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January 17, 2002

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**BY HAND**

Ms. Magalie R. Salas  
Secretary  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, D.C. 20554

RE: *WorldCom, Cox, and AT&T v. Verizon*  
CC Docket Nos. 00-218, 00-249, and 00-251/

Dear Ms. Salas:

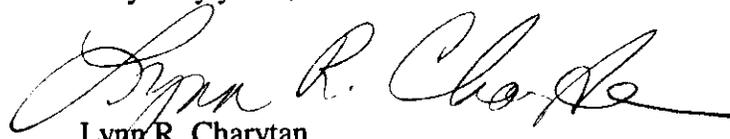
Enclosed for filing please find 4 public versions of Verizon Virginia Inc.'s ("Verizon VA") Initial Post Hearing Brief on Switching Issues in the above-referenced arbitration proceedings.

Verizon VA is also serving 8 copies of the non-public version of the brief, as well as 2 copies of the public version, on Commission staff.

Verizon VA is providing AT&T/WorldCom the proprietary version of the Initial Post Hearing Brief on Switching Issues, which contains information proprietary to Verizon VA, pursuant to the protective order issued in this case on June 6, 2001.

Please call Scott Randolph (202-515-2530) or me if you have any questions.

Very truly yours,

  
Lynn R. Charytan  
Attorney for Verizon Virginia Inc.

cc: Dorothy Attwood (8 proprietary copies; 2 public copies)  
Mark A. Keffer (1 public and 1 proprietary copy)

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

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

In the Matter of	)	
Petition of WorldCom, Inc. Pursuant	)	
to Section 252(e)(5) of the	)	CC Docket No. 00-218
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	)	
	)	
In the Matter of	)	CC Docket No. 00-249
Petition of Cox Virginia Telecom, Inc., etc.	)	
	)	
	)	
In the Matter of	)	CC Docket No. 00-251
Petition of AT&T Communications of	)	
Virginia Inc., etc.	)	
	)	

**VERIZON VIRGINIA INC.**

**INITIAL POST HEARING BRIEF  
ON SWITCHING ISSUES**

**(Public Version)**

**JANUARY 17, 2002**

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**BEFORE THE  
FEDERAL COMMUNICATION COMMISSION**

**POST-HEARING BRIEF ON SWITCHING  
ISSUES OF VERIZON VIRGINIA INC.**

**I. INTRODUCTION**

Verizon Virginia Inc.'s ("Verizon VA") studies produce reasonable switching rates that, within the constraints of TELRIC, reflect the best estimate of the forward-looking costs to provide the switching UNEs.<sup>1/</sup> Verizon VA's switching cost studies are based on the most current data available and the extensive experience of Verizon VA's engineers, and comply in all respects with TELRIC principles. And perhaps most important, unlike AT&T/WorldCom's Modified Synthesis Model ("MSM"), Verizon VA's switching model produces, to the extent TELRIC permits, the forward-looking costs of providing unbundled switching in the manner that an efficient carrier actually would pursue and in a functional network that can serve Virginia customers.

*Switch Discount.* Verizon VA's switching costs properly reflect the best available estimate of the discounts that Verizon VA would receive as it incrementally upgraded and expanded its network and therefore are appropriate for use in determining Verizon VA's forward-looking TELRIC switching costs. AT&T/WorldCom's proposed all-new switch discount, on the other hand, is entirely unrealistic and has been unequivocally rejected by this

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<sup>1/</sup> Verizon VA's switching studies are addressed in VZ-VA Ex. 107 at 179-211, VZ-VA Ex. 115 at 1-8, VZ-VA Ex. 122 at 162-207, VZ-VA Ex. 123 at 1-15, VZ-VA Ex. 125 at 1-5, and VZ-VA Ex. 161 at 1-9. Verizon VA's critique of AT&T/WorldCom's switching studies is contained in VZ-VA Ex. 108 at 48-53 and VZ-VA Ex. 109 at 46-66.

Commission, the D.C. Circuit, and state commissions as inconsistent with forward-looking TELRIC principles.

*Switch Technology Mix:* Verizon VA's studies assume a forward-looking mix of switching technology that goes well beyond what Verizon VA reasonably expects to deploy in its network for the foreseeable future and accordingly understates its forward-looking switching costs. Verizon VA, for example, assumed an all-digital switching network with 10% GR-303, even though Verizon VA has virtually no integrated lines using GR-303 and has no plans to deploy GR-303 going forward. AT&T/WorldCom's 82% GR-303 assumption is divorced from Verizon's forward-looking switching network, would be an inefficient solution for *any* carrier's forward-looking network, and is almost double the GR-303 percentage produced by AT&T/WorldCom's MSM.

*Traffic Sensitive v. Non-Traffic Sensitive Costs:* Verizon VA used a switching rate structure that appropriately identifies traffic sensitive and non-traffic sensitive costs in the manner in which they are incurred and fairly apportions these costs among the various users of the switching network. Petitioners' proposed rate structure, in stark contrast, fails to accord with cost causation principles and would result in smaller carriers, who largely serve small volume customers, subsidizing larger carriers like AT&T and WorldCom. This inequitable result should be rejected.

*Other Switch Inputs:* AT&T/WorldCom's criticisms of Verizon VA's right-to-use ("RTU") fees reflect a fundamental misunderstanding about how switches evolve. Carriers continually grow and upgrade switches over time and thus periodically incur RTU fees associated with upgrading all switches, including new ones. AT&T/WorldCom's argument that such fees are inappropriate is entirely unrealistic and inconsistent with natural and efficient

switch evolution. The RTU fees Verizon VA includes in its studies are eminently reasonable; indeed, they are *lower* than RTU fees in AT&T's recent Lucent contract and the fees that would be incurred under AT&T/WorldCom's assumptions of all new switches. AT&T/WorldCom's baseless criticisms of Verizon VA's port utilization factor and feature port additives cost are equally misplaced and unsupported.

*The MSM Switching Module:* In addition to the flaws noted above, the MSM has numerous other errors that render it wholly unusable for setting the switching costs for Verizon VA's forward-looking network. Indeed, AT&T/WorldCom have made very few changes to the switching module in the Commission's universal service Synthesis Model's (other than to drastically alter the Commission's traffic sensitive/non-traffic sensitive split), even though the Commission made clear that its switching module is not sufficiently accurate for use in UNE cost proceedings.

## **II. VERIZON VA'S SWITCHING STUDIES MODEL THE APPROPRIATE SWITCH DISCOUNT.**

Verizon VA has assumed a switch discount that, to the extent TELRIC permits, appropriately reflects the best estimate of the discount it would receive as it incrementally expands and upgrades its network. By contrast, in an effort to maximize the switch discount (and, therefore, minimize the switch investment) used in their switching cost studies — which AT&T/WorldCom recognize is “the most important input” in those studies (Tr. at 5129 (Pitts)) — AT&T/WorldCom make the wholly unrealistic assumption that the discount to be applied to switching costs should be determined as though a carrier provides service using only new switches with no growth or “add-on” equipment. This position is both economically incorrect

and has been rejected by the Commission. Accordingly, the Commission should adopt the switch discount used in Verizon VA's studies.

**A. Verizon VA's Proposed Switch Discount Is Appropriately Forward-Looking.**

The switching costs in Verizon VA's studies are forward-looking and, to the extent TELRIC permits, properly reflect the best estimate of the costs that Verizon VA would incur to efficiently expand its switching network. Verizon VA's switch discounts are based on its most recent purchases and current contracts, and thus are the most accurate predictor of the discount that Verizon VA would receive in the foreseeable future. (Tr. at 5235 (Gansert); *id.* at 5230 (Matt).) In particular, Verizon VA's proposed discounts reflect the mix of new and growth equipment Verizon purchased in 2000.<sup>2/</sup> (VZ-VA Ex. 107 at 189; VZ-VA Ex. 122 at 171.) As Verizon VA's panel explained, "Verizon VA believes this mix of growth additions and new switch purchases to be the most accurate indicator of the mix of switching equipment it intends to deploy," and thus the discounts that it will receive, in the foreseeable future.<sup>3/</sup> (VZ-VA Ex. 122 at 171.)

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<sup>2/</sup> As Ms. Matt explained, Verizon VA's Lucent and Siemens discounts were calculated based on actual purchases during the year 2000, and the Nortel discount was based on current contracts. (See VZ-VA Ex. 107 at 190-94; VZ-VA Ex. 122 at 166-70; Tr. at 5233-34.)

<sup>3/</sup> Verizon VA calculated a separate switching discount for each of its three switching equipment vendors and then applied the discount to the material investments for the respective switch type. For Lucent and Siemens, which together account for 96.35% percent of Verizon VA's switches, Verizon VA asked each vendor to provide a list of all switching equipment purchases that Verizon made during year 2000, including the list prices and actual prices that Verizon paid. From this information, Verizon VA calculated the effective discount that it actually received during the timeframe the purchases were made. That effective discount was [BEGIN VERIZON PROPRIETARY] [END VERIZON PROPRIETARY] for Lucent and [BEGIN VERIZON PROPRIETARY] [END VERIZON PROPRIETARY] for Siemens.

For Nortel, which accounts for the remaining 3.65% percent of switches in Verizon VA's network, the discount Verizon VA used in its switching cost studies is based on current contracts

Verizon VA's switch discount faithfully reflects TELRIC principles. (See VZ-VA Ex. 101 at 25; VZ-VA Ex. 102 at 22-23; Tr. at 3004 (Tardiff).) As Dr. Tardiff explained, the key question under TELRIC is "what would efficient firms operating under competition buy? And I think at least in this industry the answer is they buy a mixture of new equipment — equipment at new discounts versus other equipment at add-on discount, and that's what you see in competition." (Tr. at 5414.) Verizon VA's sample of recent switch purchases reflects just such a mix and, given the constraints of TELRIC, is the most appropriate estimate of the realistic, efficient mix of switching purchases that Verizon VA would make to expand and upgrade its network. As the Commission has stated, UNE rates should capture the "incremental costs that incumbents actually expect to incur in making network elements available to new entrants."<sup>4/</sup> That, to the extent permitted by TELRIC, is what the switch discount used in Verizon VA's studies is designed to do. (Tr. at 2955 (Shelanski) ("[T]he actual switch discounts that Verizon has had in its most recent experience for the best available technology I think represent a very rational way and a very sensible way empirically to project forward what the discounts will be."))

During the hearing, Staff asked Verizon VA to calculate a discount using an alternative approach that took account of what percentage of the *total* network switching investment was for original (*i.e.*, new) equipment and what percentage was for "growth" equipment. (See VZ-VA

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that the parties entered into in December 2000. Verizon VA used this information rather than the actual purchases for year 2000 because these contracts most accurately capture the latest material prices available to Verizon from Nortel. Because new switch purchases are individually negotiated through the competitive bidding process, these contracts do not include any new switch purchases.

<sup>4/</sup> First Report and Order, *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, 11 FCC Rcd 15499, 15848-49 ¶ 685 (1996) ("Local Competition Order").

Ex. 212.) Although Verizon VA could not provide this precise information because its vendors do not provide this level of detail, Verizon VA did present data for the last five years (1996-2000) that estimates the amount of new switching equipment that was purchased and the amount of switch additions and/or upgrades to existing switches that was purchased. (*See id.*) Verizon VA used this additional data to develop a “life cycle” discount in response to Staff’s request.

Specifically, Verizon VA explained that from 1996 to 2000, Verizon — East (which serves the former Bell Atlantic territory) purchased new switch equipment to serve approximately 50% of its lines, while it purchased “growth/add-ons” to existing switches to serve the remaining 50%. (*See VZ-VA Ex. 213.*) Using this data, Verizon VA calculated a blended discount for Lucent and Siemens equipment that is higher than the discount used in Verizon VA’s cost studies. (*See VZ-VA Ex. 213.*) This blended “life cycle” discount is extremely generous. For example, as Verizon VA explained, vendors will typically offer steep discounts at the end of the life cycle for a particular switch technology, because research and development costs for that technology are relatively low. Because digital switching is at the end of its life cycle, as even Ms. Murray conceded (*see VZ-VA Ex. 213; see also VZ-VA Ex. 120 at 4-8; Tr. at 5298*), Verizon VA’s “life cycle” discount analysis incorporates very high discount levels for both new switch and additions/replacements that would understate its forward-looking costs over the long term.

**B. AT&T/WorldCom’s Contention that Switching Costs Should Reflect Only New Switch Purchases Is Economically Incorrect and Has Been Unequivocally Rejected by the Commission.**

The MSM’s end-office switching module (which is virtually identical to the module used in the Commission’s Synthesis Model for universal service) assumes that all switching costs can

be based on the new switch discount.<sup>5/</sup> As the Commission has explained, the data used to produce switching costs in the Synthesis Model (and hence the MSM) included only new switch purchases between 1989 and 1996: “[i]n order to estimate the costs associated with the purchase and installation of *new switches*, and exclude the costs associated with upgrading switches, we removed those switches installed more than three years prior to the reporting of their associated book-value costs.”<sup>6/</sup> Thus, the MSM includes no costs at all for switch purchases associated with upgrades or growth, which, as AT&T/WorldCom have conceded and as Ms. Matt testified, vendors typically offer at significantly lower discounts (and higher cost) than new switches.<sup>7/</sup> (See, e.g., AT&T/WorldCom Ex. 12P at 98; Tr. at 5250.)

AT&T/WorldCom’s position that TELRIC requires costs to be modeled as though Verizon VA would purchase all switching equipment instantaneously at the new switch discount for the forward-looking network has been unequivocally rejected by this Commission on a number of occasions. The Commission, for example, told the Supreme Court in its reply brief

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<sup>5/</sup> AT&T/WorldCom also restate the switching costs produced by Verizon VA’s switching model by assuming only new switch discounts. (Tr. at 5131 (Pitts); see also AT&T/WorldCom Ex. 24P at 5.) Because, as explained here, the assumption of all new switches is unjustified, that restatement is fatally flawed.

<sup>6/</sup> See Tenth Report and Order, *In re Federal-State Joint Board on Universal Service, In re Forward-Looking Cost Mechanism for High Cost Support for Non-Rural LECs*, 14 FCC Rcd 20156, 20412, Appendix C, ¶ 2 (1999) (“*Tenth Report and Order*”) (emphasis added); see also Tr. at 5141, 5149, 5151 (Pitts); Tr. at 5302 (Murphy). Ms. Pitts’ claim that the MSM could possibly include some data on growth discounts not only flies in the face of the Commission’s clear statement that it intentionally removed these costs, but she also admitted that it was not even possible to determine whether her speculation regarding growth equipment could be true. (See Tr. at 5142-43.)

<sup>7/</sup> The MSM’s failure to reflect any growth switches or upgrades is inconsistent with a number of its other input assumptions. For example, if a carrier installed only new switches, with no plans to purchase additional capacity, the switches would need considerably more spare capacity than is assumed by the MSM. (See VZ-VA Ex. 108 at 50.) This increase in spare capacity would result in substantial corresponding increases in initial investment, capital recovery costs, and annual switching expenses. (See VZ-VA Ex. 108 at 50-51.)

that “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.’”<sup>8/</sup> Likewise, in approving Bell Atlantic New York’s Section 271 application, the Commission rejected AT&T’s argument that switching rates should be based solely on the costs associated with new switch purchases,<sup>9/</sup> a conclusion upheld on appeal by the D.C. Circuit.<sup>10/</sup>

Moreover, as Drs. Shelanski and Tardiff explained, AT&T/WorldCom’s new switch discount theory makes no economic sense. Verizon VA would have no reason, acting efficiently, to engage in such wholesale replacement. (See VZ-VA Ex. 117 at 32-33; Tr. at 5246-47 (Gansert).) Rather, as Verizon VA’s studies recognize and Ms. Matt testified, carriers engage in incremental replacement and expansion of switching plant. (See VZ-VA Ex. 117 at 32-33; Tr. at 5122-23.) Even AT&T/WorldCom’s economist Ms. Murray admitted as much. (Tr. at 3214.)

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<sup>8/</sup> Reply Brief for Petitioners Federal Communications Commission and the United States, *Verizon Communications, Inc., et. al. v. Federal Communications Commission, et. al.*, Nos. 00-511, 00-555, 00-587, 00-590 and 00-602 at 9 n. 7 (July 2001) (emphasis added).

<sup>9/</sup> Memorandum Opinion and Order, *In the Matter of Application by Bell Atlantic New York for Authorization Under Section 271 of the Communications Act to Provide In-Region, Interlata Service in the State of New York*, 15 FCC Rcd 3953, 4085 ¶ 247 (1999). The Commission recently repeated this holding in its Massachusetts Section 271 ruling, finding that AT&T/WorldCom’s new switch discount argument “was considered and rejected in the New York Section 271 proceeding.” Memorandum Opinion and Order, *In the Matter of Application of Verizon New England Inc., Bell Atlantic Communications, Inc. (D/B/A Verizon Long Distance), NYNEX Long Distance Company (D/B/A Verizon Enterprise Solutions) and Verizon Global Networks Inc., for Authorization to Provide In-Region, Interlata Services in Massachusetts*, 16 FCC Rcd 8988, 9004-05 ¶ 33 (2001). Numerous state commissions have also rejected AT&T/WorldCom’s new switch discount theory. See, e.g., Phase 4 Order, *Re. New England Telephone and Telegraph Company d/b/a NYNEX*, D.P.U. 96-73/74, 96-75, 96-80/81, 96-83, 96-94, 1996 WL 773716 at \*19 (Mass. D.P.U., Dec. 4, 1996); *Recommended Decision on Module Three Issues*, New York Case 98-C-1357 at 136-137 (New York State Public Service Commission, May 16, 2001) (“*NY Recommended Decision*”); Final Order, *To Determine Prices Bell Atlantic-Virginia Inc. is Authorized to Charge Competitive Local Exchange Carriers in Accordance with the Telecommunications Act of 1996 and Applicable State Law*, Case No. PUC970005 at 17 (Virginia State Corporation Commission, Apr. 15, 2000).

<sup>10/</sup> See *AT&T v. FCC*, 220 F.3d 607, 617-618 (D.C. Cir. 2000).

Thus, an efficient, real-world carrier's network will have a mixture of new switches, add-on modules, and upgrades. Even a carrier purchasing a new switch would deploy a switch with sufficient capacity to serve demand for only a finite period of time, with the understanding that when additional capacity is required, "growth" lines will be added. (See VZ-VA Ex. 108 at 49-50.) Using only the larger discount associated with new switches, therefore, would understate Verizon VA's forward-looking costs.<sup>11/</sup> (VZ-VA Ex. 117 at 33; VZ-VA Ex. 101 at 25.)

AT&T/WorldCom's new switch discount theory not only violates TELRIC principles, but also rests on a false premise: that Verizon VA could obtain the *same* new switch discount it receives today if it instantaneously replaced its entire switching network. In fact, however, vendors would likely *increase* prices to account for the increased demand and decreased supply associated with such instantaneous replacement. (See Tr. at 2953-54 (Shelanski).) For example, in the recent Ford — Bridgestone/Firestone tire recall, which required the instantaneous replacement of 6.5 million tires, the cost per tire was *higher* than the cost would have been if the tires had been replaced under normal circumstances without an accelerated time frame.<sup>12/</sup> (See VZ-VA Ex. 122 at 168-69.)

As the Commission told the D.C. Circuit during the appeal of its New York 271 order, in "an ideal world where vendors can't lock telephone companies into their product" with the

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<sup>11/</sup> In addition, as explained in Verizon VA's initial cost brief, any methodology that developed switching costs as though Verizon VA would engage in the wholesale, instantaneous — and successive — replacement of all its switches would have to assume a much higher cost of capital and shorter depreciation lives than AT&T/WorldCom, or even Verizon VA, do. (See VZ-VA Br. at 11, 22, 26-29; see also VZ-VA Ex. 108 at 52-53; VZ-VA Ex. 110 at 7-11; VZ-VA Ex. 117 at 16-17.)

<sup>12/</sup> See generally *NY Recommended Decision* at 135-36 (concluding that "the difficulty of ascertaining what the new-switch discount would be in the hypothetical situation of an instantaneously installed new system" precluded adoption of AT&T's proposed all-new switch — discount).

expectation of additional growth purchases, such deep new switch discounts would not exist.<sup>13/</sup>

The court agreed, stating that “growth additions to existing switches cost more than new switches *only because* vendors offer substantial new switch discounts in order to make telephone companies dependent on the vendors’ technology to update the switches. . . .”<sup>14/</sup> Thus, even if AT&T/WorldCom were correct in assuming that TELRIC requires only new switch purchases and that a cost model need not account for any growth add-ons (and they are not), Petitioners’ implicit assumption that vendors would continue to offer the same level of new switch discounts in such a hypothetical TELRIC world is plainly incorrect.<sup>15/</sup>

Finally, AT&T/WorldCom grasp at straws when they suggest that their all-new switch discount theory is appropriate because the SCIS model used by Verizon VA is intended only to develop the costs of new switches.<sup>16/</sup> The SCIS model is a widely accepted costing tool in the

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<sup>13/</sup> Oral Argument Tr. at 35, *AT&T Corp. v. FCC*, 220 F.3d 607 (D.C. Cir. 2000) (argued Apr. 24, 2000).

<sup>14/</sup> *AT&T Corp. v. FCC*, 220 F.3d at 618.

<sup>15/</sup> The effect of the MSM’s flawed discount assumptions is compounded by its unrealistic assumption that, if Verizon VA obtained larger discounts on switches purchased in the future than it has historically received for those same types of switches, the expense of maintaining those switches would be reduced proportionately. Such logic is simply unsound. As Verizon VA noted in its initial cost brief, there is no reason to believe that a switch will be less expensive to maintain solely because that switch may be purchased in the future at a larger discount. (VZ-VA Br. at 168-69; *see also* Tr. at 3778-80 (Tardiff); VZ-VA Ex. 108 at 55-57.)

<sup>16/</sup> SCIS is a computer program designed specifically for developing material switching investments. The SCIS/Model Office (“SCIS/MO”) module lets the user recreate each central office and remote switch in the network with great specificity and then determines the basic switching investments. To do this, Verizon VA’s engineering organization determined existing office parameters, to which forward-looking adjustments were then applied based on current growth trends. SCIS then calculated the unit and total switch material investments separately for each central office and remote switch. Vendor list prices are built into each version of SCIS. The vendor discounts that Verizon VA calculated were inputs in the SCIS runs. Verizon VA further explains the SCIS model and how it developed switching costs in its testimony. (VZ-VA Ex. 107 at 185-88; VZ-VA Ex. 123 at 3-6.)

telecommunications industry and has been adopted by numerous state commissions — most of which have also rejected the use of an all-new switch discount.<sup>17/</sup> As both Verizon VA and Telcordia, the company that *designed* SCIS, have demonstrated, SCIS can and does estimate the investment costs of a mix of growth and new switch purchases. (VZ-VA Ex. 123 at 3.) The engineering rules provided by switch vendors to Telcordia for development of SCIS, for example, apply to both new and growth switching equipment.<sup>18/</sup> (VZ-VA Ex. 123 at 4-5; *see also* Tr. at 5111-12, 5285 (Garfield).) Thus, Verizon VA's use of SCIS provides no support for AT&T/WorldCom's all-new switch discount approach.

Ultimately, the Commission should adopt the switch discount reflected in Verizon VA's studies. That discount appropriately reflects, within the constraints of TELRIC, the best estimate of the discount Verizon VA would achieve going forward to expand its network based on a realistic and efficient mix of switching purchases. The MSM's all-new switch discount, in stark contrast to Verizon VA's discount — and even to the life cycle discount — is incapable of reflecting a carrier's realistic switch discount or switch mix. (*See, e.g.*, VZ-VA Ex. 108 at 48-49.) Instead, AT&T/WorldCom rely on the economically unsupportable assumption that switching costs should be modeled as though a carrier deployed only new switches, with no growth or other additions. The Commission has repeatedly rejected this approach and should do so again here.

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<sup>17/</sup> See n. 9.

<sup>18/</sup> AT&T/WorldCom's sole support for their novel claim concerning SCIS is one sentence from a Telcordia letter. But, as Mr. Garfield of Telcordia explained, AT&T/WorldCom have simply misstated the purpose of this letter. (VZ-VA Ex. 123 at 4-5.)

### **III. VERIZON VA'S SWITCHING COSTS REFLECT AN APPROPRIATE — INDEED, GENEROUS — AMOUNT OF IDLC TECHNOLOGY.**

#### **A. IDLC Technology Assumptions**

Verizon VA's switching cost studies assume an appropriate amount of IDLC technology, based on current growth trends. (See VZ-VA Ex. 107 at 183; VZ-VA Ex. 122 at 180-81.) In fact, to comply with TELRIC, Verizon VA assumed far more IDLC (including GR-303) in its cost studies than it will actually deploy in its network at any time in the foreseeable future. Petitioners' switch technology assumptions go beyond what even TELRIC requires and assume IDLC and GR-303 deployment that exceeds anything that an efficient carrier would use in building out its forward-looking network.<sup>19/</sup> Indeed, with respect to actually providing service on a functional network, AT&T/WorldCom's proposals are entirely unworkable: they purport to produce lower short-term costs, but only at the expense of long-term efficiency and operability. Verizon VA, obviously, would never pursue such an option — nor would any other reasonable carrier. Basing UNE costs on Petitioners' unrealistic proposals thus would cause Verizon VA to substantially underrecover its forward-looking switching costs.

For its forward-looking network, Verizon VA assumed a mix of 57.6% IDLC ports and 42.4% analog ports, even though only 23% of Verizon VA's access lines are currently integrated into the switch using IDLC technology. Verizon VA further assumes that 10% of all loops in the forward-looking network will be served using GR-303 IDLC technology, although there are

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<sup>19/</sup> Although AT&T/WorldCom do not specifically address their proposed percentage of IDLC in their switching testimony, the extraordinarily high level of GR-303 they assume for switch ports necessarily means that they are assuming at least that percentage of IDLC ports as well; moreover, their 100% IDLC assumption for the loop cost study necessarily impacts the IDLC on the switch side.

virtually *no* GR-303 interfaces deployed in Verizon VA's network today (and Verizon VA has no plans to deploy them in the future).<sup>20/</sup>

AT&T/WorldCom propose that 82% of all lines be GR-303 and, accordingly, that at least 82% of switch ports be IDLC-based. Petitioners' assumptions are unworkable and ultimately lead to a *less*, not more, efficient network configuration. Moreover, given their complete inconsistency with Verizon VA's existing network, Petitioners' assumptions clearly turn on their mistaken belief that TELRIC requires the assumption that Verizon VA would instantaneously replace its entire switching network.

First, AT&T/WorldCom completely ignore that it is not technically feasible to unbundle standalone loops using IDLC and thus that IDLC cannot simply replace all UDLC in the network. As Verizon VA explained in its initial cost brief, unbundled standalone loops can be provided only using UDLC (or copper). (See VZ-VA Br. at 93-94.) By insisting on their purely hypothetical and unrealistic approach for both the loop study and the switching study, Petitioners continue to advocate a network design that would simply be incapable of provisioning the UNEs that Petitioners demand and that Verizon VA is obligated to offer. Moreover, because a significant percentage of Verizon VA's customers in the forward-looking network are appropriately served on copper loops (as well as UDLC), the reality is that for the foreseeable and likely even long-term future, a significant portion of Verizon VA's switch ports must be analog. Using primarily IDLC switch ports will simply not allow the network to function properly. Indeed, in the MSM, the proportion of customers served on copper loops is even

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<sup>20/</sup> GR-303 has been deployed in the entire Verizon — East footprint only on a limited trial basis. Less than 0.07% of the total working loops in Verizon — East are currently served via GR-303 technology. (VZ-VA Ex. 122 at 181-82.)

higher than in Verizon VA's forward-looking network — and so must be the proportion of analog switch ports. (Tr. at 4080 (Gansert).) Estimating switching costs as if these real-world constraints were absent would significantly understate Verizon VA's forward-looking costs.

AT&T/WorldCom's proposals also disregard the fact that the use of IDLC is only practical and economical in locations where customers can be served from remote terminals in groupings of a minimum of 96 lines. (VZ-VA Ex. 122 at 180-81.) Virginia has many rural areas in which these groupings are in fact not available and in which deploying IDLC technology therefore would be inefficient. Petitioners, however, fail to account for the way in which customers are actually grouped in Virginia and instead arbitrarily assume that customers are ideally clustered near remote terminals, allowing for increased — but unrealistic — use of IDLC. (VZ-VA Ex. 122 at 181.) As a result, Petitioners produce lower theoretical costs, but they do so only by assuming a network that could not serve all customers in Virginia and by ignoring the real world inefficiencies of their proposal. (See VZ-VA Ex. 122 at 181.)

#### **B. Line Concentration Assumptions**

Verizon VA made the reasonable assumption that where lines are served using GR-303, the efficient level of line concentration should be 3:1. Line concentration allows a carrier to reduce the total number of DS1 facilities between the remote terminal and the digital switch by assigning transmission paths as calls are made rather than dedicating a channel to each line. (See VZ-VA Ex. 122 at 183-84.) While line concentration can save resources, too high a line concentration can result in blocked calls (generally a fast busy signal) if more customers than expected who are served by the same remote terminal try to place calls at the same time. Based on the judgment and experience of Verizon VA's network engineers, including experience provisioning lines using IDLC and GR-303, Verizon VA determined that as many as one-third of

its customers served by a GR-303 remote terminal could be expected to use their phones simultaneously. Thus, the maximum line concentration that would be appropriate in the forward-looking network is 3:1; anything higher likely would leave at least some customers, some of the time, without the ability to complete calls.

Petitioners have countered that a 4:1 line concentration ratio should be used in place of Verizon VA's 3:1 assumption. (AT&T/WorldCom Ex. 12P at 106.) However, they have little support for their position and simply seem to believe that line concentration is nothing more than an engineering choice that can be made in a vacuum, without regard to call completion requirements and quality of service. AT&T/WorldCom primarily criticize Verizon VA's assumed usage levels on GR-303, which they propose to reduce by 30%. (AT&T/WorldCom Ex. 12P at 107.) In fact, however, AT&T/WorldCom have no experience deploying IDLC or GR-303 in the local networks and have nothing but supposition to support their contentions — which are simply wrong and would result in a high degree of blockage.

Several factors support the reasonableness of Verizon VA's determination. As Mr. Gansert explained, “[t]he per-line usage . . . determines the concentration ratio.” (Tr. at 5381.) Phone line usage is increasing with increased internet use, as Ms. Pitts admitted at the hearing. (Tr. at 5267.) Moreover, usage of digital IDLC lines tends to be higher than usage on analog lines. (See VZ-VA Ex. 122 at 183-84.) IDLC is more likely to be placed in locations with a high number of customers concentrated in close proximity to each other — typically areas with a high concentration of business users, who generally have high busy hour usage. (VZ-VA Ex. 122 at 183.) Residential areas served by digital lines also tend to have more high-usage customers concentrated in locations such as college campuses or dense urban residences. (VZ-VA Ex. 122 at 183.) Verizon VA's line concentration assumptions are designed to account for

these real-world phenomena and to ensure that the network is fully operational. Line concentration cannot be arbitrarily reduced without significantly detracting from the quality of service Verizon VA is required to provide — or that any new entrant clearly would seek to provide.

**IV. VERIZON VA'S SWITCHING RATE STRUCTURE REFLECTS THE PROPER IDENTIFICATION OF TRAFFIC SENSITIVE AND NON-TRAFFIC SENSITIVE COSTS.**

In an attempt to shift costs away from themselves and onto smaller carriers, AT&T/WorldCom challenge Verizon VA's (and the industry's) well established method of identifying switching costs as either traffic sensitive or non-traffic sensitive. Non-traffic sensitive costs are those that do not vary with increased levels of per-line usage and are traditionally recovered through a flat-rate port charge; traffic sensitive costs are costs that do vary with usage and are traditionally recovered through usage charges calculated on a minute-of-use ("MOU") basis.

Verizon has consistently, both prior to and since the 1996 Act, treated the cost of the switch port as non-traffic sensitive and the remaining switch costs as traffic sensitive.<sup>21/</sup> This approach accords with sound engineering practices and is cost causative because, except for the port, every feature of the switch potentially requires replacement/additions as the level of usage on a line (the "CCS" level) increases. Thus, from a long-run, total element perspective, the cost of non-port components of the switch are all variable with respect to usage levels. (VZ-VA Ex. 122 at 191-92; VZ-VA Ex. 123 at 6-8.) Accordingly, the 63.16% non-port portion of Verizon VA's total switching investment is traffic sensitive and should be recovered through traffic

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<sup>21/</sup> Even AT&T/WorldCom's witnesses recognize switching costs have been recovered on a usage basis for decades. (WorldCom Ex. 5 at 6; AT&T Ex. 4 at 14.)

sensitive rates, while the remaining 36.84% associated with the port is non-traffic sensitive and should be recovered through a flat rate. Verizon VA's rate structure and identification of switch resources is supported not only by the *Local Competition Order*,<sup>22/</sup> which approved the use of an MOU switching rate, but also by the default assumption in the Synthesis Model for switching costs, which, as Ms. Pitts acknowledged, treats those costs as 30% non-traffic sensitive and 70% traffic sensitive. (See Tr. at 5211-12.)

AT&T/WorldCom essentially *reverse* the Commission's prior determination of the proper allocation of traffic sensitive/non-traffic sensitive ("TS/NTS") costs by changing the Synthesis Model's 70/30 TS/NTS default split to 23% traffic sensitive and 77% non-traffic sensitive.<sup>23/</sup> Petitioners' tortured method of arriving at this reversal of the Synthesis Model illustrates the total absence of principle behind their ends-based approach. First, Petitioners' witness Mr. Pitkin used the Synthesis Model's default 70/30 TS/NTS split in the July 2, 2001 version of the MSM. (Tr. at 5211-12 (Pitts); AT&T/WorldCom Ex. 104.) On direct, however, Petitioners' witness Ms. Pitts advocated a 40/60 TS/NTS split (AT&T/WorldCom Ex. 4 at 8; Tr. at 5211 (Pitts).)<sup>24/</sup> On rebuttal, Ms. Pitts changed things yet again, recommending

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<sup>22/</sup> *Local Competition Order* ¶ 810.

<sup>23/</sup> Although AT&T/WorldCom's proposed switching costs contain a per-MOU rate element, WorldCom witness Goldfarb goes so far as to propose that all switching costs be recovered through a flat rate port charge. (WorldCom Ex. 5 at 4.) Even AT&T disagrees with this proposal. (See AT&T Ex. 4 at 15 (a flat switching rate "does not properly align rates and costs").) It is therefore unclear whether WorldCom intends to pursue its proposed flat rate proposal in this proceeding. In any event, Verizon VA witness West explains why Mr. Goldfarb's proposal violates the *Local Competition Order*, which upheld the per-MOU rate structure, and would be bad public policy. (VZ-VA Ex. 115 at 2-4.) Mr. West also explained that AT&T's proposal that Verizon VA offer different rate structures to CLECs would be completely unworkable and would deny Verizon VA recovery of its costs. (VZ-VA Ex. 115 at 4-5.)

<sup>24/</sup> See also AT&T/WCom Ex. 12P at 115, n. 103 (noting that "[t]he 40% traffic-sensitive input to the Synthesis Model referenced in Ms. Pitts' Direct Testimony was not implemented,

approximately a 16/84 TS/NTS split (Tr. at 5212-13 (Pitts); AT&T/WorldCom Ex. 12P at 115, n. 103 & Attachment 5); on surrebuttal, she suddenly proposed a 23/77 TS/NTS split.

(AT&T/WorldCom Ex. 16 at 7, n. 17 & Exhibit 1; Tr. at 5217-18.)

These constant revaluations were not only utterly unsupported, but also designed with one purpose: to cause a drastic shift of costs to the switch port. By reducing the traffic sensitive value to its final resting place (for these proceedings) of 23%, AT&T/WorldCom cut the cost estimate for local usage by 67% and increased the port cost increases by a factor of 2.6 as compared to the default value in the Synthesis Model, thereby significantly driving up prices for residence and business customers with lower usage (or for the CLECs who serve them). (VZ-VA Ex. 171; VZ-VA Ex. 109 at 56). Notably, Ms. Pitts stated that she is not aware of a single state public utility commission that has adopted her incredibly low traffic sensitive values. (Tr. at 5484-85.)

AT&T/WorldCom's proposal rests on their simplistic and misguided assertion that digital switches are limited only by port capacity. (AT&T WorldCom Ex. 4 at 7.) As Verizon VA has demonstrated, however, usage is by far the largest cost driver of additional switch capacity. Verizon's engineers do seek to design switches so that the switch will not exhaust until it needs additional ports, but this simply reflects efficient engineering practice, which recognizes that it makes more sense to purchase and install a large number of ports at one time. Ultimately, however, the non-port resources on the switch will be consumed and exhausted by usage and will have to be supplemented, whether or not ports are available, and the amount of investment in these resources is greater when more usage is expected. (See Tr. at 5431 (Gansert).)

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*and the FCC's default inputs were used")* (emphasis added); AT&T/WCom Ex. 16 at 6, n. 15 (stating that "[t]he Synthesis Model filed by Mr. Pitkin [on direct] used a 30% allocation of switch investment to line ports, *with the residual 70% of the switch assigned to the minute of use element*") (emphasis added).

In addition, switch resources that are shared among users must be engineered based on expected traffic so that all users are adequately served and so that one heavy user cannot ruin the service afforded to others. The cost of such shared resources should therefore be assigned in an economic and reasonable manner, according to *how much* of the resources usage causes to be incurred. Dedicated resources, of course, should be attributed to the particular user to whom that resource is dedicated on a flat-rate basis. (*See, e.g.*, VZ-VA Ex. 122 at 192.)

AT&T/WorldCom's argument that the significant investments associated with processors and memory (*i.e.*, "getting started" costs) should all be recovered on a completely non-traffic sensitive basis is entirely inconsistent with this principle. As Verizon's panel and Mr. Garfield explained, regardless of how many lines and trunks are contained in a particular switch, the processor complex of a switch is ultimately limited by usage (*i.e.*, milliseconds). (VZ-VA Ex. 123 at 6.) And, as Mr. Gansert testified, AT&T/WorldCom's position that carriers purchase huge processors "and you [can] put any number of calls in and nothing ever changes" simply is not true. (Tr. at 5241.)

Since usage determines ultimate exhaust, the processor and its other shared "getting started" investments are inherently traffic sensitive. (VZ-VA Ex. 123 at 6.) This is supported by the evolution of switch technology, as vendors have continually modified the switch processor complex of their respective switching systems to account for usage demand and provided tools to prevent exhaust situations. (*Id.* at 7-8.) Indeed, Verizon VA demonstrated that it does in fact grow/upgrade the "getting started" switch components, such as processors for each of the three switch technologies in Verizon VA's network. (*See* VZ-VA Ex. 122 at 176-178.)<sup>25/</sup>

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<sup>25/</sup> Likewise, EPHC (Equivalent POTS Half Call) costs — which apply only to the Lucent SESS switches — are traffic sensitive. While this system, when provisioned on an SM2000 platform, does require additions when port capacity is reached, the processor complex in each

AT&T/WorldCom's position is also belied by the MSM's own documentation, which specifies that two traffic capacity tests (busy hour calls and busy hour CCS) should be applied to the initial investment and, if either limit is exceeded, the MSM will compute the investment required for an additional switch.<sup>26/</sup> Allowing the user to change the usage inputs acknowledges, at least in principle, that there is a cost causative relationship between the usage and the investment.<sup>27/</sup>

At bottom, AT&T/WorldCom are proposing exactly what this Commission has always taken care to avoid: having low-usage residential customers support high-usage business customers. (VZ-VA Ex. 115 at 4-5.) In addition to not being a cost causative approach, an arbitrary assignment of usage costs to flat-rate port charges would be harmful to customers and unfairly penalize carriers that serve lower-usage customers. Such a rate structure would require that the flat-rate price incorporate assumptions regarding *average* usage across all customers. As a result, carriers such as AT&T/WorldCom that serve customers with higher than average usage would avoid paying their share of traffic sensitive switching costs, while carriers serving low volume users would subsidize AT&T/WorldCom and their high volume customers' costs. (VZ-

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switch module has a call capacity limitation as well. Because this system has a dual capacity, meaning that it is limited by ports *and* call volume, Verizon VA assigned the appropriate portion of this investment to usage and the remaining portion to the port. (VZ-VA Ex. 123 at 11-14.) AT&T/WorldCom, however, propose to allocate the entire investment to the non-traffic sensitive port. Such an allocation would contradict the engineering principles behind this switching system.

In addition, Verizon VA correctly designated RTU fees, which are processor-related, as traffic sensitive. If a processor's usage exceeds expectations, it will need to be supplemented. Such expansion would include additional RTU expenses. (See VZ-VA Ex. 122 at 200-01.)

<sup>26/</sup> HAI 5.0a Model Description at 55-56; *see also Tenth Report and Order* ¶ 328 ("In the Inputs Further Notice, we proposed to adopt the HAI default switch capacity constraint inputs as proposed in the HAI 5.0a Model documentation. We now adopt that proposal."); VZ-VA Ex. 109 at 55).

<sup>27/</sup> As discussed below, however, the MSM's switching costs are critically flawed because they do not in fact vary based on usage.

VA Ex. 115 at 3.) AT&T/WorldCom's proposal would also promote inefficient network usage, cause congestion in Verizon VA's switching network, and lead to an underrecovery of switching investments. (VZ-VA Ex. 109 at 54; VZ-VA Ex. 122 at 200-01.)

AT&T/WorldCom's assertion that their proposed rate structure is reasonable because Verizon VA typically offers a flat rate for local exchange service to its customers misses the point. Usage sensitive costs are *incurred* on a usage basis, regardless of the rate structure that Verizon VA decides to offer (or is required to offer) to end users. Each carrier must make an independent decision of how to induce desirable customer behavior, and Petitioners are free to offer their own customers the rate they think best will promote such behavior. But these proceedings are about determining Verizon VA's forward-looking *costs*; the rate structure that Verizon VA or AT&T/WorldCom offer to their customers is irrelevant.

**V. AT&T/WORLDCOM'S OTHER CRITICISMS OF VERIZON VA'S SWITCHING INPUTS ARE BASELESS.**

**A. Verizon VA's Right-to-Use Fees Are Well Documented And Consistent with TELRIC Principles.**

Verizon VA incorporated right-to-use ("RTU") fees in its studies that are based on recent data and are fully documented.<sup>28/</sup> To calculate a RTU cost per busy hour MOU, Verizon VA developed a RTU factor, which was then applied against the total in-place MOU busy hour investment. This RTU cost was then added to the switching busy hour MOU usage cost to produce a total busy hour MOU cost for local switching usage. (VZ-VA Ex. 107 at 203.) Notably, Verizon VA's switching studies include an average RTU cost per end office of \$118,238 per year, which is *lower* than the \$120,000 per switch in RTU costs contained in

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<sup>28/</sup> RTU fees recover the software costs associated with vendor software. RTU fees are a significant component of Verizon VA's switching costs because today's modern digital switches require extensive software. (See generally VZ-VA Ex. 122 at 197-201.)

AT&T's Lucent contract. (See VZ-VA Ex. 122 at 198 and Attachment A (AT&T Response to VZ-VA 1-1).)

AT&T/WorldCom claim that the RTU fees in Verizon VA's studies are too high because a TELRIC study requires a network of entirely new switches. As discussed above, Petitioners' underlying premise regarding the all-new switch network is wrong. But in any event, that premise, even if true, would not support their contention that RTU fees should be lower than those assumed by Verizon VA.

First, the all-new switch network would not avoid any of the RTU fees Verizon VA includes in its studies, all of which relate to software purchases required to maintain and upgrade switches *after* they are purchased.<sup>29/</sup> As Verizon VA has explained, switching software must be constantly updated to keep up with vendor releases and the development of new functionalities. (VZ-VA Ex. 122 at 199-200.) Each of Verizon VA's switch vendors issues new generic releases of its software on a yearly basis; in fact, Nortel issues two releases per year. And even AT&T admits that it performs a generic upgrade on its switches approximately every year. (VZ-VA Ex. 122 Attachment A, AT&T Response to VZ-VA 1-2.) Each time such an upgrade or new release is incorporated into Verizon VA's (or any carrier's) switches, RTU fees are incurred in connection with the associated software; these costs are not covered by the initial RTU fees associated with the cost of the brand new switch. Because even new switches, once deployed, have to be upgraded in order to stay current, the RTU fees included in Verizon VA's studies would be appropriate and in fact necessary even in an all-new switch network. Petitioners' suggestion that the associated RTU fees should not be considered makes no sense. To maintain

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<sup>29/</sup> Because the vast majority of Verizon VA's digital switching network already is deployed, Verizon VA's RTU fee assumptions, which are based on recent data, reflect very little of the significant cost associated with new switch RTU fees and instead primarily reflect the costs of switch upgrades. (VZ-VA Ex. 122 at 198.)

that position, Petitioners would have to assume not only an instantaneously built new switching network — but one that exists for only one moment in time, so that no costs are ever incurred with respect to actually maintaining the viability of that network. In any real network, however, RTU fees associated with periodic upgrades and releases are standard and necessary for all switches.

AT&T/WorldCom's argument that Verizon VA's studies should include both all new switches and *lower* RTU fees is particularly disingenuous because, as they have acknowledged, new switches require a substantial *initial* software investment of approximately \$2 million *per switch*. (VZ-VA Ex. 122 at 198-99 and Attachment A (AT&T Response to VZ-VA 1-2).) This RTU cost is not included into Verizon VA's studies since Verizon VA does not use the all-new switch assumption and incorporation of such costs would therefore make no sense. Yet, notwithstanding the fact that Petitioners *do* assume all new switches, AT&T/WorldCom's proposed switching costs do not account for the substantial up-front RTU costs that would be associated with the purchase of a whole network of new switches.

AT&T/WorldCom also criticize Verizon VA's inclusion of its 1999 RTU expenditures, which were higher than RTU expenses in subsequent years. But these costs are entirely proper. As an initial matter, of course, software expenditures can and do vary year by year, and there is no reason to ignore a spike if it exists since vendor software developed in the future may cause another spike. In any-event, as Mr. Minion explained, the particular increase in RTU fees in 1999 is simply due to a new accounting requirement first implemented by Verizon in 1999. (Tr. at 5438-39 (Minion).) Prior to 1999, RTU costs were expensed as software was deployed throughout the network, frequently over a period of several years. The 1999 accounting change requires that all RTU fees be capitalized once the software is tested and accepted. As a result, -

beginning in 1999, RTU costs that would have been spread over several years were realized all at once. (*Id.* at 5439.) Verizon VA properly included these 1999 costs, because once the transition period is over, the annual amount of RTU costs is expected to settle at the estimated amount reflected in Verizon VA's studies.

**B. Verizon VA Does Not Double Count Port Utilization.**

Verizon VA applied a forward-looking utilization factor to digital line ports, analog line ports, and digital trunk ports. AT&T/WorldCom do not dispute Verizon VA's utilization assumptions, but rather claim that Verizon VA double counts this utilization by entering a utilization factor into SCIS and again in Verizon's VCost model. (AT&T/WorldCom Ex. 12P at 107-08.)

AT&T/WorldCom's assertion that no spare capacity should be included in Verizon VA's VCost model is based on their misunderstanding of the SCIS model. The SCIS administrative fill input allows Verizon VA to account for the necessary spare Verizon VA must maintain on its network to accommodate customer movement, maintenance requirements, and the technical and physical nature of the design of the particular plant and equipment. The SCIS breakage input reflects the facts that many network components come in a limited set of capacity increments and that actual demand rarely conforms exactly to those increments.

However, the SCIS model does not fully incorporate Verizon VA's utilization assumptions. (VZ-VA Ex. 107 at 196-197; VZ-VA Ex. 122 at 186-187.) Accordingly, Verizon VA must further account for utilization in VCost to reach the forward-looking utilization rate determined by Verizon VA's engineers.<sup>30/</sup> The result is not a double-counting but one thorough

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<sup>30/</sup> This utilization was adjusted in Verizon VA's VCost model to account for the fact that the SCIS model includes some administrative spare and breakage.

counting. Setting utilization at 1.0 in VCost, as AT&T/WorldCom propose, would result in a port utilization rate that is too high and that would understate Verizon VA's port costs.

**C. Verizon VA's Feature Port Additive Costs Are Fully Documented.**

Port additives are the incremental hardware investments associated with optional features, such as three-way calling, which require a three port conference circuit. Verizon VA determined these investments by running each feature through SCIS/IN, the module of SCIS designed to calculate incremental investments associated with specific features of the switch.

Contrary to AT&T/WorldCom's claims, Verizon VA has fully documented its feature costs. Notably, even as they attack the feature costs employed by Verizon VA, AT&T/WorldCom offer no evidence that their own feature costs are any different. In particular, AT&T/WorldCom fail to contradict Verizon VA's assumptions regarding the amount of usage for these port features that should be assumed in a cost study — assumptions that are based on Verizon VA's years of experience — even though AT&T/WorldCom undoubtedly have similar usage information in their possession. AT&T/WorldCom's criticisms ring hollow and should be rejected.<sup>31/</sup>

**VI. AT&T/WORLDCOM'S PROPOSED MSM SWITCHING MODULE CONTAINS NUMEROUS OTHER FLAWS.**

In addition to the MSM switching module's fundamentally erroneous assumptions relating to the switch discount, the level of traffic sensitive costs, and the switch technology mix,

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<sup>31/</sup> AT&T/WorldCom's claim that these investments should receive a new switch discount is likewise wrong. Verizon VA does not purchase all port additives simultaneously with a new switch purchase. (VZ-VA Ex. 122 at 188.) It would therefore be inappropriate to apply only a new switch discount to these investments.

the module is rife with other flaws that provide further reason for rejecting its use in estimating Verizon VA's switching costs.

**A. The MSM's Switching Module Was Designed for Universal Service Purposes for Which Accurate Switching UNE Cost Estimates Were Not as Important.**

Unlike the MSM's loop algorithms, AT&T/WorldCom did not make "any substantial changes" to the switching module adopted by the Commission for federal universal service purposes and, as a result, the proposed module is "essentially identical to the FCC [Synthesis Model] . . . ." (Tr. at 5193-94 (Pitts).) Yet the Commission explicitly recognized that "for universal service purposes, where cost differences caused by differing loop lengths are the most significant cost factor, *switching costs are less significant than they would be in, for example, a cost model to determine unbundled network element[s] . . . .*"<sup>32/</sup>

As a result, the Commission focused not on whether the calculations provided an accurate estimate of forward-looking costs for UNE purposes, but simply whether the module functioned "with a degree of accuracy that is sufficient for the computation of federal universal service costs."<sup>33/</sup> AT&T/WorldCom have done nothing here to improve the accuracy of the switching calculations, presumably because the MSM already produces such understated costs. As a result, the UNE switching cost estimates produced by the MSM, as well as the input values used to derive them, are not representative of Verizon VA's — or any efficient carrier's — forward-looking switching costs. (VZ-VA Ex. 109 at 49.)

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<sup>32/</sup> Fifth Report and Order, *In re Federal-State Joint Board on Universal Service, In re Forward-Looking Cost Mechanism for High Cost Support for Non-Rural LECs*, 13 FCC Rcd 21323, 21354-55 ¶ 75 (1998) ("*Fifth Report and Order*") (emphasis added).

<sup>33/</sup> *Id.* ¶ 78.

**B. The Switch Investments Produced By The MSM Are Impervious to Changes in Busy Hour Traffic Volumes.**

The MSM's simplistic switching cost methodology disregards the particular characteristics of the individual switches deployed in Virginia, including the distinct traffic characteristics of each wire center. As a result, the MSM's switch investment values are impervious to changes in the amount of busy hour traffic. As AT&T/WorldCom witness Ms. Pitts acknowledged, "when you increase usage [in the Modified Synthesis Model], it won't cause an increase in switch investment." (Tr. at 5220-21.<sup>34/</sup>) In fact, drastic changes to the dial equipment minutes ("DEMs") counts (*e.g.*, a 50 percent reduction or 100 percent increase) do not affect the MSM's total switch investment by even a penny. (VZ-VA Ex. 163 at 19; *see also* VZ-VA Ex. 163 Accompanying Workpapers.) Such results simply defy common sense. Given that all parties agree that at least some portion of the switching costs is traffic sensitive, it is simply nonsensical to assume that total investment levels will not change at all when traffic amounts are increased or decreased dramatically. (VZ-VA Ex. 163 at 19; Tr. at 5303 (Murphy).)

This modeling error is compounded by the MSM's failure to account for the fact that usage on the network has grown steadily and significantly in the past 5 to 6 years. (Tr. at 5302-04 (Murphy).) The MSM's switch investments are based on traffic patterns experienced by switches placed in service in a period ending six years ago in 1996. (Tr. at 5141, 5149, 5151 (Pitts); Tr. at 5302 (Murphy).) Demand on the network, however, has grown considerably since then. (Tr. at 5150-51 (Pitts); Tr. at 5302 (Murphy).) As Dr. Tardiff pointed out, while growth in usage per-line from 1989-1996 was low — roughly 1.1 percent per year — growth in usage per-line was more than four times higher (4.5%) from 1996 to 2000. (Tr. at 5334-35.) Thus, even if

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<sup>34/</sup> *See also* Tr. at 5219 (Q: "[T]he end-office switch investment does not vary when usage — in the busy hour is significantly increased or decreased?" A: "Yes.").

the MSM's investment amounts appropriately accounted for varying usage levels, costs would still be understated due to the outdated usage demand data used in AT&T/WorldCom's model.

**C. The MSM Uses Dubious Engineering Assumptions and Erroneous Inputs to Derive Unrealistically Low Switching UNE Cost Estimates.**

By failing to adhere to relevant engineering and industry standards, ignoring the principle of cost causation, and relying on outdated switching data, AT&T/WorldCom substantially understate switching costs.

**1. The MSM Cannot Accurately Account For Peak Period Usage.**

To produce an accurate measure of costs, a forward-looking cost model must design a network that can handle all traffic demand, including peak period traffic, in accordance with generally accepted engineering practices and applicable service quality standards. (VZ-VA Ex. 109 at 47.) In developing the Synthesis Model, the Commission made eminently clear that a cost model must “. . . ensure that adequate capacity exists in that switching facility to process all customers' calls that are expected to be made at peak periods.”<sup>35/</sup> The MSM, however, fails to satisfy this basic criterion because it does not account for the fact that each central office and its associated trunking network experience an annual busy season, characterized by periods of peak traffic loads.

The MSM is only equipped to handle the same amount of busy hour calls each day of the year. (VZ-VA Ex. 109 at 50.) The uniform amount of usage that AT&T/WorldCom posit as “peak traffic” cannot account for peak periods resulting from *seasonal* fluctuations in demand (e.g., a resort community when the bulk of the yearly traffic occurs over a few summer

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<sup>35/</sup> *Tenth Report and Order* at 20164-65 ¶ 12; see also *id.* at 20277-78 ¶ 286.

months).<sup>36/</sup> (VZ-VA Ex. 109 at 51.) As a result, the MSM models switches that would be incapable of handling traffic during busy season periods and a network on which customers will frequently be denied service.

**2. The MSM's Faulty Engineering Assumptions Ignore Numerous Switch Sizing Conventions, Thereby Creating a Network Incapable of Providing Reliable and Adequate Service.**

The MSM ignores proper switch sizing guidelines and engineering standards, thereby ensuring that the network modeled by the MSM would never be able to reliably and adequately provide service to Verizon VA's customers. For example, the MSM incorrectly assumes that switch sizes are infinitely variable (*i.e.*, that a switch can be sized to meet perfectly the line count in a given wire center). In the real world, however, switches and switch components come in particular sizes and cannot be customized to match exactly the demand in a particular wire center. (VZ-VA Ex. 109 at 50-52.) Therefore, much like the phenomenon of breakage in the context of cables, carriers will always incur the cost of some amount of excess switching capacity. The MSM, however, is incapable of accounting for these types of engineering realities. (VZ-VA Ex. 109 at 50-52.)

**3. The MSM Fails To Incorporate Appropriate Technologies.**

As noted above, the MSM relies on outdated switching data from a sample of switches that were deployed between 1989 and 1996.<sup>37/</sup> (Tr. at 5151 (Pitts); Tr. at 5302 (Murphy).) These outdated inputs replicate switches that are incapable of provisioning the services and features for

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<sup>36/</sup> Resort communities typically experience upwards of 60-75% of their total annual traffic during a 2 or 3 month vacation period. (VZ-VA Ex. 109 at 51.)

<sup>37/</sup> The majority of the switches in the sample were deployed in the early 1990s. (Tr. at 5151 (Pitts); Tr. at 5302 (Murphy).) By way of comparison, Verizon VA calculated its switch discount for Lucent and Siemens based on actual purchases in 2000 and on current contracts with Nortel. (Tr. at 5120-21 (Gansert); Tr. at 5233-35 (Matt); Tr. at 5129-30 (Pitts).)

which the MSM is developing UNE costs. (VZ-VA Ex. 109 at 47.) Since 1996, many new features have been added to the switches, almost all of which require additional investment. (Tr. at 5329-30 (Murphy).) The MSM, however, does not account for these modern features and the related expenditures (Tr. at 5329-30 (Murphy)), and as a result does not comply with the Commission's specific unbundling requirements for local circuit switching.<sup>38/</sup>

For example, the MSM's data inputs do not reflect the additional costs associated with provisioning ISDN lines on a digital switch,<sup>39/</sup> do not reflect the considerable software investment necessary to comply with such requirements as the mandates of the Communications Assistance for Law Enforcement Act and local number portability obligations (Tr. at 5330-31 (Gansert)), and do not model the requisite hardware modifications included in the current Nortel and Lucent switches. (VZ-VA Ex. 109 at 47-48.) By failing to account for the complete range of technologies (both hardware- and software-related) currently being deployed, the MSM cannot develop switching costs that will fully and appropriately compensate Verizon VA, or any efficient carrier, for all of the switching functions required in a forward-looking network to

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<sup>38/</sup> 47 C.F.R. § 51.319(c)(1)(iii)(B) (switching UNE includes “[a]ll other features that the switch is capable of providing, including but not limited to customer calling, customer local area signaling service features, and Centrex, as well as any technically feasible customized routing functions provided by the switch”).

<sup>39/</sup> AT&T/WorldCom witness Ms. Pitts conceded that the Synthesis Model, and by default the Modified Synthesis Model, does not produce cost estimates for ISDN. (Tr. at 5197, 5199.) *See also* David Gabel, Scott Kennedy, “Estimating the Cost of Switching and Cables Based on Publicly Available Data,” National Regulatory Research Institute at 114 (April 1998) (“During the years covered by this data set the overwhelming majority of the lines were for voice service. Therefore, to a large extent, the per-line investment estimates do not reflect the additional costs associated with providing ISDN lines on a digital switching machine.”).

provide services to Virginia customers, including competitive entrants.<sup>40/</sup> (VZ-VA Ex. 109 at 48.)

## VII. CONCLUSION

For the foregoing reasons, the Commission should adopt the switching costs produced by Verizon VA's studies. As Verizon VA has demonstrated, these costs are consistent with TELRIC principles and sound engineering practices. They are based on real data regarding the Virginia switching network and, within the constraints of TELRIC, reflect the best estimate of the forward-looking costs of providing switching UNEs in Virginia.

AT&T/WorldCom's proposed switching costs, in stark contrast, are based on economically incorrect assumptions, including the presumption that forward-looking costs should be based on a network with only new switches. They also use outdated data and rely on

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<sup>40/</sup> As Verizon VA noted in its initial cost brief, the MSM also significantly understates power and main distribution frame ("MDF") investment (VZ-VA Br. at 162-63; VZ-VA Ex. 109 at 91-92 and Attachment 4), as well as the costs of central office construction (*see* VZ-VA Br. at 150-51). Not surprisingly, the result is significantly understated switching costs. (VZ-VA Ex. 109 at 91-92 (noting that the investment value for power and MDF should have been \$45 per-line, as opposed to the \$8 per-line produced by the MSM); VZ-VA Ex. 109 at 92-93 (noting that the MSM's maximum central office construction cost of \$190 per square foot is substantially lower than AT&T's experienced average construction cost of [Begin AT&T Proprietary] [End AT&T Proprietary]).)

fanciful engineering assumptions that would render Verizon VA's network incapable of reliably and efficiently serving customers. Accordingly, AT&T/WorldCom's proposed switching costs should be rejected.

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CERTIFICATE OF SERVICE

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