would reflect little or no investment at the higher net prices charged by switch vendors for "growth" purchases. The short-run incremental costs of switching capacity would be even lower, for much of the Bells' existing switching investment is sunk. The forward-looking cost of this sunk investment is lower in the short run than even the net discounted cost of new replacement equipment, and may be as low as zero.[22] This phenomenon is precisely what makes the continued use of the existing equipment, augmented by the purchase of growth capacity, a rational decision despite the higher unit costs of growth capacity. *See* Murray/Pitts Decl. ¶¶ 13-15. As noted above, one cannot consistently ask the Commission to recognize the higher unit costs of short-run growth purchases while ignoring the correspondingly lower opportunity costs of the sunk investment in the short run.

Indeed, the Bells' jumble of short run and long run assumptions would yield cost estimates above even the Bells' *embedded* costs. Because the incumbents have replaced *all* of their outdated analog switches with digital switches, *they obtained with respect to each and every one of their existing switches the very switch discounts that they now ask the Commission to disregard in setting network element rates.* The Bells would have this Commission allow them to charge their potential competitors inflated rates that reflect only a shallow growth discount for the use of switches that the incumbents *actually purchased* at the much deeper discount and can continue to use at virtually no added cost for years. *See* Murray/Pitts Decl. ¶¶ 13-15; Murray/Pitts Reply Decl. ¶ 11; Willig Decl. ¶¶ 107-08.

The Bells' responses to these criticisms border on the frivolous. SBC and Verizon, invoking the theory of "razorblade" pricing, assert that switch manufacturers would offer much shallower discounts for new equipment if local carriers bought most of their capacity as new

[22] *See* Alfred Kahn & William Shew, *Current Issues In Telecommunications Regulation: Pricing*, 4 YALE J. ON REG. 191, 225 (1987).

equipment. SBC at 71; Verizon at 50-53; Shelanski (Verizon) Decl. ¶ 46. The incumbents' actual performance refutes this claim. The switch prices that incumbents pay for purchases of "new" equipment today are similar to, or deeper than, those that the incumbents have paid since at least the 1980s, during which period the Bells bought most of their switching capacity at deep new-equipment discounts. Murray/Pitts Reply Decl. ¶¶ 5-9. The major switch vendors, rather than increasing their average net prices, have continued to lower them in response to cost-saving advances in computer technology. *Id.* ¶¶ 6-9.

Rate Structure. The Commission should reject Verizon's claim that switching costs should be recovered using traffic-sensitive switching charges. Verizon at 52-54. It is undisputed that switch purchasers pay on a per-line, not a per-minute-of-use, basis. Moreover, the overwhelming evidence—including the statements of Verizon's own officials in rate proceedings—shows that modern switches do not exhaust based on usage, because today's switches have substantial excess capacity. Murray/Pitts Decl. ¶¶ 39-46; *Virginia Arbitration Order* ¶ 474. Only a small percentage (less than 15 percent) of costs relating to peak periods are traffic sensitive, but as the Wireline Competition Bureau determined in the *Virginia Arbitration Order*, there is no practical way to recover peak-period costs through a traffic-sensitive charge. *Virginia Arbitration Order* ¶ 474. The use of a per-port flat fee is the most competitively neutral and economically efficient method of recovering peak-period costs. *Id.* ¶ 478; Murray/Pitts Decl. ¶¶ 53-57; Murray/Pitts Reply Decl. ¶¶ 14-15. Because switching costs largely do not vary with volume, Verizon's call to recover costs in the "manner in which they are incurred" only confirms the reasonableness of per-port prices for switching. Verizon's push for traffic-sensitive switching rates must be rejected.

Verizon's assertion (at 54-55) that a flat, per-port rate would force customers with below-average minutes of use to subsidize customers with above-average minutes of use is also

unfounded. Verizon at 54-55. As the Wireline Competition Bureau found in the Virginia Arbitration Proceeding, the only relevant usage is peak period usage. *Virginia Arbitration Order* ¶ 474. Off peak, neither high-volume users nor low-volume users incur capacity costs; hence, no subsidy can result from off-peak usage. Traffic-sensitive cost causation thus is even a theoretical possibility only during peak periods.[23] Verizon provides no evidence about which users—high volume or low volume—use switch resources during the peak period, and suggests no means by which the Commission or state regulators could implement time-of-day or peak load pricing. Murray/Pitts Reply Decl. ¶¶ 16-17.

Absent a time-of-day rate, the next best solution is the flat, per-port rate structure proposed by AT&T. The flat, per-port charge ensures that the incumbent and CLEC face similar cost structures, and it mirrors the "all you can eat" flat, per-line charges generally used by incumbents for mass-market retail customers. Given the evidence that switching costs do not vary with usage, this is the appropriate method of recovering switching costs. Murray/Pitts Decl. ¶¶ 55-57; Murray/Pitts Reply Decl. ¶¶ 16-17.

E. Cost of Capital

As AT&T explained in its opening comments, the Commission should endorse standard the techniques of financial analysis to determine the cost of capital for UNE rates. State commissions have often calculated the equity component of return on capital by applying multi-stage discounted cash flow ("DCF") or the capital asset pricing model ("CAPM") to a proxy group consisting of the Bell holding companies ("RBOCs"). The DCF and CAPM models are well-accepted tools for estimating the cost of equity, and are widely used by financial analysts

[23] During peak periods, the flat, per port rate could lead to overuse of the network because peak-period users would not incur a price that fully charges them for their use of the network. This does not appear to pose a significant problem, however, as the widespread existence of flat, per-line local services for residential and small business customers does not appear to have resulted in call blocking or required capacity additions. Murray/Pitts Decl. ¶¶ 55-56.

and other regulators. The RBOCs, as the primary providers of UNEs and other similar services provided over the network facilities, comprise the best proxy group of firms for the DCF and CAPM. Similarly, state commissions should calculate the cost of debt by examining the forward-looking yield to maturity for the publicly traded debt of the RBOCs.

The Commission should rejected the welter of "adjustments" and alternative assumptions proposed by the Bells. These proposals include: (1) use of risk proxy groups consisting of non-telecommunications firms from the S&P 500, which face substantially different (and higher) risks than an efficient wholesale provider of UNEs in a contestable market; (2) abandonment of the CAPM equity cost model; and (3) adoption of the one-stage (perpetual growth) DCF model, which assumes that that all firms in the proxy group will grow at their projected short term growth rate in perpetuity. Finally, and most egregiously, the Bells ask the Commission to inflate the cost of capital still further with additives to offset various risks from competition and regulation that supposedly have been overlooked by financial markets. These approaches are all without merit. All have been rejected repeatedly by state commissions, the federal courts, and the Commission itself.

1. The Relevant Proxy Group.

For the last eight years, state commissions have with few exceptions used the major publicly traded local telephone holding companies as the proxy group for determining the cost of capital. This result is unsurprising. It is the large local carriers that provide the UNEs which are priced at TELRIC-based rates. The RBOCs' stock is publicly traded, the RBOCs issue public debt, and the RBOCs derive the preponderance of their revenues from local telephone services. Indeed, a proxy group consist of this holding group provides a conservatively high measure of risk, for most of the Bells' lines of business—including retail local service, long distance and wireless service, and foreign operations, face significant facilities-based competition, and are

considerably riskier than the business of supplying UNEs as wholesale. Murray Decl. ¶ 66; Murray Reply Decl. ¶¶ 16-18; Willig Reply Decl. ¶¶ 111.

SBC agrees "that ILEC holding companies are a fair—indeed, conservative—proxy group to use in estimating the cost of equity." Verizon and BellSouth, however, propose a proxy group consisting of diversified industrial companies from the S&P 500. The Commission should reject this proposal. The hodgepodge of firms in the S&P 500 are not remotely representative of an efficient UNE provider. Willig Reply Decl. ¶ 114. Only a handful of the firms in the S&P 500 provide any kind of telephone service, let alone offer UNEs at wholesale. Virtually all of the firms in the S&P 500 engage in entirely unrelated lines of business, and have vastly different risk characteristics than an efficient provider of UNEs. The S&P 500 firms also require different capital outlays, use different capital stock, and have different asset lives—indeed, different almost everything. 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 it faced facilities based competition.

Virginia Arbitration Order ¶ 90.

Qwest's proposal to use competitive and long distance carriers as an appropriate proxy group for computing the cost of capital of an efficient UNE provider is also inappropriate. Unlike an efficient UNE provider, competitive local carriers and long distance carriers are not in the wholesale UNE business, making them unqualified as proxies for an efficient UNE provider carrier. Willig Reply Decl. ¶ 115. Most importantly, the competitive risks and current cost of capital of competitive carriers and long distance carriers are much higher than that of an efficient UNE provider in a contestable market. Long distance carriers also now face competition from

the Bells, who are able to self-supply their own access at economic costs and have an established relationship with the long distance carriers' customers. In local markets, competitive local carriers—including even the major long distance carriers—are new entrants into local markets dominated by the legacy monopoly incumbent carriers, and have obtained only tiny footholds in those markets. As a result, the competitive carriers face substantial barriers to entry, and a far greater likelihood of economic losses than would efficient sellers of UNEs. *Id.*

In defense of these higher risk proxy groups, the Bells contend that a stand-alone business devoted exclusively to the provision of UNEs would be riskier than the Bell holding companies as a whole. *E.g.*, BellSouth at 32; Verizon at 68-73. This claim is flawed on two levels. First, the RBOCs' other lines of business, such as wireless telephone service and investment in foreign companies, are considerably riskier than the wholesale supply of UNEs. This is true by definition, for the Bells have obligation to unbundle a network element at all in markets where multiple competitive providers offer the facilities in question. *See* Willig Reply Decl. ¶¶ 114-115.

Second, even assuming *arguendo* that a stand-alone UNE provider would face higher risks than the same business operating as a division of a vertically integrated holding company, there is no legitimate reason for disregarding the potential economies of integration when determining the TELRIC cost of capital. Basic economics teaches that an efficient firm will take full advantage of all available efficiency opportunities, including economies of scale and scope. Hence, "[a]n efficient UNE provider . . . will size its network to account optimally for scale economies, and will take advantage of any additional efficiencies associated with economies of scope by integrating with a firm that deploys and sells, at efficient levels, products and services that are related to the sale of UNEs." Willig Reply Decl. ¶ 112. As the Commission recently recognized in its *Triennial Review Order*, in the telecommunications markets, these additional

sales can include, among others, retail services, long distance services, broadband services, and maintenance services. *Triennial Review Order* ¶ 115; *see also id.* ¶ 519 ("The state must also consider the revenues a competitor is likely to obtain from using its facilities for providing data and long distance services and from serving business customers"); *id.* n.1585 (the impairment analysis "will therefore take into account the scale and scope economies available to carriers using existing facilities to provide a variety of services to all customers that are likely to be served by an efficient entrant"). Failing to recognize these economies of scale and scope would greatly inflate the efficient costs of selling UNEs, because they would ignore that a carrier that has deployed facilities to serve an entire geographic area can spread its costs over all customers in that area and all services provided in that area, rather than only the limited subset of UNE customers and the limited subset of UNE services. *Id.* Verizon's witness acknowledges this point. Vander Weide (Verizon) Decl. ¶¶ 44-47 (noting that a carrier can reduce cost of capital by diversifying its assets).

2. The Appropriate Models Of The Cost Of Equity.

The Commission should confirm that state commissions may continue to estimate the cost of equity with both the DCF and CAPM. Both models are widely used, and financial analysts customarily use one model as a check on the other. Murray Reply Decl. ¶¶ 24, 27; *accord*, SBC at 44 ("it is not critical for the Commission to select one specific *model* to calculate the cost of equity") (emphasis in original).

Only Verizon's expert witness, Dr. Vander Weide, claims that the CAPM is incapable of producing TELRIC compliant results without substantial modifications. Dr. Vander Weide and BellSouth expert Mr. Billingsley also ask the Commission to endorse their idiosyncratic views as to the appropriate application of the DCF technique. As explained below, the views of the two

witnesses are outside the mainstream of financial economics and, indeed, are squarely at odds with basic financial economic principles.

a. The Three-Stage DCF Approach Produces Far More Accurate Long-Run Cost Of Capital Estimates Than The One-Stage DCF Approach.

Verizon and BellSouth ask the Commission to mandate the use of a "one-stage" DCF model, which assumes that current short-term growth estimates (usually five-year estimates produced by a firm called "I/B/E/S," now part of a firm called "First Call") will continue unchanged to eternity. Vander Weide (Verizon) ¶¶ 55-58; Billingsley Decl. (BellSouth), Exh. No. RSB-2 at 2. This approach has been roundly rejected because it is based on obviously flawed assumptions. Use of a one-stage DCF implicitly assumes that firms with an above average short-term growth estimate would eventually grow to become the entire economy. Murray Reply Decl. ¶¶ 30-39. Such a result clearly is inconsistent with even the most bullish investor expectations, and 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. *Id.*

Because of the well-documented flaws of the one-stage DCF approach, financial analysts generally use multi-stage DCF models instead. Perhaps the most widely used DCF model has three stages. The first stage, which lasts three or five years, incorporates the current short term growth estimates. Then, for the next several years—"stage two"—growth rates will begin to converge to the market growth rate. And in "stage three," the growth rate will equal that of the expected market growth rate. Murray Decl. ¶¶ 83-88 (fully describing this methodology).

Economists have recognized that "[f]orecasted growth rates are obviously not constant forever" and that "[v]ariable-growth DCF models, which distinguish short- and long-term growth rates, should give more accurate estimates of the cost of equity" by "guard[ing] against naïve projection of short-run earnings changes into the indefinite future." 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, (1994); *accord Virginia Arbitration Order* ¶ 73 ("the finance literature concludes without exception that the [single stage DCF] model is unlikely to produce an accurate cost of equity capital estimate"). As one Nobel Prize winning financial economist put it:

> Valuing common stock with a [DCF] . . . 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 [DCF]?
>
> 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 [DCF models] . . . make standard assumptions that all companies in the maturity stage have the same growth rates, payout ratios and return on equity.

William F. Sharpe, Gordon J. Alexander and Jeffrey V. Bailey, INVESTMENTS 590-591 (1995).

The New Hampshire PUC reached a similar conclusion in its recent cost of capital decision involving Verizon New Hampshire:

> The [three-stage DCF] model takes account of the fact that the expected growth rates of earnings and dividends quoted by financial publishing companies like Value Line and I/B/E/S may reflect expectations in the medium term but are, by the statements of these publishing companies, not intended to reflect expectations for the long term. The three-stage version takes account of this inherent limitation in the data and ensures that long term growth rates do not exceed the productive capacity of the economy itself. Such a scenario would imply that some companies will grow faster than the economy *ad infinitum*, an implication we cannot accept. At the same time, the three-stage version ensures that long term growth rates are not so low that some investors remain under-compensated. In this manner, the three-stage version strikes a balance that we find is appropriate in this proceeding. ...the difference between Verizon's growth rates and the

sustainable growth rate is far too great for us to conclude that its growth rate is sustainable indefinitely.[24]

Dr. Vander Weide tries to defend the single-stage DCF approach on three grounds. First, he asserts that it is appropriate because the I/B/E/S growth estimates reflect investor expectations. Vander Weide (Verizon) Decl. ¶ 56. But, as noted, those growth estimates are intended to cover only the next three to five years. No rational investor would expect such estimates to be accurate in perpetuity, particularly given the complete turnaround in growth rates for telecommunications firms over the most recent five year period. *See* Murray Reply Decl. ¶ 34.

Second, Dr. Vander Weide asserts 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. *See* Murray Reply Decl. ¶ 35.

Third, Dr. Vander Weide claims that the five-year I/B/E/S growth rates are consistent with "long-term" growth estimates called "internal growth estimates." But, as explained by Ms. Murray (¶ 36) internal growth estimates are simply the growth rate that a company can achieve without additional external funds and depend on assumptions regarding the level of a 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. *Id.*

Unable to defend the single-stage DCF on the merits, Dr. Vander Weide resorts to contrived statistical attacks on the three-stage DCF. Vander Weide (Verizon) Decl. ¶¶ 60-61.

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[24] Order No. 24, 265, Order Establishing Cost of Capital, *Verizon New Hampshire Investigation Into Cost of Capital*, January 16, 2004, pp. 67-68.

These analyses prove only that Dr. Vander Weide is adept at misspecifying models.[25] As the New Hampshire PUCs noted its January 16, 2004, cost of capital decision involving Verizon,

> testimony 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.[26]

Finally, the Bells' observation that the three-stage DCF results in a lower cost of capital for Verizon than for AT&T and MCI only confirms its appropriateness. AT&T and MCI operate in highly competitive long-distance and business markets in which there are many facilitates-based carriers and substantial excess capacity. And where they compete for local customers they face myriad entry barriers as they attempt to compete against incumbent monopoly like the Bells.[27]

b. CAPM.

Only Dr. Vander Weide claims that the CAPM is entirely inappropriate for computing the cost of equity. Vander Weide (Verizon) Decl. ¶¶ 68-70. His testimony, however, is nothing more than a rehash of his testimony before the Commission in the Virginia Arbitration

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[25] *See, e.g.*, Surrebuttal Testimony of John I. Hirshleifer On Behalf Of AT&T And WorldCom, Inc., CC Docket Nos. 00-25, 00-281, at 78 (FCC, September 21, 2001); *id.*, Objections of AT&T and WorldCom to Verizon Response to Staff Record Request for Literature Comparing the Accuracy of One-Stage vs. Multi-Stage DCF Models (filed Dec. 18, 2001).

[26] Order No. 24, 265, Order Establishing Cost of Capital, *Verizon New Hampshire Investigation Into Cost of Capital*, January 16, 2004, at 66-67.

[27] BellSouth claims that it is appropriate to include in the DCF calculation an adjustment for "flotation costs." Billingsley (BellSouth) Decl., Exh. RSB-2 at 4-5. Flotation costs are costs associated with financing firm investments, and financial markets already account for flotation costs when setting the value and return of the firms assets. Murray Reply Decl. ¶¶41-42. Adding a flotation cost adjustment would in effect double count the cost of financing. *Id.*

proceeding, which the Wireline Competition Bureau declined to credit. *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). Nothing in his current declaration calls into question the Bureau's prior conclusion.

First, 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." Vander Weide (Verizon) Decl. ¶ 64. 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 bias into the estimate of the cost of equity." *Id.* That the CAPM relies on the single risk factor he identifies is not necessarily a flaw, however, and Dr. Vander Weide has offered no reason to believe that the addition of other "risk factors" to the equation would improve the cost of capital estimate. Murray Reply Decl. ¶¶ 44-45; Willig Reply Decl. ¶ 117. The addition of some risk factors may *reduce* the cost of capital estimate, and the addition of other risk factors may increase it. *See id.* What is certain is that financial economists have long determined that the CAPM can, when properly implemented, produce an accurate measure of the cost of capital. *See id.* Murray Reply Decl. ¶¶ 44-45; *accord, e.g., Virginia Arbitration Order* ¶ 71. It is thus clear that SBC, not Verizon, is correct – both the CAPM or the DCF model can produce proper estimates of the cost of equity so long the models are properly used.

Alternatively, Mr. Vander Weide argues that if the Commission allows states to use CAPM, the Commission should prescribe national inputs using the values he endorses. Vander Weide (Verizon) Decl. ¶¶ 68-70. But the inputs to the CAPM are variables that fluctuate over time. Murray Reply Decl. ¶ 59. That means that any national requirement of inputs would have to be continually updated to reflect such changes. The better approach is to permit states to adopt the inputs to the CAPM model that are appropriate at the time of the UNE rate proceeding.

Moreover, the national inputs proposed by Dr. Vander Weide are absurdly inflated. For example, he urges the Commission to require states to set the risk free rate at the return paid on *long-term* treasury bonds, Vander Weide (Verizon) Decl. ¶ 68, which given their long-term nature are not remotely risk-free, as Verizon admitted in the Virginia Arbitration. *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."). In any event, as noted, this is an issue that must be addressed by state commissions at the time of the UNE pricing proceeding, so that states can account for changes in market conditions.

Verizon also urges the Commission to mandate that the "beta" used in the CAPM model be greater than 1.0, meaning that an efficient UNE provider is riskier than the market as a whole. Vander Weide (Verizon) Decl. ¶ 69. But, again, Verizon offers no evidence why such a firm would be more risky than the market as a whole. And empirical evidence suggests otherwise. *See* Selwyn Reply Decl. ¶¶ 57-60. Finally, Verizon urges the Commission to adopt a risk premium in the 7 to 9 percent range. Vander Weide ¶ 70. There is substantial and growing evidence, however, that the forward-looking risk premium demanded by investors is now in the range of 3 to 4 percent – well below historic risk premiums. Murray Reply Decl. ¶ 49. In any event, the forward-looking risk premium is a value that changes over time and, thus, is best computed by state commissions at the time of the UNE pricing proceeding.

3. Computing The Cost Of Debt.

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 debt of the relevant proxy firms. Murray Decl. ¶ 106; Murray Reply Decl. ¶ 31. And, as noted, a proxy group consisting of local telephone holding companies provides a conservatively high measure

of the relevant cost of debt. *Accord Virginia Arbitration Order* ¶¶ 66-67; *see also* Murray Reply Decl. ¶ 31.

Aside from advocating the use of bonds issued by non-ILEC firms,[28] the Bells try to inflate the cost of debt by urging the Commission to mandate that debt costs be determined solely with regard to very long-term debt (*i.e.*, with maturities longer than 25 years). *See, e.g.*, SBC at 47; Vander Weide (Verizon) Decl. ¶¶ 48-50. But the use of such very long-term debt would flatly contradict the use of the much shorter economic lives the Bells use for most of the asset categories that the debt is supposedly financing. *See* Murray Reply Decl. ¶ 52. Basic economics teaches that the economic lives of the assets being financed should act as a ceiling on the term of the bonds used to compute the cost of debt. *Id.* An example illustrates this point. A car is a relatively short-lived asset. Because the economic life of a car is generally between 5 to 10 years, the term of most car finance loans is less than 10 years. Indeed, a debt holder would prefer to not hold debt where the economic value of the underlying asset has already reached zero. It would thus be very difficult to find a lender that would allow a purchaser of a car to finance the car using a 30 year loan. *Id.* ¶ 100.

Similarly, if an ILEC were financing its network today, only a small fraction of its assets would qualify for very long-term financing. Accordingly, it is appropriate to use a mix of short-term and long-term bonds when computing the relevant cost of capital. *See* Murray Decl. ¶ 108; Murray Reply Decl. ¶¶ 33-54. Moreover, the Bells' claim that the very shortest term debt should be excluded altogether is a red herring. The Bells claim that this debt is used only for "working capital." But as demonstrated in Ms. Murray's initial testimony (¶ 108), the Bells are

[28] For the reasons discussed above, the Bells' proposals that cost of debt be determined using the yields of non-ILECs, *see* Billingsley (BellSouth) Decl. ¶ 21 (S&P 500 firms); Vander Weide (Verizon) Decl. ¶ 48 (Moody's "industrials"), should be rejected.

increasingly relying on very short term debt for requirements beyond working capital, presumably to take advantage of the very low short-term rates that are currently available.

4. Capital Structure.

As demonstrated by AT&T in its initial comments, the relevant mix of equity and debt capital should reflect the firm's ideal, or "target," capital structure. *See* Murray Decl. ¶¶ 109-19. The Bells, however, support the use of a "current" market structure, *i.e.*, the market structure that can be computed at any moment from the current prices of the firms' stock and debt. *See* Billingsley (BellSouth) Decl. at 13-17; SBC 48-49; Vander Weide (Verizon) Decl. ¶¶ 71-73. The Bells defend this "snapshot" market structure on the theory that it reflects investor expectations. *See* Billingsley (BellSouth) Decl. at 13-17; SBC 48-49; Vander Weide (Verizon) Decl. ¶¶ 71-73. That is nonsensical.

No rational consumer would assume the market structure at a single point in time, given the then-existing prices for a firm's stock and bond offerings, would persist unchanged a few days later, let alone over the long run. Murray Reply Decl. ¶ 56. Indeed, as stock and bond prices change so does the market-based capital structure. *Id.* And as BellSouth's own witness concedes, an appropriate forward-looking capital structure should reflect the "optimal, *sustainable* capital structure," Billingsley (BellSouth) Decl. at 12-13, not an ephemeral market-based snapshot.

5. Illegitimate Risk "Add-Ons."

Lastly, the Bells try to inflate the cost of capital by tacking on arbitrary "add-ons" to the cost of capital, regardless of the cost models used to compute it. The Bells argue that these add-ons are justified because the existing techniques for computing the cost of capital fail to account for four "special" risks: (1) competitive market risk; (2) regulatory risk; (3) lease cancellation risk; and (4) "options" or "sunk cost" risk. As demonstrated by Professor Willig, however,

current cost of capital methodologies do account for these risks because current methodologies are based on the expectations of financial markets, which account for such risks. Moreover, certain of the purported "risks" identified by the Bells, may actually be "upside" risks, which, if separately incorporated into the cost of capital, would result in *lower* cost of capital estimates.

Competitive Risk. There can be no serious claim that the cost of capital should be grossed up to reflect additional "competitive risk." Even Verizon's cost of capital witness concedes that "[c]ompetitive market risk is included in estimates of the market cost of capital." Vander Weide (Verizon) Decl. ¶ 14. That is because cost of capital estimates are based on equity prices and growth expectations as determined by financial markets, and financial markets in setting prices and expectations account for all available and relevant information, including competition-related risk. Willig Reply Decl. ¶ 117. This is true regardless of the group of firms that are used as a "proxy" to estimate the cost of capital. *Id.*

Regulatory Risk. There is obviously no need to account for "regulatory risk" if the RBOCs are the proxy group of firms used to compute the cost of capital, because the financial markets' prices and growth expectations used to compute the cost of capital would fully reflect such risk. Willig Reply Decl. ¶¶ 118-21. It is no secret to the financial community that UNE providers are subject to regulatory requirements, including the unbundling obligations imposed by the 1996 Act, and the TELRIC pricing standard established by this Commission. There is no serious evidence in this record challenging the view that the cost of capital using the incumbents as proxy firms fully reflects any risk associated with regulation.

The incumbents' claim that regulatory risk must be added to the cost of capital is thus tied to the incumbents' flawed claim that the cost of capital should be based on a proxy group of firms that are not involved in the sale of UNEs or, in many cases, not even involved in the telecommunications industry. *Id.* ¶ 120. For the reasons explained above, those arguments are

misguided. Moreover, the exercise urged by the Bells would be a fool's errand even if the use of a non-telecommunications proxy group were otherwise appropriate. The Commission would be required to identify and make adjustments to the cost of capital estimates to account for different regulatory risks associated with the group of proxy firms and the hypothetical efficient UNE provider. That is no small endeavor. It would require the Commission (or state commissions) not only to account for risks that do not exist in the proxy firm industries, but also would require the *subtraction* of risks that exist in the proxy firm industries, but not in the telecommunications industry – such as environmental regulatory risks, product liability litigation risks, safety-related regulatory risks and risks faced by companies with substantial overseas operations (*e.g.*, foreign exchange, expropriation and terrorism). Willig Reply Decl. ¶ 120.

Lease Cancellation Risk. Lease cancellation risk, as described by the Bells, refers to the risk that a competitor may cancel a lease for UNEs. As with regulatory risk, there is obviously no need to account for lease cancellation risk separately if the incumbents are the proxy group of firms used to compute the cost of capital: the financial markets, which for years have been tracking economic factors effecting incumbent growth, would reflect such existing and forward-looking risk in the market prices and growth expectations used to compute the cost of capital. *Id.* ¶¶ 123-35. It is no secret to the financial community that competitors lease unbundled network elements, and that they may cancel such leases on relatively short notice. *Id.* Moreover, most other major services offered by the Bells—including retail local service, long distance and wireless service—are also provided under tariffs or contracts that allow the customer to cancel on relatively short notice compared with the life of much of the sunk investment needed to provide the service.

The Bells' claim that the cost of capital computations should be increased to account for lease cancellation risk, therefore, like regulatory risk, is tied to their claims that the Commission

(or state commissions) should use non-RBOC firms as a proxy when computing the cost of capital and fails for those same reasons. *Id.* ¶¶ 123-25. Moreover, the Bells' claim that making their proposed one-sided risk adjustment would necessarily *increase* risk does not withstand scrutiny. Under the Bells' theory, when a competitor cancels a lease, the incumbent somehow is worse off. But that is only true only in the unlikely circumstances in which the competitor transitions the customer to non-incumbent owned facilities, or when the customer previously served by the competitor using the unbundled network elements becomes unprofitable even for the incumbent. *Id.* ¶ 125. In virtually all other cases, the cancellation of a UNE lease is good news for the incumbent, because the incumbent get to serve the retail customer formerly served by the competitor and thus earn retail rates for the UNE facilities rather than the lower wholesale rates. Any adjustments to account for lease adjustment, therefore, likely would decrease, not increase, the cost of capital. *Id.*

The New Hampshire commission recognized this in its January 16, 2004, cost of capital decision:

> It is also unclear on this record to what extent Verizon faces the risk of stranded investment as the result of the departure of any group of customers. Both UNE and retail facilities typically can be re-used by Verizon to serve other customers in the same line of business or to serve customers in the other line of business. This substantially reduces the extent of risk faced by Verizon. Investments made to serve retail customers can ordinarily be recovered under rate of return regulation, so long as the expenditures are prudent.

NH COC Order at 42-43. *See also id.* ("Whatever the case may be with respect to CLEC business models, the risk of demand reductions is not unique to Verizon's UNE line of business given that retail customers who have not signed special contracts are free to take their business to competitive carriers").

In this regard, at least some Bells have not tried to require that competitive carriers enter into long-term lease contracts, indicating that they believe shorter term leases *reduce* rather than

increase their risk. The New Hampshire commission recognized this point too in its recent decision:

> As the CLEC parties pointed out, it is Verizon that restricts CLEC UNE leases to one-month terms, and declines to offer longer term non-cancelable UNE leases. Presumably this is a result of a judgment by Verizon that its risk is decreased, not increased, by shorter terms, notwithstanding the associated exposure to increased risk of CLEC discontinuance of service.

Id. at 45-46.

Options Risk and Sunk Investment Risk. The Bells' proposals to add a risk premium to account for "options risk" badly misapplies options risk theory. Willig Reply Decl. ¶¶ 125-32. According to the Bells, under the current regulatory regime, they must make "sunk" cost investments today to make UNEs available to competitors, a commitment that eliminates their "option" to make those investments in the future. NERA (BellSouth) at 44-46; SBC at 38-43; Verizon at 68-76. Because the option to delay making sunk investments has a value, the Bells argue that their "costs" are greater than those computed using traditional cost of capital techniques. The Bells' analysis is inaccurate and incomplete.

The DCF and CAPM techniques use current stock prices and financial market growth expectations to compute the cost of capital. Financial markets are, of course, fully aware of the costs associated with making investments today, and, therefore, the equity prices and growth expectations of the financial markets fully reflect options costs and benefits. As a result, options costs and benefits are addressed by standard cost of capital techniques. Willig Reply Decl. ¶ 126. In this regard, Verizon's witness, Dr. Pindyck, ultimately acknowledges that the options value may already be implicitly incorporated into the current cost of capital techniques – which is presumably why Dr. Pindyck is careful to state only that such "options" costs are not "*explicitly*" reflected in those models. Pindyck (Verizon) Decl. ¶ 23.

In any event, even if an options additur could be appropriately incorporated into the cost of capital, it is not clear that the additur would be positive. As explained by Professor William Baumol, for example, the general options theory relies on assumptions that are not valid when assessing the pricing of unbundled network elements. *See* William Baumol, *Options Value Analysis and Telephone Access Charges*, THE NEW INVESTMENT THEORY OF REAL OPTIONS AND ITS IMPLICATIONS FOR TELECOMMUNICATIONS ECONOMICS (1999). First, the Bells' option analysis implicitly assumes that the provision of UNEs requires the Bells to make positive net sunk investment in facilities. In fact, however, "the grant to the [competitors] . . . of access to the LECs' facilities is likely to require little, if any, expanded investment commitment" because "if [competitive] . . . entry into the local telecommunications markets is successful, it will mean that the LECs will lose some of their local business to the new entrants . . . [which will] reduce the LECs' use of their own facilities, leaving unused capacity available for rental to the [competitors]." *Id.* at 217. "More than that . . . *the LECs have repeatedly contended that entry will leave them with substantial stranded assets* . . . [which] is tantamount to saying that . . . the LECs expect to have considerable excess capacity left on their hands." *Id.* Moreover, as noted above, the Bells have repeatedly (and thus far successfully) argued that they are under no legal obligation to make capital investments *even if they would otherwise lack the capacity to satisfy the demand for UNEs from CLECs*. If the Bells will not be required to make new sunk investments to provide unbundled network elements, there is no forgone option to delay such investment.

But even if Bells were required to make new sunk investments, it is not clear that the option value of that investment would increase the cost of capital. Sunk investment has at least two option-related effects. First, sunk investments eliminate the option of delaying those investments to the future, which is the "cost" identified by the Bells. Willig Reply Decl. ¶ 127.

Second, sunk investments provide the incumbents with benefits associated with being the first mover, which are "options" to provide existing services at lower cost and to expand services in the future. *Id.*[29]

The bottom line is that the Bells' discussion of options theory is quite incomplete. The Bells fail to recognize that the values and costs of such options likely are reflected in the data used by existing cost of capital techniques, and thus represented by current cost of capital estimates. Furthermore, the Bells fail to recognize that the value of such options may, in fact, be zero or even negative, requiring a *decrease*, not an increase, in the cost of capital estimates currently used by state commissions.[30]

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[29] That there are "option" benefits to making the sunk investment is intuitive. Consider a new business complex that does not currently have telephone service. The incumbent can either build facilities to that business today, or delay such deployment. By deploying telecommunications facilities to the business today, the incumbent loses the option of delaying those investments. But the incumbents also gains the "option" to deliver those services without incurring the massive additional costs associated with being the "second mover" in a market where there are substantial benefits to being the "first mover." These fundamental concepts are well recognized in the industry and by fundamental financial textbooks. *See* Richard Clarke, *Rethinking The Implications Of "Real Options" Theory For The U.S. Local Telephone Industry*, THE NEW INVESTMENT THEORY OF REAL OPTIONS AND ITS IMPLICATIONS FOR TELECOMMUNICATIONS ECONOMICS (1999); Richard Brealey and Stewart Meyers, PRINCIPLES OF CORPORATE FINANCE, 620-22 (2000); Michael Peleovits, *Application of Real Options Theory to TELRIC Models: Real Trouble or Red Herring*, THE NEW INVESTMENT THEORY OF REAL OPTIONS AND ITS IMPLICATIONS FOR TELECOMMUNICATIONS ECONOMICS (1999).

[30] The Bells do not address whether the Commission should adopt a UNE-specific cost of capital. For the reasons stated in AT&T's initial comments, while it would be appropriate to allow states to retain the "option of establishing UNE-specific costs of capital," *Notice* ¶ 90, data limitations may prevent regulators from differentiating with precision the risks and capital costs of individual UNEs, and, therefore, state commissions should not be required to do so. There is also no need for a Commission-mandated cost of capital because State commission's are perfectly capable of overseeing and even making the relevant computations. *Cf.* Qwest at 46. The cost of capital will vary from ILEC-to-ILEC as each ILECs is a separate company and likely have different risk structures. Further, the cost of capital changes over time. That means that, in order to adopt its own cost of capital the Commission would have to conduct frequent periodic updates of the national cost of capital—indeed, any time that there was a UNE rate case before a state commission. It obviously is far easier to permit state commission to compute the relevant cost of capital at the time of a UNE rate proceeding.

F. Depreciation

The comments broadly confirm that the Commission's regulatory lives should be used to calculate depreciation under TELRIC, as most state commissions have held. The ILECs, however, argue that the Commission should adopt financial book lives, determined in accordance with Generally Accepted Accounting Principles ("GAAP"), in developing UNE rates. Lacey (Verizon) Decl. at 2. All of the ILECs' arguments, however, have been repeatedly rejected by both the Commission and the state commissions.

1. The Bells Have Failed, Once Again, To Offer Any Empirical Evidence That Existing Regulatory Lives Are Too Short To Be Forward-Looking.

As AT&T explained in its initial comments, there is ample evidence that the regulatory lives prescribed by the Commission, and used by most state commissions in UNE pricing cases, are forward looking. These lives are based on explicit consideration of changes in technology and competition anticipated by the Bells, and the conservatively high level of the depreciation charges they generate has received empirical confirmation from the rising level of Bell depreciation reserves over the past two decades. AT&T at 93-95; Lee Decl. ¶¶ 11-34.

The only counterevidence offered by the Bells in their initial comments is the fact that the Commission's regulatory lives are longer than the lives forecast by Technology Futures Inc. ("TFI"), a consulting firm that specializes in advocating short depreciation lives for its Bell clients in regulatory proceedings. *See, e.g.*, Lacey (Verizon) Decl. ¶ 22; SBC at 52-53. These TFI lives have been thoroughly discredited. Lee Reply Decl. ¶¶ 18-31 & Att. 3-4.

TFI develops its life estimates largely through "substitution analysis," which attempts to forecast the pattern by which new technology will replace old technology. TFI predicts here, as it has over the last decade, an imminent "avalanche" of retirements in various accounts based upon its claimed application of past retirement patterns of obsolete technologies to future circumstances. In particular, TFI assumes that the ILECs will soon replace their narrowband

telecommunications networks with broadband integrated networks capable of providing both telecommunications services and high-speed data services, and the resulting widespread deployment of fiber loop plant will make existing copper plant obsolete. TFI predicts that this will also drive the ILECs to upgrade transmission systems, replace existing circuit equipment, and deploy packet switching equipment. Lee Reply Decl. ¶¶ 21-22.

This "substitution analysis" is fundamentally flawed. To begin with, to the extent that replacement is driven by the desire of the ILECs to provide broadband, those depreciation costs are not "attributable" to UNEs being purchased by CLECs. AT&T at 53-55. As noted, the *Triennial Review Order* limited access to only the narrowband portion of hybrid loops.

In all events, TFI's substitution analysis is no more than elaborately packaged guesswork. There is no evidence, for example, that copper cable is on its way out in the foreseeable future, and no *a priori* reason to assume that advances in technology will shorten, rather than lengthen, the lives of existing assets. The advent of DSL, for example, has lengthened the life of copper cable; and ATM IP switches are being deployed as complements for digital circuit switches, not as their substitutes. Lee Reply Decl. ¶¶ 23-26.

Unsurprisingly, history has not been kind to TFI's prognostications. The asset lives forecasted by TFI over the last decade have consistently been proven far too short. Lee Decl. ¶¶ 26-29 & Att. 3-4, and the Commission has declined to accept them. In the 1998 Biennial Review, for example, the Commission found that "[t]here is no evidence that the large wave of plant replacements forecast by TFI, which should result in increased retirements, has begun or is about to begin." *1999 Update* ¶ 16. In the *Virginia Arbitration Order*, the Wireline Competition Bureau rejected Verizon's use of financial reporting lives and supporting TFI studies, finding them too heavily reliant on unrealistic assumptions regarding massive retirement of copper. *Virginia Arbitration Order* ¶ 118 ("the TFI study assumes that new technology will

result in massive waves of retirements (e.g., replacements of copper cable by fiber-to-the home facilities). Although TELRIC assumes that the value of an incumbent network is constrained by the widespread deployment of the most efficient technology currently available, that does not mean that it is appropriate to assume massive retirements of copper facilities"). The Bureau further concluded that "AT&T/WorldCom convincingly demonstrate that past TFI studies have been extremely aggressive in their projections, and that actual incumbent LEC retirements have proceeded at a much slower pace." *Id.*

Finally, BellSouth's claim (at 36) that the history of switching technology demonstrates a rapidly accelerating rate of displacement is simply false. BellSouth has contrived this apparent trend by excluding both current digital switching technology and very early switching technology. As Mr. Lee shows, when one looks at the *entire* history of switching development, the rate of technological change has hardly accelerated at all. Lee Reply Decl. ¶¶ 32-34.

2. GAAP Lives Are Too Conservative To Be Included in TELRIC.

The Bells' reliance on GAAP (financial) lives is also unsupported. AT&T at 95-97; Lee Decl. ¶¶ 35-41. Financial lives are completely inappropriate as a proxy for economic lives, because they are driven by the GAAP principle of conservatism, which encourages the accountant to err on the side of overstating costs for financial reporting when there is uncertainty about their precise level. Because of the GAAP principle of conservatism, financial book lives are much shorter than the lives prescribed by the Commission, and thus would lead to substantially higher annual depreciation expense and UNE rates if incorporated into TELRIC. Lee Reply Decl. ¶¶ 7-8.[31]

[31] For these reasons, the GAAP lives of long distance carriers and cable TV operators would provide no justification for relying on Bell financial lives here – even if (contrary to fact) long distance carriers and cable operators had the same assets and depreciation practices as the Bells. Lee Reply Decl. ¶ 35.

The Commission has repeatedly rejected the argument that GAAP lives should be used for regulatory purposes. In 1993, for example, the Commission found that adopting GAAP lives would allow the ILECs to overstate their costs (and thus understate earnings). "Although conservatism is effective in protecting the interest of investors, it may not always serve the interest of ratepayers." *Depreciation Order* ¶ 46.

The Commission found that "GAAP would not effectively limit the opportunity for LECs to manage earnings" and would not offer "adequate protection for ratepayers." The Commission rejected the use of GAAP again in its *Universal Service* proceeding in 1999, and found that the ILECs had not explained why financial book lives "would also reflect *economic* depreciation." *Universal Service Order* ¶ 48 (1999) ("although conservatism is effective in protecting the interests of investors, it may not always serve the interests of ratepayers"). The Commission again found that "[t]he depreciation values used in the LECs' financial reporting are intended to protect investors by erring on the side of conservative understatement of net assets, partially achieving this goal by erring on the side of over-depreciation" – preferences that "are not compatible" with regulatory measures of depreciation. *Id.*

Verizon's witness Dr. Lacey argues that GAAP has rescinded the principle of conservatism. Lacey (Verizon) Decl. at 15-17. Specifically, he asserts that the Accounting Standards Executive Committee eliminated the principle of conservatism in 1993 when it repealed "Accounting Principles Board Statement 4, Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises" ("APB Statement 4"). This claim is a mischaracterization of GAAP. APB Concepts Statements No. 2 ¶ 91 *et seq.* ("Conservatism") was *not* repealed. Paragraphs 91 *et seq.* provide a detailed exposition of the currently operative principle of conservatism, and paragraph 95 in particular expressly provides that "if two estimates of amounts to be received or paid in the future are about equally likely, conservatism

dictates using the less optimistic estimate." Because the Concepts Statements stand on their own, the repeal of APB Statement No. 4 thus has no impact on financial reporting. *See* Lee Reply Decl. ¶ 11.

In the recent arbitration between AT&T and Verizon Virginia before the Wireline Competition Bureau, Dr. Lacey conceded on cross-examination that the Concept Statements represented "current accounting standards."[32] For that and other reasons, the Wireline Competition Bureau expressly rejected Verizon's contentions (based on Dr. Lacey's testimony) that financial book lives are an appropriate measure of the economic life of an asset. *Virginia Arbitration Order* ¶ 116.

The Bells gain nothing with their alternative argument that the conservatism of GAAP is not is merely a tie-breaking principle that works only in contexts where the appropriate value is uncertain. No accounting item is more uncertain or difficult to quantify with precision than the expected economic life of a class of assets. If the conservatism principle applies anywhere, it applies in this context. *See* Lee Reply Decl. ¶¶ 13-14 (citing FASB, Statement of Financial Accounting Concepts No. 2, *Qualitative Characteristics of Accounting Information* (May 1980) ¶ 85). And the Bells' suggestion that the accounting profession has now abandoned conservatism is particularly insupportable in the wake of the numerous recent high-profile accounting scandals involving Enron and other publicly trade companies—scandals that have only reinforced the instinctive conservatism of the accounting profession. Lee Reply Decl. ¶ 15.

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[32] *Petition of WorldCom, Inc., Pursuant to Section 252(e)(5) of the Communications Act for Expedited 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 *et al.*, 11 Tr. 3314 (Oct. 23, 2001) ("*Virginia Arbitration*"). In an attempt to salvage his testimony, he offered interpretations of the conservatism principle that would have essentially drained it of all meaning. Nothing in the GAAP pronouncements cited by Dr. Lacey suggests that the accounting profession intended to nullify the conservatism principle in this way. *See* Lee Reply Decl. ¶ 12.

Indeed, the Bells themselves clearly do not believe that GAAP's aggressively conservative depreciation lives are accurate. In recent years, the Bells have repeatedly supplemented their quarterly earnings reports with so-called "non-GAAP reconciliations." *See* Lee Reply Decl. ¶ 17. These "reconciliations" are offered to give investors a more useful picture of the company's financial condition. Both BellSouth and Qwest have provided reconciliations to their GAAP figures for "asset impairments" and "depreciation"; and in each case these companies have made clear to investors that GAAP has overstated the extent to which its assets are "impaired" or "depreciated." *See id.* This is simply further confirmation that GAAP is far too conservative to be used as the standard for depreciation under TELRIC.

Finally, the Bells' claim that they would have no incentive to understate depreciation is also false. Lacey (Verizon) Decl. ¶ 31. Although the adoption of longer depreciation lives will increase a company's *reported* earnings in the short run, this accounting change does not increase a company's *long-term* earnings or cash flows at all. In contrast, adoption of shorter financial book lives *can* increase a company's *long-term* earnings if regulatory commissions adopt them and thereby agree to higher UNE prices. Lee Reply Decl. ¶ 16. The slight increase in reported earnings would be well worth the erection of a barrier to competitive entry by CLECs, which would allow the ILEC to maintain supranormal revenues and profits. *Id.*

G. Expense Factors

For eight years, in hundreds of litigated UNE rate proceedings, forward-looking expense estimates have been based on cost factors that are determined by applying historical expense/investment ratios to cost model estimates of forward-looking investment. All cost models use this approach, including models developed by both CLECs and ILECs in state UNE proceedings as well as the Commission's own synthesis cost model. As Mr. Klick explains, this is also the standard approach used in other network industries, including those that have been