | 28.52 | 0.08 | 13.2% | 13.53% |
| Fluor Corp | 42.50 | 0.64 | 13.3% | 15.11% |
| Fortcollocation Brands Inc | 51.01 | 1.00 | 11.5% | 13.82% |

| Company | Price | Dividend | Growth | Cost of Equity |
|---|---|---|---|---|
| Gap Inc | 14.60 | 0.09 | 14.8% | 15.55% |
| General Dynamics Corp | 94.76 | 1.12 | 11.2% | 12.59% |
| General Mills Inc | 46.00 | 1.10 | 11.5% | 14.33% |
| Gillette Co | 34.79 | 0.65 | 10.1% | 12.28% |
| Grainger (W W) Inc | 56.40 | 0.70 | 11.9% | 13.37% |
| Hewlett-Packard Co | 17.68 | 0.32 | 11.8% | 13.95% |
| Hilton Hotels Corp | 15.49 | 0.08 | 14.3% | 14.92% |
| Honeywell International Inc | 38.35 | 0.75 | 13.2% | 15.55% |
| Illinois Tool Works | 73.50 | 0.88 | 14.0% | 15.44% |
| Ingersoll-Rand Co Ltd | 49.00 | 0.68 | 11.2% | 12.83% |
| Interpublic Group Of Cos | 32.66 | 0.38 | 14.1% | 15.50% |
| Itt Industries Inc | 66.54 | 0.60 | 12.2% | 13.27% |
| Johnson & Johnson | 63.54 | 0.72 | 14.0% | 15.37% |
| Johnson Controls Inc | 88.73 | 1.32 | 11.8% | 13.56% |
| Kb Home | 46.48 | 0.30 | 13.3% | 14.07% |
| Kimberly-Clark Corp | 64.67 | 1.20 | 11.0% | 13.18% |
| Lilly (Eli) & Co | 70.95 | 1.24 | 13.2% | 15.30% |
| Liz Claiborne Inc | 29.77 | 0.22 | 12.7% | 13.58% |
| Lockheed Martin Corp | 60.42 | 0.44 | 14.0% | 14.88% |
| Marathon Oil Corp | 28.82 | 0.92 | 9.6% | 13.33% |
| Mattel Inc | 20.68 | 0.20 | 13.5% | 14.66% |
| May Department Stores Co | 35.15 | 0.94 | 9.7% | 12.82% |
| Mcgraw-Hill Companies | 65.20 | 1.02 | 12.1% | 13.96% |
| Merck & Co | 54.40 | 1.40 | 10.8% | 13.83% |
| Molex Inc | 33.82 | 0.10 | 14.6% | 14.96% |
| New York Times Co | 47.22 | 0.50 | 11.4% | 12.65% |
| Newell Rubbermaid Inc | 31.48 | 0.84 | 12.2% | 15.39% |
| Nike Inc -Cl B | 56.20 | 0.48 | 13.5% | 14.52% |
| Nordstrom Inc | 23.70 | 0.36 | 11.5% | 13.29% |
| Northrop Grumman Corp | 116.70 | 1.60 | 11.5% | 13.12% |
| Nucor Corp | 61.72 | 0.76 | 12.0% | 13.46% |
| Paccar Inc | 73.97 | 1.20 | 11.3% | 13.21% |
| Parker-Hannifin Corp | 48.45 | 0.72 | 11.4% | 13.15% |
| Pepsico Inc | 51.69 | 0.58 | 13.0% | 14.34% |
| Pitney Bowes Inc | 43.04 | 1.18 | 10.7% | 13.93% |
| Procter & Gamble Co | 90.30 | 1.52 | 10.9% | 12.88% |
| Raytheon Co | 40.23 | 0.80 | 12.5% | 14.87% |
| Rockwell Automation | 20.29 | 0.66 | 10.0% | 13.82% |
| Rohm & Haas Co | 38.91 | 0.80 | 11.4% | 13.83% |
| Royal Dutch Petroleum | 53.44 | 1.41 | 11.5% | 14.63% |
| Sara Lee Corp | 21.48 | 0.60 | 9.3% | 12.55% |
| Schering-Plough | 29.30 | 0.64 | 11.3% | 13.88% |
| Scientific-Atlanta Inc | 22.01 | 0.04 | 13.4% | 13.62% |
| Sears Roebuck & Co | 51.61 | 0.92 | 11.2% | 13.30% |
| Sherwin-Williams Co | 29.43 | 0.60 | 11.2% | 13.61% |
| Sigma-Aldrich | 46.08 | 0.34 | 12.2% | 13.07% |
| Snap-On Inc | 32.78 | 0.96 | 10.4% | 13.84% |

| Company | Price | Dividend | Growth | Cost of Equity |
|---|---|---|---|---|
| Stanley Works | 47.99 | 0.96 | 12.5% | 14.89% |
| Sysco Corp | 29.02 | 0.36 | 13.9% | 15.39% |
| Target Corp | 43.41 | 0.22 | 14.5% | 15.11% |
| Tjx Companies Inc | 41.28 | 0.18 | 15.0% | 15.53% |
| Tribcollocation Co | 45.26 | 0.44 | 12.8% | 13.96% |
| United Technologies Corp | 71.03 | 0.98 | 13.6% | 15.26% |
| Unocal Corp | 37.97 | 0.80 | 10.9% | 13.38% |
| Vf Corp | 43.35 | 0.96 | 10.8% | 13.41% |
| Vulcan Materials Co | 47.98 | 0.94 | 13.2% | 15.55% |
| Wal-Mart Stores | 57.84 | 0.28 | 13.6% | 14.18% |
| Waste Management Inc | 26.34 | 0.01 | 13.8% | 13.85% |
| Wendy's International Inc | 36.31 | 0.24 | 13.9% | 14.69% |
| Whirlpool Corp | 75.49 | 1.36 | 10.3% | 12.41% |
| Winn-Dixie Stores Inc | 17.21 | 1.02 | 8.5% | 15.43% |
| Wrigley (Wm) Jr Co | 54.03 | 0.76 | 11.1% | 12.75% |
| Xerox Corp | 9.74 | 0.20 | 11.7% | 14.13% |
| Market Weighted Average | | | 12.22% | 14.13% |

Source: Standard & Poor's Compustat Database. Price is average of April 2002 high and low prices. Quarterly dividend obtained from the annual dividend rate as reported by Compustat, divided by 4. Growth rate is the I/B/E/S mean estimate of long-term growth rate as reported by Compustat.

Notes: In applying the DCF Model to the S&P Industrials, I included in the DCF analysis only those companies in the S&P Industrial group which have a reported stock price, pay a dividend, have a positive growth rate, have at least three analysts' long-term growth estimates, and have at least one common share outstanding. To be conservative, I also eliminated those 25 percent of companies with the highest and lowest DCF results, those companies with cost of equity results equal to or below the April 2002 average yield on Moody's A-rated industrial bonds or equal to or above 20 percent. The weighted average DCF result for all four quartiles of the S&P Industrials was 14.34 percent, while the weighted average DCF result for 2nd and 3rd quartiles shown here on Exhibit JVW-1 is 14.13 percent. Elimination of the 1st and 4th quartiles of the S&P Industrials had a negligible effect on the market value capital structure.

Notation:

| | | |
|---|---|---|
| $d_0$ | = | Quarterly Dividend (annual dividend divided by 4). |
| $P_0$ | = | Average of the monthly high and low stock prices April 2002. |
| FC | = | Flotation costs expressed as a percent of gross proceeds (5 percent). |
| g | = | I/B/E/S mean forecast of future earnings growth April 2002. |
| k | = | Cost of equity using the quarterly version of the DCF Model as shown by the formula below: |

$$k = \left[ \frac{d_0 (1+g)^{\frac{1}{4}}}{P_0} + (1+g)^{1/4} \right]^4 - 1$$

## Discounted Cash Flow Analysis of the S&P Industrials

| Total Product Investments | |
|---|---|
| **Forward-Looking Investment** | **FL-Specific** |
| SS7 Investments | |
| Operator Services | |
| Total Collocation Investments | $16,593,201 |
| Access to OSS | |
| Support Investments | |
| ADSL Incremental | |
| Testing Support Investments | |
| DUF Investments | |
| Total Switch Investments | |
| Total Loop Investments | |
| Total IOF Investments | |
| Total PubComm Investments | |
| AIN Incremental | |
| Total Forward-looking Investments | **$16,593,201** |

| Expected Life | FNS | Deprec.Rate W/O FNS | Deprec. Rate With FNS | Typical FLCd Operating Factor | Operating Expenses |
|---|---|---|---|---|---|
| | | | | | 0 |
| | | | | | 0 |
| 9 | 0.02 | 11.11% | 10.9% | 0.1190 | $1,974,690 |
| | | | | | 0 |
| | | | | | 0 |
| | | | | | 0 |
| | | | | | 0 |
| | | | | | 0 |
| | | | | | 0 |
| | | | | | 0 |
| | | | | | 0 |
| | | | | | 0 |
| | | | | | 0 |

| Total Exp | $1,974,690 |
|---|---|