BELLSOUTH TELECOMMUNICATIONS, INC.

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 30851-TP

DIRECT TESTIMONY OF

DR. RANDALL S. BILLINGSLEY, CFA

DECEMBER 4, 2003

I. INTRODUCTION

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

A. My name is Randall S. Billingsley. I am a finance professor at Virginia Polytechnic Institute and State University. I also act as a financial consultant in the areas of cost of capital analysis, financial security analysis, and valuation. More details on my qualifications may be found in Billingsley Exhibit No. RSB-1. My business address is: Department of Finance, Pamplin College of Business, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061-0221.

This testimony presents my independent professional opinions and is not presented by me as a representative of Virginia Polytechnic Institute and State University.

II. PURPOSE OF DIRECT TESTIMONY AND SUMMARY OF CONCLUSIONS

A. PURPOSE OF TESTIMONY

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Q. What issues in this proceeding are you addressing?

A. My testimony furnishes a part of the information necessary to do the economic analysis to determine whether there are economic barriers to CLEC entry into particular geographic markets without access to unbundled local switching. The issues most directly affected by my testimony are Issues 5(d) and 5(e).

Q. Would you elaborate on the purpose of your direct testimony in this proceeding?

A. Yes. My purpose is to provide the Florida Public Service Commission (Commission) with an estimate of the forward-looking costs of capital for the representative competitive local exchange company (CLEC) modeled in the BellSouth Analysis of CLEC Entry (BACE) model. My testimony provides the appropriate costs of capital to be used in the BACE model, which determines whether any lack of access to BellSouth Telecommunications' (BST) switch unbundled network element (switch UNE) makes entry by a CLEC uneconomical. These costs of capital can be used by the Commission in its response to the Federal Communication Commission's (FCC's) Triennial Review Order (In Re Review of the Section 251, Unbundling Obligations of Incumbent Local Exchange Carriers, First Report and Order on Remand and Further Notice of Proposed Rulemaking, FCC 03-36, released August, 21, 2003, hereinafter TRO).

More specifically, the costs of capital presented in my testimony are for use in calculating the net present value (NPV) of the cash flows generated by the products of the representative CLEC entering the Florida market, as measured in the BACE model. Accordingly, I provide evidence concerning the representative CLEC's forward-looking

cost of equity, cost of debt, and overall cost of capital. It is essential to note that the capital cost estimates I provide are all stated on a before-tax basis. The after-tax cash flows produced by the BACE model must all be discounted at after-tax capital costs.

B. SUMMARY OF THE REPRESENTATIVE CLEC'S COST OF CAPITAL ANALYSIS

Q. Please describe your approaches to determining the representative CLEC's capital costs.

A. Given the data problems resulting from the current troubled environment facing the CLEC industry, I essentially provide "ceiling" and "floor" estimates of the industry's capital costs. Thus, I use two surrogates to measure the representative CLEC's capital costs. As described below, I use the Standard & Poor's Composite 500 Index (S&P 500) as a lower-bound estimate of the representative CLEC's cost of capital and I also use a sample of publicly-traded CLECs that provides an upper-bound estimate of the representative CLEC's cost of capital. I then provide a reasonable estimate of the industry's overall capital costs by averaging the results of my two approaches.

It is important to emphasize that estimating the capital costs of a representative CLEC is challenging. The majority of firms in the CLEC industry are either privately-held or are wholly-owned subsidiaries of much larger, often diversified firms. While there are some publicly-traded CLECs, many have declared bankruptcy over the last two years and a significant number of the others operate under severe financial distress. The CLEC firms for which data are available therefore do not, by themselves, provide a reliable picture of

the industry's sustainable capital structure and optimal financing costs.

With regard to the S&P 500 surrogate, I apply the discounted cash flow (DCF) model to the firms in the S&P 500 to measure the cost of equity of average-risk firms operating in a competitive environment. As discussed below, reliance on the S&P 500 is based largely on the FCC's recent clarification that the index is a "... useful benchmark for the risk faced on average by established companies in competitive markets" (Verizon Arbitration Order, p. 41, §90, full citation below). Thus, I apply the DCF model to the S&P 500 to provide a conservative, market-determined cost of equity capital estimate for the representative CLEC. This is the derivation of the cost of capital that I believe should form the floor for any analysis of the cost of capital for the representative CLEC.

With regard to the surrogate composed of a group of publicly-traded CLECs, I apply the capital asset pricing model (CAPM) to estimate the cost of equity capital. Because the average cost of equity for this sample reflects the severe financial distress of the industry, it provides an upper-bound estimate of the representative CLEC's sustainable, efficient cost of equity. I cannot use the DCF method on this sample because these CLECs do not pay dividends.

The appropriate cost of debt is determined for each of my two surrogates. First, I determine the cost of debt for the representative CLEC using the current yield on the average bond rating category of firms in the S&P 500. Second, I estimate the cost of debt using the average bond rating for firms operating in the CLEC industry. I rely on the average market value-based capital structure for each of the two surrogates. Averaging the costs of equity, the costs of debt, and the capital structures of the two surrogates provides a reasonable

estimate of the overall pre-tax cost of capital for the representative CLEC that should be used in the BACE business case model.

Q. Would you please summarize your findings concerning the representative CLEC's capital costs?

A. Yes. Analysis of the S&P 500 produces an average cost of equity between 14.27% and 14.35% using the DCF model approach, or an average of 14.31%. The CAPM approach applied to a sample of publicly-traded CLECs indicates that the representative CLEC's cost of equity capital is between 20.71% and 20.84%, or an average of 20.78%. The average cost of equity for the two approaches is consequently 17.55%.

Analysis of the firms composing the S&P 500 indicates that the average Standard & Poor's bond rating is BBB (or Baa using the *Mergent Bond Record* equivalent). This indicates a pre-tax cost of debt for the representative CLEC of 6.79%. The average bond rating on a sample of publicly-traded CLECs is CCC+/CCC (or Caa+/Caa using the *Mergent Bond Record* equivalent), which has a current pre-tax yield of 13.04%. Thus, the average cost of debt for the two approaches is 9.92%.

The average market value-based capital structure of firms in the S&P 500 is 29.50% debt and 70.50% equity while the average for the portfolio of publicly-traded CLEC firms is 87.43% debt and 12.57% equity. The average capital structure is thus 58.50% debt and 41.50% equity. Combining this average capital structure with the above average costs of debt and equity produces an average pre-tax overall cost of capital for the representative CLEC of 13.09%. Thus, this overall cost of capital, after being adjusted to be on an after-

tax basis, should be used to produce the NPVs in the BACE model.

C. ORGANIZATION OF DIRECT TESTIMONY

Q. How is the rest of your testimony organized?

A. Section III of my testimony overviews the status of competition in the telecommunications industry in the United States and describes the structure of the CLEC industry to provide insight into the context in which capital costs are estimated. Section IV discusses recent FCC clarifications concerning the cost of capital that are relied on in my analyses and relevant to the current proceeding. Sections V-VII describe the methods that I use to estimate the representative CLEC's current capital costs and present my specific findings. Finally, section VIII presents my estimate of the representative CLEC's overall cost of capital and summarizes my recommendations to the Commission.

III. CURRENT STATUS OF COMPETITION IN THE LOCAL TELECOMMUNICATIONS MARKET AND CONDITION OF THE CLEC INDUSTRY

A. CURRENT STATUS OF COMPETITION IN THE LOCAL TELECOMMUNICATIONS MARKET

Q. What are the key points in this section that are relevant to your determination of the representative CLEC's capital costs?

A. In this section I cite evidence that supports the following key points:

- Local telecommunications market competition has increased significantly and the CLEC industry is playing a key role in that increase.
- Incumbent local exchange companies face significant and growing competition from CLECs.
- Recent technological developments like softswitches are making local market entry easier and more profitable for CLECs.
- The current compromised financial condition of the average CLEC does not provide reliable evidence concerning the industry's sustainable, long-run optimal capital structure or associated efficient capital costs, on a stand-alone basis.

Q. What is the current status of competition in local telecommunications markets?

A. Competition in the local telecommunications industry has increased dramatically in recent years. The sources of that increased competition include a greater number of new entrants in the industry, a significant increase in the number of existing competitors, a greater number of substitute telecommunications products and services, more intense competition among existing firms in the industry, and enhanced regulatory risk at both the state and the federal levels. Thus, both actual and potential competition has increased and the risk level of the industry has consequently increased.

Q. Is there any empirical evidence indicating a significant increase in local telecommunications market competition?

A. Yes. A recent study by the FCC documents the significant and growing trend toward greater competition in the local telephone exchange market by observing the following (*Local Competition: Status as of December 31, 2002*, Industry Analysis Division, Wireline Competition Bureau, Federal Communications Commission, June 2003, pp. 1 - 3):

- Competitive local exchange carriers (CLECs) reported 24.8 million (or 13.2%) of the approximately 188 million nationwide end-user switched access lines in service at the end of December 2002, compared to 21.6 million (or 11.4% of nationwide lines) in June 2002. This represents a 14% growth in CLEC market size during the second half of 2002.
- Since December 1999, the percentage of nationwide CLEC switched access lines reported to be provisioned by reselling services has declined steadily, to 19% at the end of December 2002, and the percentage provisioned over UNE loops has grown, to 55%.
- The Commission's data collection program requires CLECs and ILECs to identify each zip code in which the carrier provides local telephone service to at least one end-user customer. As of December 31, 2002, at least one CLEC was serving customers in 69% of the nation's zip codes. About 94% of United States households resided in these zip codes. Moreover, multiple carriers reported providing local telephone service in the major population centers of the country.

Thus, the FCC documents that competitors are making enormous strides in taking local telecommunications business away from the ILECs.

Similarly, Standard & Poor's (*Industry Surveys, Telecommunications: Wireline*, May 31, 2001, p. 19) emphasizes the risks brought by increasing competition:

> For local telephone companies, long-distance carriers, and cable providers alike, the Telecom Act's sweeping deregulation is a double-edged sword. On the one hand, a company can gain new revenue sources by providing extra services and entering markets that previously were out of reach. On the other hand, the added competition in all segments will result in tighter profit margins for all players.

Q. Specifically what effects does the analyst community expect these increasing competitive risks and the growth of the CLEC industry to have on the ILECs in general and BST in particular?

A. The following recent comments by Marc Crossman of J. P. Morgan explain how increasing competition is pressuring ILECs like BST ("Company Report: BellSouth," Telecommunications Wireline Services Equity Research, March 15, 2002, p. 4):

> ... The company is facing increasing facilities-based competition from cable operators on the consumer side and the CLECs controlled by WorldCom ... and AT&T ... on the business side. BellSouth also faces growing competition in both the consumer and business customer segments from non-facilities based wholesale competitors, which lease elements of BellSouth's network to provide service. We estimate that BellSouth will have lost 10% of access lines to wholesale competition by year-end 2002. ... Access line loss also places pressure on margins due to the high proportion of fixed versus variable costs associated with providing service.

> Technology substitution exacerbates share loss for wireline voice. On the consumer side, wireless is replacing both primary and secondary lines at an accelerating rate, while cable and DSL broadband are eliminating demand for second lines used for dial-up Internet access. On the business side, DSL is replacing ISDN BRI, while ISDN PRI and fiber are replacing copper-based access lines. In many instances, BellSouth becomes the provider of the substitute technology and retains the customer; however, the revenue generated by the replacing technology tends to be lower ...

The point that one can draw from all of this is that the entire telecommunications industry is competitive and risky, and is growing more so with the passage of time.

B. CONDITION OF THE CLEC INDUSTRY

Q. Why would it not be appropriate to determine the representative CLEC's capital costs for application in the BACE model using information solely from currently operating CLECs?

A. That would be an acceptable approach if currently operating CLECs had demonstrated an ability to maintain a sustainable presence in the market and had done so over some time. Unfortunately, the CLECs as a whole continue to demonstrate some degree of financial instability. While that condition should improve in the future, CLEC data are not sufficient today to rely on exclusively in determining the capital costs for a representative CLEC.

Q. What is expected to happen to the CLEC industry over the next few years?

A. Recent research by International Data Corporation (IDC) projects that:

> ... the competitive local exchange carriers (CLECs) will continue to win access lines from the incumbent carriers, based on flexible pricing and packaging and personalized customer service. While CLEC access lines will grow at 12.2% compound annual growth (CAGR) through 2007, their revenue growth will be in low single digits because of falling prices for both voice and data services. Other key findings include:
>
> - Regulatory uncertainty is still a problem for the CLEC market, but preservation of the UNE system is good for the CLECs.
> - New technologies, such as softswitches and electronic ordering and bonding of operational support systems (OSSs), will continue to reduce CLECs' cost of doing business.
> - Prior capital expenditures will continue to drive a steady increase in switched lines, though IDC assumes that this growth will decline during 2001-2003 then increase as the economy and capital markets improve. (Adcock, Barbara, Kaplan, Ron, and Stofega, William. "U.S. CLEC Forecast, 2002-2007," IDC, Study #29661, June 2003, p. 1).

Q. What factors explain the broad financial distress and bankruptcies experienced by the CLEC industry in the last two years?

A. The generally accepted explanation follows:

> Just as the fact that a number of CLECs have filed for Chapter 11 has become

common knowledge, the reason for their bankruptcies is well known. In the 1990s, the CLECs acquired billions of dollars in financing to invest in telecommunications infrastructure with the assumption that the demand for their services would continue to experience accelerating growth. When this demand did not materialize, the CLECs were left with billions of dollars in debt and no way to pay it off. Some of these CLECs were forced into Chapter 11 to recapitalize their financial structure. Some of these CLECs finally succumbed to Chapter 7 bankruptcy after exhausting all efforts to reduce their debt loads. (New Paradigm Resources Group, Inc., *CLEC Report 2003: Competitive Last Mile Providers*, 17th edition, volume 1, chapter 2, 2003, p. 3 of 20).

Q. In light of the recent high number of bankruptcies and general financial distress, is it fair to conclude that the CLEC industry does not currently exhibit a sustainable long-run structure and the implied optimal, efficient capital structure that can be relied upon by itself to estimate capital costs for the representative CLEC?

A. Yes. The following observations reinforce the above-noted cause of the industry's current problems and emphasize the state of flux the industry currently operates within:

Much has been written in the press about the demise of the CLEC industry. True the past two years have seen several stronger players shut their doors because of high levels of debt. The overall economic slump has further depressed the outlook for CLECs going forward. Despite these facts, New Paradigm Resources Group, Inc. (NPRG) has seen evidence in 2002 that the

CLEC industry is nearing its bottom and should stabilize in 2003 and early 2004.

The CLEC industry continued to shrink in 2002 as several competitive providers with weak business plans, excessive amount of debt, and lackluster management have gone bust. At the same time, large portions of their assets have been acquired by other CLECs, serving to strengthen these companies' operations. The CLECs that continue to do business in late 2002 have reduced their capital spending, scaled back expansion plans, and fortified their management teams, all with an eye toward future growth. Indeed, despite the ongoing drought in the capital markets, 2002 has seen a handful of competitive providers receive new capital investments ...

... The CLEC industry is a relatively young one, and has undergone a variety of growing pains over the last seven years. Considering that total CLEC switched access lines increased by 16% to 27.4 billion during 2001, NPRG continues to assert the difficulty that the industry has faced in the past does not portend the downfall of the entire CLEC market. (New Paradigm Resources Group, Inc. *CLEC Report 2003: Competitive Last Mile Providers*, 17th edition, volume I, chapter 2, 2003, p. 1 of 20).

Q. Have there been any recent specific technological advances that favorably affect forward-looking ability of the CLEC industry to generate profits?

A. Yes. Industry observers note the importance of so-called softswitches in reducing the barriers to entering the local telecommunications market and increasing the ability of CLECs to compete profitably in it. They observe that one of the trends in 2002 was that:

> ... at least 25% of the voice-focused pure-play CLECs – that is, of the CLECs in this Report – had an ongoing softswitch initiative in place. The world continues to move toward a packetized infrastructure.
>
> This is an important trend, carrying significant implications for the future of local competition. To the extent local voice can be readily deployed over softswitches going forward, the expense of deploying a Class 5 switch as an entry barrier will be diminished. This suggest that many more CLEC resellers and ISPs will ultimately migrate to facilities-based CLEC status, deploying voice as an application. (New Paradigm Resources Group, Inc., *CLEC Report 2002: Competitive Last Mile Providers,* 15th edition, volume I, 2002, chapter 2, p. 3 of 22.)

All of this suggests that while there is useful information in relying in part on information about publicly-traded CLECs, such information cannot reliably reflect, by itself, the capital costs of a representative CLEC.

IV. RECENT FCC CLARIFICATIONS CONCERNING COST OF CAPITAL ESTIMATION

A. TRIENNIAL REVIEW ORDER CLARIFICATIONS

Q. What are the key points in this section that are relevant to your determination of the representative CLEC's capital costs?

A. The recent clarifications made by the FCC in the TRO support the following key points that influence my approaches to estimating the representative CLEC's capital costs:

- The cost of capital should rely on data that reflect competitive markets.
- The cost of capital should reflect the assumption of a forward-looking, technologically efficient network. This implies that the cost of capital should reflect forward-looking, efficient capital structure, equity costs, and debt costs.
- The appropriate capital structure in cost of capital analysis is market value- rather than book value-based.
- The S&P 500 is a useful benchmark for assessing the average risk of firms operating in competitive markets, which is relevant in the telecommunications market.

Q. What clarifications does the FCC's TRO provide concerning the appropriate method for computing capital costs?

A. The TRO clearly indicates that the cost of capital should reflect the risks of a competitive rather than a regulated market. Indeed, the FCC states:

> To ensure that UNE prices set by the states appropriately reflect the risks associated with new facilities and new services, we think it would be helpful to clarify two types of risks that should be reflected in the cost of capital. First, we clarify that a TELRIC-based cost of capital should reflect the risks of a competitive market. The objective of TELRIC is to establish a price that replicates the price that would exist in a market in which there is facilities-

based competition. In this type of competitive market, all facilities-based carriers would face the risk of losing customers to other facilities-based carriers, and that risk should be reflected in TELRIC prices. (TRO, p. 419, §680).

This implies that the FCC believes that the cost of capital should be measured using data from competitive rather than just regulated markets.

Q. What assumptions does the FCC make concerning the underlying telecommunications network for the purpose of computing the cost of equity capital?

A. As noted below, the FCC advocates calculating the cost of capital under the assumption of a forward-looking network using the most efficient technology:

> ... To calculate rates based on an assumption of a forward-looking network that uses the most efficient technology (i.e., the network that would be deployed in a competitive market), without also compensating for the risks associated with investment in such a network, would reduce artificially the value of the incumbent LEC network and send improper pricing signals to competitors. Establishing UNE prices based on an unreasonably low cost of capital would discourage competitive LECs from investing in their own facilities and thus slow the development of facilities-based competition. (TRO, pp. 419-420, §682.)

The FCC's assertion that the cost of capital should reflect a forward-looking efficient

network presumably implies that the cost of capital should also reflect the assumption of an optimal, sustainable capital structure and its associated forward-looking capital costs. Unfortunately, the current financial problems being experienced by the CLEC industry undermine the validity of such an assumption. It is consequently necessary to find market-based evidence of optimal, sustainable capital structures and capital costs elsewhere.

B. FCC CLARIFICATIONS PROVIDED BY THE VERIZON ARBITRATION ORDER

Q. Does the FCC take a position in its recent Verizon arbitration order concerning the appropriateness of market value- rather than book value-based capital structures in cost of capital analysis?

A. Yes. In reviewing the cost of capital determination process applied to Verizon, the FCC (specifically, the Wireline Competition Bureau) observes that:

> ... In calculating TELRIC prices, the theoretically correct capital structure is based on market values of debt and equity, not book values. In section 252(d)(1) of the Act, Congress specifically prohibited the use of traditional rate-base, rate-of-return ratemaking. The Commission has interpreted this section to require prices based on forward-looking costs, because forward-looking costs best replicate the costs a carrier would face in a market with facilities-based competition. Under the Commission's TELRIC rules, we calculate the investment necessary to build a network using the most efficient technology currently available. The TELRIC rules provide for the recovery of the investment in that efficient network through the use of economic

depreciation and they provide for a return on that investment through a risk-adjusted cost of capital. The book value of Verizon's existing network is irrelevant for these purposes. Investors would not earn the return that they require if a cost of capital that is based on book value is applied to the economic value of their assets, given that rational investors value these assets at market value. Thus, the use of a capital structure based on market values, rather than book values, represents a departure from traditional ratemaking, but one that is entirely appropriate under the Act. (In the Matter of 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, and In the Matter of 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 Corporation Commission Regarding Interconnection Disputes With Verizon Virginia Inc., CC Docket No. 00-251, Memorandum Opinion and Order, DA 03-2738, released August 29, 2003, p. 45, §102, hereinafter Verizon Arbitration Order.)

Thus, the FCC quite clearly supports the use of market value-based capital structures in cost of capital estimation.

Q. Has the FCC provided any guidance concerning the usefulness of the S&P 500 in measuring equity capital costs?

A. Yes. In the Verizon Arbitration Order the FCC observes that:

> ... the overall beta of 1.0 for the S&P 500 companies for which Verizon placed betas into the record does produce a useful benchmark for the risk faced on average by established companies in competitive markets. (Verizon Arbitration Order, p. 41, §90.)

The FCC consequently indicates that the S&P 500 market return is a reasonable proxy for the average risk faced by firms operating in competitive markets.

Q. By using the firms of the S&P 500 as a surrogate for the representative CLEC, does this mean that the average CLEC has the same risk as any firm in the S&P 500?

A. No. It may be tempting to single out one company in the S&P 500 and incorrectly attempt to compare its various risk measures individually to those of the representative CLEC. However, none of the individual companies in the S&P 500 are precisely like the representative CLEC in every respect. The firms are alternative investment opportunities that, *in the aggregate*, have average risk. This benchmark consequently provides insight into the representative CLEC's long-term, sustainable capital costs in a fully competitive market.

Some may also incorrectly argue that the S&P 500 is of low risk. Yet this is incorrect because the index is, by definition, composed of firms that are, *as a group*, of average risk. The assumption that the S&P 500 captures only lower risk firms is likely based on a historical, rather than a forward-looking perspective. On a forward-looking basis there is plenty of risk associated with S&P 500 companies. For example, Eastman Kodak is an S&P

500 firm, yet it recently lost a significant amount of its value as investors considered a future in which digital photography has in large part replaced traditional chemical-based photography. Thus, Eastman Kodak - and other S&P 500 firms - face considerable forward-looking risks from technological and market changes. In other words, a history of market dominance is no guarantee of such a future.

V. COST OF EQUITY ANALYSIS FOR THE S&P 500 SURROGATE

Q. What method do you use to calculate the cost of equity for the S&P 500?

A. I use a standard DCF model.

Q. What form of the DCF model do you use to estimate the representative CLEC's cost of equity capital?

A. I use the constant growth form of the DCF model that assumes an indefinite or infinite holding period. I will first describe the general model that is commonly applied to individual firms and then I will describe how the model is refined for application to the S&P 500.

Since most U.S. firms pay dividends quarterly, I use the quarterly form of the DCF model under the realistic assumption that such dividends are changed by firms once a year, on average in the middle of the year. Specifically, the cost of equity K is calculated as:

$$K = [(D_0^q (1 + G)) / P_{mkt}] + G = [D_1^q / P_{mkt}] + G;$$

where G is the most recent average five-year earnings per share growth rate projected by analysts, as reported by either Zacks Investment Research Inc. (Zacks) or by the IBES, and P_{mkt} is the average of the three most recent months (July to September of 2003) of high and low prices for the equity. D_0^q and D_1^q reflect the most recent annual and the anticipated next year amount of quarterly dividends, respectively. D_1^q is calculated as:

$$D_1^q = d_1 (1 + K)^{.75} + d_2 (1 + K)^{.5} + d_3 (1 + K)^{.25} + d_4 ;$$

where d_1 and d_2 are the quarterly dividends paid prior to the assumed yearly change in dividends and d_3 and d_4 are the two quarterly dividends paid after the given change in the amount paid by a firm. Thus, dividend D_1^q captures the quarterly payment of dividends that grow at rate G. In order to reflect the effect of flotation costs on the cost of equity, I directly reduce the market price P_{mkt} used in my analysis by a conservative 5 percent. Billingsley Exhibit No. RSB-2 elaborates on the nature and applicability of the DCF model in estimating the cost of capital. It also discusses the importance of adjusting for both the payment of quarterly dividends and for flotation costs.

The DCF model for the S&P 500 is estimated using essentially the same approach described above. However, the expected growth rate used in the quarterly version of DCF model is the market value-weighted mean of the five-year earnings per share estimates published by Zacks and IBES for the firms in the S&P 500. Similarly, the average closing values of the index for the three most recent months (July to September of 2003) are used. Dividend yield data are obtained from Standard & Poor's *The Outlook*, restated on a quarterly basis.

Q. What cost of equity capital do you estimate for the representative CLEC applying the DCF model to S&P 500 surrogate?

A. Application of the DCF model to the S&P 500 index produces a cost of equity of 14.27% using IBES growth rate estimates and a cost of equity of 14.35% using Zacks growth rate estimates, or an average of 14.31%.

VI. COST OF EQUITY ANALYSIS USING THE PUBLICLY-TRADED CLEC SURROGATE

Q. For your other surrogate, the limited group of publicly-traded CLECs, did you use the DCF model to estimate that surrogate's cost of equity?

A. No, I did not. Because the CLECs do not generally pay dividends, it is not possible to use the DCF approach. As a result, I have instead used the CAPM approach to estimate the cost of equity for this surrogate.

Q. What form of the CAPM do you use to estimate the representative CLEC's cost of equity capital?

A. I use the common form of the model, which calculates the risk-adjusted rate of return K as:

$$K = R_f + \beta [R_m - R_f];$$

where R_f is the expected return on a risk-free security like a U.S. Treasury bond, β is the

expected beta or systematic risk of the equity security, and R_m is the expected return on a broad index of equity market performance, which is the S&P 500 in my analysis.

Q. How and where do you obtain the beta coefficient data needed to estimate the representative CLEC's cost of equity capital using the CAPM?

A. As discussed above, there is limited reliable market data with which to estimate the representative CLEC's beta coefficient, which is required by the CAPM. However, there is sufficient information to evaluate a sample of CLEC firms that do have traded equity and therefore measurable beta coefficients. This sample is identified in Billingsley Exhibit No. RSB-3. Specifically, the average beta of 1.66 for the group of firms is used in the CAPM equation presented above.

The beta coefficients used in my CAPM analysis are the most recent prospective measures supplied by BARRA, a widely recognized provider of financial data and decision support systems for institutional investors. Billingsley Exhibit No. RSB-4 elaborates on the nature and significance of using prospective rather than historical beta estimates.

Q. How do you estimate the risk-free rate of return needed in the CAPM equation?

A. In order to be consistent with the expectational emphasis of the CAPM, I use the 4.51% average expected yield implied by the prices of the Treasury note futures contracts quoted during September of 2003. The prices of these contracts reflect the market's consensus forecast of long-term, low-risk interest rates. Billingsley Exhibit No. RSB-5 describes the futures contracts used in the analysis in more detail and shows the calculations necessary to

derive the implied expected future risk-free rate of return.

Q. How do you estimate the expected return on a broad index of equity market performance for use in the CAPM?

A. I use expectational data to estimate the return of the S&P 500 as my proxy for overall equity market performance using the DCF method discussed above. The expected return during the most recent month (September of 2003) for which data are available is used in the CAPM analysis.

Q. What cost of equity capital do you estimate for the representative CLEC under the CAPM approach?

A. Summarizing the results of the above analysis, I use a risk-free rate of return of 4.51%, an average beta of 1.66 for firms comparable in risk to the representative CLEC, and IBES and Zacks growth rate estimates that imply an expected return on the S&P 500 of 14.27% and 14.35%, respectively. These objective, market-determined data indicate that the representative CLEC's cost of equity capital is 20.71% using the IBES growth rate and 20.84% using the Zacks growth rate forecast. Thus, the average cost of equity for the representative CLEC using the CAPM approach is 20.78%.

Q. What is your conclusion regarding the representative CLEC's cost of equity capital on the basis of the DCF- and CAPM-based findings for your two surrogates?

A. I believe that the DCF finding of 14.31% for the S&P 500 surrogate and the CAPM result of 20.78% for the publicly-traded CLEC surrogate should be averaged to provide a

reasonable cost of equity capital estimate for the representative CLEC. The average cost of equity capital is 17.55%.

VII. COST OF DEBT

Q. How can the representative CLEC's forward-looking cost of debt be empirically estimated?

A. Two approaches are used to estimate the cost of debt. First, the representative CLEC's forward-looking cost of debt is estimated by examining the yields on bonds with the same rating as the average issued by firms in the S&P 500. Using a numerical dummy coding of bond rating categories, the average corporate bond rating for members of the S&P 500 is BBB or Baa. As of September of 2003, the average yield on such bonds is 6.79% (*Mergent Bond Record*, October 2003, p. 63). Second, the representative CLEC's cost of debt is estimated by examining the average bond rating of firms in the industry. As noted above and portrayed in Billingsley Exhibit RSB-6, the average bond rating is CCC+/CCC. That exhibit also shows that the average yield on such bonds in September of 2003 is 13.04%. While this is the rating and associated average yield of a financially troubled industry, I use it to estimate a ceiling debt cost for the industry.

Q. What is your estimate of the representative CLEC's forward-looking cost of debt?

A. Based on my analysis, I believe that a reasonable estimate of the representative CLEC's forward-looking cost of debt is the average of the two estimates of 6.79% and 13.04%, which are the estimates provided by the S&P 500 firms' debt and the sample of publicly-

traded CLEC debt. The average cost of debt for the two approaches is 9.92%.

VIII. OVERALL COST OF CAPITAL FOR THE REPRESENTATIVE CLEC AND SUMMARY OF RECOMMENDATIONS

Q. What capital structure, component costs of capital, and overall cost of capital do you use in estimating the representative CLEC's overall cost of capital directly?

A. I use my estimated costs of equity and debt for the representative CLEC along with the average market value-based capital structure for both the S&P 500 and the above-noted sample of publicly-traded CLECs. The average market value-based capital structure of firms in the S&P 500 is 29.50% debt and 70.50% equity while the average for the sample of publicly-traded CLECs is 87.43% debt and 12.57% equity (see Billingsley Exhibit No. RSB-3). Averaging these capital structure weights and combining them with the above average cost of debt and cost of equity estimates produces a pre-tax overall cost of capital for the representative CLEC of 13.09%.

Q. What practical and theoretical arguments support reliance on market value-based rather than on book value capital structures in cost of capital analysis?

A. Book value capital structures do not recognize the reality the representative CLEC obtaining capital in today's financial marketplace. The use of market values is both practically as well and theoretically appropriate and consistent with establishing a prospective cost of capital for use in a proceeding such as this one. Market values should be used exclusively because they are dynamically determined in the marketplace by investors,

while book values are the result of historical accounting practices. One-time accounting events that do not change market values can significantly alter book values. Additionally, the point in time at which a company issued stock in the past can influence book values, while prospective market values are not affected. Current market values are determined by investors' most up-to-date expectations for the future. These expectations are based on a variety of factors, many of which are external to a CLEC. Book values look at a firm largely in dated isolation, while market values consider the firm's expected performance in light of its external competitive environment as well.

Over time, market values vary from book values as investors change stock prices in response to new company announcements as well as to announcements concerning their competitors for investors' dollars. If an event or announcement significantly enhances or detracts from shareholder value, that change is immediately translated into a market value change by investors, while there is likely to be no immediate change in book value. It is obvious that relying on book values is unrepresentative of the investor's perspective in today's capital markets from which the representative CLEC must obtain capital. The impact of relying on book values is a downward bias in overall cost of capital estimates.

Q. Would you elaborate on how market value-based capital structures reflect investors' expectations and how capital structures are commonly measured in accepted financial practice and theory?

A. Yes. Market value-based capital structures reflect the most up-to-date expectations of investors in the capital markets. In contrast, book value-based capital structures reflect accounting conventions and historical costs. It is important to stress that capital costs

inherently involve market-based expectations no matter what type of cost estimation model is used. Therefore, the capital structure that is matched with expected capital costs must also be measured in market value terms that capture investors' expectations. In order to be consistent with well-established financial practice and theory, market-determined capital costs must be matched with market-determined capital structures. Indeed, the use of market value-based capital structures in cost of capital and capital budgeting analysis is the standard approach taken in modern corporate finance textbooks (e.g., see S. A. Ross, R. W. Westerfield, and B. D. Jordan, *Essentials of Corporate Finance*, Irwin: 1996, pp. 316-317 or R.A. Brealey and S.C. Myers, *Principles of Corporate Finance*, McGraw-Hill: 1996, 5th ed., pp. 214, 517).

Many people mistakenly believe that there are three different costs of capital: historical, current, and expected. Actually there is only one relevant measure, which is the *expected* cost of capital that is based on market values. This is consistently updated every day in the financial markets and exists at any given point in time. Thus, market value-based capital structures are more appropriate than accounting-based capital structures in cost of capital analysis

Q. Is the use of market value-based capital structures in cost of capital analysis consistent with well-accepted legal and regulatory standards?

A. Yes. In addition to being consistent with well-established financial practice and theory, I believe that the use of market value-based capital structures is consistent with the universally-accepted Supreme Court precedents concerning what characterizes a reasonable rate of return for a regulated public utility (see Bluefield Water Works & Improvement Co.

v. Public Service Commission of West Virginia, 262, U.S. 679, 692-3, (1923) and Federal Power Commission v. Hope Natural Gas Co. 320, U.S. 591, (1944)).

Market value-based capital structures are also consistent with the FCC's standard of considering the expected cost of capital (see First Report & Order, FCC 96-325, released August 8, 1996, paragraph 700). Because the expected cost of capital is, by definition, based on investors' expectations, all of its components must be based on expectations. The FCC's standard implies that the CLECs' costs of debt, costs of equity, and capital structures must all rely on the expectations reflected in market values. Thus, well-accepted financial practice and theory as well as the FCC's espoused principle indicate that market value-based capital structures are more appropriate than accounting-based capital structures in cost of capital analysis.

Q. Similarly, is the use of market value-based capital structures in cost of capital analysis consistent with the recent clarifications concerning the estimation of capital costs that you discuss above in your testimony?

A. Yes. As discussed above in Section IV of my testimony, the FCC clearly states that " ... the use of a capital structure based on market values, rather than book values, represents a departure from traditional ratemaking, but one that is entirely appropriate under the Act" (Verizon Arbitration Order, p. 45, §102).

Q. Would you please elaborate on why it is necessary to adjust your overall cost of capital estimate for taxes before using it to discount the representative CLEC's cash flows in the BACE model?

A. Yes. The representative CLEC operates in a competitive marketplace that is fully subject to state and federal taxation. Thus, it is important to adjust all estimated capital costs for the effects of such taxation. Interest expenses are typically deducted from taxable income. Thus, each dollar of interest paid reduces the amount of a CLEC's income that is subject to tax. For example, if a CLEC pays a before-tax interest cost of 6.79% and faces a 32% tax rate, it's effective after-tax cost of debt will be 6.79% (1 – 32%) = 4.62%. In contrast, a CLEC must meet equity holders' return requirements as an expense that is not tax-deductible. Thus, for example, the before-tax cost of equity on the S&P 500 of 14.31% is equal to the after-tax cost. In other words, the cost of equity receives no favorable tax treatment.

In evaluating potential investments it is necessary to discount after-tax cash flows at after-tax capital costs. The BACE model generates after-tax cash flows that consequently must be discounted at an after-tax overall cost of capital in order to produce a reliable NPV estimate.

Q. Would you please summarize your recommendations to the Commission concerning the appropriate capital costs that should be used in the BACE business case model to assess whether any lack of access to BST's switch UNE makes entry by a CLEC uneconomical?

A. My analysis indicates that a forward-looking cost of equity estimate for the representative CLEC using the DCF and CAPM approaches is an average of 17.55%. I also find evidence that the cost of debt of the representative CLEC is an average of 9.92%. The average market value-based capital structure of firms is 58.50% debt and 41.50% equity.

Combining this average capital structure with the above average costs of debt and equity produces an average pre-tax overall cost of capital for the representative CLEC of 13.09%. In summary, I recommend that the Commission use a *before-tax* overall cost of capital of 13.09% to discount the cash flows produced by the BACE CLEC business case model. As noted above, the capital cost estimates I provide are all stated on a before-tax basis. The after-tax cash flows produced by the BACE model must be discounted at after-tax capital costs so as to produce a reliable NPV estimate.

Q. Does this conclude your direct testimony?

A. Yes, it does.

RANDALL S. BILLINGSLEY

December 2003

BUSINESS ADDRESSES

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APPOINTMENTS

1994 - Current: Associate Professor of Finance
Virginia Polytechnic Institute & State University

1993: Vice President
Association for Investment Management and Research
Education and Programs Department

Duties: Project director, responsible for the development and design of education technology products. Projects included videos on options and futures analysis, ethical issues in the investment profession, and financial statement analysis for investment valuation and management.

Responsible for the design and offering of continuing education programs to meet the needs of AIMR's members in particular and the investment industry in general.

Associate Professor, On Leave of Absence
Virginia Polytechnic Institute & State University

1987-1992: Associate Professor of Finance
Virginia Polytechnic Institute and State University

1981-1987: Assistant Professor of Finance
Virginia Polytechnic Institute and State University

1978-1981: Lecturer of Finance
Texas A&M University

1977-1978: Lecturer of Economics
Research Assistant in Economics
Texas A&M University

Summers 1978, 1980: Research Associate
Texas Transportation Institute
Texas A&M University

Duties: (1978) Principal researcher and author of a study concerning design of optimal subsidy techniques for public transit projects. (1980) Co-author of research proposal for study of the projected economic impact of user charges on the Texas Gulf Intra-Coastal Waterway (proposal accepted and fully funded). Performed research concerning various policy issues in transportation economics.

PROFESSIONAL DESIGNATIONS

1986: Chartered Financial Analyst (CFA)
The Institute of Chartered Financial Analysts
(Association for Investment Management and Research)

1992: Certified Rate of Return Analyst (CRRA)
National Society of Rate of Return Analysts

EDUCATION

1982: Doctor of Philosophy in Finance, supporting field in Economics
Dissertation Title: "A Multivariate Analysis of Bank Holding Company Capital Note and Debenture Ratings"
Chairman: Dr. Donald R. Fraser
Texas A&M University

1978: Master of Science in Economics, supporting field in Statistics
Texas A&M University

1976: Bachelor of Arts in Economics
Texas Tech University

PRIMARY TEACHING AND RESEARCH INTERESTS

Teaching: Financial Derivatives and Investments.

Research: Interests include investments, valuation methods, cost of capital analysis, primary market pricing of debt instruments, and public utility regulatory issues.

TEACHING HONORS

Teaching Excellence Award, The R. B. Pamplin College of Business, Virginia Polytechnic Institute and State University, 2002-2003.

Teaching Excellence Award, The R. B. Pamplin College of Business, Virginia Polytechnic Institute and State University, 1986-1987.

Excellence in Teaching Award, MBA Association, Virginia Polytechnic Institute and State University, 1985-1986.

PUBLICATIONS

Journal Articles - Refereed

"The Benefits and Limits of Diversification Among Commodity Trading Advisors," *Journal of Portfolio Management*, Vol. 23, No. 1, Fall 1996, pp. 65-80 (Author listing: R. S. Billingsley and D. M. Chance).

"Why Do Firms Issue Convertible Debt?" *Financial Management*, Vol. 25, No. 2, Summer 1996, pp. 93-99, (Author listing: R. S. Billingsley and O.M. Smith).

"Simultaneous Debt and Equity Offerings and Capital Structure Targets," *Journal of Financial Research*, Vol. 17, No. 4, Winter 1994, (Author listing: R. S. Billingsley, D. M. Smith, and R. E. Lamy).

"Regional Reciprocal Interstate Banking: The Supreme Court and the Resolution of Uncertainty," *Journal of Banking and Finance*, Vol. 16, No. 1, 1992, pp. 665-686, (Author listing: R. S. Billingsley and R. E. Lamy).

"Integration of the Mortgage Market," *Journal of Financial Services Research*, Vol. 6, 1992, 137-155, (Author listing: R. S. Billingsley, V. A. Bonomo, and S. P. Ferris).

"Units of Debt with Warrants: Evidence of the 'Penalty-Free' Issuance of an Equity-Like Security," *The Journal of Financial Research*, Vol. 13, No. 3, Fall 1990, pp. 187-199, (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith).

"Shareholder Wealth and Stock Repurchases By Bank Holding Companies," *Quarterly Journal of Business and Economics*, Vol. 28, No. 1, Winter 1989, pp. 3-25, (Author listing: R. S. Billingsley, D. R. Fraser and G. R. Thompson).

Abstract: *Journal of Economic Literature*, Vol. 27, No. 3, September 1989, p. 1503.

"The Regulation of International Lending: IMF Support, the Debt Crisis, and Bank Shareholders," *Journal of Banking and Finance*, Vol. 12, No. 2, 1988, pp. 255-274, (Author listing: R. S. Billingsley and R. E. Lamy).

"Put-Call Ratios and Market Timing Effectiveness," *Journal of Portfolio Management*, Vol. 15, No. 1, Fall 1988, pp. 25-28, (Author listing: R. S. Billingsley and D. M. Chance).

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"Bankruptcy Avoidance As A Merger Incentive," *Managerial Finance*, Vol. 14, No. 1, November 1988, pp. 25-33, (Author listing: R. S. Billingsley, D. J. Johnson, and R. P. Marquette).

"The Pricing and Performance of Stock Index Futures Spreads," *Journal of Futures Markets*, Vol. 8, No. 3, June 1988, pp. 303-318, (Author listing: R. S. Billingsley and D. M. Chance).

"The Choice Among Debt, Equity, and Convertible Bonds," The *Journal of Financial Research*, Vol. 11, No. 1, Spring 1988, pp. 43-55, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

"Valuation of Primary Issue Convertible Bonds," *The Journal of Financial Research*, Vol. 9, No. 3, Fall 1986, pp. 251-259, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

Abridged Reprint: *The CFA Digest*, Vol. 17, No. 2, Spring 1987, pp. 18-19.

"The Reaction of Defense Industry Stocks to World Events," *Akron Business and Economic Review*, Vol. 18, No. 2, Summer 1987, pp. 40-47, (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson).

"Listed Stock Options and Managerial Strategy," *Strategy and Executive Action,* No. 4, Fall 1986, pp. 17-20, 28, (Author listing: R. S. Billingsley and D. M. Chance).

"Reevaluating Mortgage Refinancing "Rules of Thumb," *Journal of the Institute of Certified Financial Planners*, Vol. 7, No. 1, Spring 1986, pp. 37-45, (Author listing: R. S. Billingsley and D. M. Chance).

"Explaining Yield Savings on New Convertible Bond Issues," *Quarterly Journal of Business and Economics*, Vol. 24, No. 3, Summer 1985, pp. 92-104, (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson).

Abstract: *Journal of Economic Literature*, Vol. 24, No. 2, June 1986, p. 1083.

"Options Market Efficiency and the Box Spread Strategy," *The Financial Review,* Vol. 20, No. 4, November 1985, pp. 287-301, (Author listing: R. S. Billingsley and D. M. Chance).

Reprint: *CFA Readings in Derivative Securities*, pp. 217-231, Charlottesville, VA: The Institute of Chartered Financial Analysts, 1988.

"Determinants of Stock Repurchases by Bank Holding Companies," *Journal of Bank Research*, Vol. 16, No. 3, Autumn 1985, pp. 128-35, (Author listing: R. S. Billingsley and G. R. Thompson).

"The Informational Content of Unrated Industrial Bonds," *Akron Business and Economic Review*, Vol. 16, No. 2, Summer 1985, pp. 53-58, (Author listing: R. S. Billingsley and R. E. Lamy).

"Split Ratings and Bond Reoffering Yields," *Financial Management*, Vol. 14, No. 2, Summer 1985, pp. 59-65, (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson).

"Determinants of Bank Holding Company Bond Ratings," *The Financial Review*, Vol. 19, No. 1, March 1984, pp. 55-66, (Author listing: R. S. Billingsley and D. R. Fraser).

Abstract: *Journal of Economic Literature*, Vol. 22, No. 4, December 1984, p. 2010.

"Market Reaction to the Formation of One-Bank Holding Companies and the 1970 Bank Holding Company Act Amendment," *Journal of Banking and Finance*, Vol. 8, No. 2, 1984, pp. 21-33, (Author listing: R. S. Billingsley and R. E. Lamy).

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"Preliminary Study Indicates Optimal Number of Advisors May Be 40 +," *Managed Account Reports*, Issue No. 185, July 1994, p. 13.

"Managing Portfolios Using Index Options," *Futures*, Vol. 14, No. 9, September 1985, pp. 70-74, (Author listing: D. M. Chance and R. S. Billingsley).

Monographs & Sponsored Research

"The Evolution of Depository Institution Regulation In the United States," in *Banking and Monetary Reform: A Conservative Agenda*, Catherine England, pp. 47-56, Washington, D. C.: The Heritage Foundation, 1985, (Author listing: R. S. Billingsley).

Fare Box and Public Revenue: How to Finance Public Transportation. State Department of Highways and Public Transportation, Texas Transportation Institute, February 1980, (Author listing: R. S. Billingsley, P. K. Guseman and W. F. McFarland).

Cases

"Merck & Company: A Comprehensive Equity Valuation Analysis," Charlottesville, VA: The Association for Investment Management and Research, (Author listing: R. S. Billingsley), 1996.

Adopted by the Candidate Curriculum Committee of the CFA Program: 1997, 1998, 1999, 2000, 2001, and 2002.

"Equity Securities Analysis Case Study: Merck & Company," *The CFA Candidate Readings II*, Charlottesville, VA: The Association for Investment Management and Research, (Author listing: R. S. Billingsley), 1994.

Adopted by the Candidate Curriculum Committee of the CFA Program: 1994, 1995, and 1996.

Proceedings

"Bankruptcy Avoidance as a Merger Incentive: An Empirical Study of Failing Firms," *The Financial Review*, Vol. 18, No. 3, 1983, p. 94, (Author listing: R. S. Billingsley, D. J. Johnson, and R. P. Marquette).

"A Multivariate Analysis of the Ratings of Bank Holding Company Debt Issues," *The Financial Review*, Vol. 17, No. 2, July 1982, p. 57, (Author listing: R. S. Billingsley and D. R. Fraser).

Editor

"Corporate Decision Making and Equity Analysis," Seminar Proceedings, Charlottesville, VA: The Association for Investment Management and Research, (Author listing: R. S. Billingsley, Editor), 1995.

"Industry Analysis: The Telecommunications Industry," Seminar Proceedings, Charlottesville, VA: The Association for Investment Management and Research, (Author listing: R. S. Billingsley, Editor), 1994.

PAPERS PRESENTED AT PROFESSIONAL MEETINGS

"The Telecommunications Act of 1996: Preliminary Surprises of Deregulation," (Author listing: R. S. Billingsley, P. P. Peterson, and J. M. Pinkerton). Presented at the Financial Management Association Meetings, Seattle, Washington, October 2000.

"Further Evidence on the Gains from Diversification in Multi-Manager Programs," (Author listing: R. S. Billingsley and D. M. Chance). Presented at Managed Account Reports' conference, *Alternative Investment Strategies*, Chicago, Illinois, June 1995.

"The Gains from Diversification in a Multi-Manager Program: Some Preliminary Results," (Author listing: R. S. Billingsley and D. M. Chance). Presented at Managed Account Reports' conference, *Derivatives Investment Management*, Chicago, Illinois, July 1994.

"Firm Value and Convertible Debt Issues: Signalling vs. Agency Effects," (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith). Presented at the Eastern Finance Association Meetings, Hot Springs, Virginia, April 1991.

"The Valuation of Simultaneous Debt and Equity Offerings," (Author listing: R. S. Billingsley, R. E. Lamy, and D. M. Smith). Presented at the Financial Management Association Meetings, Orlando, Florida, October 1990.

"The Choice Between Issuing Convertible Bonds and Units of Debt with Warrants," (Author listing: R. S. Billingsley, R. E. Lamy and D. M. Smith). Presented at the Financial Management Association Meetings, New Orleans, Louisiana, October 1988. (Subsequently published in *The Journal of Financial Research*, see article citation.)

"The Choice Among Debt, Equity, and Convertible Bonds," (Author listing: R. S. Billingsley, R. E. Lamy, and G. R. Thompson). Presented at the Financial Management Association Meetings, Las Vegas, Nevada, October 1987. (Subsequently published in *The Journal of Financial Research,* see article citation.)

"The Regulation of International Lending: IMF Support, the Debt Crisis, and Bank Shareholders," (Author listing: R. S. Billingsley and R. E. Lamy). Presented at the Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, Chicago, Illinois, May 1986. (Subsequently published in the *Journal of Banking and Finance*, see article citation.)

"Valuation of Primary Issue Convertible Bonds," (Author listing: R. S. Billingsley, R. E. Lamy and G. R. Thompson). Presented at the Financial Management Association Meetings, Denver, Colorado, October 1985. (Subsequently published in *The Journal of Financial Research*, see article citation.)

"The Economic Impact of Split Ratings on Bond Reoffering Yields," (Author listing: R. S. Billingsley, R. E. Lamy, M. W. Marr, and G. R. Thompson). Presented at the Financial Management Association Meetings, Toronto, Canada, October 1984. (Subsequently published in *Financial Management*, see article citation.)

"The Informational Content of Unrated Industrial Bonds," (Author listing: R. S. Billingsley and R. E. Lamy). Presented at the Financial Management Association Meetings, Atlanta, Georgia, October 1983. (Subsequently published in *Akron Business and Economic Review*, see article citation.)

"Bankruptcy Avoidance As A Merger Incentive: An Empirical Study of Failing Firms," (Author listing: R. S. Billingsley, R. P. Marquette, and D. J. Johnson). Presented at the Eastern Finance Association Meetings, New York, New York, April 1983. (Subsequently published in *Managerial Finance*, see article citation.)

"A Multivariate Analysis of the Ratings of Bank Holding Company Debt Issues," (Author listing: R. S. Billingsley and D. R. Fraser). Presented at the Eastern Finance Association Meetings, Jacksonville, Florida, April 1982. (Subsequently published in *The Financial Review*, see article citation.)

PROFESSIONAL EDUCATIONAL SEMINARS PLANNED AND ORGANIZED FOR THE ASSOCIATION FOR INVESTMENT MANAGEMENT AND RESEARCH

"Corporate Financial Decision Making and Equity Analysis," New York, NY, February 2000. Conference Moderator: M. Kritzman.

"Risk Management," Boston, MA, March 1999. Conference Moderator: B. Putnam.

"Investing in the "New" Telecommunications Industry," New York, NY, September 1997. Conference Moderator: L. J. Haverty, Jr.

"Managing the Investment Professional," Chicago, IL, April 1996. Conference Moderator: R. S. Lannamann.

"Effective Risk Management in the Investment Firm," Boston MA, October 1995. Conference Moderator: G. L. Gastineau.

"Equity Analysis: The Role of Corporate Financial Decision Making," Washington, D.C., January 1995. Conference Moderator: R. S. Billingsley.

"Blending Quantitative and Traditional Equity Analysis," Boston, MA, March 1994. Conference Moderator: H. R. Fogler.

"Industry Analysis: The Telecommunications Industries," New York, NY, November 1993. Conference Moderator: R. S. Billingsley.

PROFESSIONAL SERVICE

Board of Directors
Society of Utility and Regulatory Financial Analysts, 1993 – 2002.

Association for Investment Management and Research Activities
(Formally the Institute for Chartered Financial Analysts).
Professional service beyond duties performed as Vice President at AIMR.

Grading Staff, Institute of Chartered Financial Analysts, June 1987.

Candidate Curriculum Committee, Institute of Chartered Financial Analysts, Quantitative Analysis Sub-Committee, 1987-1989.

CFA Examination Analysis Team, Levels I-III, March 1988.
CFA Examination Grading Review Team, July 1988.

Faculty, CFA Refresher Course, Valuation: Equity, Charlottesville, VA, June 1992, June 1993, June 1994, UCLA, November 1994.

Faculty, Basics of Equity Analysis, Montreal, Quebec, Canada, November 1994.

Consulting Clients

Association for Investment Management and Research

Bell Atlantic

BellSouth Telecommunications

The Financial Analysts' Review of the United States

Innovative Telephone Company

Institut Penembangan Analisis Finansial, Jakarta, Indonesia

Schweser Study Program (Kaplan Professional Company)

Securities Analysts' Association, Bangkok, Thailand

Sprint

Union Bank of Switzerland and UBS AG, Zürich and Basel

United States Telecommunications Association

Expert Witness Regulatory Testimony
(Note: only original docket indicated; direct and rebuttal not distinguished in same docket spanning over one year.)

Company	Docket No.	Year
Haviland Telephone Company (Kansas)	KCC 03-HVDT-664-RTS	2003
Innovative Telephone Company (U.S.V.I.)	VIPSC 532	2002
BellSouth Telecommunications (North Carolina)	NCPSC P-100, Sub133D	2002
BellSouth Telecommunications (Georgia)	GAPSC 14361-U	2001
BellSouth Telecommunications (Alabama)	ALPSC 27821	2000
BellSouth Telecommunications (Florida)	FLPSC 990649-TP	2000
BellSouth Telecommunications (Kentucky)	KPSC Adm. Case 382	2000
BellSouth Telecommunications (Louisiana)	LAPSC U-24714, Sub A	2000
BellSouth Telecommunications (Mississippi)	MPSC 2000-UA-999	2000
BellSouth Telecommunications (South Carolina)	SCPUC 2001-65-C	2000
United State Telephone Association, et. al.	FCC 98-166	1999
BellSouth Telecommunications and Sprint-Florida (Florida)	FLPSC 980696	1998
BellSouth Telecommunications (Alabama)	ALPSC 25980	1998
BellSouth Telecommunications (Florida)	FLPSC 980696-TP	1998
BellSouth Telecommunications (Kentucky)	KPSC Adm. Case 361	1998
BellSouth Telecommunications (Mississippi)	MPSC 98-AD-035	1998
BellSouth Telecommunications (Mississippi)	MPSC 98-AD-544	1998
BellSouth Telecommunications (North Carolina)	NCPSC P-100, Sub 133B	1998
BellSouth Telecommunications (North Carolina)	NCPSC P-100, Sub 133D	1998
BellSouth Telecommunications (Tennessee)	TRA 97-00888	1998
BellSouth Telecommunications (Florida)	FLPSC 960833-TP	1997
BellSouth Telecommunications (Kentucky)	KPSC Adm. Case 360	1997
BellSouth Telecommunications (Tennessee)	TRA 97-01262	1997
BellSouth Telecommunications (South Carolina)	SCPSC 97-374-C	1997
BellSouth Telecommunications (Florida)	FPSC 960833-TP	1997
BellSouth Telecommunications (Alabama)	ALPSC 26029	1997
BellSouth Telecommunications (Georgia)	GAPSC 7061-U	1997
United States Telephone Association	FCC 96-262	1997
United States Telephone Association	FCC: AA096-28	1996
Southern Bell (South Carolina)	SCPSC 95-862-C	1995
United States Telephone Association	FCC 94-1	1994
Southern Bell (South Carolina)	SCPSC 93-503-C	1994

Company	Docket No.	Year
Southern Bell (Georgia)	GPSC 3905-4	1994
Southern Bell (Florida)	FPSC 920260-TL	1993

Manuscript Referee

Journal of Banking and Finance

Journal of Financial Research

Journal of Futures Markets

Financial Review

Quarterly Journal of Business and Economics

Quarterly Review of Business and Economics

International Review of Economics and Finance

Japan and the World Economy

Journal of Business Research

Journal of Economics and Business

Engineering Economist

SELECTED INVITED SPEECHES/WORKSHOPS

LDC / Virginia State Corporation Commission Conference, "LDC Return On Equity: Has The World Changed? Common Myths in Cost of Capital Analysis," Roanoke, VA, October 2003.

Securities Analysts' Association, "Equity Valuation and Analysis Workshop," Bangkok, Thailand, March 1998.

Securities Analysts' Association, "Equity Valuation and Analysis Workshop," Bangkok, Thailand, March 1997.

Maryland - District of Columbia Utilities Association, "Telecommunications: Increasing Risk on the Horizon? An Investment Community Perspective, "71st Annual Fall Conference, Ocean City, MD, September 1995.

Bell Atlantic, "Do the 'Traditional' Cost of Equity Estimation Methods Work in the Current Environment?" National Accounting Witness Conference, Landsdowne Conference Resort, VA, April 1994.

Southeastern Electric Exchange, "Trends in Estimating the Cost of Equity for Public Utilities," St. Petersburg, FL, October 1993.

Securities Analysts' Association, "Common Problems in Valuing Equity Securities," Bangkok, Thailand, April 1992.

Virginia Bankers Association, Group Five (Credit Policy Committee), "Want to Sell Your Bank?" Interstate Banking in 1987 and Beyond," Credit Policy Conference, Radford, VA, April 1987.

NATURE AND APPLICABILITY OF THE DISCOUNTED CASH FLOW MODEL IN COST OF EQUITY CAPITAL ANALYSIS

I. Nature of the Discounted Cash Flow (DCF) Model

The DCF model is a formal statement of common sense and basic financial theory. The model asks an investor's most basic question: How much is this stock worth? Common sense dictates that the answer depends on what investors expect to get out of the stock and when they expect to get it. The "what" is the expected cash flow stream generated by the stock and the "when" is the projected timing of those expected cash flows.

Determining how much a stock is worth depends on one more critical consideration: the riskiness or probability that investors associate with their forecast of what they will receive from the stock. In this context, risk is the possibility that investors' expectations will be frustrated. Thus, risk is reflected by the probability that investors' actual returns will differ from their expected returns. The DCF model assumes that the average investor dislikes risk and consequently will accept higher risk only if there is a higher expected return.

The DCF model recognizes two types of expected cash flows: the periodic payment of cash dividends and the (possible) future sale of the stock. If an investor facing an opportunity cost of K percent expects to get dividends D_t annually for the next N years and then sells the stock at the end of year N for a price of P_N, then the appropriate current price P_0 is:

$$P_0 = \frac{D_1}{(1 + K)^1} + \frac{D_2}{(1 + K)^2} + \ldots + \frac{D_N + P_N}{(1 + K)^N}$$

In summary, the appropriate price of a stock is the present value of all of the cash benefits that an investor expects to get from owning it.

II. Applicable Form of the DCF Model

A. Issues

The above form of the DCF model is typically modified in at least two ways. First, a regulatory commission is presumably not concerned with determining how much a stock should sell for. Its goal is to determine what rate of return a firm's equity investors should reasonably expect to receive for bearing the firm's risk. Thus, a regulator is concerned with what the price is rather than with what it should be. The actual price P_{mkt} should consequently be used to infer investors' required rate of return.

Second, the form of the DCF presented above makes no explicit assumption concerning the expected rate of growth in dividends and the stock's price over time, nor any assumption concerning the length of an investor's expected holding period. However, the so-called constant growth form of the DCF model implicitly assumes that dividends and price grow at a constant rate G over time, that the growth rate is less than the required rate of return, and that investors have an infinite or indefinite holding period.

It is important to remember that the fundamental source of a stock's value to investors in the DCF model is its expected dividend stream. Why would investors be willing to trade a stock if the stock was nothing more than a piece of paper that would never pay any money? If the current price of a stock is the present value of all expected future cash flows, then the price at any point in time should be the present value of the expected cash flows beyond that point in time.

While an infinite holding period may not seem to apply to any one investor, this assumption is an accurate way of portraying the behavior of investors collectively. This is because investors must determine all prices, present and future, by projecting a seemingly endless series of future dividends. They must make such dividend projections since any expected future price is dependent on the dividends that are expected to be paid on that stock after it is purchased.

The constant growth form of the DCF model makes these two adjustments and can be expressed as:

$$K = \frac{D_0(1 + G)}{P_{mkt}} + G = \frac{D_1}{P_{mkt}} + G,$$

where D_0 is the most recent dividend paid, G is the expected growth rate, D_1 is the next anticipated dividend, and the rest of the variables are defined as above.

Two additional modifications to the DCF model are necessary. First, it should be recognized that dividends are paid by most companies on a quarterly, not an annual basis. The second adjustment to the general DCF model presented above considers the flotation costs borne by the firm in raising equity funds.

B. Adjustment for Quarterly Dividends

1. Rationale

The annual form of the DCF model assumes that investors receive dividends only once a year and that they have the opportunity to reinvest those cash flows in investments of the same risk. The required rate of return implied by the annual form of the DCF model will be biased downward if investors actually receive their dividend payments in quarterly rather than in annual installments. This bias results because equity investors have the opportunity to start earning a return on their reinvested dividends sooner when these dividends are received quarterly than when the dividends are received only annually.

Investors determine prices that are consistent with the returns that they expect to earn. Thus, investors pay prices that reflect that they expect dividends quarterly rather than annually. Failure to make this adjustment to the DCF model will understate the cost of equity capital. This adjustment should be made in order to determine an economically correct cost of equity for a regulated firm.

2. Specific Adjustment

There are two basic ways in which quarterly dividends can be handled. The first approach makes the simplifying assumption that dividends are paid quarterly and grow quarterly as well. While this approach has the virtue of simplicity, it is not realistic because most firms adjust their dividend payments only once a year, not quarterly.

The second approach assumes that firms pay dividends quarterly but that those dividends are only changed by a firm annually. Thus, quarterly reinvestment opportunities are recognized and the more realistic pattern of annual dividend growth is accounted for as well. This is the approach that I use in my analysis of a regulated firm's cost of equity. Further, I assume that firms on average adjust the level of their dividends in the middle of the year.

The adjusted DCF model calculates a revised dividend, D_1^q:

$$D_1^q = d_1 (1+K)^{.75} + d_2 (1+K)^{.5} + d_3 (1+K)^{.25} + d_4,$$

where d_1 and d_2 are the two quarterly dividends paid prior to the assumed yearly change in dividends and d_3 and d_4 are the two quarterly dividends paid after the given change in the amount paid by a firm. This dividend, D_1^q, revised to recognize the quarterly payment of dividends that grow at rate G once a year (on average for all firms in the middle of the next

12 months), is substituted in the place of D_1 in the basic form of the DCF model as follows:

$$K = \frac{D_1^q}{P_{mkt}} + G.$$

In my analysis, the market price is the average of the monthly high and low stock prices for the most recent three months for which data are available.

C. Adjustment for Flotation Costs

1. Rationale and Specific Adjustment

The cost of equity capital must reflect what a firm needs to earn on its funds in order to meet the return requirements of its investors. Flotation costs reduce the amount of funds that a firm has to invest and thereby increase the return that a firm must earn on those remaining funds if it is to continue attracting investors. If a utility was allowed to recover all of its flotation costs at the time of issuance, there would be no need for this adjustment. Otherwise, it is important to subtract the flotation costs from the price used in the DCF model in order to capture the fact that a utility does not receive the full proceeds of an equity issue.

Two empirical studies indicate that a 5% flotation cost is realistic. Research by C. W. Smith, Jr. (*Journal of Financial Economics*, 1977, pp. 273-307) finds that explicit flotation costs amount to between 4% and 5% of the amount of an equity issue. Focusing on the utility industry, research by R. H. Pettway (*Public Utilities Fortnightly*, May 10, 1984, pp. 35-39) finds that the sale of equity securities generally also involves implicit flotation costs in the form of a 2% to 3% decline in the price of the stock that results from market pressure.

While the above studies deal with both utilities and industrial firms, they are also relevant to the estimation of telecommunications companies' flotation costs. As the telecommunications industry becomes more competitive, such firms are increasingly being viewed more like industrials than as "pure" public utilities. Equity investors taking a long-term view in their valuations recognize this. Thus, the firm's cost of equity should reflect this expected transition. Therefore, given actual costs of approximately 4-5% and market pressure of 2-3%, I include a conservative 5% flotation cost adjustment that is implemented as a 5% reduction to the stock prices used in my DCF analysis.

2. Relevance of Flotation Costs Despite the Absence of Actual Equity Sales

The fact that a regulated firm does not actually sell equity by virtue of an affiliation with a parent company does not invalidate the need to adjust for flotation costs. Taken to its logical extreme, it could be argued that such a regulated subsidiary firm has no cost of equity capital at all since it does not sell shares of stock on the open market. Yet such regulated firms bear such equity costs and should be compensated accordingly.

The omission of a flotation cost adjustment is incorrect and is equivalent to comparing mortgage rates without adjusting for "points." A regulated firm will not get fair treatment if it is only permitted to earn a return that does not cover all of its reasonable costs, which include flotation costs.

3. Estimation of Growth for Use in the DCF Model

Investors are forward-looking. Investment decisions are made on the basis of how investors expect a stock to perform in the future. While how a stock has performed in the past may well influence an investor's expectations concerning future performance, there is no guarantee that the future will be a simple extension of the past. Thus, it is important that the estimated growth rate used in the DCF model be a prospective or expected, not a historical, rate.

Financial research indicates that the consensus growth rate forecasts of financial analysts are the most unbiased, objective, and accurate measure of investors' growth expectations for a stock. Thus, I use the growth rate estimates published by the Institutional Brokers Estimate System (IBES) and Zacks Investment Research, Inc. (Zacks). Both IBES and Zacks are used widely within the investment profession and are revised frequently enough to remain relevant to investors evaluating the growth prospects of stocks. Further, the use of both sources provides broad-based measures of long-term growth rate expectations.

Sample of Publicly-Traded CLECs
March 2003[1]

COMPANY	BARRA BETA	DEBT / TOTAL CAPITAL[2]	EQUITY / TOTAL CAPITAL
DSL.Net, Inc.	2.05	0.5733	0.4267
McLeodUSA Inc.-Cl A	1.61	0.8545	0.1455
Pac-West Telecom, Inc.	1.76	0.8627	0.1373
RCN Corp.	1.86	0.9807	0.0193
Talk America Holdings, Inc.	1.66	0.3167	0.6833
Time Warner Telecom, Inc.	1.71	0.7665	0.2335
US LEC Corp	0.99	0.7851	0.2149
Z Tel Technologies, Inc.	1.62	0.7184	0.2816
Average[3]	**1.66**	**0.8743**	**0.1257**

[1] Based on the closing common stock prices as of March 3, 2003 and year-end 2002 financial statements.
[2] Debt is defined as the book value of total debt plus the book value of preferred equity.
[3] The average debt and equity ratios are market value-weighted.

CAPITAL ASSET PRICING MODEL ANALYSIS OF THE COST OF EQUITY CAPITAL

I. Description of the Approach

The capital asset pricing model (CAPM) is a theory of the relationship between the risk of a security or a portfolio of securities and the expected rate of return that is commensurate with that risk. The theory is based on the assumption that security markets are efficient and dominated by risk averse investors. In other words, the CAPM argues that investors are willing to take on more risk only if they can reasonably expect a higher return.

The CAPM accepts the risk/return trade-off economic principle and quantifies that trade-off. Further, the model assumes that most investors diversify their investment holdings so as to not put "all of their eggs in one basket." Indeed, the tendency for investors to diversify their investment portfolios implies that, in a CAPM context, the only type of risk that is rewarded or relevant in the risk/return trade-off is systematic or market-related risk. Thus, the additional risk created by not diversifying among investments is not rewarded by the securities markets under the CAPM.

The measurable relationship between risk and expected return in the CAPM is summarized by the following expression:

$$R_i = R_f + \beta_i [R_m - R_f],$$

where R_i is the expected return on security or portfolio i, R_f is the return on a risk-free security like a U.S. Treasury bond, β_i is the beta of security or portfolio i, and R_m is the expected return on a broad index of equity market performance like the Standard & Poor's Composite 500 Index (S&P 500).

II. Economic Rationale for the Approach

The rationale for the CAPM equation is the common sense observation that investors must be coaxed to move their money from riskless assets like U.S. Treasury bonds into risky assets. Consider an everyday example wherein investors can obtain about a 7% return on a Treasury security. Investors will not invest in a broad market portfolio of risky securities unless they can expect a significant return premium for accepting the risk in excess of the riskless security. In terms of the above example, investors would want an expected return that is greater than 7% if material risk is present. The usefulness of the CAPM is in measuring how much of an expected return premium is appropriate for investments in light of their riskiness relative to the risk of a benchmark broad market index.

The economic interpretation of the CAPM equation is as the base risk-free rate of return (R_f) plus the market-wide risk premium of (R_m - R_f) that is required to coax investors away from exclusive investment in risk-free securities. The beta coefficient measures the riskiness of a given security or portfolio relative to the overall market benchmark. Beta expresses how much the given investment's returns tend to vary as the returns on the benchmark market index vary over the business cycle. Beta therefore may be viewed as the appropriate weight to apply to the market-wide risk premium (R_m - R_f). The beta of the market portfolio must, by definition, be equal to 1.

Consider an example of how the CAPM estimates the appropriate risk-adjusted expected return on an investment. Assume that the risk-free rate of return on a U.S. Treasury bond is 7%, the expected return on the market is 15%, and that an investor wants to determine the appropriate expected rate of return on a stock with a beta of 1.5. The market-wide risk premium is (15% - 7%) or 8%. This implies that investors will not allocate money to investments with market-like riskiness unless they can expect to get at least an 8% premium over the risk-free rate of 7%. However, a 8% premium will be insufficient if an investment is more variable (i.e., riskier) than the overall market. The returns on a stock with a beta of 1.5 tend to vary 1.5 times more than the return on the overall market. The market-wide risk premium of 8% must therefore be increased 1.5 times to 12% in order to attract investors. Thus, a stock with a beta of 1.5 should generate an expected return of 19% in order to adequately compensate investors for the above-market risk of the investment.

III. Consistency of the Approach with Regulatory and Economic Standards

The CAPM is consistent with the appropriate public utility regulatory and economic standards. Specifically, the CAPM is consistent with the regulatory principle set forth in the Hope case that the allowed return of a public utility should be "... commensurate with the returns on investments in other enterprises having corresponding risk." The CAPM is also consistent with the regulatory standard that emerged from the Bluefield decision, which states that the "... return should be reasonably sufficient to assure confidence in the financial soundness of the utility and ... enable it to raise the money necessary for the proper discharge of its public duties."

In terms of the appropriate economic standards, the CAPM produces return estimates that should meet investors' opportunity costs, satisfy the demands of the risk/return trade-off, and is consistent with the empirical evidence that supports a high degree of efficiency in U.S. financial markets.

IV. Usefulness of the CAPM in Estimating the Cost of Equity Capital

The primary usefulness of the CAPM is as a conceptual tool for systematically relating expected returns to risk. The model requires market-based data inputs that are largely objective and relatively easy to obtain. The shortcoming of the CAPM is that available empirical evidence

indicates that the beta coefficient may not fully capture all of the sources of market risk. This implies that CAPM-based estimates of the cost of equity should be supplemented with alternative approaches that use other measures of risk. For this reason, my cost of equity analysis does not rely solely on the CAPM but also uses the DCF model and the risk premium approach to corroborate the reasonableness of my cost of equity estimates for the target regulated firm.

V. Data for CAPM Analysis

A. Beta Coefficients

Importantly, the beta coefficients presented in Billingsley Exhibit No. RSB-3 are not historical betas like those commonly quoted by Value Line, Standard & Poor's, or Merrill Lynch. While frequently used, such historical estimates of beta are inconsistent with the CAPM's reliance on prospective beta coefficients. Historical estimates only reflect the past riskiness of an equity security that need not be representative of the future riskiness that is relevant to equity investors. The CAPM is formulated in terms of investor expectations, which clearly transcend exclusive reliance on historical measures of riskiness like betas based solely on the past return performance of stocks. The beta coefficients used in my CAPM analysis are prospective measures supplied by BARRA, a widely recognized provider of data and decision support systems for institutional investors.

BARRA describes its predicted beta as follows:

> In the BARRA E2 multiple-factor model, factors are estimated for 13 risk indices and for 55 industry groups...each risk index is built from a number of underlying fundamental data items that capture elements of risk. By combining them, we produce a multifaceted measure of risk that best characterizes the single concept we are trying to measure. The individual data items are called descriptors. The combined descriptors make up the risk index (*BARRA U.S. Equity Beta Book*, January 1997).

This approach has been extended in BARRA's E3 version of the model (*United States Equity - Risk Model Handbook*, Version 3 (E3), BARRA, Inc., 1998).

B. Risk-Free Rate of Return

In order to be consistent with the expectational emphasis of the CAPM, I use the average expected yield implied by the prices of the U.S. Treasury bond futures contracts quoted during the most recent month for which data are available. These future contracts are obligations to either take or make delivery of 6% coupon 10-year Treasury bonds for a fixed price (yield) at a specified future date. The prices of these contracts reflect the market's objective consensus forecast of long-term, low-risk interest rates. The rate on long-term Treasury securities is chosen to be consistent with the long-time horizon of equities. A more

detailed explanation of the data and calculations is provided in Billingsley Exhibit No. RSB-5.

C. Expected Return on the Equity Market

In order to focus on the prospective nature of the CAPM, I use expectational data to estimate the return on the S&P 500 as my proxy for overall equity market performance. The S&P 500 data used in the CAPM analysis reflect expected returns as of the most recent month for which data are available (September of 2003).

CALCULATION OF 10-YEAR U. S. TREASURY NOTE FUTURES' IMPLIED INTEREST RATE

The interest rate implied by the price of a U. S. Treasury note futures contract is calculated as follows:

$$(\textit{Price of Contract}) \times 1{,}000 = \frac{\$3{,}000}{(1+i)^1} + \frac{\$3{,}000}{(1+i)^2} + \ldots + \frac{\$3{,}000}{(1+i)^{20}} + \frac{\$100{,}000}{(1+i)^{20}},$$

where i = the semi-annual rate of return and the maturity is assumed to be 10 years.

The implied annual rate of return on a 10-year U. S. Treasury note futures is calculated as:

Annual Rate of Return = $(1 + i)^2 - 1$.

The U. S. Treasury note futures contract prices shown below are averaged, by contract maturity, using the Friday settlement prices for all contracts trading for the entire month of September in 2003 that had significant open interest. Data are obtained from ***The Wall Street Journal.***

U. S. 10-YEAR TREASURY NOTE FUTURES CONTRACT DATA

Contract Maturity	09/05/03	09/12/03	09/19/02	09/26/03	Average Price	Implied Yield
12/03	110.9531	111.9531	112.5469	113.8281	112.3203	**4.51%**

BOND RATINGS FOR VALUE LINE-COVERED CLECs
September 2003[1]

COMPANY	STANDARD & POOR'S BOND RATING[2]
Allegiance Telecom	NR/D
Citizens Communications	NR/BBB
Pac-West Telecom, Inc.	NR/D
RCN Corp.	NR/CCC-
Time Warner Telecom, Inc.	CCC+
AVERAGE[3]	**CCC+/CCC**

[1] CLECs are identified from the Telecommunications Services firms listed in *Value Line Investment Survey for Window –Plus Edition*, Value Line Publishing, Inc., September 2003. Bond ratings are obtained from *Standard & Poor's Bond Guide*, October 2003.
[2] NR= listed as not currently rated in the October 2003 issue of *Standard & Poor's Bond Guide.* However, in such cases the last indicated rating is shown.
[3] The average S&P bond rating is calculated by attaching numerical values to each qualitative category.

YIELDS ON CCC-RATED DEBT
September 2003[4]

DATE	YIELD TO MATURITY (%)
2-Sep-03	13.50
3-Sep-03	13.42
4-Sep-03	13.25
5-Sep-03	13.29
8-Sep-03	13.22
9-Sep-03	13.13
10-Sep-03	13.14
18-Sep-03	12.95
19-Sep-03	12.83
22-Sep-03	12.81
23-Sep-03	12.83
24-Sep-03	12.86
25-Sep-03	12.82
26-Sep-03	12.78
29-Sep-03	12.84
30-Sep-03	12.91
AVERAGE	**13.04**

[4] Data obtained from Goldman Sachs International, High Yield Research.