demand mean that an efficient firm can manage risk only for the finite period for which it reasonably can predict the mix of forward-looking technologies that it should efficiently use, based, as the Commission has explicitly stated, on technology currently being deployed in the network.[18] The planning period for a TELRIC study should thus be only as long as the period for which reasonable predictions concerning technological and demand change can be made. (*See* VZ-VA Ex. 101 at 17-18, 28-29; VZ-VA Ex. 117 at 23-24.)

Ultimately, by asserting that a long-run study requires the incumbent to "assume away" all its existing network and pretend it is building from scratch, AT&T/WorldCom completely distort the concept of "long run." If the incumbent has made an efficient decision not to replace a network element (either today or over an economically reasonable future planning period), it has done so because the long-run costs of retaining the existing technology are *lower* on a forward-looking basis than the costs of replacing it with the new technology. It makes no sense, then, to further lower the incumbent's UNE prices to reflect any short-run cost efficiencies of the new technology that it has appropriately determined not to install. Yet that is what AT&T/WorldCom propose to do.

3. AT&T/WorldCom's Assumption of Repeated, Instantaneous, and Complete Network Replacement Is Unjustifiable.

Petitioners' extreme, instantaneous, and successive replacement model is neither economically correct nor required by TELRIC. AT&T/WorldCom contend that long-run, incremental costs should be modeled as if firms repeatedly, at defined intervals, instantly replace their entire networks with the latest technology without regard to whether the equipment they are replacing was bought last month or last decade, and regardless of uncertainty about future

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[18] *See, e.g.*, *Local Competition Order* at 15848-49 ¶ 685; 47 C.F.R. § 51.505(b)(1).

changes in technology and demand. Indeed, they expressly argue that the efficient rate of network replacement and expansion is "irrelevant" to the determination of the forward-looking costs on which UNE prices are based. (AT&T/WCom Ex. 11 at 26.) As a result, the MSM does not estimate the forward-looking costs that Verizon VA or any other efficient firm would incur, and its position is plainly at odds with economic principles and with the goal of long-run cost minimization.

AT&T/WorldCom's vision is based on the unrealistic assumption that there always will be a carrier capable of instantaneous, ubiquitous deployment of new technology and network design. In Petitioners' view, Verizon VA's costs cannot exceed the costs of this hypothetical carrier's instantaneous new network. This construct is absurd. In no real-world, capital-intensive market are forward-looking costs driven immediately down to costs based on the assumption that the current least-cost technology could be deployed instantaneously and ubiquitously throughout a network. As Dr. Hausman explained, one of the many unrealistic assumptions underlying this view is that the local exchange market is "perfectly contestable" so that no assets are sunk and competitors can enter and exit with minimal or no cost. (VZ-VA Ex. 111 at 6-7.) AT&T/WorldCom's economist, Ms. Murray, conceded both that this was her assumption and that it was unrealistic:

> My assumption is that we are trying to price things as close as possible to what would exist if there were not barriers to entry and high cost of entry and exit. But I do recognize that the reality in this market is that there will be some entry barriers because of the economies of scope and scale for the foreseeable future.

(Tr. at 3066-67.) As Dr. Shelanski subsequently observed, "[t]here's been a lot said here about assuming or pretending . . . that there's quick entry and exit, and that there are not sunk costs, but

that's the world we are in here, and to ignore the reality of this market I think will lead to inefficient results." (Tr. at 3163-64.)

AT&T/WorldCom's TELRIC theory is further flawed because it essentially assumes that carriers operate in a static environment. They assume that the mere fact that a new technology exists means that a carrier would immediately deploy it — and deploy it in place of the existing technology throughout the entire network. Their assumption of instantaneous and ubiquitous deployment of new facilities makes no sense where technology is constantly evolving. As discussed above, in such a market, a carrier will minimize costs over the long run by deploying new technologies incrementally, not ubiquitously. As a result, an efficient competitor will have a mix of technological vintages, not the ubiquitous new technologies that AT&T/WorldCom posit. Petitioners make a similar error in failing to recognize the effects of uncertainty and changes in demand. In reality, even the most efficient carriers add capacity over time to accommodate the uncertainty of growing or shifting demand through "add-on modules" or other incremental additions. Thus, for example, as the Commission itself acknowledged to the Supreme Court, "TELRIC does not assume that an efficient carrier would provide the switching element with large-capacity switches, rather than with a mix of smaller switches and so-called 'add-on modules.'"[19/]

The problems in AT&T/WorldCom's TELRIC theory are compounded by the successive nature of the replacement they envision. The Commission decided to consider costs in these proceedings a mere two years after the Virginia Commission set UNE prices based on TELRIC. Yet AT&T/WorldCom posit that UNEs should be priced here by starting on a completely blank slate and ignoring both Verizon VA's existing network and whatever assumptions the Virginia

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[19/] FCC Reply Brief at 9 n.7; *see also* VZ-VA Ex. 117 at 5-7, 23.

Commission made in setting prices just a short while ago — and that the result should be loop rates approximately $7 less than the TELRIC rate set just two years ago. AT&T/WorldCom undoubtedly will insist on hypothesizing yet another new, instantaneous, and ubiquitous network in a few years when the next UNE pricing proceeding is held in Virginia. This successive replacement theory is nothing short of absurd. To take just one example, AT&T/WorldCom propose here to size switches and other facilities, such as feeder plant, based on current demand. Three years from now, any real-world carrier that had built a new network today would, except in the most unusual circumstances, use incremental capacity additions to take account of growth. But AT&T/WorldCom's theory would wipe the slate clean and hypothesize the construction of an entirely new network using facilities that would be perfectly configured and sized to meet whatever demand happened to exist then. (*See, e.g.*, Tr. at 3117-19 (explaining that AT&T/WorldCom's model would produce "a completely different route structure" if were re-run in a few years) (Tardiff).)

In the end, any real network would always be considered inefficient compared to the hypothetical ideal AT&T/WorldCom posit. But there are reasons the hypothetical competitor AT&T/WorldCom envision does not exist in the real world and has no place in a legitimate economic analysis. The assumptions and behavior posited by AT&T/WorldCom are not rational and cost-minimizing over the long term; to the contrary, they would produce significant costs that AT&T/WorldCom simply ignore. As discussed below, the cost of capital and depreciation for a carrier that behaved as Petitioners assume would be extraordinarily high. And the true construction and material investment costs for instantaneous replacement would be extremely high. As AT&T/WorldCom witness Catherine Pitts acknowledged, if "an entirely new network has to be placed . . . . [t]he prices would not look the same because of supply and demand"; thus,

AT&T/WorldCom's cost studies — which do not account for the impact of that supply and demand — do not represent a "practical application of what the prices are." (Tr. at 5132; *see also* VZ-VA Ex. 101 at 16.)

An economically appropriate interpretation of TELRIC should demand, to the extent possible, prices that are set based on the efficient costs of a rational carrier operating in the real-world. The instantaneous, ubiquitous, successive replacement model put forth by AT&T/WorldCom is about as far from that as possible. As Drs. Shelanski and Tardiff summarized, "[t]he notion of a perfectly sized, instantaneous network, coupled with successive reconstructions, is the essence of [AT&T/WorldCom's] unrealistic approach. This approach is not based on an obtainable long-run result. It ignores that all . . . networks are deployed over time in an uncertain world." (VZ-VA Ex. 117 at 6-7.) Thus, AT&T/WorldCom's model is manifestly not the appropriate starting point for determining costs for purposes of UNE pricing.

4. New Technologies Do Not Lower the Value of Existing Facilities in the Way AT&T/WorldCom Assume.

AT&T/WorldCom attempt to rescue their TELRIC model on the theory that the cost of new technologies determines the value of a carrier's network, even if the carrier efficiently chooses to retain existing assets. While the cost of new technologies may have a constraining effect on the value of existing facilities, that constraint will in many cases not actually *lower* the value. Even if in some cases it does, AT&T/WorldCom overlook or ignore a number of factors that will limit, if not eliminate, the scope of that effect.

As an initial matter, even if the availability of new technology may constrain the value of the technology already in place, it does not follow that replacement of the old technology is warranted. As Dr. Shelanski observed, "even in a competitive market, it's not necessarily true that new technology that has some efficiency gains gets adopted; and certainly not true that these

firms that compete in the market that have a mix of technological vintages all fully replace." (Tr. at 3182.) In particular, the existing asset may still have forward-looking value, and factors such as uncertainty in future demand and technological development may make it, in Ms. Murray's words, "entirely rational" for a carrier such as Verizon VA to replace facilities incrementally. (AT&T/WCom Ex. 11 at 17.) In other words, not having to start from scratch, Verizon VA has a lower-cost alternative to instantaneous, static optimization with the latest technology. This same analysis holds true for any other real-world firm in a competitive market. As noted above, barring unusual circumstances, firms in a competitive market will provide service using a mix of technological vintages. The result is that prices in a competitive market will not, as AT&T/WorldCom assume, be instantaneously reduced to the costs of a hypothetical firm always having the most current technologies, ideally configured to serve existing demand. (*See* VZ-VA Ex. 117 at 12-13.)

This is especially true because the market at issue in this proceeding is not the sale of telecommunications *assets*, but *services* provided over such assets. As Dr. Shelanski noted, "Telecommunications companies are not equipment vendors any more than airlines are airplane vendors. . . . The availability of [a] new switch [due to new technology] doesn't necessarily translate network-wide and industry-wide into a decline in service prices to sort of the short run level of the new switch." (Tr. at 3069; *see also* VZ-VA Ex. 117 at 13-14.)

For example, if Boeing were to develop a new, more efficient commercial aircraft, no airline would instantly replace all the planes in its fleet with the new type of aircraft. Moreover, the ticket prices that airlines charge would not be instantaneously reduced to reflect the lower operating costs of the new type of plane. As Dr. Shelanski explained, "the fact that I have one of these new Boeings in my fleet, if I've made the efficient forward-looking investment calculus

that it's only worth replacing one of these, it does not necessarily mean I think that the prices of all the seats I sell necessarily falls to reflect all the savings of the new technology." (Tr. at 3180; *see also id.* at 3182 ("The fact that all of these competing firms found it efficient to buy three or four of the new planes doesn't mean that all of them will necessarily drop their seat prices to act as if they had those efficiencies fleet-wide.") (Shelanski).)

Similarly, even if one assumes that the development of a new, efficient switch would constrain the resale value of a single older switch, it does not follow that the rate for leasing capacity on an older switch that is part of an existing telecommunication network would instantaneously be reduced to the cost of leasing capacity on a hypothetical network having all new switches. As Dr. Shelanski noted, "the fact that I buy one advanced switch pursuant to an efficient forward-looking investment calculus does not mean that the price I can charge for the services I provide over all the rest of my switches falls to this more efficient cost level of the new switch." (Tr. at 3179.) Given that *no other* carrier is likely to have all new switches in its network, the first carrier would not be competing with any service provider offering service on — and at the costs of — a network with all new switches; accordingly, it would be economically irrational for its costs to drop to that level.

Finally, any discussion of the effect of new technology on the value of the old technology (and network) must take into account the *full* cost of the new technology, including the effects of the real-world and regulatory risks a carrier must face. But, as discussed below, AT&T/WorldCom fail to account for how, once correct capital costs and depreciation are factored into their model, the hypothetical new network costs of a new entrant would relate to the costs of an efficient, real-world, forward-looking firm. In other words, "the new network, hypothetically constructed, will put a cap on the value of the ILEC's existing network, but that

cap may be enormously, enormously high, and you have to calculate the capital costs correctly in this context." (Tr. at 3116 (Shelanski); *see also* VZ-VA Ex. 117 at 14.) Once all the new entrants' costs are appropriately taken into account, AT&T/WorldCom's blithe assumption that new technologies instantly lower the value of an efficient carrier's existing network is extremely suspect. Dr. Shelanski observed:

> If it is economically rational for those other competing firms in the market that have a mix of technological[] vintages not fully to replace, that means that it's lower cost for them, on a forward-looking basis, not fully to replace. How a new firm is going to come in with an entirely new fleet and have a cost structure that allows it to compete against these competing firms with the mixed technological vintage and the lower forward-looking cost is a mystery to me.

(Tr. at 3183.)

5. AT&T/WorldCom's Depreciation Rates and Cost of Capital Are Inconsistent with Their Instantaneous Replacement Model.

Even if a market like that assumed by AT&T/WorldCom actually existed — in which a hypothetical network with ideally efficient technologies could instantaneously sprout up at any time — the depreciation and capital costs of investments in new technologies would be extremely high, a fact that AT&T/WorldCom entirely ignore. Indeed, their analysis of these inputs fails on two levels. First, as their economist has now conceded, Petitioners inexplicably and wrongly base their cost of capital and depreciation on the assumption of a monopoly market, even while positing other costs on the basis of a hypercompetitive market.[20/] Second, AT&T/WorldCom's extreme assumptions of instantaneous, successive, and ubiquitous replacement would require an even higher cost of capital and depreciation than what would exist

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[20/] As discussed elsewhere, Petitioners use the same inconsistent approach to argue that Verizon VA would have no need to advertise to promote its UNE business in the forward-looking market and that resale costs, for instances, thus cannot include advertising costs.

in a real-world competitive market, and certainly higher than what Petitioners propose for use in these proceedings. Thus, Petitioners' assumptions expressly contradict the Commission's direction that the cost of capital must take into account both competitive *and* regulatory risk.

TELRIC costs, including depreciation and cost of capital, must be calculated using consistent assumptions about the relevant forward-looking environment. As Dr. Shelanski explained,

> If you're going to assume that the firm in the market is facing competition from this hypothetical new entrant, you have to treat the entrant as coming into that same economic environment with the same anticipated entry from other firms, and the same risks and costs of capital that are faced by the incumbents as soon as the competition . . . arrives.

(Tr. at 3165; *see also* VZ-VA Ex. 110 at 7-11; VZ-VA Ex. 117 at 16-17.) AT&T/WorldCom's witness, Ms. Murray, when pushed by the Commission staff, eventually conceded that "all the model assumptions have to be consistent. So, to the degree that it requires a competitive market to get all of the other assumptions, that would be true for the cost of capital as well." (Tr. at 3202; *see also id.* at 3201, 3408-09.)

Notwithstanding this concession, Dr. Shelanski observed that, "in [AT&T/WorldCom's] model what they do is posit an ILEC that faces an ideal new competitor, and the ILEC has to do all kinds of things because it knows that this entry is coming. And strangely, the new entrant seems to have costs of capital that aren't the costs of capital of a new entrant into a competitive market that [] itself has to face the prospect of entry." (Tr. at 3115.) Thus, as discussed in greater detail below, AT&T/WorldCom's cost of capital and depreciation are inexplicably based on a monopolistic environment, which is entirely inconsistent with their economic theory and the rest of their model.

But the problem does not stop there. AT&T/WorldCom do not just assume any ordinary competitive market. Instead, as discussed above, they make far-reaching and unrealistic assumptions about a market in which firms are subject to successive entry by competitors who instantaneously deploy ubiquitous networks with the latest technologies. "Depreciation allowances and risk-adjusted costs of capital may be particularly high when a firm is subject to a regulatory process that periodically assumes the network is successively and instantaneously replaced with new technology." (VZ-VA Ex. 101 at 15; VZ-VA Ex. 110 at 10 (under the "instantaneous replacement scenario the exposure to . . . risk and uncertainty is much higher than an incremental replacement model, and thus requires a correspondingly higher risk premium" in the cost of capital).) The Commission itself has likewise recognized that "an appropriate cost of capital determination takes into account not only existing competitive risks . . . but also risks associated with the regulatory regime to which a firm is subject."[21/]

Under the instantaneous replacement model, because the incumbent is assumed to be subject to entry at any time by an optimal, "best-available" network, the risk premium it must factor in to account for unanticipated technological change, demand uncertainty, and similar factors will be significantly higher than in a realistic competitive market. (VZ-VA Ex. 101 at 13-14.) In addition, where technological change is frequent, depreciation lives under a total replacement model will be short and the rate of depreciation will be high in order for the firm fully to recover its investment during the allowable interval. (VZ-VA Ex. 101 at 14-15.) In addition, such a model must account for economic depreciation resulting from any price decreases for elements and/or the inputs needed to produce those elements. (VZ-VA Ex. 111 at

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21/ FCC Reply Brief at 12 n.8.

5, 12-15.) These issues have a particularly pronounced effect when a firm is subject to a regulatory process that assumes the network is *successively* revalued. (VZ-VA Ex. 101 at 15.)

As Dr. Hausman explained, given the sunk costs at issue in building telecommunications networks, the capital costs under such a full-replacement rule would be, after the necessary risk and depreciation adjustments, two to three times the costs of capital for efficient, incremental network investment. Indeed, to take account of the effect of sunk costs, the estimated TELRIC values in any instantaneous replacement model such as the MSM (after being corrected to remedy all the other deficiencies) would need to be increased by factors on the order of 97% to 120%, depending on the particular element and the proportion of sunk costs to the total costs of providing the element. (*See* VZ-VA Ex. 111 at 5-20.) Thus, even the cost of capital and the depreciation assumptions made by Verizon VA are too low.

B. To Have Economic Significance, UNE Costs Must Reflect the TELRIC Costs of a Robust, Functional Network.

The Commission has explained that if the costs produced by a TELRIC analysis are to have any value as economic signals, they must approximate those that "carriers in competitive markets would *actually* consider in making decisions concerning entry, pricing, and investment."[22/] It necessarily follows, then, that the relevant costs are those that the CLEC would incur to either provision its own functional network or obtain functioning UNEs from the incumbent. While TELRIC has been interpreted so as to preclude using a real estimation of the latter, UNE costs under TELRIC must at least be based upon a network that is actually capable of providing service.

22/ FCC Reply Brief at 2 (emphasis in original).

Only the Verizon VA cost studies produce a result consistent with this requirement.[23] The forward-looking assumptions that are made to optimize Verizon VA's network for TELRIC costing purposes are informed by real data concerning the network and real experience in operating the network. As discussed in more detail below, the utilization factors that Verizon VA uses in its studies are based on observed fill after years of operating the network — fill levels that have remained stable since the inception of price caps and that should not change as a result of any design or technology assumptions in either party's model. These utilization factors represent Verizon VA's informed judgment regarding the amount of spare capacity that is required to meet the network's demand and operational requirements. The MSM's target fills, in contrast, are purely hypothetical; there is no evidence that any real network could operate at those levels. To the contrary, as Mr. Gansert testified, reducing average utilization across the network would significantly degrade service quality and impair the network's ability to operate as required. (Tr. at 4575; VZ-VA Ex. 122 at 125.)

Similarly, as is also discussed in more detail below, Verizon VA's "TELRIC network" assumes use of the routes and structure (*i.e.,* buried, underground, or aerial cable) that are in the Virginia network today and that will and should not change. These route and structure choices reflect Verizon VA's experience in efficiently designing a network that can serve all customers throughout the Commonwealth. No evidence in the record suggests that there are more efficient ways to route feeder and distribution cable, or that there are more efficient structure mixes that would accord with, for example, the actual geography of Virginia, current rights-of-way requirements, environmental concerns, or ordinances concerning use of buried versus aerial

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[23] This issue is addressed throughout Verizon VA's testimony, including VZ-VA Ex. 109 at 1-124; VZ-VA Ex. 108 at 1-65; and VZ-VA Ex. 122 at 60-74.

cable. (VZ-VA Ex. 122 at 61-65.) Moreover, Verizon VA's estimates concerning the correct technology mix to deploy in the forward-looking network are informed by the company's experience with the deployment of technology in a real network providing a variety of services, including unbundled UNE loops and non-switched services. AT&T/WorldCom, in contrast, produce lower costs by arguing for a network that lacks facilities and technology (*e.g.*, universal digital loop carrier) that is critical to providing many services that Verizon VA's network must offer. (VZ-VA Ex. 122 at 77-80.) Similarly, Verizon VA's non-recurring cost model is based on a forward-looking evolution of the real network, whereas Petitioners insist on a network with 100% dedicated plant that would make provisioning service extremely expensive and unwieldy. (VZ-VA Ex. 116 at 26-32, 39-44.) Petitioners also "model away" or reduce the costs of line conditioning by suggesting that Verizon VA could condition lines in batches, which, if possible at all, would leave a large number of lines unusable to provide basic voice service. (VZ-VA Ex. 124 at 135-37.)

Moreover, the MSM offered by Petitioners analyzes a partial network that is not even designed to provide all the services at issue in these proceedings. In this respect, the MSM operates no differently from the Synthesis Model, which, as WorldCom argued before the Supreme Court, "*does not include costs for all of the equipment necessary to provide unbundled elements.*"[24/] For example, the MSM fails to account for the distribution facilities necessary to serve existing customers; it designs an "inefficiently small amount of feeder facilities and an impossibly small amount of distribution facilities"; it similarly undersizes drop wires. (VZ-VA Ex. 109 at 25, 40.) It builds loops that are not capable of providing high speed services and

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[24/] Brief for Respondents WorldCom, Inc., the Association for Local Telecommunications Services and Competitive Telecommunications Association, *Verizon Communications, Inc., et al. v. Federal Communications Commission, et al.*, Case No. 00-511 (2001).

switches that have insufficient capacity and lack the necessary power to operate. (VZ-VA Ex. 109 at 19, 50.) The MSM also fails to account for the costs of the electronic multiplexing equipment necessary for special access DS-1 and DS-3 services to function and the electronic equipment that would be required to provide IOF service under any model. (VZ-VA Ex. 109 at 37, 61-63.) The low costs produced by the MSM accordingly come at the expense of accounting for many of the facilities and equipment that a real network must contain.

In sum, the theoretical network designed by the MSM could never function to provide services to customers because no carrier would ever build a network that could not provide the basic required services, it would be nonsensical to consider the costs of that network in determining — or even approximating — Verizon VA's TELRIC costs. A model based on such a network would always substantially understate the costs of building a real facilities-based network even more than TELRIC requires, and would produce economic signals significantly skewed toward UNE-based, rather than true facilities-based entry. The only approach that can provide even remotely accurate economic signals is to analyze a network that is at least based on data related to an operational network. Such a network thus should account for the need to serve all customers, fulfill the requirements of the Virginia commission, and provide service in the face of demand fluctuations. Verizon VA's forward-looking TELRIC network, while not the network Verizon VA actually will have in place in the future, at least accounts for the realities Verizon has experienced serving the Virginia market.

Indeed, several state commissions that have arbitrated interconnection proceedings have refused to consider models proposed by AT&T and others that failed to take into account data that necessarily would characterize the forward-looking network of a carrier serving customer

demand in the same footprint as the incumbent.[25] As one state commission noted, estimating the incumbent's forward-looking UNE costs based on an entirely hypothetical network would be as nonsensical as "costing Greyhound Bus service using investments in large sedans."[26]

III. GLOBAL STUDY INPUTS

Verizon VA submitted both recurring and non-recurring studies in these proceedings, as well as a study of the appropriate wholesale discount that should be applied to Verizon VA's retail rates when CLECs purchase Verizon VA service for resale under section 251(c)(4) of the Act. While each of the studies is discussed below, most of them utilize one or more of the following so-called "global" inputs.

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[25] *See, e.g., Re Bell Atlantic,* No. DE 97-171, 210 P.U.R.4th 363, 2001 WL 1002726, at 87, 91, 97 (N.H. P.U.C. July 6, 2001) (rejecting generic model because it did not reflect actual network design and customer locations and could not be "adjusted to account for all New Hampshire specifics" and was based on "incorrect assumptions for New Hampshire"); *Re Investigations of Communications Infrastructure of State of Hawaii,* No. 16775, 1999 WL 99325 (Haw. P.U.C. Jan. 7, 1999) (rejecting generic model that identified costs of a theoretical company in a region the "general size and population of Hawaii"); *Re Govern Open Access to Bottleneck Services and Establish a Framework Rulemaking Proceeding,* 1998 WL 1739407, at *1 (Cal. P.U.C. Feb. 19, 1998); *AT&T Communications of the South Central States, Inc.*, 20 F. Supp. 2d 1097, 1101 (E.D. Ky. 1998) (upholding use of the ILEC's TELRIC-based cost model because it reflected costs the ILEC was likely to incur); *Re General Proceeding to Determine Permanent Pricing for Unbundled Network Elements*, 1999 WL 719493, at 32, 34 (N.C.U.C. Aug. 28, 1999); *In re Board's Review of UNE Rates, Terms and Conditions of Bell Atlantic New Jersey, Inc.*, Docket No. TO00060356, Summary Order of Approval at 4 (Dec. 17, 2001) ("Our conclusion is supported by the testimony of both Verizon and the Ratepayer Advocate, who suggest that the HAI Model, sponsored by AT&T, failed to use TELRIC-compliant inputs and assumptions. It is the Board's belief that such an approach would result in Verizon subsidizing CLEC entry into the local markets and eliminate any incentive for CLECs to invest in their own facilities.").

[26] *Re Southern New England Tel. Co.,* No. 96-09-22, 1997 WL 325986, at *45 (Conn. Dep't Pub. Util. Ctrl. Apr. 1, 1997).

A. Depreciation Lives

Depreciation lives must be consistent with the forward-looking assumptions made in any given study.[27] Verizon VA's cost studies use the same depreciation lives that it uses for financial reporting purposes. Significantly, while those lives are the correct ones for use in an economically correct forward-looking cost study, they are actually *longer* than is appropriate for use in an instantaneous replacement model. In contrast, AT&T/WorldCom's proposed lives, established in 1994, cannot possibly reflect the future risks of local competition and technological change, let alone the added regulatory risk inherent in TELRIC. Moreover, their own depreciation witness, Richard Lee, conceded that AT&T/WorldCom's lives are *inconsistent* with the TELRIC assumption of a competitive market. Those lives are even more absurd in the context of Petitioners' successive and instantaneous network replacement methodology, which would require use of significantly shorter economic lives than those any party to these proceedings uses.

1. Verizon VA's Depreciation Lives Are TELRIC-Compliant, While AT&T/WorldCom's Admittedly Are Not.

a) Verizon VA's Depreciation Lives Are Forward-Looking

Verizon VA used depreciation lives in its studies that conform to Generally Accepted Accounting Principles (GAAP). (VZ-VA Ex. 105 at 13-15.) Specifically, Verizon VA used the same economic lives and future net salvage values in its studies as it used in its 2000 financial reports to its shareholders. (VZ-VA Ex. 106 at 1-3 and Attachment A.) As Verizon VA witness Dr. Lacey explained at the hearing and in his written testimony, GAAP lives are intrinsically

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[27] This is discussed in VZ-VA Ex. 105 at 1-17; VZ-VA Ex. 119 at 1-10; VZ-VA Ex. 119 at 1-8; VZ-VA Ex. 106 at 1-21; VZ-VA Ex. 114 at 1-14; VZ-VA Ex. 120 at 1-22.

forward-looking: they are based upon the expected time period, looking forward, during which the assets will produce economic benefit. (VZ-VA Ex. 105 at 6.) GAAP lives reflect the principle that the economic life of an asset may be shorter than its physical life because technological changes, competition, and other factors may decrease the period during which the asset will produce economic value. (*See* VZ-VA Ex. 106 at 15-17.) To ensure that the assessment of an asset's depreciable life accounts for such change, GAAP lives are not fixed. Instead, they are reassessed annually or even more frequently to reflect events and circumstances that affect that economic life. (*See* VZ-VA Ex. 105 at 4; Tr. at 3323; VZ-VA Ex. 106 at 5.) Given the ever-increasing pace of technological change in the telecommunications market, as well as growing competition from all sources, the use of GAAP to determine the depreciable lives for telecommunications technology is particularly appropriate and forward-looking.

The current pace of technological change supports Verizon VA's GAAP lives. For example, as the switching market has grown more competitive,[28/] carriers, including Verizon VA, have been developing substitute, new components of the switch with increasing frequency, reducing the overall average depreciable life of the digital switch. (VZ-VA Ex. 120 at 7-12.) Or, in AT&T/WorldCom witness Ms. Pitts' words, "[t]echnical obsolescence . . . is exactly what is shortening the life span" of the switch. (Tr. at 5276.) Digital switching is also being overtaken by packet switching, which offers customers the advantage of converged voice and data capabilities. As AT&T/WorldCom witness Ms. Murray said when discussing switching costs, the market will change, "because you have to point out to the vendor that you're now looking at the decision to go to packet in the near future . . . . you're not going to be all that

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[28/] For example, more than 16 CLECs have placed over 40 switches in Verizon VA's territory. (VZ-VA Ex. 103 at 4.)

thrilled about putting in a new digital switch." (Tr. at 5279-80.) Verizon VA expects the growing competition among broadband providers to advance packet switching capabilities and render more and more of its digital switching capacity obsolete. This trend is expected to develop rapidly within the next 10 years — corresponding with the life Verizon VA used for digital switching equipment and with the 10.5 year digital switch life the Commission recently adopted for Verizon South, Inc. (VZ-VA Ex. 120 at 2; *see also* VZ-VA Ex. 103 at 4-5.) Yet AT&T/WorldCom propose a depreciation life for the digital switch of 17.5 years. (*See* AT&T/WCom Ex. 3, Attachment 6.)

The same is true for SONET circuit equipment and copper cable, which both are designed primarily for voice communications and are likely to become marginalized as the need for converged voice and data communications develops. Despite Mr. Lee's suggestion that DSL is revitalizing copper, it is clear that copper is no longer the technology of choice and will be increasingly supplanted as carriers pursue fiber-to-the-home. As Mr. West points out, CLECs have laid 2000 route miles of *fiber* in Virginia, not copper. (VZ-VA Ex. 103 at 4.) Extending the life of copper, as AT&T/WorldCom propose, would be entirely out of sync with the dynamic telecommunications market. (VZ-VA Ex. 120 at 14-16.) This is equally true for the rest of the network. Competitive carriers are using a number of alternative technologies to provide telecommunications service without using the network of the ILEC. As AT&T/WorldCom witness Richard Lee testified at the hearing, such "facilities bypass" has a direct impact on the economic lives of the ILEC's plant.[29/] (Tr. at 3360-61.)

[29/] Mr. Lee admitted that if these proceedings were for the purpose of setting UNE rates for Verizon's other ILEC properties in Virginia, he would recommend a 10.5 year life for digital switches, rather than the 18 year life that he is recommending here. (Tr. at 3270.)

b) AT&T/WorldCom's Lives Are Backward-Looking and Inconsistent with TELRIC.

In contrast to GAAP lives, the depreciable lives recommended by AT&T/WorldCom make no sense whatsoever and are inherently backward-looking. Mr. Lee proposes that this Commission apply the depreciation lives it prescribed in 1994, based on data accumulated in the preceding years. (Tr. at 3256.) The Commission set these lives before the 1996 Telecommunications Act even was conceived, and not surprisingly, the Commission has shortened the range of permissible lives several times since then.[30/] (VZ-VA Ex. 114 at 4; Tr. at 3256.)

As an initial matter, Mr. Lee expressly admitted that the depreciation lives he recommends are *not* based on a hypothetical TELRIC world, (Tr. at 3371), but on a world in which the ILEC is the sole provider of local service. (Tr. at 3396.) Indeed, it would be absurd to believe that lives established by the Commission in 1994 were based on the assumptions inherent in TELRIC. Mr. Lee conceded this point, agreeing that the lives he recommends were established before Virginia law even permitted competing carriers to offer local service, let alone "before Verizon Virginia had to unbundle its network and lease it to its competitors at TELRIC rates." (Tr. at 3264-66.)

But this approach is manifestly inconsistent with TELRIC *and* the MSM model. As AT&T/WorldCom witness Ms. Murray herself conceded, when setting depreciable lives, "you have to consider the competitive effects of a regime that has TELRIC pricing that allows for

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30/ Not surprisingly, Mr. Lee tends to propose lives that are *longer* than those prescribed since 1994 by the FCC, and in virtually all other cases, he proposes lives on the higher end of the FCC range. (VZ-VA Ex. 114 at 8.)

repricing every X period of time based on the diminution of the value to the wholesale resource because of the technology change." (Tr. at 3408-09.) Thus, the TELRIC approach clearly mandates *shorter* lives than those proposed by AT&T/WorldCom. Moreover, under the AT&T/WorldCom assumption that the network must be evaluated every three years as though a new entrant had instantaneously built a brand-new, ubiquitous network, the depreciable life of every network asset would have to be even shorter than those that would apply in a real world competitive market. (*See* Tr. at 3170-73 (Shelanski).) AT&T/WorldCom's failure to account for the impact of their model's assumptions on depreciation makes the MSM all the more inconsistent and flawed. Indeed, even the lives used by Verizon VA are too conservative for use in the MSM.

The lives recommended by Mr. Lee not only fail to account for the hypothetical TELRIC construct, they fail to account even for the very real impact that current and expected technological change and competition have had on the depreciable lives of telecommunications technology to date. (VZ-VA Ex. 114 at 3-4.) Indeed, Mr. Lee fails even to acknowledge that the Commission itself *shortened* the range of depreciation lives it recommended in 1994: once in 1995 and then again in 1999. (VZ-VA Ex. 114 at 5.) Although Mr. Lee tried to defend the FCC's prescribed lives as "forward-looking in '94" (Tr. at 3358), they cannot be considered even remotely "forward-looking" today. They do not account for the impact of technological change since 1994, the competition that has developed as a result of the 1996 Act, and the extent to which competition is expected to develop in coming years.

Mr. Lee offered only two arguments in support of his proposed lives, both of which are unavailing. First, he argued that the 1994 lives must have been forward-looking and must have comprehended the ensuing competition because Verizon VA's depreciation reserve has increased

since 1994 — suggesting that there is some necessary relationship between the reserves and whether the depreciation lives are forward-looking. But Mr. Lee's entire argument concerning depreciation reserve is simply a red herring, unrelated to the accurate estimation today of *forward-looking* lives, since reserve analysis is based on historical retirements. As Mr. Lee himself has pointed out, the Commission has not looked to historical retirements in setting depreciation lives since 1980. (*See* AT&T/WCom Ex. 9 at 12.)

In any case, as Dr. Lacey observed, Mr. Lee's conclusions regarding depreciation reserve are simply incorrect. The depreciation reserve naturally increases as the depreciated asset ages, regardless of whether the depreciable life is forward-looking. (VZ-VA Ex. 113 at 5.) Moreover, Verizon VA's depreciation reserve also has increased as a result of the addition of new assets with shorter lives, which increases the size and the percentage of the depreciation reserve. (VZ-VA Ex. 113 at 5-6.) As a result, the increase in Verizon VA's depreciation reserve presents no reason to assume that 1994 lives are forward-looking. Indeed, as Dr. Lacey explained, the current depreciation reserve is probably not growing fast enough. For example, AT&T's depreciation reserve, which is the result of GAAP lives, has increased far more rapidly and significantly than Verizon VA's. (VZ-VA Ex. 113 at 8-10.)

Mr. Lee next suggested that competition may actually *lengthen* depreciable lives by providing Verizon with a UNE market for its network assets, even while competitors might be eroding Verizon VA's retail customer base. (Tr. at 3362-63.) But as Commission Staff observed, the TELRIC analysis assumes full-blown facilities-based competition, meaning that Verizon VA would be assumed to have facilities-based competitors, whose own offerings would compete with, and thus *decrease* Verizon VA's opportunity to lease UNEs. (Tr. at 3368-69; 3372-73.) AT&T/WorldCom witness Ms. Murray in fact conceded that facilities-based

competition would directly shorten Verizon VA's depreciation lives. (Tr. at 3402-03.) Ironically, she suggested that this impact could be avoided if UNE-based competition, rather than facilities-based competition, were encouraged through reduced rates. (Tr. at 3403-04.) Even if that were true (and it is not), the point is absurdly circular and inconsistent with AT&T/WorldCom's overall approach. Petitioners' entire case is based on the existence of a hypothetical competitor able to build out the full network at absurdly low prices. Yet Ms. Murray essentially asks the Commission to assume away that facilities-based competitor and instead set depreciation lives based on the assumption of only UNE-based competitors. As Commission Staff noted, Ms. Murray essentially asks the Commission to "assume a competitive market, but the competitor is also a monopoly provider of [UNEs]." (Tr. at 3406.) Clearly, the more forward-looking, consistent approach is the one employed by Verizon VA.

2. Verizon VA's Depreciation Lives Are Accurate and Reliable.

The Commission itself has recognized the viability of GAAP lives in costing analyses. In recent cases under section 271 of the Act, the Commission approved the use of GAAP lives by SBC (in Kansas and Oklahoma) and by Verizon (in Pennsylvania).[31/] (*See* VZ-VA Ex. 114 at 3.) As the Commission has observed, "a state may find that a depreciation schedule such as [one based on GAAP] is appropriate, and AT&T has failed to indicate why it would not be so here."[32/]

Mr. Lee nonetheless has sought to discredit the use of GAAP lives by suggesting they are biased toward choosing shorter lives than is appropriate. But he performed no study whatsoever

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[31/] *Kansas-Oklahoma § 271 Order* at ¶ 74; *see* Reply Declaration of Daniel J. Whelan and Gary E. Sanford, *Application by Verizon Pennsylvania Inc. et al. for Authorization to Provide In-Region, InterLATA Services in Pennsylvania*, FCC 01-269 CC Docket No. 01-138, at 16-18 (August 2001.)

[32/] *Kansas-Oklahoma § 271 Order* at 6238 ¶ 76.

before recommending the Commission's 1994 lives and criticizing those used by Verizon VA. (*See* VZ-VA Ex. 127; Tr. at 3258.) Thus, Mr. Lee's argument is necessarily based simply on misguided criticisms of GAAP principles. Mr. Lee failed to acknowledge a central tenet of GAAP: GAAP lives are intended to be inherently reliable and unbiased. (VZ-VA Ex. 105 at 11-13.) A primary principle of the Financial Accounting Standards Board (FASB), the premier U.S. accounting standard-setting body, is that accounting information must possess "relevance" and "reliability," which in turn means that the data used must be verifiable and neutral, with no "bias intended to attain a predetermined result or to induce a particular mode of behavior."[33/]

Moreover, as Dr. Lacey explained, because companies use GAAP lives for financial reporting purposes, they have no incentive to understate lives. (VZ-VA Ex. 105 at 11-13.) Shorter depreciable lives produce higher expenses and lower net income, which could have negative implications for the company's stock price and management compensation decisions. Depreciation lives set too short also would send incorrect signals to investors, which GAAP seeks to avoid. Moreover, setting the depreciable life too short results in a large depreciation soon after purchasing the asset, leaving no depreciation cost to be realized later. (VZ-VA Ex. 119 at 6-7; Tr. at 3336.)

The reasonableness of the GAAP lives recommended by Verizon VA is confirmed by their comparability to the lives adopted by Verizon VA's competitors and others in the industry. As Mr. Sovereign explained, Verizon VA benchmarked its lives against those of several industry players, including AT&T, WorldCom, cable companies, and lives proposed in industry studies performed by Technology Futures, Inc. In all cases, Verizon VA's lives were comparable to or

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[33/] FASB Statement of Financial Accounting Concepts No. 2, "Qualitative Characteristics of Accounting Information," Figure 1 and Glossary.

longer than the lives against which they were benchmarked. (VZ-VA Ex. 106 at 12-16.) Mr. Lee sought to downplay the fact that Verizon VA's lives were comparable to those used by AT&T, arguing that AT&T's lives were irrelevant for several reasons, including that they were long distance lives. (Tr. at 3262-63.) But ultimately even he conceded that AT&T uses the same lives for its long distance and local network, and there is no question that the lives AT&T used in its 1999 financial reports are significantly *shorter* than Verizon VA's lives. (Tr. at 3263-64.)[34/] No AT&T/WorldCom witness has been able to explain why Verizon VA should use *longer* lives than those used by its chief competitors — especially given that the lives are being used for a TELRIC costing analysis, and thus must assume a market far more competitive than anything AT&T or WorldCom currently experience.

B. Cost of Capital

Verizon VA's cost studies employ a 12.95% cost of capital in assessing Verizon VA's TELRIC UNE costs, which is the cost of capital Verizon VA uses in making network investment decisions.[35/] Rather than using a book or embedded approach, Verizon VA used a forward-looking, market approach to assess the cost of both equity and debt. Thus, for example, in assessing its risk in the forward-looking market, Verizon VA used the S&P industrial companies

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34/ Similarly, Mr. Lee's firm provided technical assistance for a depreciation rate study performed for the Puerto Rico Telephone Company in 1996, which arrived at lives similar to those proposed by Verizon VA. While Mr. Lee recommends a life of 21 years for Verizon VA's buried copper cable, the Puerto Rico study supported a life of 15 years. (*See* Tr. at 3276-77.) For aerial cable, Mr. Lee recommends a life for Verizon VA of 23 years, even though the Puerto Rico study proposed a life of 14 years. (Tr. at 3277-78.) And Mr. Lee recommends a life for Verizon VA's digital electronic switching equipment of 17.5 years, even while he assisted in crafting a proposal for the Puerto Rico Telephone Company of 13 years. (*See* Tr. at 3279.)

35/ This issue is discussed in VZ-VA Ex. 104 at 1-48; VZ-VA Ex. 112 at 1-75; and VZ-VA Ex. 118 at 8-9, 12-18.