

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

Review of the Commission's Rules)
Regarding the Pricing of Unbundled)
Network Elements and the Resale of Service)
by Incumbent Local Exchange Carriers)

WC Docket No. 03-173

REPLY DECLARATION

OF

TERRY L. MURRAY

ON BEHALF OF AT&T CORP.

January 30, 2004

DECLARATION OF TERRY L. MURRAY

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION AND SUMMARY	1
II. COST OF CAPITAL	7
A. The Appropriate Proxy Group for Computing the Cost of Capital Is the Group of Comparable ILEC Holding Companies.....	7
B. Cost of Equity	12
1. The Three-Stage DCF Approach (Without “Flotation Costs”) Produces Far More Accurate Long-Run Cost Of Capital Estimates Than The One-Stage DCF Approach	14
2. The CAPM Can Also Produce Reasonable Cost of Equity Estimates, Given Appropriate Inputs.	21
C. The Cost of Debt Should Reflect the Debt Cost for Telecommunications Companies, and Should Be Based on Debt Issues with Maturities That Do Not Exceed the Economic Lives of the Assets Being Financed.....	25
D. The Forward-Looking Capital Structure Should Reflect a Long-Run “Optimal” or Target Capital Structure, Rather than a Snapshot of Market Capitalization.	27
E. The Commission Should Not Prescribe a National Cost of Capital.....	29
III. NON-RECURRING COSTS.....	30
A. Contrary to the ILECs’ Contention, NRCs Constitute a Serious Potential Barrier To Entry.....	30
B. The Commission Should Reject the ILECs’ Proposal That Non-Recurring Costs Be Based on Their “Actual,” Embedded Costs.....	32
C. The Commission Should Limit Recovery Through NRCs To the Costs of Those Activities That Exclusively Benefit the CLEC Ordering the UNE or Activity, and Should Therefore Reject the ILECs’ Proposal To Allow Such Recovery for the Costs of Every One-Time Activity Performed For CLECs.	40
D. Disconnection Charges Should Be Recovered (If At All) Only When the Service Is Actually Disconnected.	45

E. ILECs Should Not Be Permitted To Assess Separate Charges for
Conditioning Loops.46

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I. INTRODUCTION AND SUMMARY

1. My name is Terry L. Murray. I previously submitted a declaration in this proceeding on December 16, 2003, addressing the appropriate treatment of cost of capital and non-recurring costs under forward-looking economic cost principles. My background and qualifications are set forth in that Opening Declaration ("Murray Opening Decl."). The purpose of this Reply Declaration is to address the incumbent local exchange carriers ("ILECs") regarding the cost of capital and non-recurring costs.

2. **Cost of Capital.** The ILECs made proposals in their opening comments that would substantially inflate the cost of capital used for computing the TELRIC prices for unbundled network elements ("UNEs"). All parties recognize that there are three fundamental steps to computing the cost of capital: (1) computing the cost of debt; (2) computing the cost of equity; and (3) computing the capital structure, which is the proper mix of debt and equity. In my Opening Declaration, I described the correct methods for estimating each of the components of the cost of capital and demonstrated that my

proposed methods are fully consistent with forward-looking cost principles. The incumbents, however, offer various, and often internally inconsistent, procedures for computing the cost of capital that would result in massive overstatements of those costs.

3. First, I demonstrate the proposals of some ILECs (although not SBC) to base the cost of capital on proxy groups such as the S&P 500 or Moody's industrials are without merit. Instead, I agree with SBC that the cost of capital for the UNE line of business can reasonably be approximated by looking to the cost of capital for the Regional Bell Operating Companies ("RBOCs"), or other appropriate ILEC comparisons, in the case of smaller incumbents.

4. Second, I show that the various ILEC methodologies for computing the cost of equity—which are often inconsistent with one another—are fundamentally flawed and must be rejected. Either a multi-stage discounted cash flow ("DCF") or a Capital Asset Pricing Model ("CAPM") approach can produce a reasonable estimate of the cost of equity, given appropriate inputs. ILEC proposals to use a constant-growth DCF or to inflate the inputs to the CAPM, however, would systematically overstate the cost of equity.

5. Third, I demonstrate that the ILECs' cost of debt measurements also must be rejected. The cost of debt should be based on telecommunications companies, rather than some broader group such as the S&P 500 or Moody's industrials, and should reflect appropriate maturities that do not exceed the economic lives of the assets being financed.

6. Finally, I demonstrate the ILEC methods for computing the forward-looking capital structure are inappropriate. A “snapshot” market-value capital structure is inferior to the estimate of long-run target capital structure that I proposed in my Opening Declaration.

7. **Non-Recurring Costs.** With respect to non-recurring costs, the ILECs have, predictably, advocated an “actual cost” standard, arguing that their embedded costs are a good proxy for forward-looking costs because they allegedly have “strong incentives” to be efficient. They also maintain that they should be entitled to recover all of their claimed non-recurring costs, including disconnect costs, through non-recurring charges (“NRCs”) to be collected “up front” from CLECs, claiming that such NRCs properly reflect cost causation principles and do not cause significant barriers to entry. The numerous issues raised in the ILEC comments and supporting declarations concerning non-recurring costs are, by and large, mere variations on these general themes. For the reasons stated herein and in my Opening Declaration, the methodology urged by the ILECs would be totally contrary to the Commission’s stated resolve to ensure that NRCs do not create unnecessary barriers to entry.¹

8. The ILECs’ proposed “actual cost” approach is an improper methodology for determining non-recurring costs. No readily available “actual” cost data provide the detail required to establish wholesale NRCs. Even if complete and accurate “actual” cost data were available, the ILECs’ actual costs reflect inefficiencies that are inconsistent with basic principles of forward-looking cost methodology. Consequently, for the

¹ Notice of Proposed Rulemaking issued September 15, 2003, in WC Docket No. 03-173 (“*TELRIC NPRM*”), ¶ 114.

reasons described in my Opening Declaration, the Commission should continue to require the use of the current TELRIC methodology for non-recurring costs, as well as for recurring costs.

9. The ILECs seek to justify their “actual cost” standard by asserting that NRCs do not constitute a barrier to entry and that the ILECs currently have substantial incentives to be efficient. These assertions, however, are simply contrary to reality. Non-recurring charges represent an up-front cost of doing business that new entrants must incur in conjunction with each customer that they win from an ILEC—which, by contrast, is not required to incur such charges to maintain its customers. Even to the extent that the ILECs incurred these types of “costs of doing business” when they first attracted retail customers, they did so in a monopoly era when they were virtually guaranteed recovery of their costs. This asymmetric cost burden, by itself, constitutes a barrier to entry.

10. The ILECs’ reliance on their “strong incentives to be efficient” is equally misplaced. The ILECs will have sufficient incentives to be efficient *only* if their prices are based on the assumption of an efficient, forward-looking network—not, as the ILECs propose, on their current inefficient networks. At most, the various “incentives” cited by the ILECs motivate them to “do the best that they can” with their current networks. That, however, is not enough to achieve the efficiencies required in a true forward-looking network.

11. The ILECs are also wrong in asserting that they should be allowed to treat all one-time costs as non-recurring costs, and therefore to collect all such costs through

NRCs. Such an approach is contrary to the very standards that they propose, *i.e.*, that costs be recovered in a manner that reflects the way they are incurred, consistent with the principles of cost causation. Although non-recurring charges should reflect this cost causation standard, only the “reusability” test that I described in my Opening Declaration satisfies this standard. The reusability test allows ILECs to recover the cost of a one-time activity through NRCs only if that activity is entirely “used up” by the initial CLEC placing the UNE order (such as the cost of processing the service order itself). If, instead, a one-time activity creates an asset that has enduring value for future users (including the ILEC itself, using the asset to provide retail services to its end-user customers), the cost of that activity is appropriately recovered through recurring charges. Applying the reusability test in this way allows the ILEC the same opportunity for full recovery of its total forward-looking costs that it has for any of the other “capitalized labor” that is included as part of the ILEC’s investments, such as the cost of placing loop plant in the network. Moreover, the reusability test helps to prevent double-recovery of costs that are already reflected in recurring charges.

12. The ILECs’ “one-time-activity” test, by contrast, would result in double recovery of costs and erect yet another barrier to entry. The ILECs’ attempts to justify their approach consist primarily of erecting a straw man—characterizing the reusability test as one that would shift true non-recurring costs to recurring charges. The reusability test, however, does nothing of the sort. The reusability test simply requires that particular costs be recovered through recurring charges if those costs create an asset that has enduring value, which therefore benefits and can be used by subsequent carriers, including the ILEC itself. That requirement cannot reasonably be regarded as a

“subsidy.” Consequently, the ILECs’ claims that the reusability test would force them to “subsidize” the CLECs and act as “the CLECs’ banker” (and even to risk their financial viability) are baseless.

13. Of the four RBOCs, only Verizon takes the position that ILECs should be permitted to assess disconnection charges at the time of installation. As I showed in my Opening Declaration, however, such a practice would be inconsistent with the principles of cost causation, because the ILEC does not incur costs for disconnection until the disconnection actually occurs. Verizon’s professed concern about nonrecovery of these costs ignores the fact that in many cases, the ILEC leaves the customer’s facilities in place when the customer terminates service—and, therefore, the ILEC incurs no disconnection costs at all. Moreover, Verizon’s proposal to discount the disconnection charges to account for the time value of money would not cure the impropriety of allowing “up front” collection of disconnection charges. Even if such an approach were feasible (and it is not), it would discriminate among CLECs.

14. Finally, contrary to the arguments of Verizon and BellSouth, ILECs should not be permitted to assess any separate charge for conditioning loops. A forward-looking network would not require loop conditioning. Even BellSouth acknowledges that its recurring cost model does not include the load coils and excessive bridged taps that would require loop conditioning. Under the principles of cost causation, the ILECs should bear the costs of loop conditioning in the embedded networks without recovering them from the CLECs, because the ILECs incur such costs solely as a result of their failure to implement decades-old industry guidelines. Allowing the ILECs to recover

conditioning charges from the CLECs in addition to recovering the recurring cost of a forward-looking network that does not require conditioning would enable them to overrecover their forward-looking costs, while giving them no incentive to modernize their networks and eliminate the need for loop conditioning.

II. COST OF CAPITAL

A. The Appropriate Proxy Group for Computing the Cost of Capital Is the Group of Comparable ILEC Holding Companies.

15. The cost of capital inputs for a forward-looking cost study of UNEs should reflect the investor-required return for the UNE line of business of an efficient company that is subject to facilities-based competition. This is part and parcel of the Commission's requirement that *all* of the assumptions in a TELRIC analysis must reflect the costs that an efficient carrier would incur if it deployed the most efficient technology currently available in the least-cost network configuration. As SBC explains, the "ILEC holding companies are a fair—indeed, conservative—proxy group to use in estimating the cost of equity."² I too have advocated the RBOC holding companies as a reasonable comparable group to use in estimating the cost of equity.

16. Some of the other ILECs, however, argue that RBOC holding companies are not an appropriate proxy group because the RBOCs, by engaging in a diversified portfolio of activities, are able to reduce their risk below that of a UNE-only provider. And, although SBC accepts the RBOC holding companies as a proxy group, SBC implies

² Opening Comments of SBC Communications Inc., December 16, 2003, ("SBC"), at 45.

that this approach produces a conservatively low cost of capital because, it claims, the provision of UNEs is riskier than other holding company activities.³

17. To the contrary, Dr. Selwyn submitted a study with his Opening Declaration that shows that the UNE portion of the RBOCs' business is *less risky* than the other portions of the RBOCs' business, indicating that the overall risk of the RBOCs exceeds that of their UNE businesses.⁴ Risks associated with these lines of business are *not* attributable to UNEs and should not be reflected in the cost of capital input for a UNE cost study. Therefore, in my opinion, using the RBOCs' holding-company cost of capital produces a conservatively *high* cost of capital for a UNE cost study.⁵ In any event, SBC and I appear to agree that the RBOC holding-company cost of capital is an *acceptable*—and readily available—proxy for the cost of capital of an efficient firm providing UNEs.

18. This estimate is conservatively high in at least one other respect. As explained by Mr. Klick and Dr. Selwyn, the RBOCs are *not* efficient carriers. Their inefficiency makes them more risky, which in turn makes their cost of capital higher than that of an efficient firm. To the extent state commissions are able to measure the amount by which the inefficiencies overstate the cost of capital of an efficient firm, they should make a corresponding downward adjustment to the cost of capital estimates. For example, state commissions should be free to adopt optimal capital structures that

³ *Id.*

⁴ Declaration of Lee L. Selwyn on behalf of AT&T, December 16, 2003, (“Selwyn Opening Decl.”) ¶¶ 46-48.

⁵ See Murray Opening Decl. ¶¶ 7-9. In addition, Professor Willig explains in his Reply Declaration that an efficient UNE provider will take advantage of economies of scope associated with the sale of UNEs along with other products and services.

minimize the weighted-average cost of capital even if the ILECs choose different, more expensive capital structures.

19. Using the incumbent local carriers' publicly traded holding companies as proxy firms also ensures that the cost of capital will satisfy the hypothetical risk standard of a market with facilities-based competition adopted by the Commission in the *Triennial Review Order*. As the ILECs themselves argue, the majority of their lines of business are highly competitive. According to the ILECs, the retail local telephone markets are highly competitive, and it is well known that the long distance, wireless, and broadband markets are also highly competitive.

20. Qwest opposes the use of ILECs as a proxy for an efficient UNE provider, but offers no reason for its position. Instead, Qwest asserts, without elaboration, that CLECs and IXC are a better proxy for UNE sellers. Qwest's proposal must be rejected. As a preliminary matter, unlike the ILECs, CLECs and IXCs are not in the UNE business, making them unqualified as proxies for an efficient UNE-based carrier.⁶ Moreover, the current cost of capital for CLECs (including IXCs operating as CLECs) is much higher than that of an efficient UNE-based carrier in a contestable market because CLECs are new entrants with only tiny footholds in markets dominated by the legacy monopoly ILECs. As a result, the CLECs face substantial barriers to entry, and a far greater likelihood of economic losses and other risks than would an efficient seller of UNEs in a competitive market, which in turn means that the cost of capital of CLECs substantially exceeds those of established firms in competitive markets.⁷

⁶ See Professor Willig's Reply Declaration.

⁷ See Professor Willig's Reply Declaration.

21. BellSouth and Verizon support the use of the cost of capital of firms in the S&P 500 as a proxy for the cost of capital. That position also is untenable. Again, such firms are not in the business of selling UNEs, retail telephone service, or even telecommunications equipment. For example, Coca Cola, an S&P 500 company, plainly has no relation whatsoever to the telecommunications industry. Nor do International Flavors and Fragrances or Clorox, two other S&P 500 firms. Indeed, these firms, as well as most of the approximately 497 other firms in the S&P 500, plainly face different risk characteristics and capital requirements than an efficient provider of UNEs. They require different capital/labor ratios in their inputs, different types of capital equipment, different capital depreciation lives—indeed, they are different in almost every respect. As the Wireline Competition Bureau explained in rejecting the use of the S&P 500 firms as a proxy for an efficient provider of UNEs:

The businesses of most of Verizon's S&P 500 based proxy group of companies have no obvious similarity to the provision of local exchange services, and Verizon did not describe any. Consequently, there is no basis on which to conclude that this proxy group best represents the risks that Verizon would face if faced facilities-based competition.⁸

It is thus clear that there is no justifiable basis for using the cost of capital of firms in the S&P 500 as a proxy for the cost of capital of an efficient provider of UNEs.

22. Furthermore, the constant-growth estimates of the S&P 500 return proposed here (and in state UNE cost proceedings) far exceeds the 7.46% mean annual forecast of S&P 500 returns over the next 10 years issued by the Philadelphia Federal

⁸ *Virginia Arbitration Order* ¶ 90.

Reserve Bank's *Survey of Professional Forecasters* that I cited in my Opening Declaration.⁹ This vast discrepancy between the constant-growth estimate of cost of equity for the S&P 500 (which BellSouth computes at 14.38%)¹⁰ and a direct forecast of S&P 500 market returns confirms the wisdom of the Wireline Competition Bureau in rejecting the constant-growth DCF method entirely.¹¹ I discuss this issue further in a subsequent section of this Reply Declaration.

23. Verizon objects to basing cost of capital calculations on the group of RBOCs, complaining that there are too few of them to obtain reasonable estimates. To be sure, there are relatively small number of RBOCs, but "more" data are not necessarily meaningful—one cannot improve estimation by introducing noisy, unrelated data. An example illustrates this point. If one wanted to estimate the average blood pressure reading for people over 110 years old, there would be a very small population from which to gather data. But, including the blood pressure readings for adults under 70 years old would not improve the accuracy of the estimate. The data for an appropriate sample of ILECs (typically the RBOCs for proceedings involving those firms) present the best available starting point for a UNE cost analysis.

⁹ Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, February 24, 2003, 10-year expected equity return forecasts.

¹⁰ Comments of BellSouth, December 16, 2003 ("BellSouth"), at 32.

¹¹ *Virginia Arbitration Order* ¶ 73.

B. Cost of Equity

24. SBC argues that “it is not critical for the Commission to select one specific *model* to calculate the cost of equity.”¹² I agree with SBC to the extent that the cost of equity component of the cost of capital can be accurately computed using either of the well-established models—the DCF or a CAPM model—as long as the chosen model is properly designed and run with appropriate inputs.¹³

25. I also agree with SBC that the Commission should “preclude the use of backward-looking and unreliable assumptions—concerning, for example, proxy groups and growth rates—in whatever cost-of-equity model state commissions employ.”¹⁴ Ironically, this guidance would preclude state commissions from adopting the 1999-vintage cost of capital study that SBC continues to submit around the country, with its outdated assumptions about, *e.g.*, proxy groups and growth rates. As the Indiana Utility Regulatory Commission observed:

In our review of the parties’ testimony, we struggled with the insistence of SBC witness Dr. Avera, both in direct and reply testimony, in urging the Commission to adopt a model that was first advanced in 1999, and more importantly, presents calculations reliant on data from 1999. The very changes in the telecommunications industry that Dr. Avera repeatedly cited are ample justification for a recalculation such as that proposed by Ms. Murray. Moreover, Dr. Avera argued that somehow everything balances out in the end, with reductions in interest rates somehow exactly counterbalanced, as if by “Kentucky windage,” by increased risk confronting investors so that there is no need to review or update his 1999 data or analysis.¹⁵

¹² SBC at 44 (emphasis in original).

¹³ See Murray Opening Decl. ¶ 79; SBC at 44.

¹⁴ SBC at 45 (footnote omitted).

¹⁵ *Order*, Indiana Utility Regulatory Commission Cause No. 42393, January 5, 2004, at

The Commission should take up SBC's invitation and direct state commissions to disregard SBC's outdated cost of capital study, which is still before state regulators in the pending UNE cost proceedings in California, Illinois, Michigan, and Texas.

26. Only Verizon's expert witness claims that the CAPM is incapable of producing TELRIC-compliant results without substantial modifications.¹⁶ To the contrary, I demonstrated in my Opening Declaration that the CAPM can produce reasonable forward-looking results if run with appropriate assumptions. I respond to Dr. Vander Weide's specific criticisms of the CAPM in a subsequent section.

27. It is clear that either the CAPM or the DCF model can produce proper estimates of the cost of equity so long as the models are properly used. In the remainder of this section, I address the application of these cost models. First, I demonstrate that Verizon's proposal to rely only on the "one-stage DCF model" must be rejected out of hand, because such models are notoriously inaccurate when measuring "long-run" costs of capital. I also demonstrate that Verizon's proposal to "hard code" the inputs used by the CAPM is contrary to the most fundamental financial economic principles.¹⁷

74.

¹⁶ Declaration of James H. Vander Weide Submitted in Support of the Comments of Verizon Telephone Companies, December 16, 2003 ("Vander Weide Decl."), ¶¶ 63-70.

¹⁷ Vander Weide Decl. ¶¶ 71-74.

1. The Three-Stage DCF Approach (Without “Flotation Costs”) Produces Far More Accurate Long-Run Cost Of Capital Estimates Than The One-Stage DCF Approach.

28. The DCF model calculates investors’ required rates of return for holding stock under the assumption that today’s stock price for a company is equal to the present value of the cash flows accruing to the company’s stockholders. These cash flows include both dividend payments and capital appreciation in the value of shares held. I fully described the formula and other technical aspects of the DCF computation in my Opening Declaration (¶¶ 80-88).

29. Two key inputs to the DCF calculation are the level of future dividend payments and their growth rate for the firm(s) being studied. These inputs are critical because the DCF calculation, by its nature, effectively requires the researcher to forecast the cash flows accruing to shareholders that extend into the *indefinite* future.

30. Verizon and BellSouth support the use of inputs that are contrary to basic economics, and that have been roundly rejected by analysts and by the Wireline Competition Bureau. In particular, the constant-growth or one-stage DCF model that they propose makes the unrealistic assumption that the future will look exactly like the present—*i.e.*, the current dividend yield on the company’s stock and current forecast of the company’s growth (usually five-year horizon estimates) will continue to be valid forever.¹⁸ However, as a logical matter, a company cannot forever grow at a rate different from the economy unless the company either shrinks to a vanishingly small and

¹⁸ Vander Weide Decl. ¶¶ 55-58; Statement of Dr. Randall S. Billingsley, CFA on Behalf of BellSouth Telecommunications Inc., December 16, 2003 (“Billingsley Decl.”), Exh. No. RSB-2 at 2.

insignificant fraction of the economy or it eventually takes over the entire economy, a result that is inconsistent with even the most bullish investor's expectations. The impossibility of such a result is an important clue that such a single-stage DCF model will not generally produce reliable cost of equity estimates.¹⁹ For precisely this reason, the *Virginia Arbitration Order* unequivocally rejected use of the constant-growth form of the DCF methodology as advanced by Verizon witness Dr. Vander Weide.

31. The problems with the constant-growth DCF have been widely recognized by economists and market analysts, who have offered a solution. Stewart Myers and Lynda Borucki state that:

[f]orecasted growth rates are obviously not constant forever. Variable-growth DCF models, which distinguish short- and long-term growth rates, should give more accurate estimates of the cost of equity. Use of such models guards against naïve projection of short-run earnings changes into the indefinite future.²⁰

32. Sharpe,²¹ Alexander and Bailey state that:

¹⁹ On the flip side, to the extent that current growth estimates predict growth that is below the long-term growth for the economy as a whole, using those low growth rates would understate the cost of capital. In fact, many analysts are predicting that ILECs' earnings will grow for the next few years at rates below the long-term growth of the economy as a whole. Thus, a constant-growth DCF based on RBOC data may actually understate the incumbents' cost of capital. Under these conditions, even an ILEC witness who has proposed a constant-growth DCF calculation agrees that the methodology is incorrect. Proceedings before the Public Utility Commission of Texas in TPUC Docket No. 28600, Transcript at 896. Notwithstanding that the three-stage DCF procedure may result in higher cost of capital estimates under current conditions, I still fully support the use of the three-stage approach.

²⁰ Stewart C. Myers and Lynda S. Borucki, "Discounted Cash Flow Estimates of the Cost of Equity Capital—A Case Study," *Financial Markets, Institutions & Instruments*, vol. 3, no. 3, New York University Salomon Center, 1994.

²¹ Dr. Sharpe is a Nobel-prize winning financial economist.

Over the last 30 years, dividend discount models (DDMs) have achieved broad acceptance among professional common stock investors...

Valuing common stock with a DDM technically requires an estimate of future dividends over an infinite time horizon. Given that accurately forecasting dividends three years from today, let alone 20 years in the future, is a difficult proposition, how do investment firms actually go about implementing DDMs?

One approach is to use constant or two-stage dividend growth models, as described in the text. However, although such models are relatively easy to apply, institutional investors typically view the assumed dividend growth assumptions as overly simplistic. Instead, these investors generally prefer three-stage models, believing that they provide the best combination of realism and ease of application.

...[M]ost three-stage DDMs make standard assumptions that all companies in the maturity stage have the same growth rates, payout ratios and return on equity.²²

33. Copeland, Koller and Murrin echo these observations, stating that “[f]ew companies can be expected to grow faster than the economy for long periods of time.”²³ Thus, the Wireline Competition Bureau correctly recognized that “the finance literature concludes without exception that the [single stage DCF] model is unlikely to produce an accurate cost of equity capital estimate.”²⁴

34. Verizon’s witness tries to defend a single-stage DCF model on three grounds. First, he asserts that the single-stage DCF approach is appropriate because the

²² Sharpe, William F., Gordon J. Alexander and Jeffrey V. Bailey, *Investments*, Fifth Edition, Prentice Hall, Englewood Cliffs, New Jersey, 1995, pp. 590-591.

²³ Copeland, Tom, Tim Koller, and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, John Wiley & Sons, New York, 1994, pg. 295.

²⁴ *Virginia Arbitration Order* ¶ 73.

analysts' growth estimates reflect investors' expectations.²⁵ But, those growth estimates are intended to cover only a five-year time horizon. No rational investor would expect such estimates to be accurate in perpetuity. Current analysts' forecasts for the RBOCs' earnings growth are dramatically lower than they were five years ago; indeed, in less than a year, average earnings growth forecasts for the RBOCs have dropped over 300 basis points.

35. Second, Verizon's witness says that the perpetual above-average growth assumption will result only in a slight overstatement of the cost of equity because such growth assumptions are discounted to present value. But that is true only if the current growth estimates are valid for an extremely long period, which they are not.²⁶ To be sure, when short-run growth projections are closer to the long-run growth rate, the error resulting from the use of a one-stage DCF will be smaller. But even a slight error can be easily be avoided altogether using a three-stage DCF model.

36. Third, Verizon's witness claims that the five-year I/B/E/S growth rates are consistent with "long-term" growth estimates called "internal growth estimates."²⁷ But internal growth estimates are simply the "the growth rate that a company can achieve without additional external funds"²⁸ and depend on assumptions regarding the level of a

²⁵ Vander Weide Decl. ¶ 56.

²⁶ In the *Virginia Arbitration* proceeding, AT&T/WorldCom witness Mr. Hirshleifer demonstrated that as a result of "compounding" of dividend returns, the assumption that short term high growth rates will last for perpetuity can greatly overstate cost of capital estimates. *Surrebuttal Testimony of John I. Hirshleifer on Behalf of AT&T and WorldCom, Inc.*, CC Docket Nos. 00-25, 00-281 (FCC, September 21, 2001).

²⁷ Vander Weide Decl. ¶ 58.

²⁸ Richard A. Brealey and Stewart C. Myers, *Principles of Corporate Finance*, Irwin-McGraw Hill (6th Ed. 2000).

firm's retained earnings and the value of the firm's assets, neither of which can be predicted with any accuracy for more than five years, let alone in perpetuity. Other authorities, including Ibbotson Associates, dismiss this "sustainable growth" approach to estimating the growth rates as a "rudimentary estimate of long-term growth."²⁹

37. To the contrary, in the long-run, no firm can sustain above average growth—for, as noted, if it could, it would eventually consume the entire economy—and no firm can sustain below-average growth, because investors would be unwilling to continue financing such a carrier given that they could easily earn higher returns by simply investing in a market index fund.

38. Given this economic reality, a much better method for computing the cost of equity using the DCF approach is to use a "three-stage" DCF approach in which the initial stage (approximately five years) reflects the longest-term analyst growth forecasts typically available, the final stage reflects the expected long-term growth rate for the economy as a whole and the middle stage reflects a transition from the initial growth rate to the long-term growth rate. As Ibbotson Associates states:

One of the advantages of a three-stage discounted cash flow model is that it fits with life cycle theories in regards to company growth. In these theories, companies are assumed to have a life cycle with varying growth characteristics. Typically, the potential for extraordinary growth in the near term eases over time and eventually growth slows to a more stable level.³⁰

²⁹ Ibbotson Associates, *Stocks, Bonds, Bill and Inflation: Valuation Edition*, 2003 Yearbook, Chicago, 2003, at 62-63.

³⁰ *Id.* at 62.

I fully described this methodology in my Opening Declaration.³¹

39. Notwithstanding the broad recognition that a three-stage DCF model is far superior to a single-stage DCF model, Verizon's witness supports the use of the single-stage DCF model, pointing to purported flaws in the three-stage model. First, Verizon's witness claims that there is no evidence that investors expect a firm's growth to converge to market growth over the long-run.³² But as noted above, that is the only reasonable expectation; if growth rates remained above market growth, the firm would eventually become the entire economy, and if growth rates remained below market growth, the firm could not survive. Second, Verizon's witness claims (without citation) to have shown in prior testimony that a three-stage DCF approach results in higher risk companies having lower cost of equity than lower risk companies, like electric utility companies.³³ But those purported showings were confirmed to be based on a very poor and misleading analysis.³⁴ For example, Dr. Vander Weide's "low risk" "electric utility group" included electric, gas and nuclear energy, telecommunications, real estate, financial services and international businesses," clearly a very generous interpretation of "electric utility."³⁵ Obviously, there is no reason to assume that such a group of carriers would have lower risk than the S&P 500, as Prof. Vander Weide's purported "study" assumes.³⁶

³¹ See Murray Opening Decl. ¶¶ 83-88.

³² Vander Weide Decl. ¶ 59.

³³ Vander Weide Decl. ¶¶ 60-61.

³⁴ See, e.g., Surrebuttal Testimony of John I. Hirshleifer on Behalf of AT&T and WorldCom, Inc., CC Docket Nos. 00-25, 00-281 (FCC, September 21, 2001).

³⁵ *Id.* at 78.

³⁶ Mr. Hirshleifer also demonstrated that Dr. Vander Weide's "price-to-earnings" analyses (Vander Weide Decl. ¶ 61) is fundamentally flawed and based on completely untenable assumptions. *Id.* at 75-81.

40. The New Hampshire PSC has agreed. In its January 16, 2004, cost of capital decision involving Verizon, the PSC commented:

[T]estimony by Staff at hearing demonstrated that Verizon's one-stage application of the DCF model could, under certain conditions, produce illogical results. Both the one-stage and three-stage versions can produce a counterintuitive relationship between risk, as measured by beta (produced by the CAPM), and the cost of equity. We conclude that the apparent conflict occurs between the CAPM and DCF models and not in the difference between the one-stage and the three-stage versions. Put differently, whether or not the CAPM agrees with the DCF model empirically at any given point in time is irrelevant to the decision of whether the one-stage version should be refined.³⁷

41. Finally, BellSouth erroneously contends that the DCF calculation should include an adjustment for "flotation costs."³⁸ Flotation costs are costs associated with financing firm investments. Financial markets already account for flotation costs when setting the value and return of the firm's assets, thus making it unnecessary to include a "flotation cost." Adding a flotation cost adjustment would in effect double-count the cost of financing.

42. In this regard, BellSouth has misinterpreted the reason for computing flotation costs in other types of rate proceedings. In those proceedings, regulatory agencies were setting the rates that utilities could charge ratepayers for goods and services. The regulatory agencies recognized that ratepayers should not be required to pay—at least not in a lump sum—the utilities' flotation costs. Therefore, it was

³⁷ Docket No. DT 02-110, *Verizon New Hampshire Investigation Into Cost Of Capital Order Establishing Cost Of Capital*, Order No. 24,265 (New Hampshire PSC, January 16, 2004), pp. 66-67.

³⁸ Billingsley Decl., Exh. RSB-2 at 4-5.

necessary to carve out the flotation costs to allow utilities to recover those costs separately from their general cost of capital. Here, by contrast, there is no need to carve out flotation costs from the returns set by financial markets, and thus there is no need to add them back in. Simply put, BellSouth, by adding flotation costs, is double-counting such costs.

2. The CAPM Can Also Produce Reasonable Cost of Equity Estimates, Given Appropriate Inputs.

43. Only Verizon's expert witness claims that the CAPM is incapable of producing TELRIC-compliant results without substantial modifications.³⁹ Verizon's position is flatly refuted by virtually all economists and the Wireline Competition Bureau, which recognized in the *Virginia Arbitration Order* that the CAPM model can accurately compute the cost of capital.⁴⁰

44. Verizon's criticisms of the CAPM do not withstand scrutiny. First, Dr. Vander Weide states that the "CAPM concludes that investors are sensitive to only one risk factor, how a company's stock varies in proportion to movements in the market as a whole."⁴¹ According to Dr. Vander Weide, "[u]sing a single-factor model such as the CAPM, when the cost of equity actually depends on multiple risk factors, introduces a

³⁹ Vander Weide Decl. ¶¶ 63-70.

⁴⁰ See, e.g., *Virginia Arbitration Order* ¶ 72 (rejecting Verizon's criticisms of CAPM, recognizing that it is widely employed by economists, and adopting it for computing the cost of capital in a UNE rate proceeding).

⁴¹ Vander Weide Decl. ¶ 64.

bias into the estimate of the cost of equity.”⁴² Dr. Vander Weide fails to identify any relevant risk factor omitted from the CAPM.

45. The CAPM does assume that investors require high returns for stocks whose prices are highly correlated with fluctuations in the overall stock market. In this sense, the CAPM could be seen to rely on a “single risk factor.” But it does not follow that the CAPM is flawed, or that the addition of other (unspecified) “risk factors” to the equation would improve the cost of capital estimate.⁴³ The cost of equity measured by the market-based CAPM techniques already reflects investors’ perceptions of all *relevant* risks. That is, it reflects all non-diversifiable risks.⁴⁴ A rational investor can select a diversified portfolio of stocks and bonds that is immune to unsystematic risks; *i.e.*, such risks can be arbitrated away. As a result, investors do not require compensation for unsystematic risk, and the CAPM is explicitly and appropriately designed to ignore unsystematic risk in its estimation of the cost of capital.

46. Dr. Vander Weide’s remaining criticisms of the CAPM approach distill to complaints that it is hard to estimate the inputs used in the CAPM model, such as the market risk premium.⁴⁵ Estimating the inputs for all cost of equity models involves the

⁴² *Id.*

⁴³ As Professor Willig explains, in his accompanying Reply Declaration, the incorporation of some risk factors may increase the cost of capital estimate, whereas the incorporation of other risk factors may reduce it.

⁴⁴ By definition, company-specific risks are unsystematic (diversifiable) risks, which are irrelevant to the determination of the return necessary to compensate investors. Unsystematic risks are random events, which may be specific to one or only a few firms. Systematic risks, on the other hand, affect all firms simultaneously and are caused by macroeconomic events such as sudden changes in inflation, growth, and interest rates. Financial models such as the CAPM capture these systematic risks. *See* Murray Opening Decl. ¶¶ 58-62.

⁴⁵ Vander Weide Decl. ¶ 67.

exercise of prudent judgment; the CAPM is no different—or more difficult—in this regard.

47. Verizon further argues that if the Commission allows states to use the CAPM, it should adopt national inputs for use in the model.⁴⁶ Verizon's suggestion is impractical, at best. The inputs to the CAPM (especially the risk-free interest rate) are variables that fluctuate over time. Therefore, Commission-mandated inputs would require continual updating. The better approach is to permit states to determine the inputs to the CAPM that are appropriate at the time of the UNE rate proceeding.

48. Moreover, Verizon has recommended national inputs that are inappropriate and designed to inflate the cost of capital. For example, Verizon urges the Commission to mandate that the "beta" used in the CAPM model be greater than 1.0, meaning that a UNE-only firm is riskier than the U.S. stock market as a whole. But, Verizon offers no evidence why such a firm would be riskier than the market as a whole, a conclusion that is completely contrary to the *Virginia Arbitration Order's* finding on this point.⁴⁷ At most, the Commission should affirm the Wireline Competition Bureau's finding that a beta of 1 is sufficient to account for the relevant competitive risk. Such an approach tends to overstate the relevant risk for all of the reasons that I discussed in my Opening Declaration. Indeed, the empirical evidence analyzed by Dr. Selwyn in his opening declaration suggests that the ILECs' UNE operations are indeed far less risky,

⁴⁶ Vander Weide Decl. ¶¶ 68-70.

⁴⁷ *Virginia Arbitration Order* ¶ 90 ("Absent evidence of any unique risks associated with the telecommunications industry, or a segment of the industry, we would be uncomfortable prescribing a cost of equity capital for UNEs that is based on a beta significantly higher or lower than the average beta for companies that face competition.")

although holding-company-level betas for the RBOCs are now equal to approximately the market beta of 1.⁴⁸

49. Verizon also urges the Commission to adopt a risk premium in the 7% to 9% range.⁴⁹ Again, Verizon offers no support for this proposition. The Verizon proposal seems, however, to reflect the Ibbotson Associates historical equity risk premium. I discussed the problems with using this historical data series at length in my Opening Declaration, in which I noted that even Professor Ibbotson, founder of the firm, has indicated his belief that the forward-looking equity risk premium is lower than the average historical result would indicate.⁵⁰ A forward-looking cost model should incorporate the best available forward-looking estimate of the equity risk premium. My Opening Declaration demonstrated that the recent academic literature on this issue generally supports a forward-looking risk premium in the range of 3% to 4%, with a few estimates somewhat higher and others much lower.

50. Finally, Verizon urges the Commission to require states to set the risk-free rate at the return paid on *long-term* treasury bonds.⁵¹ At most, this would be appropriate when using an equity risk premium that is also calculated with respect to the long-term bond rate.⁵² Moreover, as Verizon admitted in the Virginia Arbitration, the long-term

⁴⁸ See Selwyn Opening Decl. ¶¶ 46-48.

⁴⁹ Vander Weide Decl. ¶ 70.

⁵⁰ Roger Ibbotson, "Building the Future from the Past," *TIAA-CREF Investment Forum: Idea Exchange* (June 2002) at 12.

⁵¹ Vander Weide Decl. ¶ 68.

⁵² *Accord, Virginia Arbitration Order* ¶ 86.

Treasury bond rate is problematic because of discontinuities in the data series.⁵³ The long-term rate also is not truly “risk-free” because the very length of the maturity subjects the return to inflation risk. To eliminate inflation risk from the calculation,⁵⁴ and to correct for any short-run anomalies in the yield curve (the relationships among interest rates for different terms), it is desirable to incorporate shorter-term Treasury bond rates (with an appropriately calculated equity risk premium) in the CAPM calculation. This was the approach chosen by the Wireline Competition Bureau in the *Virginia Arbitration Order*.⁵⁵

C. The Cost of Debt Should Reflect the Debt Cost for Telecommunications Companies, and Should Be Based on Debt Issues with Maturities That Do Not Exceed the Economic Lives of the Assets Being Financed.

51. As I demonstrated in my Opening Declaration, UNE cost studies should incorporate a forward-looking cost of debt, which can be estimated by looking at the forward-looking yield to maturity for publicly traded ILEC debt.⁵⁶ These data are publicly available and easily verifiable. The Commission should reject proposals to base the cost of debt on bond issuances of firms that have nothing to do with the telecommunications industry, *e.g.* S&P 500 firms, as suggested by Dr. Billingsley,⁵⁷ or

⁵³ *Virginia Arbitration Order* ¶ 79 (citing Verizon’s argument “that the [long-term treasury bond] rate is not representative of the true risk-free rate due to the Treasury’s 1998 decision to reduce the supply of long-term bonds.”).

⁵⁴ *Virginia Arbitration Order* ¶ 78.

⁵⁵ *Virginia Arbitration Order* ¶ 80.

⁵⁶ *Accord, Virginia Arbitration Order* ¶¶ 66-67.

⁵⁷ Billingsley Decl. ¶ 21.

Moody's "industrials," as suggested by Dr. Vander Weide.⁵⁸ These suggestions are just as inappropriate as are BellSouth's and Verizon's suggestions to rely on the cost of equity for a large sample of industrial firms.⁵⁹

52. In UNE rate cases, as they do here, the ILECs contend that the cost of capital should be based only on very long-term bonds, usually with terms greater than 25 years.⁶⁰ The exclusive use of such very long-term debt, however, is inconsistent with the relatively short average economic lives that ILECs assume for the asset categories that the debt is supposedly financing. I explained in my Opening Declaration that the economic lives of assets should serve as a *ceiling* on the term of financing.⁶¹ If an ILEC were financing its network today, only a small fraction of its assets would merit very long-term financing.

53. Moreover, the ILECs' claim that the very shortest term debt should be excluded altogether is a red herring. The ILECs claim that this debt is used only for "working capital."⁶² But as I demonstrated in my Opening Declaration (¶ 108), the extent to which the ILECs are relying on very short-term debt goes well beyond requirements for working capital and is presumably designed to take advantage of the very low short-term rates that are currently available to the ILECs.

⁵⁸ Vander Weide Decl. ¶ 48.

⁵⁹ *Accord*, Virginia Arbitration Order ¶ 67.

⁶⁰ *See, e.g.*, SBC at 47; Comments of the Verizon Telephone Companies, December 16, 2003 ("Verizon") at 72; Vander Weide Decl. ¶¶ 48-50.

⁶¹ *See* Murray Opening Decl. ¶ 106.

⁶² Vander Weide Decl. ¶¶ 49-50; SBC at 47.

54. Finally, as discussed above, the cost of debt should be based on that produced by the ILECs' current bond issuances. And, for the same reasons that flotation costs should not be reflected in cost of equity estimates—*i.e.*, because such costs are already reflected in the financial debt returns—flotation costs should not be added to the cost of debt estimates. Therefore, the Commission should reject Dr. Vander Weide's suggestion to double-count flotation costs.⁶³

D. The Forward-Looking Capital Structure Should Reflect a Long-Run “Optimal” or Target Capital Structure, Rather than a Snapshot of Market Capitalization.

55. The relevant capital structure—the mix of equity and debt capital—in a forward-looking cost study is the efficient firm's optimal, or “target,” capital structure. Verizon, SBC and BellSouth, however, support the use of a “snapshot” market structure, *i.e.*, the market structure that happens to exist at the time of evaluation given current prices of stock and debt.⁶⁴ This is not the best approach. As one state commission has explained, the “[t]arget capital structures are based more on careful management consideration of risk than on current market prices, which can fluctuate for reasons not specifically related to the entity in question.”⁶⁵

56. A “snapshot” market capitalization can change radically in a matter of days or weeks as stock prices fluctuate, whereas target capital structures change much

⁶³ Vander Weide Decl. ¶ 48.

⁶⁴ See Billingsley Decl. at ¶¶ 21-25; SBC at 48-49; Vander Weide Decl. ¶¶ 71-73.

⁶⁵ Order No. 12610, *In the Matter of the Implementation of the District of Columbia Telecommunications Competition Act of 1996 and Implementation of the Telecommunications Act of 1996*, DSC PSC Formal Case No. 962 (Dec. 6, 2002) at ¶ 161.

more slowly. These dramatic shifts would not necessarily have anything to do with investors' expectations about the long-run or optimal capital structure for a hypothetical efficient carrier that provides UNEs. And, as BellSouth's witness concedes, an appropriate forward-looking capital structure should reflect the "optimal, *sustainable* capital structure,"⁶⁶ not an ephemeral market-based snapshot.

57. The only remaining question is how to determine the target capital structure for an efficient UNE provider. Firms generally do not publicly disclose their target capital structures. However, by definition, in an efficient market, a firm's capital structure will adjust toward its target structure in the long-run. And, as I noted in my Opening Declaration, on balance, the academic literature on this topic suggests that the best prediction of a firm's long-run target capital structure using publicly available data incorporates both book and market information.⁶⁷ For these reasons, in prior UNE cost proceedings, I have used an equal weighting of the market and book capitalization of the ILEC holding companies included in my comparable group to estimate the target capital structure for an efficient UNE provider. The reasonableness of the resulting capital structure—generally in range of 60% equity and 40% debt using recent data—is confirmed by public information about target capital structures that Sprint and BellSouth have released in a proceeding in Florida.⁶⁸

58. Finally, the ILECs claim that book capital structures are inherently "backward looking." This argument has no application to my suggested approach for

⁶⁶ Billingsley Decl. at ¶ 20, emphasis added.

⁶⁷ See Murray Opening Decl. ¶¶ 114-116.

⁶⁸ See Murray Opening Decl. ¶ 117.

estimating the *forward-looking* target (or optimal long-run) capital structure. My suggestion to use book-value capital structure data as one component of the estimation process reflects the expectation that market and book values will converge over time, and that this process typically involves “regression toward the mean” rather than simply the movement of book values to align with today’s market values.

E. The Commission Should Not Prescribe a National Cost of Capital.

59. Qwest argues that it would be appropriate for the Commission to prescribe a national cost of capital because the cost of capital should not vary substantially from state to state.⁶⁹ The Commission should reject this proposal. As I noted in my Opening Declaration, there is no need for a Commission-mandated cost of capital. Indeed, such a federally mandated cost of capital would eliminate any opportunity to reflect state-specific considerations where they exist. Moreover, all of the components of cost of capital change over time with market conditions. Under Qwest’s proposal, therefore, the Commission would have to conduct frequent periodic updates of the national cost of capital. To do otherwise would require states to use a cost of capital assumption that is outdated and possibly inconsistent with the cost study assumptions under review. It is more practical to permit state commissions to compute the relevant cost of capital at the time of a UNE rate proceeding, when all the assumptions can be considered together.

⁶⁹ Comments of Qwest Communications International Inc., December 16, 2003 (“Qwest”) at 46.