COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

Investigation by the Department of Telecommunications and Energy on its own Motion into the Appropriate Pricing, based upon Total Element Long-Run Incremental Costs, for Unbundled Network Elements and Combinations of Unbundled Network Elements, and the Appropriate Avoided Cost Discount for Verizon New England, Inc. d/b/a Verizon Massachusetts' Resale Services in the Commonwealth of Massachusetts	D.T.E. 01-20 Part A (UNE Rates)

AT&T'S INITIAL POST-HEARING BRIEF

REDACTED - PUBLIC VERSION

Jeffrey F. Jones
Kenneth W. Salinger
Laurie Gill
Jay E. Gruber
Kevin Prendergast
John Bennett
Katie Davenport
PALMER & DODGE LLP
111 Huntington Avenue
Boston, MA 02199-7613
(617) 239-0100

Mary E. Burgess
AT&T Communications of New England, Inc.
111 Washington Avenue
Albany, NY 12210-0000
(518) 463-3148

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Glossary of Acronyms and Short Forms.

Acronyms for Key Words and Phrases

Term	**Definition**
AC Power	Alternating Current Power
ACF	Annual Cost Factor
ADM	Add Drop Multiplexer
BDFB	Battery Distribution Fuse Bay
BH/AHD	Busy Hour to Any Hour of the Day ratio
CLEC	Competitive Local Exchange Carrier
CLLI Code	Common Language Local Identification Code
CO	Central Office
COT	Central Office Terminal
CLEC	Competitive Local Exchange Carrier
DA	Distribution Area
DC Power	Direct Current Power
DWD	Dial-with-Dial
EF&I	Engineered, Furnished and Installed
EPHC	Equivalent POTS Half Calls
FCC	Federal Communications Commission
FDF	Fiber Distribution Frame
FDI	Feeder-Distribution Interface
HARC	House and Riser Cable
DCPR	Detailed Continuing Property Record
DCS	Digital Cross-Connect Systems
DLC	Digital Loop Carrier
DS0	Digital Signal Level 0
DS1	Digital Signal Level 1
DSL	Digital Subscriber Line
IDLC	Integrated Digital Loop Carrier
ILEC	Incumbent Local Exchange Order
IOF	Interoffice
kw	Kilowatt

Term	Definition
M-dollars	Moves and Rearrangements Expenses
MDF	Main Distribution Frame
MIPS	Millions of Instructions Per Second
MOU	Minute of Use
MTU	Multiple Tenant Unit building
NCT	Non-Conversation Time
NRC	Non-Recurring Charge
OSSs	Operations Support Systems
POP	Point of Presence
POTS	Plain Old Telephone Service
R-dollars	Repair Expenses
RT	Remote Terminal
RTU	Right To Use
SAI	Serving Area Interface
SCIS	Switching Cost Information System
SONET	Synchronous Optical Network
TELRIC	Total Element Long Run Incremental Cost
THC	Telephone Holding Company
UDLC	Universal Digital Loop Carrier
UNE	Unbundled Network Element
UNE-L or UNE-Loop	Unbundled Loop
UNE-P or UNE-Platform	Unbundled Loop and Switching, provided in combined or unseparated form
WACC	Weighted Average Cost of Capital

Short Names for Key Cases and Regulatory Decisions

Short Form	Long Form
AT&T Corp.	*AT&T Corp. v. Iowa Utilities Board*, 525 U.S. 366, 119 S.Ct. 721, 142 L.Ed.2d 835 (1999).

Short Form	**Long Form**
Consolidated Arbitrations docket or proceeding	*Consolidated Petitions of New England Telephone and Telegraph Company d/b/a NYNEX, Teleport Communications Group, Inc., Brooks Fiber Communications, AT&T Communications of New England, Inc., MCI Communications Company, and Sprint Communications Company, L.P., pursuant to Section 252(b) of the Telecommunications Act of 1996, for arbitration of interconnection agreements between NYNEX and the aforementioned companies*, Massachusetts DTE Dockets D.T.E./D.P.U. 96-73/74, 96-75, 96-80/81, 96-83, 96-94
FCC's Arkansas /Missouri 271 Order	*In the Matter of Joint Application by SBC Communications, Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Arkansas and Missouri,* CC Docket 01-194, Memorandum Opinion and Order, No. FCC 01-338 (released Nov. 16, 2001)
FCC's Kansas /Oklahoma 271 Order	*In the Matter of Joint Application by SBC Communications, Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Kansas and Oklahoma*, CC Docket 00-217, "Memorandum Opinion and Order" No. FCC 01-29, 16 FCC Rcd. 6237 (rel. Jan. 22, 2001)
FCC's First Local Competition Order	*In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996,* CC Docket 96-98, First Report and Order, No. FCC 96-325 (released August 8, 1996)
FCC's Line Sharing Order	*In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability* (CC Docket 98-147) and *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996* (CC Docket 96-98), Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, No. FCC 99-355 (released December 9, 1999)
FCC's Line Sharing Clarification Order	*In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability* (CC Docket 98-147) and *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996* (CC Docket 96-98), Third Report and Order on Reconsideration in CC Docket No. 98-147 and Fourth Report and Order on Reconsideration in CC Docket No. 96-98, No. FCC 99-355 (released January 19, 2001)
FCC's Massachusetts 271 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,* CC Docket No. 01-9, Memorandum Opinion and Order, No. FCC 01-130 (released April 16, 2001)

Short Form	**Long Form**
FCC's Pennsylvania 271 Order	*In the Matter of Application of Verizon Pennsylvania Inc., Verizon Long Distance, Verizon Enterprise Solutions, Verizon Global Networks Inc., and Verizon Select Services Inc. for Authorization to Provide In-Region, InterLATA Services in Pennsylvania*, CC Docket 01-138, Memorandum Opinion and Order, No. FCC 01-269 (released Sept. 19, 2001)
FCC's Rhode Island 271 Order	*In the Matter of Application by Verizon New England Inc., Bell Atlantic Communications Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions), Verizon Global Networks Inc., and Verizon Select Services Inc., for Authorization to Provide In-Region, InterLATA Services in Rhode Island*, CC Docket 01-324, Memorandum Opinion and Order, No. FCC 02-63 (released February 22, 2002)
FCC's UNE Remand Order	*In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket 96-98, Third Report and Order, No. FCC 99-238 (released November 5, 1999)
FCC's USF Inputs Order	*In the Matter of Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Tenth Report and Order, No. FCC 99-304 (released November 2, 1999)
FCC's USF Platform Order	*In the Matter of Federal-state Joint Board on Universal Service and Forward-Looking Mechanism for High Cost Support for Non-Rural LECs*, CC Docket 96-45, CC Docket 97-160, Fifth Report and Order, No. FCC 98-279 (released Oct. 28, 1998)
Maine UNE Rates Order	*Investigation of Total Element Long-Run Incremental Cost (TELRIC) Studies and Pricing of Unbundled Network Elements*, Maine Public Utility Commission Docket 97-505, Order dated February 12, 2002.
New Hampshire 271 Conditions Order	*Application of Verizon New England, Inc. d/b/a Verizon New Hampshire, for a Favorable Recommendation to Offer InterLATA Service Under 47 U.S.C. 271*, New Hampshire Public Utilities Commission Docket DT 01-151, Letter Order with Conditions (March 1, 2002)
New Jersey UNE Rates Order	*In the Matter of the Board's Review of Unbundled Network Elements Rates, Terms and Conditions of Bell Atlantic New Jersey, Inc.*, New Jersey Board of Public Utilities Docket No. TO00060356, Summary Order of Approval (December 17, 2001)
New York UNE Rates Order	*Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements*, New York Public Service Commission Case 98-C-1357, Order on Unbundled Network Element Rates (issued January 28, 2002)
Rhode Island UNE Inputs Order	*In re Review of Bell Atlantic-Rhode Island TELRIC Study*, Rhode Island Public Utilities Commission Docket No. 2681, Report and Order No. 16793 (issued November 18, 2001).

Short Form	**Long Form**
Vermont UNE Rates Order	*Investigation into New England Telephone and Telegraph Company's (NET's) tariff filing re: Open Network Architecture, including the unbundling of NET's network, expanded interconnection, and intelligent networks in re: Phase II, Module 2 – Cost Studies*, Vermont Public Service Board Docket 5713, Order entered February 4, 2000.

I. INTRODUCTION.

A. The Department's Task is to Set TELRIC-Compliant Rates that Permit UNE-Based Competition, Not to Pick and Choose Among Models.

As the FCC recently reminded us, the Telecommunications Act of 1996 "is premised on the notion that federal and state regulators can and should promote competition by requiring incumbent LECs to provide inputs to other LECs so that the latter may compete with the incumbent for customers."[1] Setting reasonable UNE rates that are truly cost-based, and that therefore are low enough to permit UNE-based competition, is crucial to the future viability of local exchange competition in Massachusetts. In the FCC's words, "prices for the interconnection and network elements critical to the development of a competitive local exchange [market] should be based on the pro-competition, forward-looking, economic costs of those elements…"[2]

The Department opened this docket to investigate "the appropriate pricing, based upon Total Element Long Run Incremental Costs, for unbundled network elements and combinations of unbundled network elements to be charged by Verizon New England, Inc. d/b/a Verizon Massachusetts ('Verizon')."[3] As this vote and the governing statute make clear,[4] and as the parties have agreed, the task for the Department is to establish appropriate, forward-looking, and TELRIC-compliant rates for UNEs. In evaluating the voluminous and complex record in this case, we must not lose sight of the true goal: the setting of pro-competitive rates. The various costing models and related evidence are all potential tools to help the Department set proper rates. The goal, however, is the setting of pro-competitive UNE rates based on forward-looking, economic costs, not the selection of one model over another.

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1 *In The Matter Of Performance Measurements And Standards For Unbundled Network Elements And Interconnection*, CC Docket No. 01-318, Notice of Proposed Rulemaking No. FCC 01-331, ¶ 2 (Nov. 19, 2001).

2 *FCC's First Local Competition Order* ¶ 705.

3 Docket DTE 01-20, Notice of Investigation dated January 12, 2001.

During the hearings, the Department asked "which is more important for the Department to be deciding: the model to use to develop TELRIC costs or the inputs that go into that model?"[5] Dr. Mercer advised the Department that setting proper rates is more important than model selection, and that choosing the proper inputs is generally a more significant determinant of the rates than selecting among competing models.[6] The next day Verizon's witness Dr. Tardiff "wholeheartedly agree[d]" with this fundamental point, explaining "that, at least from the view of the Commission, the important thing is to use whatever models you have to establish the correct rates."[7] The "correct rates" are TELRIC-compliant rates that are low enough to foster local exchange competition.

For the reasons discussed below, the record in this case supports substantial reductions in UNE rates for Massachusetts. The Department has conducted a thorough investigation and with the parties has developed an extensive record. AT&T very much appreciates the hard work and close attention that the Telecommunications Staff and its special consultant have given and continue to give to the issues in this case. At this time, in this proceeding and in others including Dockets 01-31 and 01-34, the Department is in the process of adjusting the telecommunications regulatory regime in Massachusetts. It has the opportunity to establish a markedly pro-competitive paradigm. The evidence in this case fully supports the adoption of much lower UNE rates that can make Massachusetts a true leader in the development of robust local exchange competition, with the attendant pricing and service quality benefits that such competition will bring to Massachusetts consumers.

(..continued)

[4] *See* 47 U.S.C. § 252(d)(1) (state commissions are to determine "just and reasonable rate for network elements," in accord with FCC's pricing rules).

[5] Tr. 3010, 2/5/02 (Baldwin).

[6] Tr. 3011, 2/5/02 (Mercer).

[7] Tr. 3134, 2/6/02 (Tardiff).

B. UNE Rates Should Not be Biased Upward In the Belief that Doing So Would Promote Facilities-Based Competition.

The Department should not be led astray by any suggestion by Verizon that higher UNE rates are desirable because they will purportedly foster facilities-based competition. Such a suggestion is wrong both as a matter of law and as a matter of fact. Any position that is contrary to law and unsupported by fact would, of course, also be bad public policy.

As a matter of law, CLECs may choose to provide service to retail customers wholly through the use of combinations of UNEs, leased from ILECs, and cannot be required to build or own any portion of the network or other facilities in order to do so.[8]

> The Act contemplates three paths of entry into the local market – the construction of new networks, the use of unbundled elements of the incumbent's network, and resale. The 1996 Act requires us to implement rules that eliminate statutory and regulatory barriers and remove economic impediments to each.[9]

Congress directed that CLECs be permitted to "access the incumbent's network elements through the methods described in the Act" because the theoretical option of a CLEC "construct[ing] an entire network" of its own is "an obvious burden to market entry."[10]

As a matter of fact, high UNE rates will impede – not foster – facilities-based competition. Although over time surviving CLECs will have an incentive to develop their own networks where it is technically and economically feasible to do so, the 1996 Telecommunications Act was designed to jump-start the development of effective local exchange competition by permitting CLECs to use some or all of the existing networks to provide service to retail customers.[11] This was done in part because an ILEC's "existing

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[8] *AT&T Corp. v. Iowa Utilities Board*, 525 U.S. 366, 392-392, 119 S.Ct. 721, 736, 142 L.Ed.2d 835 (1999).

[9] *FCC's First Local Competition Order* ¶ 12.

[10] *In re Petition of Verizon New England, Inc.*, ___ Vt. ___, ___ A.2d ___, Docket No. 2000-118, slip. op. at 7 (Feb. 22, 2002) (affirming Vermont Public Service Board order that Verizon must provide CLECs with access to UNE combinations that it ordinarily combines for its retail customers, even if they are not currently physically combined when ordered by the CLEC). An advance copy of the opinion is available at: < gopher://dol.state.vt.us/0R0-39516-gopher_root3:%5Bsupct.current%5D2000-118.op;1 >.

[11] *FCC's UNE Remand Order*, ¶¶ 5-7, 12-13.

infrastructure enables it to serve new customers at a much lower incremental cost than a facilities-based entrant that must install its own switches, trunking and loops to serve its customers."[12] This was Congress' understanding when it passed the 1996 Act.

> [I]t is unlikely that competitors will have a fully redundant network in place when they initially offer local service because the investment necessary is so significant. Some facilities and capabilities .. will likely need to be obtained from the incumbent [LEC] as network elements pursuant to section 251.[13]

The FCC has determined that, even in areas where facilities-based competition is a worthy long-term goal, "the ability of requesting carriers to use unbundled network elements, including various combinations of unbundled network elements, is a necessary precondition to the subsequent deployment of self-provisioned network facilities."[14] In the Section 271 context the FCC has similarly emphasized that "the ability of requesting carriers to use unbundled network elements, as well as combinations of unbundled network elements, is integral to achieving Congress' objective of promoting competition in the local telecommunications markets."[15]

In sum, fair access to UNEs is not only mandated by law, it is also pivotal to the development of robust local exchange competition. But without substantially lower, pro-competitive UNE rates, there will be no fair access and Massachusetts consumers will be denied the pricing and service benefits of robust retail competition.

C. UNE Rates Must be Set In Accord with the FCC's TELRIC Methodology.

The FCC has established the Total Element Long-Run Incremental Cost ("TELRIC") methodology as the basis for setting UNE rates.[16] TELRIC-compliant rates are needed to permit "potential new entrants to purchase unbundled incumbent LEC network elements to compete

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[12] *FCC's First Local Competition Order* ¶ 10.

[13] Joint Statement of Managers, S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess., at 148 (1996), quoted in *FCC's UNE Remand Order*, ¶ 6.

[14] *FCC's UNE Remand Order* ¶ 5.

[15] *E.g., FCC's Massachusetts 271 Order* ¶ 117, fn. 379; *FCC's New York 271 Order* ¶ 230.

[16] *See* 47 C.F.R. § 51.505; *FCC's First Local Competition Order* ¶¶ 672-711.

efficiently to provide local exchange services."[17] The FCC's TELRIC rules remain in effect, and govern the setting of UNE rates in this proceeding.[18] Verizon concedes this point, acknowledging that "[a]pplication of the TELRIC methodology is currently required by the FCC's rules" for setting UNE rates.[19]

The fact that the TELRIC standard governs here is not a matter of contention. In its Vote and Order opening this proceeding, the Department has already determined and specified that it will apply the TELRIC standard.[20] Verizon stipulated at the outset of this proceeding that it will "charge what the Department finds to be appropriate TELRIC rates."[21] One year later, Verizon still agrees that "the TELRIC rules as currently in effect are what we're applying" to set UNE rates in this proceeding.[22] Since Verizon stipulated at the outset that the Department should apply the TELRIC standard, and for the past year has litigated this complex and time-consuming case on that premise, it should not be heard now or later to challenge the setting of UNE rates in this proceeding on the basis of the TELRIC methodology.

1. Under TELRIC, We Must Ignore Embedded Costs and Instead Set UNE Rates that are Forward-Looking and Reflect the Least-Cost, Most Efficient Way of Providing the Element in the Long-Run.

In their most general terms, the FCC's UNE pricing rules provide that the "total element long-run incremental cost of an element is the forward-looking cost over the long run of the total quantity of the facilities and functions that are directly attributable, or reasonably identifiable as incremental to, such element, calculated taking as a given the incumbent LEC's provision of

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17 *FCC's First Local Competition Order* ¶ 672.

18 *See Iowa Utilities Board v. FCC*, Docket Nos. 96-3321 *et al*., Order on Motion to Stay Mandate, (8th Cir., Sept. 25, 2000); *FCC's Massachusetts 271 Order* ¶ 17. *See also, e.g., FCC's Rhode Island 271 Order* ¶ 20; *FCC's Arkansas/Missouri 271 Order* ¶ 48; *FCC's Pennsylvania 271 Order*, Appendix C, ¶ 46.

19 Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 17.

20 Docket DTE 01-20, Vote and Order to Open Proceeding at 5. 7 (Jan. 12, 2001).

21 Procedural Conference Tr. 14, 2/8/01 (Beausejour, attorney for Verizon-Massachusetts).

22 Tr. 1582, 1/24/02 (Anglin).

other elements."[23] The rules also make a critical efficiency assumption, mandating that costs for access to UNEs "be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network configuration, given the existing location of the incumbent LEC's wire centers."[24]

The FCC rejected two alternative network assumptions, deciding against using either a so-called "scorched earth" model in which no consideration whatsoever is given to existing network design, or the "embedded cost methodology" in which the existing network and technology "that are currently in operation" are used for the model network.[25] The FCC instead adopted a third approach, in which the locations of existing wire centers remain unchanged but otherwise a "reconstructed local network [that] will employ the most efficient technology" becomes the basis for the TELRIC network model.[26] This is sometimes referred to as a "scorched node" methodology.

Verizon's recurring cost panel witnesses argued, wrongly, that the "scorched node" approach embodied in TELRIC is "economically incorrect."[27] The FCC disagrees, and to the contrary states in its regulations that this methodological construct is the very definition of "forward-looking economic cost."[28] In the words of Verizon witnesses Drs. Taylor and Tardiff, under TELRIC "the ILEC's costs are determined with reference to a hypothetical carrier that is able to install new network equipment in the current locations of the ILEC's central offices."[29]

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[23] 47 C.F.R. § 51.505(b).

[24] 47 C.F.R. § 51.505(b)(1). *See also* Tr. 22, 1/7/02 (Taylor).

[25] *FCC's First Local Competition Order* ¶¶ 683-684.

[26] *FCC's First Local Competition Order*. ¶ 685.

[27] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 24.

[28] *See* 47 C.F.R. § 51.505(a) (forward-looking economic cost equals TELRIC of an element plus reasonable allocation of forward-looking common costs) and § 51.505(b)(1) (defining TELRIC to encompass the scorched node approach).

[29] Timothy Tardiff, William Taylor, Charles Zarkada, and Jaime d'Almeida, *An Economic Evaluation of Network Cost Models*, Appendix A at 4, published by the National Economic Research Associates (Aug. 7, 2000); reprinted in relevant part at Ex. ATT-3, Hirshleifer Surrebuttal, Attachment JH-12; *see also* Tr. 21-22, 1/7/02 (Taylor).

To eliminate any doubt regarding how to evaluate forward-looking efficiency, the TELRIC rules specify that embedded costs, "the costs that the incumbent LEC incurred in the past and that are recorded in the incumbent LEC's books of accounts," "shall not be considered in a calculation of the forward-looking economic cost of an element."[30] In other words, Verizon does "not get the benefit of recovering inefficient embedded costs."[31] This follows from the long-run nature of the TELRIC costing exercise.[32]

"In a TELRIC methodology, the 'long run' used shall be a period long enough that all costs are treated as variable and avoidable."[33] "[T]he long run is measured by how long it takes for current contracts to become irrelevant, for the firm to be in a position where it can effectively change any decision -- any capital technology, any hiring practice, anything like that -- that it has currently in the ground today."[34] Thus, the goal here is to estimate the costs that would result if Verizon could "choos[e] and arrang[e] its plant to produce the required level of output in the most efficient manner possible."[35]

2. A TELRIC Model Must Estimate the Forward-Looking Cost for the Entire Element, and Then Derive Per Unit Costs.

TELRIC is "a version of the methodology commonly referred to as TSLRIC," the difference being that it is used to estimate the forward-looking cost of an entire unbundled network element, rather than a single service.[36]

"The increment that forms the basis for a TELRIC study shall be the entire quantity of the network element provided."[37] Thus, as Dr. Taylor explained, under TELRIC Verizon is assumed to continue as a monopolist in the wholesale market, serving the entire increment of demand for

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30 47 C.F.R. § 51.505(d)(1).
31 Tr. 227, 1/7/02 (Hirshleifer).
32 Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 16.
33 *FCC's First Local Competition Order* ¶ 692.
34 Tr. 24, 1/7/02 (Taylor).
35 Ex. VZ-1, Taylor Direct, at 6.
36 *FCC's First Local Competition Order*, ¶ 678.

each element, for both itself and all other retail providers.[38] Once the aggregate cost is determined, "the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element."[39] This total usage for the element is to include the demand by CLECs and the usage by Verizon for its own retail customers.[40]

D. Any Doubts Must be Resolved In Favor of Lower UNE Rates, Especially Given Verizon's Burden of Proof, the Period of Time These Rates Are Likely to Be In Effect, and that Telecommunications is a Declining Cost Industry.

Verizon bears the burden of proving "that the rates for each element it offers do not exceed the forward-looking economic cost per unit of providing the element," measured in accord with the TELRIC methodology.[41] Verizon must prove both "the nature and magnitude of any forward-looking cost that it seeks to recover."[42] In an adjudicatory proceeding any doubt must be resolved against the party that has the burden of proof.[43] Since the burden is on Verizon to prove the nature and magnitude of the UNE rates set in this proceeding, any doubt about any aspect of the forward-looking costs to be recovered must be resolved by selecting inputs, methodologies, and costs that result in UNE rates at the lower end of the range of reasonableness.

This is particularly important given that the Department intends to adopt UNE rates that will be in place for the next five years.[44] If it is to set UNE rates today that will remain

(..continued)

[37] *FCC's First Local Competition Order*, ¶ 690.

[38] Tr. 16-17, 1/7/02 (Taylor); Timothy Tardiff, William Taylor, Charles Zarkada, and Jaime d'Almeida, *An Economic Evaluation of Network Cost Models*, Appendix A at 4, published by the National Economic Research Associates (Aug. 7, 2000); reprinted in relevant part at Ex. ATT-3, Hirshleifer Surrebuttal, Attachment JH-12.

[39] *FCC's First Local Competition Order*, ¶ 682.

[40] 47 C.F.R. § 51.511(a).

[41] 47 C.F.R. § 51.505(e).

[42] *FCC's First Local Competition Order*, ¶ 680.

[43] *E.g., Western Massachusetts Lifecare Corp*. v. *Board of Assessors of Springfield*, 434 Mass. 96, 101 (2001); *Simas* v. *First Citizens' Federal Credit Union*, 170 F.3d 37, 49 (1st Cir. 1999).

[44] Docket DTE 01-20, Vote and Order to Open Investigation, at 5 (Jan. 12, 2001).

reasonable over a period of approximately five years, the Department must anticipate likely changes that will tend to cause the per unit forward-looking cost over that period of time to decrease. If the cost of providing an entire element is likely to decrease over time, and especially if on top of that the number of units demanded is likely to increase, then the Department will have to make sure that it adopts UNE rates that will best approximate the forward-looking costs anticipated for the mid-point of the period for which the rates are expected to remain in effect. Otherwise, if the Department looks solely to evidence regarding cost and demand today, it will inadvertently err by adopting rates that overcharge CLECs during the life of those rates.

Verizon concedes this point, at least conceptually.[45] For example, Verizon: (i) says that one should calculate switch usage MOU charges based on a projection of the usage at the "midpoint of the planning cycle;"[46] (ii) claimed to reflect productivity gains through the end of 2003[47] (but see Section II.C.1, beginning at page 34, for why this productivity adjustment is inadequate); and (iii) says that per unit OSS costs should be calculated using the levelized 10-year annual demand projection, not the demand projection as of today, in order to avoid "any rate anomalies that might otherwise be created from increased demand during the study period"[48] (but see Section IV.B beginning at page 163, for why Verizon's proposed OSS charge should be rejected).

The Department has previously found that "telecommunications is a declining-cost industry."[49] This remains true.[50] On the equipment side, prices keep declining, and Verizon's recurring cost witnesses concede that Verizon will continue to be able over time to buy the same

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[45] Tr. 1623-1624, 1/24/02 (Matt).

[46] Ex. VZ-37, Verizon Recurring Cost Study, Workpaper Part C-2, Section 4, Page 2.

[47] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 55.

[48] Ex. VZ-26, Minion Direct, at 13.

[49] *Petition of AT&T Communications of New England, Inc., for an alternative mode of regulation of the Company's Massachusetts intrastate telecommunications services*, Docket DPU 91-79, at 45 (June 22, 1992).

[50] Ex. ATT-29P, Donovan Surrebuttal, at 33-34; Ex. ATT-26, Mercer Surrebuttal, at 50; Ex. ATT-24P, Baranowski Surrebuttal, at 4.

capacity for less, or get far greater capacity for the same cost.[51] On the labor side, productivity gains continue to outstrip labor rate increases.[52] In New York, Verizon conceded that one should assume 3.33 percent annual productivity growth above inflation, which it says translates to real productivity growth of 5.88 percent if one accounts for inflation. (*See* Section II.C.1 beginning at page 34, for discussion and citations.) Because telecommunications is a declining cost industry, one should expect that over time the forward-looking cost of providing UNEs will have decreased.[53]

As a result, "prices that constitute appropriately forward-looking inputs to a TELRIC model one year can quickly become outdated and lead to inappropriately high cost estimates."[54] The Department must guard against this both by explicitly attempting to anticipate declining per unit costs, and by rigorously applying the burden of proof in this case and resolving all doubts in favor of lower, pro-competitive UNE rates.

In the following sections of this brief, AT&T applies the foregoing principles in a detailed review of the record evidence to demonstrate the appropriate, cost-based UNE rates that we ask the Department to approve.

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51 Tr. 1676, 1/24/02 (Matt) (re switching prices); Tr. 2527, 2/1/02 (Gansert) (same re outside plant).
52 Tr. 3106-3017, 2/6/02 (Donovan).
53 Ex. ATT-26, Mercer Surrebuttal, at 50; Ex. ATT-24P, Baranowski Surrebuttal, at 4.
54 Ex. ATT-29P, Donovan Surrebuttal, at 33-34.

II. GENERAL INPUTS: AT&T'S RECOMMENDATIONS AS TO COST OF CAPITAL, DEPRECIATION LIVES, AND OTHER GENERAL INPUTS OR ADJUSTMENTS ARE REASONABLE, BUT THOSE OF VERIZON ARE NOT.

A. WACC: Verizon's Cost of Capital Estimate Is Based on a Deeply Flawed Analysis and Greatly Exceeds the Cost of Capital Adopted by Every Other State in the Verizon-East Territory.

The record supports adoption of the 9.54% weighted average cost of capital ("WACC") recommended by AT&T's witness Dr. Hirshleifer, and rejection of the exorbitant 12.6% WACC advocated by Verizon. The 9.54% WACC advocated by AT&T is consistent with the decisions of other state commissions in the Verizon-East region, whereas the 12.6% WACC proposed by Verizon is both out of line with the results in other states and not supported by any Massachusetts-specific evidence or analysis.

An incumbent ILEC's weighted average cost of capital ("WACC") is determined by adding: (1) the forward-looking cost to the ILEC (return it must pay) of equity, multiplied by the percentage of equity in its capital structure, and (2) the forward-looking cost to the ILEC of debt, multiplied by the percentage of debt in its capital structure.[55] In order that the WACC be forward-looking for purposes of this proceeding, it must be based upon reasonable projections of the cost of equity capital, the cost of debt, and the capital structure that would be faced by the incumbent wholesale provider of UNEs.

In this case the difference between the WACC proposed by Verizon and that proposed by AT&T is explained almost entirely by the excessive and unsupportable cost of equity assumed by Verizon.

Verizon's witness Dr. Vander Weide estimates Verizon's WACC to be 12.95%.[56] This estimate is based on a cost of equity of 14.75%, a cost of debt of 7.55%, and a capital structure

[55] Ex. ATT-1, Hirshleifer Direct, at 3.
[56] Ex. Vz-3, Vander Weide Direct, at 50.

containing 25% debt and 75% equity.[57] For the purposes of its cost study, Verizon actually adopted a slightly lower, but still exorbitant, WACC of 12.6%.[58]

In contrast, AT&T's expert witness, John Hirshleifer, estimates Verizon's weighted average cost of capital to be in the range of 9.17 to 9.91% and recommends that the Department adopt the midpoint of this range, or 9.54%.[59] Mr. Hirshleifer estimated a cost of equity for Verizon of 10.42% and a cost of debt of 7.86%.[60] Because there are no publicly traded companies engaged solely in provisioning wholesale UNEs, Mr. Hirshleifer used a range of capital structures to determine his WACC estimate.[61] As an upper bound, he used the average market capital structure weights (20% debt/80% equity) of a group of Telephone Holding Companies ("THCs"). As a lower bound, he used the average book value capital structures (49% debt/51% equity) of the THCs.[62]

There a number of fundamental flaws in Dr. Vander Weide's methodology that cause him to significantly overstate Verizon's WACC. Thus, it is not surprising that every other jurisdiction in the Verizon territory has rejected Verizon's WACC estimate. The Department should do the same and avoid adopting an unreasonably high WACC that would lead to UNE rates that are not TELRIC compliant and that would foreclose CLEC competition in the Massachusetts local services market.

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57 Ex. Vz-3, Vander Weide Direct, at 50.
58 Ex. Vz-3, Vander Weide Direct, at 4.
59 Ex. ATT-1, Hirshleifer Direct, at 36-37.
60 Ex. ATT-1, Hirshleifer Direct, at 36-37.
61 Ex. ATT-1, Hirshleifer Direct, at 36-37.
62 Ex. ATT-1, Hirshleifer Direct, at 36-37.

1. Other Verizon-East States Have Adopted a WACC Close To or Lower Than the Result Supported by Mr. Hirshleifer, and Dr. Vander Weide Concedes There is No Massachusetts-Specific Evidence to Support a Higher WACC Here.

Massachusetts is not the first state in which Verizon has made the WACC arguments that it makes here.[63] As explained below, states other than Massachusetts in the Verizon-East territory have adopted a WACC for setting UNE rates in a range from 8.42 percent to the low to middle 10 percent range, with West Virginia an outlier at 11.25 percent. The most recent decisions have generally been at the low end of that range.

Significantly, Dr. Vander Weide admits that there is nothing unique about Massachusetts that should result in a higher or lower average cost of capital for Verizon to provide UNEs in Massachusetts than for Verizon to provide UNEs in other states.[64] Furthermore, as part of its application to the FCC for Section 271 relief in Rhode Island, Verizon included a joint declaration that discussed various inputs and assumptions adopted by the Rhode Island Public Utilities Commission. In that joint declaration, Verizon admitted that Rhode Island's WACC of 9.5% complied with TELRIC principles and was reasonable.[65] It is not credible for Verizon to argue in this proceeding that AT&T's proposal of a 9.54% WACC for Massachusetts is unreasonable when Verizon has filed a sworn declaration with the FCC affirming that 9.5% is a reasonable WACC for Rhode Island.

In its supplemental response to ATT-VZ 10-3, Verizon provided a chart listing thirteen jurisdictions where Dr. Vander Weide had made a WACC recommendation similar to the one that he has made in this case.[66] According to Dr. Vander Weide himself, the only difference between the 12.95% recommendation that he has made for Massachusetts in the current case and

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[63] Tr. 48-49, 1/7/02 (Vander Weide).

[64] Tr. 51, 89, 1/7/02 (Vander Weide).

[65] Ex. ATT-9, Joint Declaration of Donna C. Cupelo, Patrick A Garzillo and Michael J. Anglin, filed by Verizon-RI in CC Docket No. 01-324, in support of Verizon's Section 271 Application for Rhode Island.

the 13.18% recommendation he made in the other proceedings discussed in Ex. ATT-VZ 10-3 is that he used more recent data in the current proceeding.[67] His methodology has not changed in any way.[68]

For ease of reference, the chart which Verizon provided in its supplemental response to ATT-VZ 10-3 is reproduced below and has been updated to reflect the fact that just days ago New Hampshire ordered Verizon to recalculate its UNE rates "using an 8.42% overall cost of capital,"[69] New Jersey has recently lowered its WACC from 10.4% to 8.8%,[70] and Maine has adopted a WACC of 9.79%.[71] As this chart demonstrates, the jurisdictions that have considered Verizon's WACC arguments have rejected them and adopted WACCs substantially below what Verizon proposed.

Jurisdiction	**Verizon's Proposed WACC**	**Final WACC Adopted By PUC**
Delaware	13.18%	10.28%
Dist. of Columbia	13.18%	TBD
Maine	13.18%	9.79%
Maryland	13.18%	10.10%
Massachusetts[72]	13.18%	12.16%
New Hampshire	13.18%	8.42%
New Jersey	13.18%	8.80%
New York	13.18%	10.50%[73]
Pennsylvania	13.18%	9.83%
Rhode Island	13.18%	9.50%
Vermont	13.18%	9.99%
Virginia	13.18%	10.12%
West Virginia	13.18%	11.25%

(..continued)

66 Ex. ATT-VZ 10-3S.

67 Tr. 50-51, 1/7/02 (Vander Weide).

68 Tr. 50-51, 1/7/02 (Vander Weide).

69 *New Hampshire 271 Conditions Order* at 1.

70 Ex. ATT-8, Excerpt from *New Jersey UNE Rates Order*, at 5.

71 *Maine UNE Rates Order* at 21.

72 As proposed and adopted in the 1996 *Consolidated Arbitrations* proceeding.

73 Though Ex. ATT-VZ 10-3S cites a New York WACC of 10.2%, the recent *New York UNE Rates Order* adopted a WACC of 10.5%.

Although the majority of the decisions set forth in the chart above were from the 1997 timeframe, it is notable that more recent decisions, including Pennsylvania (August 1999), Vermont (February 2000), Rhode Island (November 2001), New Jersey (December 2001) and Maine (February 2002), and New Hampshire (March 2002) have demonstrated a trend toward even lower WACCs.[74]

Massachusetts is the only state in the Verizon-East territory that has adopted a WACC even close to the WACC which Verizon has proposed in the present case. The FCC, however, expressed serious reservations about the 12.16% WACC adopted during the 1996 *Consolidated Arbitrations* proceeding in Massachusetts.[75] In its Massachusetts 271 Order, the FCC noted that the Massachusetts cost of capital was "substantially higher than the cost of capital employed by any of the other states in Verizon's region" and questioned "whether this relatively high cost of capital is sufficiently justified by state-specific factors."[76] Despite these clear admonitions, Verizon is actually seeking a WACC that is ***higher*** than the one criticized by the FCC in its Massachusetts 271 Order. Furthermore, Dr. Vander Weide has admitted that there is nothing unique about Massachusetts that should result in a higher cost of capital for Verizon in Massachusetts than in other states.[77]

Verizon's own admissions, and the decisions of every other jurisdiction in the Verizon territory, demonstrate that Verizon's WACC proposal lacks credibility and should be rejected.

2. Verizon Significantly Overstated its Cost of Equity

The primary driver of the difference between the WACC estimates of Dr. Vander Weide and Mr. Hirshleifer is the assumptions they made regarding Verizon's cost of equity capital. Dr. Vander Weide made a number of unreasonable assumptions that caused him to significantly

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74 Tr. 54, 1/7/02 (Vander Weide).
75 *FCC's Massachusetts 271 Order*, ¶ 38.
76 *FCC's Massachusetts 271 Order*, ¶ 38.

overestimate Verizon's cost of capital as 14.75%. The most significant of Dr. Vander Weide's errors was his use of a single-stage discounted cash flow ("DCF") model that unreasonably assumes that Verizon will continue to grow at a rate significantly above the growth rate of the U.S. economy as a whole; quite literally, this means he assumed that someday Verizon will subsume the entire U.S. economy. Mr. Hirshleifer, on the other hand, made the far more reasonable assumption that Verizon's growth may outpace the rest of the economy for 20 years, but thereafter can only be expected to be equal to the growth rate of the U.S. economy. Dr. Vander Weide compounds his error by overstating the risk faced by Verizon in providing wholesale UNEs, going so far as to claim that Verizon will face the same risk as the Standard & Poor's Industrials, a contention that has been rejected elsewhere. Mr. Hirshleifer, on the other hand, conservatively estimates that Verizon's risk in the wholesale UNE market is more accurately reflected by the telephone holding companies ("THCs").

a. Vander Weide's Single-Stage DCF Model Unreasonably Assumes That Verizon's Growth Will Forever Outpace the Growth Rate of the Entire U.S. Economy.

Verizon's unreasonable WACC estimate has been rejected by every other jurisdiction in the Verizon-East territory. The biggest flaw in Verizon's discredited analysis is Dr. Vander Weide's use of a single-stage DCF model for estimating Verizon's cost of equity which makes the unreasonable assumption that Verizon can continue to grow at a rate exceeding the growth rate of the economy as a whole ***forever***.[78] Mr. Hirshleifer, on the other hand, uses a far more reasonable three-stage DCF model which, unlike Dr. Vander Weide's model, does not assume that Verizon will grow to subsume the entire economy of the United States at a future point in

(..continued)

[77] Tr. 51, 1/7/02 (Vander Weide).

[78] Ex. ATT-2, Hirshleifer Rebuttal, at 5-6.

time.[79] This difference in the DCF models used is the primary driver of the difference in the cost of equity estimates of the two parties,[80] causing Verizon to overstate its cost of equity by at least 371 basis points.[81] Because, as discussed below, Verizon uses a capital structure consisting of 75% equity and only 25% debt, overstating Verizon's cost of equity by 371 basis points leads to an overstatement of Verizon's WACC by more than 278 basis points (371 * 75%). Making this one correction to Dr. Vander Weide's study would therefore reduce his recommended WACC from an unreasonable 12.95% to a still high, but far more reasonable, 10.17%.

In order to justify this enormous increase in the cost of equity, proponents of the single-stage model must make the incredible assumption that sample companies will not only maintain growth rates higher than the growth rate of the national economy forever, but also that the companies' stock prices will not rise to reflect this phenomenal growth.[82] Mr. Hirshleifer's assumption of a three-stage growth pattern for a telecommunications firm such as Verizon, with the firm's growth tracking, rather than outpacing the U.S. economy in the long-run, is clearly a more plausible application of the DCF method.[83] Mr. Hirshleifer's approach is also consistent with the almost universally accepted principle that multi-stage models should be used when evaluating companies whose growth rate exceeds that of the economy as a whole. Not surprisingly, while Mr. Hirshleifer was able to cite to a wide range of experts and academics that support use of multi-stage DCF models,[84] Dr. Vander Weide was unable to cite to a single voice of support for the use of a single-stage DCF model to determine the cost of equity of a company experiencing growth rates that exceed the growth rate of the economy as a whole. If Dr. Vander

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79 Ex. ATT-2, Hirshleifer Rebuttal, at 6-7.
80 Tr. 1/7/02 at p. 45-46 (Vander Weide).
81 Ex. ATT-2, Hirshleifer Rebuttal, at 10.
82 Ex. ATT-2, Hirshleifer Rebuttal, at 10.
83 Ex. ATT-1, Hirshleifer Direct, at 15.
84 Ex. ATT-1, Hirshleifer Direct, at 12-14.

Weide's arguments were actually valid, scholars and experts would support his view, not Mr. Hirshleifer's.[85]

In his three-stage model, Mr. Hirshleifer uses a first stage that lasts five years, because that is the longest horizon over which analysts' forecasts of growth are available.[86] In this first stage, Mr. Hirshleifer assumes that Verizon will grow at rates substantially above the growth rate of the U.S. economy. In the second stage, which lasts fifteen years, Mr. Hirshleifer assumes that Verizon's growth rate will continue to be above average, but will slow a little bit each year until it reaches the same growth level as the U.S. economy as a whole.[87] Finally, in the final stage, beginning in year 21, Mr. Hirshleifer assumes that Verizon's growth rate will be equal to the growth rate of the economy as a whole into perpetuity.[88] Thus, Mr. Hirshleifer has allowed for the possibility that Verizon may outpace the U.S. economy for a full 20 years and thereafter grow at the same rate as the U.S. economy. However, by using a three-stage model, Mr. Hirshleifer avoided the mistake made by Dr. Vander Weide, who unreasonably assumed that Verizon's growth will substantially exceed the growth rate of the U.S. economy forever, leading to the day when Verizon has subsumed the entire U.S. economy. Indeed, if anything, Mr. Hirshleifer's cost of equity estimate is high, because few companies can actually expect to grow at the same rate as the U.S. economy forever.

b. Dr. Vander Weide Unreasonably Assumes That Verizon's Wholesale UNE Business Faces the Same Risks as the Standard & Poor's Industrials.

Another component in determining a company's WACC is to select a group of comparable companies to which the DCF model can be applied. In order to achieve the most accurate result, it is important to use the closest comparable companies for which public market

[85] Ex. ATT-3, Hirshleifer Surrebuttal, at 2.
[86] Ex. ATT-1, Hirshleifer Direct, at 15.
[87] Ex. ATT-1, Hirshleifer Direct, at 15.

data is available.[89] In the present case, this presents a problem because there are no companies dedicated solely to the wholesale provisioning of UNEs for which market data is available.[90]

Dr. Vander Weide chose to make the unreasonable assumption that Verizon's wholesale provisioning of UNEs is very risky, and therefore is comparable to the companies in the Standard & Poor's Industrials.[91] Dr. Vander Weide's use of the S&P Industrials conflicts with FCC guidelines, rational investor expectations, and common sense. The S&P Industrials are comprised of firms which face vastly different risks and opportunities than Verizon or other telecommunications companies.[92] Moreover, this list has dropped companies that have experienced poor or negative growth in the past few years.[93] This has the effect of upwardly biasing the growth rate of the S&P Industrials list as a composite.

Mr. Hirshleifer, on the other hand, based his analysis on the list of telephone operating companies in Standard and Poor's Industry Survey.[94] Such firms, which are in the business of providing competitive telecommunications services, can far more rationally be expected to face similar risks to those faced by Verizon, and thus serve as far superior proxies for estimating the cost of equity capital to Verizon.[95] Indeed, if anything, Mr. Hirshleifer's use of these companies leads to a higher cost of equity than Verizon will actually experience because these companies are engaged in a variety of risky businesses that a company engaged solely in the wholesale provisioning of UNEs would not be engaged in.[96]

(..continued)

88 Ex. ATT-1, Hirshleifer Direct, at 15.
89 Ex. ATT-1, Hirshleifer Direct, at 6.
90 Ex. ATT-1, Hirshleifer Direct, at 6.
91 Ex. VZ-3, Vander Weide Direct, at 48-49.
92 Ex. ATT-2, Hirshleifer Rebuttal, at 11.
93 Tr. 121-122, 1/7/02 (Vander Weide); Ex. ATT-3, Hirshleifer Surrebuttal, at 3.
94 Ex. ATT-1, Hirshleifer Direct, at 7.
95 Ex. ATT-1, Hirshleifer Direct, at 7.
96 Ex. ATT-1, Hirshleifer Direct, at 7, 39.

Dr. Vander Weide's unsupportable choice of the S&P Industrials as purported comparables seems to stem in part from his apparent confusion regarding the business being evaluated in this case. The relevant market for determining the WACC is the market for providing unbundled network elements.[97] Instead of recognizing this, Dr. Vander Weide tries to blur the distinction between the wholesale UNE market and the market for retail local exchange service.[98] For example, in his testimony, Dr. Vander Weide discusses at length the competition allegedly faced by Verizon in providing local exchange service in Massachusetts. However, such competition is irrelevant to the question of the risk faced by a company whose only business is the provisioning of wholesale UNEs.[99]

Verizon itself has recognized this vital distinction between the wholesale UNE market and the retail local services market, reassuring investors that despite the potential for retail competition it will continue to monopolize the wholesale market.[100] Verizon's economic witness explained in this proceeding that under TELRIC "the business decision being modeled is that of a hypothetical local-exchange carrier" that is "providing only wholesale services as separate services."[101] Dr. Taylor and Dr. Tardiff, Verizon-MA witnesses both, have explained that implicit in the TELRIC methodology "are the assumptions that (1) the ILEC will effectively be a monopolist in the provision of network elements for the indefinite future and (2) competitors will need to obtain such elements to compete over this time frame."[102] Under TELRIC "we're measuring the cost, incremental cost, of producing the total volume of service, [which means

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97 Ex. ATT-1, Hirshleifer Direct at 39.

98 Ex. ATT-2, Hirshleifer Rebuttal, at 13.

99 Ex. ATT-2, Hirshleifer Rebuttal, at 14.

100 Bell Atlantic's 4th Quarter 1999 Investor Quarterly, quoted in Ex. ATT-2, Hirshleifer Rebuttal, at 15.

101 Tr. 16, 1/7/02 (Taylor).

102 Timothy Tardiff, William Taylor, Charles Zarkada, and Jaime d'Almeida, *An Economic Evaluation of Network Cost Models*, Appendix A at 4, published by the National Economic Research Associates (Aug. 7, 2000); reprinted in relevant part at Ex. ATT-3, Hirshleifer Surrebuttal, Attachment JH-12.

that] the ILEC must be the only provider of service."[103] Thus it is entirely inappropriate for Dr. Vander Weide to attempt to inflate his cost of capital estimate by taking into account alleged competitive risks that Verizon might face in the retail market. Such risks, even if they were shown to exist, are irrelevant here.

To the limited extent that Dr. Vander Weide does focus on the business of provisioning wholesale UNEs, his claims are not credible. According to Dr. Vander Weide, Verizon faces substantial risk in the provisioning of wholesale UNEs because CLECs may choose to stop using Verizon UNEs in the future and Verizon may be stuck with stranded investment.[104]

> The CLECs either have the opportunity to purchase UNEs from Verizon Communications - Massachusetts, or they have the opportunity to build their own facilities. So Verizon - Massachusetts is essentially providing service to its competitors, who also provide facilities-based local-exchange service. And the reason the risk is so great is that they don't have an obligation to continue to take service from Verizon - Massachusetts. At any point in time they can build their own facilities and discontinue their taking of service from Verizon - Massachusetts.[105]

Thus, for the purposes of his study, Dr. Vander Weide has assumed that Verizon faces substantial risk because he expects the demand for wholesale UNEs to drop in future years. His assumption regarding this risk, however, directly contradicts the assumptions made by Verizon itself.[106] Verizon's Business Plan access line forecast for Massachusetts for the years 2001 through 2006 shows that the demand for Verizon Wholesale UNEs **<Begin Proprietary>** **XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX** **XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX<End Proprietary>**.[107] This same Business Plan shows that Verizon expects its total network demand **<Begin Proprietary>** **XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX**

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[103] Tr. 17, 1/7/02 (Taylor).
[104] Tr. 68, 1/7/02 (Vander Weide).
[105] Tr. 68, 1/7/02 (Vander Weide).
[106] Ex. ATT-VZ 4-292S, Proprietary Attachment, at 3.

XXXXXXXXXX <End Proprietary>.[108] These are Verizon's own, actual projections of the demand upon its network over the next five years to serve its own retail customers plus its wholesale customers. Verizon's actual access line demand forecast cannot be squared with Dr. Vander Weide's unsupported and unsupportable assumption that Verizon will face tremendous risk in the wholesale market for network elements. Dr. Vander Weide's conjecture regarding Verizon's risk is simply not credible and should be ignored.

Finally, any purported risk from future competition is already reflected in the market prices for the telephone holding companies' stock.[109] In the words of Dr. Vander Weide, when investors "estimate the risk of a particular investment" they "consider all the risks that a firm might incur over the future life of the company."[110] Since risks from future competition are already reflected in the market price of the telephone holding companies, there is no need and indeed it is inappropriate to jigger one's analysis to inflate the calculated cost of capital on the basis of abstract assertions of future risk.

The FCC has made clear that Verizon "bear[s] the burden of demonstrating with specificity that the business risks that they face in providing unbundled network elements and interconnection services would justify" a higher cost of capital rate.[111] As discussed above, Dr. Vander Weide merely assumes the existence of such risks, but fails to prove that they exist in the wholesale market for providing UNEs.

Not surprisingly, Dr. Vander Weide's approach has been rejected by almost all states in the Verizon-East region that have considered it.[112] For example, it was recently rejected by the

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[107] Ex. ATT-VZ 4-292S, Proprietary Attachment, at 3.
[108] Ex. ATT-VZ 4-292S, Proprietary Attachment, at 3.
[109] Tr. 182, 194, 1/7/02 (Hirshleifer); Ex. ATT-2, Hirshleifer Direct, at 23.
[110] Ex. VZ-3, Vander Weide Direct, at 18.
[111] *FCC's First Local Competition Order* ¶ 702. *See also* Tr. 181, 183, 1/7/02 (Hirshleifer).
[112] See Table in II.A.1, which begins at page 13, above.

State of Maine Public Utilities Commission which found that "the S&P Industrials are not a reasonably comparable group of companies, because the business risk inherent in their operations generally exceeds the risk faced by a provider of UNEs, and their forecasted growth rates are well above what we would expect for providers of basically monopoly services."[113] Similarly, in its most recent UNE proceeding, the State of Vermont Public Service Board determined that the S&P Industrials were not comparable to Verizon, because "the business of selling network elements should present relatively low risks in the intermediate term."[114]

Although the evidence demonstrates that the choice of comparables has far less impact on the final WACC than the choice of an appropriate DCF model, it still could account for as much as 40 basis points.[115] Thus, correcting Dr. Vander Weide's erroneous selection of the S&P Industrials would further reduce Verizon's WACC from 10.17% (the WACC achieved by merely correcting Dr. Vander Weide's erroneous selection of a single-stage model, discussed in Section II.A.2.a, beginning at page 16) to 9.77%. This is further evidence of the reasonableness of Mr. Hirshleifer's 9.54% recommended WACC.

3. There is Little Disagreement Regarding Verizon's Cost of Debt.

In order to calculate Verizon's WACC, the Department must also determine the cost of debt to Verizon. Fortunately, in this case, there has been no serious dispute on this issue. Verizon's witness, Dr. Vander Weide, estimated Verizon's cost of debt at 7.55%,[116] while AT&T's Mr. Hirshleifer estimated a similar cost of debt of 7.86%.[117] The miniscule difference in these estimates has only a *de minimus* effect on Verizon's overall WACC. Furthermore, because these estimates exclude lower cost short-term debt and are based on the cost of debt for

[113] *Maine UNE Rates Order*, at 20.
[114] *See Vermont UNE Rates Order*, at 33.
[115] Tr. 46-47, 1/7/02 (Vander Weide).
[116] Ex. Vz-3, Vander Weide Direct, at 50.
[117] Ex. ATT-1, Hirshleifer Direct, at 36-37.

Verizon's operations as a whole, instead of the less risky portion of Verizon's business which provides wholesale UNEs, these estimates are likely both conservatively high.[118]

4. Although Capital Structure Has Minimal Impact on Verizon's Overall WACC, the Majority of States Considering the Issue Have Rejected Verizon's Proposed Capital Structure.

The final step in determining a company's WACC is to choose an appropriate capital structure. Most corporations are financed by some combination of equity (common stock) and debt (bonds and bank loans).[119] A company's capital structure is represented by its relative use of equity and debt in financing its businesses.[120]

In the present case, Verizon has proposed a capital structure consisting of 75% equity and 25% debt,[121] while AT&T has proposed a capital structure of 65.5% equity and 34.5% debt.[122] This difference accounts for only between 25 basis points (when applied to Mr. Hirshleifer's reasonable cost of equity estimate) and 40 basis points[123] (when applied to Dr. Vander Weide's unreasonable cost of equity estimate) of the difference between the WACC estimates of the two parties. The Department's decision regarding whether to adopt Dr. Vander Weide's absurd single-stage DCF model or Mr. Hirshleifer's reasonable 3-stage model will be a far greater determiner of whether the Department sets UNE rates that are TELRIC compliant and will allow for effectively CLEC competition in Massachusetts. Thus, AT&T will not spend any further time discussing the capital structure issue, other than to note that almost all Verizon jurisdictions considering this issue have adopted a capital structure with even more debt than AT&T has recommended here.[124]

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[118] Ex. ATT-1, Hirshleifer Direct, at 8-9.
[119] Ex. ATT-1, Hirshleifer Direct, at 33.
[120] Ex. ATT-1, Hirshleifer Direct, at 33.
[121] Ex. Vz-3, Vander Weide Direct, at 45; Tr. 44, 1/17/02 (Vander Weide).
[122] Ex. ATT-1, Hirshleifer Direct, at 4.
[123] Tr. 45, 1/17/02 (Vander Weide).
[124] Ex. ATT-VZ 10-3 Supplemental.

B. Depreciation: The Department Should Adopt the FCC's Forward-Looking Prescribed Lives, and Reject the Unreasonably Short Lives Used by Verizon.

Verizon attempts to inflate projected UNE costs by using unreasonably short depreciation lives in its cost model. AT&T, on the other hand, recommends that the Department adopt the lives specifically prescribed for Massachusetts by the FCC. As will be demonstrated below, Verizon offers little support for its own proposal and fails to rebut AT&T's suggestion that the Department look to the expertise of the FCC. Therefore, the Department should adopt the FCC's Massachusetts-specific depreciation lives for use in determining Massachusetts UNE rates, as it did in the *Consolidated Arbitrations* proceeding.

1. The Overwhelming Majority of States Considering This Issue Have Rejected Verizon's Proposals and Adopted the FCC's Forward-Looking, State-Specific Depreciation Lives.

Verizon has proposed depreciation lives that are shorter than both the lives that the FCC has specifically prescribed for Massachusetts and the range of lives that the FCC has adopted for the nation as a whole. Massachusetts is not the first state where Verizon has proposed such short lives. Almost universally, other states have rejected Verizon's proposed lives and adopted either the FCC lives or lives similar thereto.

For example, the Maine PUC recently rejected Verizon's proposals, finding that "the FCC lives and resulting rates are the best indicator of the economically useful lives of newly installed equipment that will be used to provide service to end-users or provide UNEs to competitors."[125] Similarly, in December 2001, the New Jersey Board rejected Verizon's depreciation proposal. In doing so, the Board found that using depreciation lives at the midpoint of the FCC's prescription range is appropriate and consistent with TELRIC principles.[126] The Rhode Island PUC also ordered Verizon to use the most recent depreciation rates prescribed by

[125] ME UNE Order at 10.

the FCC to set UNE rates.[127] In that decision, the Rhode Island PUC found that the FCC's prescribed lives constitute economic depreciation and are TELRIC compliant.[128]

The Rhode Island ruling is of particular interest because Verizon has stipulated that it was correct. In a joint declaration submitted to the FCC in connection with its Rhode Island § 271 application, Verizon admitted to the FCC that the Rhode Island Commission had made a reasonable decision and complied with TELRIC principles when it adopted the FCC prescribed lives.[129] It is not credible for Verizon to argue in this proceeding that AT&T's recommendation that the Department use the FCC's lives is unreasonable for Massachusetts, when Verizon has filed a sworn declaration with the FCC affirming that the use of those lives was reasonable for Rhode Island.

Verizon's position is further undermined by the sheer number of states that have ruled on this issue in recent years and rejected Verizon's position, choosing instead to adopt FCC or similarly prescribed lives. In addition to Maine, Vermont and Rhode Island, the experts in this case discussed 25 other states that have dealt with the depreciation issue in recent years.[130] An overwhelming 20 out of those 25 states have rejected the position that Verizon has asserted in the present case.[131]

Thus, the record evidence shows that almost all of the states that have dealt with this issue in recent years have rejected Verizon's attempts to inflate its UNE rates through the use of unreasonably short depreciation lives. The Department should similarly reject Verizon's

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[126] Ex. ATT-8, Excerpt from *New Jersey UNE Rates Order*; Ex. ATT-12, Excerpt from WorldCom New Jersey Brief; Tr. 240, 1/8/02 (Sovereign).

[127] Ex. ATT-11, Rhode Island PUC Report and Order in Docket 2681, 11/18/01.

[128] Ex. ATT-11, Rhode Island PUC Report and Order in Docket 2681, 11/18/01.

[129] Ex. ATT-9, Joint Declaration of Donna C. Cupelo, Patrick A Garzillo and Michael J. Anglin, filed by Verizon-RI in CC Docket No. 01-324, in support of Verizon's Section 271 Application for Rhode Island.

[130] Ex. ATT-5, Lee Direct, at 10-13; Ex. ATT-7, Lee Surrebuttal, at 4; Ex. ATT-VZ 24-2; Ex. ATT-VZ 24-3.

[131] Ex. ATT-5, Lee Direct, at 10-13; Ex. ATT-7, Lee Surrebuttal, at 4; Ex. ATT-VZ 24-2; Ex. ATT-VZ 24-3.

proposal and should instead adopt the FCC lives which Verizon itself has recently admitted are appropriate and TELRIC compliant.[132]

2. Verizon's Criticisms of Mr. Lee's Recommendations Are Invalid and Should be Rejected.

Verizon's attack on Mr. Lee's recommendations centers on its invalid assertions that: (1) the FCC's depreciation life prescription for Massachusetts is outdated; (2) the FCC prescribed lives are not forward-looking enough for use in a TELRIC study; (3) technical innovation will reduce the useful lives of Verizon's plant; and (4) AT&T uses shorter depreciation lives for its own reporting purposes than it has recommended for use by Verizon in this docket. Each of these criticisms is invalid and should be rejected.

a. The FCC's Lives Are Not Outdated and Are Still Appropriate for Use in a TELRIC Study.

In its testimony, Verizon suggests that the FCC's lives are outdated and should not be used because they were originally prescribed for Massachusetts in 1996.[133] According to Verizon, the FCC lives are invalid because of changes in the telecommunications industry generally, and Massachusetts specifically, since 1996.[134] Verizon's argument, however, contains a major flaw. Although the FCC did originally prescribe the lives in 1995, the FCC reviewed its prescribed life ranges in 1999 and at that time expressly found that its prescribed lives were appropriate for use by state commissions "for determining the appropriate depreciation factors for use in establishing high cost support and interconnection and UNE prices."[135] Also in 1999,

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[132] Ex. ATT-9, Joint Declaration of Donna C. Cupelo, Patrick A Garzillo and Michael J. Anglin, filed by Verizon-RI in CC Docket No. 01-324, in support of Verizon's Section 271 Application for Rhode Island.

[133] Ex. Vz-7, Sovereign Rebuttal, at 2-3.

[134] Ex. Vz-7, Sovereign Rebuttal, at 2-3.

[135] FCC, 1998 Biennial Regulatory Review- Review of Depreciation Requirements for Incumbent Local Exchange Carriers, CC Docket 98-137, Report and Order, No. FCC 99-397, at ¶ 14 (released December 30, 1999).

the FCC noted that its prescribed lives "represent the best forward-looking estimates of depreciation lives…"[136]

If Verizon truly believed that the Massachusetts-specific lives prescribed by the FCC were outdated, Verizon could have sought re-prescription at the FCC. Verizon made a conscious choice not to, however, because it feared and indeed expected that the FCC would reject any effort by Verizon to substitute short lives for Massachusetts. When pressed on the issue of why Verizon had not sought represcription by the FCC, Verizon's Group Manager responsible for determining economic depreciation lives admitted that in this proceeding Verizon is "asking for lives that are short[er] than what we feel the FCC would prescribe."[137] In other words, Verizon admitted it did not seek re-prescription because it knew that the FCC would reject Verizon's proposed lives and instead adopt longer ones.

Furthermore, Verizon continues to use the FCC's 1996 prescribed lives for Massachusetts for regulatory purposes. Verizon uses those lives for its ARMIS reporting, and for calculating its interstate rate of return for reporting to the FCC.[138]

Thus, Verizon's argument is simply not credible. Verizon first argues that the FCC lives are invalid because they are old and because the FCC might prescribe shorter lives today. Then Verizon admits that it could have remedied the alleged problem of outdatedness by seeking re-prescription but chose not to because it knew the FCC would reject its shorter lives.[139] Having made that decision, it continues to use for regulatory purposes the lives prescribed in 1996. Thus, to accept Verizon's argument would be to reward Verizon for its decision to not seek

[136] FCC, United States Telephone Associations Petition for Forbearance from Depreciation Regulation of Price Cap Local Exchange Carriers, ASD 98-91, Memorandum Opinion and Order, No. FCC 99-397, ¶ 61 (released December 30, 1999).
[137] Tr. 273, 1/8/02 (Sovereign).
[138] Tr. 247, 1/8/02 (Sovereign).
[139] Tr. 273, 1/8/02 (Sovereign).

represcription – a decision motivated by the fact that Verizon knew that a current FCC decision would include longer lives than Verizon is proposing in this case.

b. The FCC's Lives Are Forward-Looking and Appropriate for Use in a TELRIC Study.

In the *Consolidated Arbitrations* proceeding, the Department found that "the FCC's represcription process is based on a forward-looking orientation, including current technological developments and trends."[140] It concluded that "the projection lives prescribed by the FCC in its last represcription of NYNEX's depreciation rates are the kind of forward-looking projection lives required in a TELRIC study."[141]

Verizon has offered no credible support for its claim that the FCC's lives are not appropriately forward-looking for use in a TELRIC study. Mr. Lee has described the evolution at the FCC of the depreciation prescription process, reciting the ways in which both as a matter of policy and as a matter of practice the FCC has employed increasingly forward-looking analysis in determining depreciable lives for telephone companies.[142] Empirical data in the form of recent trends in depreciation reserve levels both for the local exchange industry generally and for Verizon in particular confirm the changes in FCC methodology.[143] As Mr. Lee pointed out, the depreciation reserve level for Verizon-MA has risen from 39.8% in 1991 to 53.8% in 2000 despite a growth rate in plant of over 50%.[144] Additionally, Verizon-MA's depreciation rates have averaged 7.1% over the last 10 years, while its retirement rates have averaged only 3.4%.[145] Thus, if the FCC were prescribing depreciation rates based upon historical indicators, it would be

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[140] *Consolidated Arbitrations* Docket, Phase 4 Order at 55 (Dec. 4, 1996).
[141] *Consolidated Arbitrations* Docket, Phase 4 Order at 56 (Dec. 4, 1996).
[142] Ex. ATT-6, Lee Rebuttal, at 11-13.
[143] Ex. ATT-6, Lee Rebuttal, at 11-13; Ex. ATT-5, Lee Direct at 6-8.
[144] Ex. ATT-6, Lee Rebuttal, at 12.
[145] Ex. ATT-6, Lee Rebuttal, at 12.

prescribing rates in the range of 3 to 5 percent instead of 7 percent.[146] This confirms the forward-looking nature of the FCC's prescriptions.

A final empirical test of the forward-looking nature of current FCC prescriptions can be performed by comparing recent life indications to FCC prescriptions, as follows:[147]

Account Name	Historical Life Indications	FCC Prescribed
Computers	9.6	6.0
Digital Circuit	16.1	11.0
Poles	58.5	38.0
Aerial Cable Metallic	28.4	22.0
Underground Metallic	110.6	25.0
Buried Metallic	40.4	23.0

This data provides confirmation that the FCC's projection life prescriptions are indeed forward-looking and appropriate for use in a TELRIC study.[148] In each case, the prescribed life is less than the latest historical life indication.[149] For example, the Buried Cable-Metallic FCC prescription for VZ-MA is 23.0 years, despite a 40.4 year life indication.[150] If the FCC's projection life prescriptions were not forward-looking, the prescribed life would be the same as the historical life, i.e. 40.4 years.[151]

c. Verizon Has Submitted No Credible Evidence that Technological Innovations and Competition Will Decrease the Useful Lives of Verizon's Plant.

Verizon attempts to justify its unreasonable position by claiming that technological innovations and competition are decreasing the useful lives of its plant and that such innovation,

[146] Ex. ATT-6, Lee Rebuttal, at 12.
[147] Ex. ATT-6, Lee Rebuttal, at 13.
[148] Ex. ATT-6, Lee Rebuttal, at 13.
[149] Ex. ATT-6, Lee Rebuttal, at 13.
[150] Ex. ATT-6, Lee Rebuttal, at 13.
[151] Ex. ATT-6, Lee Rebuttal, at 13.

therefore, counsels for the use of shorter depreciation lives. Verizon's argument, however, unravels upon closer examination.

For example, Verizon's argument is based in part on what it apparently considers the threat of competitors offering fixed wireless services that will allow such competitors to bypass Verizon's network and therefore decrease the need for UNEs.[152] However, a look at the reality of the current marketplace shows that the concerns expressed by Verizon were unfounded and have not come to pass. By the time of the hearings in this case, all of the companies cited by Verizon as being competitive threats via the use of fixed wireless facilities have either filed for bankruptcy or exited the fixed wireless business due to its economic unfeasibility.[153] Verizon was unable to identify a single example of a company that was economically successful with fixed wireless technology.[154]

Additionally, Verizon has provided absolutely no evidence in this case that it expects to face ***any*** competition in the wholesale UNE provisioning market. To the contrary, the record shows that Verizon is likely to face a steady demand for its wholesale services, either from its own retail customers or from CLECs.[155] Because the market for Verizon's wholesale services is the only market relevant to the issues in this case, Verizon's arguments regarding potential retail competition are irrelevant.

In sum, Verizon has provided no evidence of any technological innovation or competition that would justify the use of depreciation lives that are dramatically shorter than those that the FCC has prescribed.

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[152] Ex. Vz-6, Sovereign Direct, at 10-11.
[153] Tr. 247-249, 1/8/02 (Sovereign).
[154] Tr. 249, 1/8/02 (Sovereign).
[155] *E.g.*, ATT-VZ 4-29, Second Supplemental Response (proprietary Business Plan forecast).

d. AT&T's Remaining Lives Are Not Relevant to a Determination of Verizon's Appropriate Projection Lives.

The final Verizon criticism of Mr. Lee's recommendations is its claim that, for its own financial reporting purposes, AT&T uses lives that are even shorter than the lives which Verizon has proposed in this docket.[156] Like many of Verizon's other arguments, however, this one fails upon closer examination.

The AT&T lives cited by Mr. Sovereign are ***remaining*** lives, not ***projection*** lives.[157] A projection life is the life that newly placed plant is expected to have over the course of its service life.[158] This is far different than the remaining life of a plant already in service, which is essentially the number of years that plant already in place is expected to remain in service.[159] Verizon itself has admitted that remaining lives are far shorter than projection lives.[160] For example, in Pennsylvania, Verizon's projection life for fiber is 20 years, but its remaining life for fiber is only 11 years.[161]

Because the only issue in the present case is the appropriate projection lives, remaining lives are irrelevant. Therefore, Verizon's comparison of its projection lives to the remaining lives that AT&T uses in its financial reporting is irrelevant and unpersuasive.

3. Because The FCC Lives Are Appropriate For Use In A TELRIC Study, Verizon's Far Shorter Lives Are Not.

As has been demonstrated above, the lives prescribed by the FCC are forward-looking and appropriate for use in a TELRIC study.[162] Therefore, Verizon's proposed lives must be tested by comparison to either the lives that the FCC has prescribed for Massachusetts or the range that the FCC has established for the nation as a whole. The chart below sets forth some of

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156 Ex. Vz-6, Sovereign Direct, at 14.
157 Tr. 334-335, 1/8/02 (Lee).
158 Tr. 334-335, 1/8/02 (Lee).
159 Tr. 334-335, 1/8/02 (Lee).
160 Tr. 334-335, 1/8/02 (Lee).
161 Tr. 334-335, 1/8/02 (Lee).

the major asset categories that are at issue in this case, and then shows in three columns the lives actually employed by Verizon in its study, the lives currently prescribed by the FCC for use in Massachusetts, and the FCC range.

PROJECTION LIVES (YEARS)[163]

Account	Verizon	FCC Mass	FCC Range
Digital Circuit	9	11	11-13
Aerial Cable - Metallic	18	22	20-26
Underground Cable - Metallic	18	25	25-30
Buried Cable - Metallic	18	23	20-26
All Cable - Fiber	20	25	25-30

As this chart demonstrates, Verizon's lives are materially shorter than the FCC's lives and are therefore ***not*** appropriate for use in a TELRIC study. Indeed, in most cases, the lives proposed by Verizon are even shorter than the low end of the FCC's prescribed range.[164]

AT&T respectfully urges the Department to follow the guidance of the FCC and the overwhelming majority of other states and adopt the Massachusetts-specific FCC lives, as recommended by Mr. Lee. That is what the Department did in the 1996 *Consolidated Arbitrations* proceeding, and Verizon has not met its burden of proving that shorter economic lives should be used in setting UNE rates today.

C. ACFs: Verizon's Other Annual Cost Factors of General Application Are Excessive.

In addition to applying an exorbitant weighted average cost of capital and unreasonably short depreciation lives, Verizon further overstates its claimed UNE costs by applying other general annual cost factors that are excessive. These ACFs cannot withstand close scrutiny, as discussed below. Verizon has not met its burden of proof with respect to these ACFs, and the

(..continued)

[162] *See also Consolidated Arbitrations* Docket, Phase 4 Order at 55-56 (Dec. 4, 1996).

Department should not consider any cost results produced by Verizon's models without making the ACF corrections discussed below.

1. Productivity Adjustments and Inflation: Verizon Has Failed to Account Properly for Ongoing, Annual Productivity Gains.

Verizon concedes that its ACFs need to be adjusted downward to reflect forward-looking savings from productivity gains, and says that it did so through its VCost inputs.[165] However, Verizon provided no explanation, justification, or even quantification of its productivity assumptions when it submitted its recurring cost studies.[166] It turns out that Verizon applied a "composite productivity adjustment used to bring its [actual] 1999 expenses to 2003" equal to 10.7 percent.[167] In presenting this explanation, Verizon was trying to suggest that the productivity adjustment it used in this proceeding is similar to the one it used in New York,[168] which the New York PSC ultimately accepted.[169] Verizon has failed to provide any other support for its productivity assumption in this case.

The productivity adjustment assumed here by Verizon in fact differs markedly from that used in New York. Since Verizon concedes that there is no reason why its productivity in Massachusetts should be less than that in New York, two major corrections must be made to bring the productivity adjustment underlying Verizon's cost models in line with that used in New York. Verizon has not met its burden of proving that it should be permitted to increase its

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[163] Ex. ATT-6, Lee Rebuttal, at Attachment 1.

[164] Ex. ATT-6, Lee Rebuttal, at Attachment 1.

[165] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 55.

[166] *See id.*

[167] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal at 12.

The 10.7 percent figure was calculated as follows: ((1-.0228 *[2000 productivity]*)*(1-.0304)*[2001 productivity]*)*(1-.0273 *[2002 productivity]*)*(1-.0312)*[2003 productivity]*)-1 = -.107. *See* Ex. CC-11, p.2, cell F22 (VCost excerpt) for formula, last two years' productivity assumption (and thus fact that these figures are not proprietary); *see* Ex. CC-VZ 1-16 for first two years' productivity assumptions.

[168] Ex. VZ-38a, Verizon Recurring Cost Panel at 12.

[169] *See New York UNE Rates Order* at 53-56.

expenses by applying a substantially smaller productivity adjustment in this proceeding than it has conceded is proper in the recently completed New York UNE rates case.

First, and most significantly, in New York the productivity adjustment was not offset by inflation. Verizon-New York assumed productivity savings of 10 percent over the three year period from 1998 to 2001 for its non-network ACFs, and productivity savings of two percent for the network ACFs (primarily network maintenance expenses).[170] These adjustments were "above inflation."[171] Verizon-New York argued this point as follows:

> In considering Verizon's productivity adjustments, it must be remembered that no allowance has been made in Verizon's ACFs for the effects of inflation. Thus, the studies assume that, in addition to fully absorbing inflation, Verizon will reduce its network expenses by 2%, from 1998 levels and 10% for non-network expenses from these levels.[172]

For example, the 10 percent adjustment was derived by assuming real productivity gains of 3.33 percent per year over three years.[173] Verizon explained that if one takes into account inflation this "annual figure becomes 5.88% in real terms."[174]

In Massachusetts, however, Verizon has applied its productivity factor in a very different way. Rather than accounting for productivity above inflation as in New York, here Verizon applies both a productivity adjustment and an inflation adjustment so that "one offsets the other."[175] As Mr. Baranowski explained, "the productivity in the VCost model is just about equally offset by assumptions relating to inflation, so that the net effect of the productivity is zero because it's offset by inflation."[176] Indeed, for the three year period from 2000 to 2003 inflation more than outweighs the productivity adjustment: Verizon's cumulative three-year

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[170] *New York UNE Rates Order* at 53.
[171] *Id.*
[172] New York PSC Case 98-C-1357, Verizon New York's Initial Post-Hearing Brief, at 45 (filed February 16, 2001). Available at < http://www.bellatlantic.com/regulatory/ny/VZInitialBrief.pdf >.
[173] *New York UNE Rates Order* at 54.
[174] *Id.*
[175] Tr. 1720-1720, 1/25/02 (Anglin).
[176] Tr. 2166-2167, 1/29/2002 (Baranowski).

inflation assumption of 7.99 percent exceeds its three-year productivity factor of 5.76 percent by 2.23 percentage points.[177]

Second, in New York Verizon conceded that a TELRIC study should assume annual productivity gains "above inflation" of at least 3.33 percent per year.[178] This is substantially higher than the annual productivity gains assumed in this proceeding by Verizon.[179] This annual productivity gain of 3.33 percent must be applied in this proceeding over a five-year period, to adjust the 1999 historic expenses that underlie Verizon's ACFs for productivity gains expected through 2004, the expected mid-point of the period over which rates set in this proceeding will be in effect. Using Verizon's formula, a 3.33 percent annual productivity gain translates to a composite 15.6 percent reduction in expenses over this five year period.[180]

In sum, Verizon's proposed UNE rates are overstated because Verizon increases its historic expenses for inflation, uses too low an annual productivity growth factor, and applies that productivity factor for too short a time. In evaluating the results of the Verizon cost studies, the Department should therefore require that they reflect zero cost inflation and a composite productivity adjustment of negative 15.6%. Making these two changes is necessary to ensure that the UNE rates for Verizon-Massachusetts reflect the same level of real annual productivity gains that have been recognized and that Verizon has conceded are proper in New York.

2. Merger Savings: Verizon Inappropriately Has Ignored the Substantial Savings Resulting from the Bell Atlantic/GTE Merger.

When Bell Atlantic and GTE announced the proposed merger that created Verizon, the companies officially announced in a filing with the Securities and Exchange Commission that their combination would result in "annual expense synergies of approximately $2 billion" and

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[177] *See* Ex. CC-11, p.3 (excerpt from Verizon's VCost inputs).

[178] *New York UNE Rates Order* at 54. *See also* New York PSC Case 98-C-1357, Verizon New York's Brief on Exceptions, at 62 (filed June 21, 2001). Available at < http://www.bellatlantic.com/regulatory/ny/brief.pdf >.

[179] *See* Ex. CC-VZ 1-16, attachment regarding productivity growth; Ex. CC-11, p.2.

"annual capital synergies of approximately $500 million."[181] Verizon has stressed to the FCC that these anticipated savings are not at all uncertain. To the contrary, it presented sworn testimony that the merger "will produce substantial cost savings … that are hard, real, and certain," and that "the new company will achieve, on a continuing basis, $2.0 billion of annual expense savings and $0.5 billion of annual capital expenditure savings."[182] As of the end of 2001, Verizon was in fact well on its way to meeting or exceeding these annual savings goals.[183]

Surprisingly, instead of accounting for these forward-looking savings in its cost studies, Verizon has chosen to ignore them altogether.[184] Because the development of UNE rates in this proceeding must consider the forward-looking cost savings produced by the recent merger, Verizon's common cost factor should be reduced by the amount of the anticipated savings.[185]

Verizon says that the expense savings brought about by the Bell Atlantic/GTE merger are fully accounted for in its productivity factor, and on that basis argues against separately accounting for the merger savings.[186] But this assertion cannot be squared with the facts. The Bell Atlantic/GTE merger creating Verizon was not completed until June 30, 2000.[187] The annual growth in productivity that Verizon purports is based on productivity growth trends and predictions at Bell Atlantic that predate this merger, and thus were not caused by it and do not reflect any impact of it.[188] The New York PSC rejected Verizon's assertions that the

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[180] This figure is derived as follows: $((1-.0333)^5)-1 = -.156$. *See* Ex. CC-11, p.2, cell F22 (VCost excerpt) for formula.

[181] Ex. CC-10 (excerpt of Bell Atlantic's Form S-4 Registration Statement dated April 13, 1999).

[182] RR-DTE-84 (Declaration of Doreen Toben dated Sept. 30, 1998, filed by Bell Atlantic with the FCC to support the Bell Atlantic/GTE merger).

[183] RR-DTE-85.

[184] Ex. ATT-23, Baranowski Rebuttal, at 41.

[185] Ex. ATT-23, Baranowski Rebuttal, at 41-42.

[186] Tr. 1866-1867, 1/25/02 (Anglin); Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 11-12.

[187] *See* Verizon's Annual Report 2000. Available at < http://www.reportgallery.com/work/verizon2000/verizon2000ar11.html >.

[188] Tr. 1864-1865, 1/25/02 (Anglin); *compare* Ex. CC-VZ 1-16 (attachment depicting "Bell Atlantic Labor Productivity Growth") *with* Ex. CC-11, p.2 (excerpt from VCost, using annual productivity assumption taken directly from preceding Bell Atlantic Productivity Growth projection) ; *see also* Tr. 2166, 1/29/2002 (Baranowski).

productivity factor already accounts for additional merger-generated savings, and those assertions have no greater validity here.[189]

Verizon also argues that its ongoing merger savings must be offset by the "transition related expenses" it has incurred in connection with its mergers.[190] But this assertion makes no sense. Verizon has admitted that its one-time merger costs will all have been incurred by the end of 2002, whereas from 2003 onward Verizon projects annual merger-related expense savings of $2 billion.[191] A forward-looking, TELRIC study should not reflect one time, historic costs like the transition costs temporarily incurred by Verizon. In contrast, it should and indeed must account for the ongoing expense savings that will be brought about as a result of this merger. Not surprisingly, the New York PSC agreed that forward-looking UNE rates must reflect the savings from both the Bell Atlantic-NYNEX and Bell Atlantic-GTE mergers.[192] The Department should similarly reject Verizon's effort to ignore its forward-looking merger savings.

The evidence shows that the proper way to account for the acknowledged merger savings is to reduce the common overhead factor by 3.57 percent.[193] This 3.57 percent adjustment is reached by taking the combined GTE/Bell Atlantic revenue of $56 billion (found in the GTE/Bell Atlantic merger proxy) and dividing it by Verizon's annual expected merger related savings of $2 million (found in Bell Atlantic's 1998 Annual Report and Verizon's response to RR-DTE 85) to get a total merger savings of 3.57 percent.[194] If anything, this figure is too low, because the experience of the Bell Atlantic/NYNEX merger has shown that Verizon's actual merger savings may exceed its estimated merger savings by a significant amount.[195] Indeed, the Rhode Island Public Utilities Commission ordered Verizon to reduce its UNE rates by 7.11

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189 *New York UNE Rates Order* at 76.
190 Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 12.
191 RR-DTE 85.
192 *New York UNE Rates Order* at 76.
193 Ex. ATT-25, Mercer Direct, at 29 & RAM-3, § 5.5.2.

percent to account for the merger and process re-engineering savings following the Bell Atlantic/GTE merger to create Verizon,[196] and just days ago the New Hampshire PUC ordered a similar reduction of 6.43% also "to account for merger and process re-engineering savings."[197]

Verizon's error in omitting its substantial merger savings is also noted by AT&T witness Baranowski.[198] In his restatement of Verizon's loop study, Mr. Baranowski reduces Verizon's Joint and Common Overhead Cost Factors by 2.5 percentage points and notes that this is quite conservative because the record evidence has shown that a 3.57 percentage point adjustment would be wholly appropriate.[199]

The record evidence and Verizon's own public statements about the beneficial effects of the merger show that a 3.57 percent reduction to Verizon's joint and common overhead cost percentage would be reasonable, and possibly even conservative.[200] Indeed, Verizon has never disputed – with evidence or through cross-examination – that, if an adjustment is be made to account for the Bell Atlantic/GTE merger savings, a reduction of common overhead by 3.57 percent is proper. The Department should require that Verizon's projected expenses be reduced by at least this amount.

3. FLC: The So-Called Forward Looking To Current Adjustment Is Inconsistent with FCC Precedent, and Is an Improper Attempt to Recoup Embedded Costs.

Verizon has proposed a mis-labeled "forward-looking conversion" ("FLC") adjustment of 80% that serves to inflate its ACFs and therefore its UNE cost estimates above TELRIC

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194 Ex. ATT-25, Mercer Direct, at 29.
195 Ex. ATT-25, Mercer Direct, at 29-30.
196 *Rhode Island UNE Inputs Order* at 76.
197 *New Hampshire 271 Conditions Order* at 2.
198 Ex. ATT-23, Baranowski Rebuttal, at 41.
199 Ex. ATT-23, Baranowski Rebuttal, at 41-42.
200 Ex. ATT-25, Mercer Direct, at 29.

levels.[201] Verizon's FLC factor is nothing more than a thinly veiled attempt to recoup costs associated with its embedded network and current operations.[202] The proposed FLC adjustment is not TELRIC compliant and should be rejected.

Verizon argues that its FLC adjustment is necessary because Verizon's expense factors are based on current expense to investment ratios.[203] According to Verizon, when these expense factors are applied to lower TELRIC investment levels, they will effectively produce for CLECs a windfall reduction in expenses.[204]

But the FCC has rejected this very argument. The FCC has found that to estimate forward-looking economic cost consistent with TELRIC, plant-specific operations expenses of the kind that Verizon tries to capture in its ACFs should be calculated using up-to-date expense-to-investment ratios.[205] The FCC recognizes that application of such an expense-to-investment ratio will result in a lower estimate of forward-looking expenses when the ratio is applied to lower forward-looking investments.[206] But the FCC has expressly rejected arguments, akin to that underlying Verizon's proposed FLC adjustment, that the expense-to-investment ratio must therefore be changed to offset this effect.[207] Verizon's FLC adjustment is inconsistent with this FCC guidance, and inconsistent with TELRIC principles.

The reason why the FCC rejected such an adjustment, and why the Department should do the same in this proceeding, is simple. Because TELRIC envisions a new, least cost, efficient, forward-looking technology-based network built today to serve current demand, many of the embedded Verizon inefficiencies produced by continuing labor intensive efforts with technologically obsolete equipment to serve increasing demand will not exist in the forward-

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[201] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 56, 59-60; Tr. 3478-3479, 2/7/02 (Anglin).
[202] Ex. ATT-23, Baranowski Rebuttal, at 35.
[203] Ex. VZ-36, Verizon Recurring Cost Panel Direct Testimony, at 98-99.
[204] Ex. VZ-36, Verizon Recurring Cost Panel Direct Testimony, at 98-99.
[205] *FCC's USF Inputs Order* ¶¶ 341, 346-347.

looking environment.[208] Furthermore, as telephone technology improves and the equipment becomes more sophisticated, it also becomes less labor intensive and more "user friendly" to operate and maintain.[209] Verizon also fails to acknowledge that in addition to the lower investment required in a forward-looking network, the mix of assets in a forward-looking network will also be different.[210] The forward-looking TELRIC construct allows for the construction of an all-new facility using the most efficient available technology, and the lowest cost network configuration.[211] This will result in lower overall expenses.[212] For example, as Mr. Baranowski demonstrated in his Rebuttal Testimony, a shift in the design of the forward-looking network from less efficient copper feeder to more efficient fiber feeder produces an 81.6% reduction in operating expenses even before the lower investment costs of fiber are taken into account.[213] This is consistent with the FCC's finding that one should "expect the forward-looking plant with considerably more fiber and less copper to have lower maintenance costs than the current plant, which has more copper."[214]

Therefore, in a forward-looking network, expenses can be expected to decrease in the same manner as investments.[215] In contrast to Verizon's embedded cost approach, these facts actually support a forward-looking network adjustment factor that reduces forward-looking operating expenses, not increases them, as Verizon proposes.[216] Thus, there is no need for

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[206] *FCC's USF Inputs Order* ¶¶ 351, 365-369.
[207] *FCC's USF Inputs Order* ¶ 369.
[208] Ex. ATT-23, Baranowski Rebuttal, at 35-36.
[209] Ex. ATT-23, Baranowski Rebuttal, at 36.
[210] Ex. ATT-23, Baranowski Rebuttal, at 36.
[211] 47 C.F.R. § 51.505(b)(1); Ex. ATT-23, Baranowski Rebuttal, at 36.
[212] Ex. ATT-23, Baranowski Rebuttal, at 36.
[213] Ex. ATT-23, Baranowski Rebuttal, at 37-38.
[214] *FCC's USF Inputs Order*, ¶ 369.
[215] Ex. ATT-23, Baranowski Rebuttal, at 36.
[216] Ex. ATT-23, Baranowski Rebuttal, at 36.

Verizon's FLC factor and the inclusion of it in Verizon's cost studies violates TELRIC principles.

4. Network ACF: Verizon Overstates Its Repair and Maintenance Expenses.

Verizon applies a "Network ACF" to all of its claimed UNE recurring charges.[217] This factor is too high, and needs to be reduced substantially, because it reflects historic costs with only a negligible downward adjustment that fails to account for forward-looking savings that would be expected in a modern, reconstructed network.

"The starting point for the Network ACF is the set of expenses that have been incurred in 1999 for repairing and rearranging [Verizon's] plant and equipment."[218] For the Network ACFs that apply to copper cables and drop wire, Verizon adjusts the 1999 cost of responding to trouble reports (the Repair expenses, or "R" dollars) down by five percent.[219] However, Verizon made no similar adjustment to the 1999 historic costs for all other categories of Repair or "R" expenses, and made no such adjustment to any category of costs associated with non-trouble moves, changes, rearrangements, or upgrades of plant (the Moves and Rearrangements expenses, or "M" dollars).[220]

This is incorrect. As the FCC has found, "forward-looking expense estimates should not reflect the cost of maintaining the incumbent LEC's embedded plant."[221]

In a forward-looking network, Verizon can expect to incur substantially lower repair and maintenance expenses than it currently incurs in connection with its embedded, inefficient

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[217] Ex. VZ-37, Verizon Recurring Cost Study, Workpapers Part G-5.

[218] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 42.

[219] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 43; Ex. VZ-37, Verizon Recurring Cost Study, Workpaper Part G-5, Tab 7."R".

[220] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 43-44; Ex. VZ-37, Verizon Recurring Cost Study, Workpaper Part G-5, Tabs 6."M" and 7."R".

[221] *FCC's USF Inputs Order* ¶ 351.

network.[222] When the new forward-looking plant specifically designed to serve current demand is installed, both repair expenditures associated with defective pairs and rearrangement expenses will decline from their historic levels.[223] These reductions must be accounted for in any TELRIC compliant cost study.

Verizon understates these reductions, and thereby inflates its claimed costs. For example, Verizon computes the maintenance and repair expense for metallic cable based on the embedded relationship of its current metallic cable repair and maintenance expenditures to its embedded cable investment.[224] Before computing the ratio, however, Verizon adjusts the actual repair expenses by reducing them by five percent for "Latest Design Standards."[225] Verizon provides no explanation for this adjustment, and it appears that such a small adjustment falls far short of the actual adjustment required to capture the maintenance and repair benefits of an all new metallic cable facility.[226] In order to properly account for the cost savings in a forward-looking network, Verizon should have reduced its repair and maintenance expenses by at least the 30 percent recommended by AT&T witness Baranowski.[227]

The New York PSC recently rejected Verizon's arguments on this issue and ordered Verizon to make a 30% reduction to these costs, for all ARMIS categories except for poles and conduit.[228] Because Verizon has offered no support for its *de minimus* 5% reduction in Massachusetts, and because AT&T's recommendation is supported by the recent New York UNE Rates Order, the same 30% reduction to Verizon's historic "M" and "R" dollars is warranted here. Verizon's proposed UNE rates are overstated, and its models should be evaluated only after this reduction is made.

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[222] Ex. ATT-23, Baranowski Rebuttal, at 43.
[223] Ex. ATT-23, Baranowski Rebuttal, at 43.
[224] Ex. VZ-37, Verizon Recurring Cost Study Workpapers Part G-5.
[225] Ex. VZ-37, Verizon Recurring Cost Study Workpaper Part G-5, Tab 7."R", Column "E".
[226] Ex. ATT-23, Baranowski Rebuttal, at 43.

5. Retail Cost Adjustments: Verizon Improperly Includes Substantial Retail Expenses In Factors Used to Justify High UNE Rates.

Most of Verizon's ACFs are based on expense-to-investment ratios, and "are used to estimate the level of annual expense that [Verizon] can expect to incur to provide a particular network element based on the investment of the element."[229] Verizon begins with historic expense data from its 1999 ARMIS reports to the FCC, and then makes certain adjustments.[230]

Verizon acknowledges that in estimating forward-looking expenses associated with the wholesale provisioning of UNEs one must "exclud[e] retail expense."[231] It is undisputed that retail-related expenses must be excluded from the Network, Wholesale Marketing, Other Support, and Common Overhead ACFs within Verizon's recurring cost models.[232]

For the reasons discussed below, Verizon has substantially understated the amount of its historic expenses that must be excluded as purely retail-related, and in so doing has substantially overstated its ACFs and therefore its UNE cost estimates. Verizon includes substantially more retail-related expenses in its ACFs than the Department permitted in the *Consolidated Arbitrations* proceeding. In that proceeding the Department "made findings with regard to retail-related costs in [the] Order on Phase 2," which it then used to set UNE rates.[233] Verizon has not presented any good reason for deviating from the Department's previous findings regarding the extent to which Verizon's expenses are retail-related, and with the exception of its baseless arguments regarding advertising expense Verizon has made no effort whatsoever to defend its arbitrary assumptions that a minimal share of its historic expenses are retail-related.

(..continued)

[227] Ex. ATT-23, Baranowski Rebuttal, at 43.

[228] *New York UNE Rates Order*, at 66-69.

[229] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 35.

[230] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 42; Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 12; Ex. VZ-37, Verizon Recurring Cost Study, Part G-4, Tab 1.

[231] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 21.

[232] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 54-55.

[233] *Consolidated Arbitrations* Docket, Phase 4 Order at 57 (Dec. 4, 1996).

Verizon asserts, wrongly, that the extent to which its ACFs are based on purely retail-related expenses is an issue that should be reserved for Part B of this proceeding, and that until the Department sets a new discount for resellers Verizon should be permitted to increase its UNE rates by including substantial retail-related expenses within its ACFs.[234] This suggestion makes no sense, for at least two reasons.

First, the cost-based statutory standard for setting wholesale UNE rates is very different than the standard for determining the resale discount. As the New York PSC has properly determined, the Eighth Circuit's ruling regarding the standard for determining the resale discount in no way permits Verizon to include retail-related expenses in the basis for its wholesale UNE rates.[235] This is discussed below in Section II.C.5.a, beginning at page 46.

Second, Verizon's suggestion would make no sense even if one assumed solely for the sake of argument that the Eighth Circuit's decision about the resale discount somehow governed the setting of UNE rates. Under that assumption, since the Department has ruled that pending further FCC action it will maintain the current resale discount and thus maintain the underlying calculation of the percent of total costs to be excluded as retail-related, the same status quo should be maintained as the default for purposes of setting UNE rates. In Part B of this proceeding, the Department has dismissed Verizon's cost study and held that the current resale discount will remain in place until the FCC issues new pricing rules for the resale discount and the Department is able to conduct a proceeding to apply those new pricing rules.[236] There is no basis at this time for permitting Verizon to inflate its UNE rates by assuming a different definition of what expenses are retail-related than was adopted by the Department in the *Consolidated Arbitrations* proceeding and underlies the resale discount that remains in place.

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[234] Ex. 38a, Verizon Recurring Cost Panel Surrebuttal, at 17.
[235] *New York UNE Rates Order* at 64.
[236] Docket DTE 01-20, Part B, Interlocutory Order on Part B Motions, issued April 4, 2001.

a. The Eighth Circuit's Decision Regarding the Resale Discount Has No Bearing on Wholesale UNE Costs.

The 1996 Act has defined two very different means by which a CLEC may use Verizon's facilities, with two very different pricing standards. On the one hand, Congress directed that a CLEC may purchase unbundled network elements from Verizon, which can be used to provide any services of the CLEC's choosing.

> [T]he Act provides a distinct pricing mechanism for purchase of network elements from incumbents. New entrants are to obtain access to these elements at "rates, terms, and conditions that are just, reasonable, and nondiscriminatory." 47 U.S.C. § 251(c)(3). In turn, these rates are to be "based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing" network elements and "may include a reasonable profit." § 252(d)(1)(A)(1) & (B).[237]

Alternatively, a CLEC may engage in the resale of an existing Verizon retail service, under 47 U.S.C. § 251(c)(4). The pricing of resold services follows a very different standard.

> Congress also provided a completely separate and distinct pricing methodology for the resale provision. This methodology provides that incumbent carriers are to recoup the full retail rate they currently charge customers for complete telephone services minus "any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier" in selling at wholesale to a new entrant. § 252(d)(3). Thus, unlike the pricing rule for the unbundled access provision, the resale pricing rule begins with the current retail rate as the proper baseline for calculation, not with cost.[238]

As the Department is aware, the United States Court of Appeals for the Eighth Circuit has held that the statutory standard for resold services that starts with an ILEC's retail rates and subtracts purely retail expenses "that will be avoided" was improperly read by the FCC as excluding retail-related expenses that "can reasonably be avoided."[239]

But the Eighth Circuit's decision regarding the pricing standard for resold services has nothing to do with the pricing of UNEs. The New York PSC so held, explaining that:

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[237] *AT&T Communications of the Southern States, Inc.* v. *BellSouth Telecommunications, Inc.*, 286 F.3d 1294, 1297 (11th Cir. 2001).

> [W]e also see no need to modify the retail avoided cost adjustment further in light of the Eighth Circuit, inasmuch as the portion of the decision not stayed relates to resale rather than UNEs, and TELRIC-based decision on UNEs should continue to reflect avoidable, rather than only avoided, retail costs.[240]

This legal conclusion is correct, for the simple reasons stated in the preceding paragraph.

By statute, UNE rates may only reflect the cost of providing the network element.[241] Verizon's retail-related costs are not costs of providing UNEs, and thus may not form part of the basis for its UNE rates. Indeed, the FCC's rules expressly provide that in calculating wholesale UNE rates the Department may not consider "[r]etail costs include[ing] the costs of marketing, billing, collection, and other costs associated with offering retail telecommunications services to subscribers who are not telecommunications carriers."[242] Verizon's cost studies do not comply with this requirement.

Verizon therefore erred when it based its adjustment for retail-related expenses in its UNE cost studies solely upon the now-dismissed avoided cost study methodology that Verizon filed in Part B and based on its interpretation of the Eighth Circuit's ruling.[243] Verizon has understated the need to subtract retail-related costs, because it has applied the wrong standard.

b. Verizon's ACFs Should be Revised to Exclude At Least the Share of Expenses Found to be Retail-Related in the *Consolidated Arbitrations* Proceeding.

In the *Consolidated Arbitrations* proceeding, the Department found that all of Verizon's product management, sales, and product advertising expenses, most of its customer service expenses, and much of its testing services are retail-related and thus must be excluded from any

(..continued)

[238] *AT&T Communications of the Southern States, Inc.* v. *BellSouth Telecommunications, Inc.*, 286 F.3d 1294, 1297-1298 (11th Cir. 2001).

[239] *Iowa Utilities Board* v. *FCC*, 219 F.3d 744, 755 (8th Cir. 2000).

[240] *New York UNE Rates Order* at 64.

[241] 47 U.S.C. § 252(d)(1)(A)(i).

[242] 47 C.F.R. § 51.505(d)(2).

[243] *See* Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 49.

estimate of UNE costs.[244] It also found that some of Verizon's indirect expenses should be excluded, and that the excluded share of indirect expenses should at least equal the ratio of the retail-related direct expenses to the total direct expenses.[245]

Verizon has not met its burden of proving that a different result should be obtained here. When the Department dismissed Verizon's "avoided cost study" in Part B on April 4, 2001, it expressly stated that its "decision to hold the Part B proceedings in abeyance in no way affects review of UNE rates in Part A of this docket."[246] At no time after April 4, 2001, did Verizon make any effort to provide evidentiary support for the "avoided cost study" in Part G-1 of its workpapers that underlies the ACFs it uses to estimate UNE costs in Part A.

It is a simple matter to restate Verizon's "avoided cost study" input to its ACFs, so that it is no longer inconsistent with the Department's prior findings regarding which expenses are retail-related. One need only go to the electronic version of Verizon's recurring cost study, Part G-1, Tab 1, and change the "avoided amount" for Product Management and Product Advertising to 100 percent of the total expense amount, and change the "avoided amount" for Testing to at least $14,216,000.[247] The resulting ratio of retail-related direct expense to resulting direct expense is 26.50 percent. This ratio then needs to be applied as the share of retail-related expenses for all indirect expense categories except the one (general purpose computers) that Verizon has already determined has a higher share. The result is that 30.42 percent of the total indirect expenses are retail-related. These results – shown in the form of a restatement of Part G-1, Tab 1 – are attached hereto as a one-page addendum.

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[244] *Consolidated Arbitrations* Docket, Phase 2 Order at 19, 36-38 (Dec. 3, 1996); Phase 2-A Order at 2-5 (Feb. 5, 1997); Phase 4 Order at 57 (Dec. 4, 1996).

[245] *Consolidated Arbitrations* Docket, Phase 2 Order at 22-23 (Dec. 3, 1996).

[246] Docket DTE 01-20, Interlocutory Order on Part B Motions (April 4, 2001).

[247] *Consolidated Arbitrations* Docket, Phase 2 Order at 19-20; Phase 2-A Order at 4-5.

This restated "avoided cost study" is what Verizon should have used in calculating its ACFs. Instead, Verizon estimated UNE rates on the assumption that only 22.06 percent of direct expenses and 10.90 percent of indirect expenses are retail-related and thus should be excluded from its cost study.[248] This assumption has no evidentiary support. The Department should make the changes summarized above, and ensure that they are carried through to all portions of Verizon's ACF calculations and then into all of its UNE cost estimates, before evaluating the results of Verizon's recurring cost models.

c. Verizon's Wholesale Marketing ACF Should Reflect All of These Changes, Including Treating 100 Percent of Historic Advertising Expenses as Retail Related.

In Part G-4 of its recurring cost study, Verizon proposes a number of different Wholesale Marketing ACFs. Verizon notes that each of them must be reduced to account for the "portion of marketing expenses [that] will be avoided in a wholesale environment," consistent with their treatment in the "avoided cost study" presented in Part G-1.[249] Thus, in accord with the Department's prior findings that 100 percent of Product Management, Sales, and Product Advertising expenses is retail-related (see preceding section), the three Wholesale Marketing ACFs for these categories must also be set to zero.[250] In addition, Verizon represents that 84.23 percent of its Customer Services expenses are retail-related.[251] This percent should be (but is not) reflected in the wholesale marketing workpapers; correcting this minor error reduces the Customer Services Wholesale Marketing ACF from 0.0029 to 0.0026.[252]

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[248] Ex. VZ-37, Verizon's Recurring Cost Study, Part G-1, Tab 1.

[249] Ex. VZ-37, Verizon's Recurring Cost Study, Part G-4, "Description of Study." *See also* Ex. VZ-36, Verizon's Recurring Cost Panel Direct at 49 (wholesale marketing expenses are "adjusted by avoided retail costs").

[250] *See* Ex. VZ-37, Verizon's Recurring Cost Study, Part G-4, Tab 2.

[251] Ex. VZ-37, Verizon's Recurring Cost Study, Part G-1, Tab 1, Line 6, Column F.

[252] *See* Ex. VZ-37, Verizon's Recurring Cost Study, Part G-4, Tab 17.

In its testimony, the only of its Wholesale Marketing ACFs that Verizon attempts to explain or defend is the factor related to advertising expenses.[253] But Verizon's arguments have previously been rejected by the Department, and make no more sense today.

Verizon's proposal to include *any* advertising costs in the development of its claimed UNE costs should be rejected.[254] The entirety of Verizon's advertising costs should be considered retail-related, and thus should be excluded in the calculation of wholesale UNE rates.[255] That is what the Department concluded in the prior *Consolidated Arbitrations* proceeding,[256] and Verizon has not met its burden of proving that a different result should obtain this time. Verizon's proposed inclusion of advertising costs is based on costs that Verizon has incurred in connection with ***retail*** services, not with the provisioning of UNEs on a wholesale basis.[257] Verizon failed to prove that it would have to conduct any advertising in connection with the provision of UNEs on a wholesale basis.

Verizon's inclusion of retail advertising expenses fails to recognize that Verizon is the only provider of wholesale UNEs.[258] Verizon has been unable to provide any evidence that it has ever incurred material advertising expenses in connection with its wholesale provisioning of UNEs.[259] Dr. Taylor has explained that under TELRIC Verizon is assumed to continue as a monopolist in the wholesale market, serving the entire increment of demand for each element, for both itself and all other retail providers.[260] Therefore, as the Department previously found, AT&T and other CLECs do not require Verizon's advertising in order to determine from which

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[253] Ex. VZ-38a, Verizon's Recurring Cost Panel Surrebuttal, at 17-20.
[254] Ex. ATT-23, Baranowski Rebuttal, at 44.
[255] Ex. ATT-23, Baranowski Rebuttal, at 44.
[256] *Consolidated Arbitrations* Docket, Phase 2 Order at 19 (Dec. 3, 1996).
[257] Ex. ATT-23, Baranowski Rebuttal, at 44; Tr. 1727-1729, 1/25/02 (Anglin).
[258] Tr. 1730, 1/25/02 (Anglin).
[259] Tr. 1727-1729, 1/25/02 (Anglin); Tr. 3414, 2/7/02 (Anglin).
[260] Tr. 16-17, 1/7/02 (Taylor); Timothy Tardiff, William Taylor, Charles Zarkada, and Jaime d'Almeida, *An Economic Evaluation of Network Cost Models*, Appendix A at 4, published by the National Economic Research Associates (Aug. 7, 2000); reprinted in relevant part at Ex. ATT-3, Hirshleifer Surrebuttal, Attachment JH-12.

LEC to purchase UNEs.[261] This remains true today in the context of setting UNE rates. Less than three months ago the New Jersey Board of Public Utilities ordered Verizon "to eliminate all advertising expenses used in the development of its expense factors" and noted that "Verizon was unconvincing in its argument that it would incur such expense in providing wholesale services such as UNEs."[262]

Verizon nonetheless insists that in the purely wholesale environment relevant to a TELRIC analysis it would engage in "general market stimulation advertising, brand awareness advertising," and "advertising directed toward the CLECs themselves."[263] But Verizon made these same failed arguments in the *Consolidated Arbitrations* proceeding, and the Department rejected them after full consideration, explaining that:

> In a monopoly wholesale marketplace, the wholesaler has an interest in expanding its business, but retailers have precisely the same interest. Retailers also have an interest in promoting their service over those of other retailers, but the wholesaler is neutral with regard to those market share issues. Its market share, after all, will remain at 100 percent regardless of the distribution of customers among the retailers. If we envision a marketplace in which retailers are reasonably astute in determining how much they need to spend on advertising to maximize their profitability, that will be all the advertising that is required. There would be no need in such a market for NYNEX, as an efficient wholesaler, to advertise at all.[264]

There is no credible evidence supporting Verizon's claimed wholesale advertising costs. Verizon's inclusion of advertising costs in its ACF calculations should be therefore rejected, and the Department should once again set UNE rates by excluding all advertising expenses.

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[261] *Consolidated Arbitrations* Docket, Phase 2 Order at 19 (Dec. 3, 1996).

[262] *New Jersey UNE Rates Order* at 5 (Dec. 17, 2001). *See also New York UNE Rates Order* at 69-70 (requiring Verizon to treat 85% of its advertising expenses as retail avoidable).

[263] Ex. VZ-38a, Verizon's Recurring Cost Panel Surrebuttal at 17-18.

[264] *Consolidated Arbitrations* Docket, Phase 2 Order at 19-20 (Dec. 3, 1996).

III. SWITCHING: THE DEPARTMENT SHOULD REJECT VERIZON'S EXCESSIVE SWITCHING RATES AND INSTEAD ADOPT TELRIC-COMPLIANT RATES WELL BELOW THE LEVEL RECALCULATED BY MS. PITTS, SHOULD REJECT VERIZON'S PROPOSED DUF CHARGES AS IT HAS BEFORE, AND SHOULD SET RECIPROCAL COMPENSATION TERMINATION CHARGES EQUAL TO OTHER SWITCHING RATES.

Verizon's unbundled switching rates should reflect the corrected cost of capital, depreciation, and other ACF adjustments discussed in Section II. In addition, they should reflect the switch-specific considerations discussed below.

A. Introduction to Switching Rates: Verizon's Proposed Switching Rates Are Much Too High, and Not Supported by the Evidence.

The switching rates proposed by Verizon are substantially overstated.[265] Catherine Pitts – appearing on behalf of AT&T and WorldCom – has provided a compelling critique and restatement of Verizon's own switch study that corrects for Verizon's use of switch material prices that are much too high when evaluated against Verizon's own switch pricing evidence. However, Ms. Pitts' correction for this key input results in switch cost estimates that are still too high, as shown by further Verizon information received late in this case – in early February 2002 – in response to Department record requests. The latest information pried from Verizon-MA, after Ms. Pitts had testified, makes clear that switching rates for Massachusetts should be set at a level well below even those proposed in Ms. Pitts' restatement (see Section III.B.2.a, beginning at page 62). The FCC has now made clear that under TELRIC it is improper to base unbundled switching costs entirely on the high prices associated with switching growth parts, and that a state commission must instead look either entirely to new switch pricing or mostly to new switch pricing[266] (see Section III.B.3.b, beginning at 71).

Ms. Pitts also demonstrates and corrects the many other problems with Verizon's switch study, including: the overstated EF&I factor; the misallocation of non-traffic-sensitive costs to

[265] *See* Ex. ATT-20, Pitts Revised Rebuttal, and Ex. ATT-21, Pitts Surrebuttal.
[266] *FCC's Rhode Island 271 Order* ¶ 34 (emphasis added).

the traffic-sensitive, minute of use charges; the unsubstantiated assumption that trunks will be underutilized, thereby artificially inflating the common trunk port charges; the assumption of inflated right-to-use fees; and unsubstantiated feature costs (see Section III.C, beginning at page 78). Separately, we explain why the Department should reject Verizon's improper charges for Daily Usage Files, as it did in the 1996 *Consolidated Arbitrations* proceeding (see Section III.C.8.b, beginning at page 96). Finally, Ms. Pitts also corrects for Verizon's use of an incorrect, non-TELRIC methodology to compute reciprocal compensation (see Section III.E, beginning at page 106).

Just weeks ago Verizon essentially conceded that the local switching rates it is proposing in this docket are not credible, when it reduced them in Rhode Island by more than half to levels approximating those accepted by Verizon in New York. But, as explained below, even these revised switch rates are far in excess of what Verizon's own evidence in this case shows are the maximum acceptable rates under TELRIC. The New York numbers are too high mostly because they are based on substantially older data – the New York PSC did not have the benefit of more recent information that Verizon has offered or been forced to produce in this proceeding – and also because they are the result of margin analyses by the New York Staff taking into account Verizon-NY's substantially higher retail rates. Let us explain.

In Rhode Island, Verizon attempted last November to moot criticism of its switching rates by adopting new switching rates similar to those it has proposed in Massachusetts in this proceeding.[267] The Rhode Island switching rates were severely criticized by AT&T and WorldCom on many grounds, including but not limited to the particular ones noted by the FCC in its final order.[268] On February 14, 2002, Verizon-RI effectively conceded that the rates it had imported from Massachusetts would not pass muster, and it abandoned its switching usage and

[267] *FCC's Rhode Island 271 Order* ¶ 23.

line port rates and replaced them with new rates similar to those accepted by Verizon in New York.[269] Because the original Rhode Island switching rates were not "adopted through a proceeding which correctly applied TELRIC principles in all instances," and the new February 14 rates "did not result from a rate proceeding with a thorough record that would allow [the FCC] to determine whether the faulty assumptions underlying its original rates were corrected," the FCC applied its Section 271 benchmark analysis without attempting to analyze whether the February 14 rates were TELRIC-compliant.[270]

The point of summarizing this recent Rhode Island history is simple. It demonstrates that the switching rates proposed in Massachusetts, and imported by Verizon to Rhode Island last November, are exorbitant. They are so high that Verizon had to abandon them during the Rhode Island 271 process.

But the recently adopted New York switching rates, which served as the model for the latest switching rates voluntarily adopted by Verizon-RI, are also much too high for Massachusetts. They cannot be squared with Verizon-MA's own evidence of markedly lower switch material prices. Since it is undisputed on this record that telecommunications is a declining cost industry (see Section I.D., beginning at page 8), there is every reason to believe that rates set on more up-to-date information will be lower. Verizon's cost studies, filed on February 7, 2000,[271] were based primarily on data from 1997 and 1998, as year-end 1999 data was not yet available.[272] But the cost studies filed here in May 2001 reflect data from 2000, and a Department record request to Verizon in January 2002 elicited even more up-to-date facts

(..continued)

[268] *FCC's Rhode Island 271 Order* ¶¶ 33-36.

[269] *See FCC's Rhode Island 271 Order* ¶ 47; Verizon-Rhode Island's February 14, 2002, ex parte submission to the FCC in CC Docket No. 01-324. AT&T provided a copy of this ex parte submission to the Department and the full service list on February 21, 2002.

[270] *FCC's Rhode Island 271 Order* ¶¶ 32, 36.

[271] *New York UNE Rates Order* at 4.

[272] *See also* Tr. 1514, 1/24/02 (Turner).

about switching costs. Verizon-MA's own data demonstrate that the New York rates, even if accurate based on the record available to the New York PSC, are much too high when evaluated against the evidence upon which the Department must base UNE rates in this proceeding.

A simple, but central, example demonstrates the point. The New York rates were estimated by assuming that switch material investment prices would equal $105 per access line.[273] According to Verizon-MA's own cost study in this proceeding, however, it can serve forward-looking switching demand by installing Nortel DMS-100 switches at a per-line investment of $82.62.[274] This figure is almost ***21 percent below*** the assumption adopted in New York. Because the Nortel and Lucent end-office switches are interchangeable, this is the highest possible switch investment cost that could reasonably be assumed as in input for setting Massachusetts UNE rates, based solely on the inputs used by Verizon itself in its cost study. (See Section III.B.1. beginning at page 58.)

In fact, however, Verizon can and does purchase Nortel switches for far less than the prices assumed in its cost study. Verizon-MA finally revealed this important fact in early February 2002, in its supplemental response to RR DTE-49. As explained in Section III.B.2.a. beginning at page 62, these new data show that the prices that Verizon actually pays for new Nortel switches amount to a switch material price per POTS line of only $17.57. This is a whopping ***83.5 percent below*** the switch material prices assumed by the New York PSC.

In sum, although the New York switch rates demonstrate that Verizon-MA's proposed charges are not credible, the updated data provided by Verizon in this proceeding prove that even Ms. Pitts' restatement of the Verizon switch cost study produces results far in excess of

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[273] *New York UNE Rates Order* at 24, 32.

[274] Tr. 1591-1593, 1/24/02 (Matt). *See also* Ex. ATT-20, Pitts Revised Rebuttal, at 20 (The calculation in Ms. Pitts' revised rebuttal preceded Verizon's modification of the its switching study after Verizon revealed that the Springfield tandem host and three remotes were incorrectly included in both the end-office study and the tandem study.)

TELRIC-compliant levels. Verizon-MA's cost study reflects switch prices well below the inputs used by the New York PSC, and the latest data from Verizon shows that the prices it actually pays for switching are substantially below that.

It is also important to note that the New York rates were deemed acceptable by PSC Staff on the basis of margin analyses, and those rates only work in the New York market without creating an untenable price squeeze because Verizon's retail rates are higher in New York than in Massachusetts. The following quote from New York PSC Staff panel testimony in support of the Joint Settlement in New York confirms this point:

> It is our expectation and belief that the significant reductions in wholesale prices created by the Commission's [UNE rate] decision, will result in the marketing of competitive local telephone service offerings throughout the state and across all customer groups. We have reviewed pro-forma margin analyses which, in our view, now provide CLECs with an opportunity to cover their costs and to make a profit, while at the same time offering customers savings and a choice of products and services.[275]

But here Verizon has presented no evidence that its inflated UNE rate proposals would permit CLECs "to cover their costs and to make a profit" when competing against Verizon's Massachusetts UNE rates.

For the reasons discussed in the following sections, AT&T respectfully urges the Department to adopt switching rates that are set substantially below those recalculated by Ms. Pitts using Verizon's own cost study. Even the numbers as originally restated by Ms. Pitts are much too high, because she was unable to incorporate the cost savings that result from data or analysis that were unavailable to her last summer when she was preparing her restatement. We now know that the Nortel contract switching prices used in Ms. Pitts' analysis in fact apply only

[275] NY PSC Case 00-C-1945, NY PSC Staff Panel Testimony regarding the Joint Proposal Concerning Verizon Incentive Plan for New York, Tr. 2/14/02 at 6-7.

to switching growth parts, and that Verizon pays substantially lower prices for new Nortel switches through competitive bidding (see Section III.B.2.a).[276]

As discussed below, Verizon's own evidence in this case demonstrates that the key switching rates for Massachusetts should be set at or close to the numbers in the final column of the following table, and well below the rates as originally revised by Ms. Pitts. For convenience sake this table summarizes only the key switching rate elements. The other switching port and usage rates should be decreased proportionately. The feature port additive charges should be eliminated for the reasons discussed below.

Summary of Key Switching Rate Elements

	Growth Part Pricing Only			New Switch Pricing
Rate Element	**VZ-MA**[277]	**VZ-RI's Revisions to VZ-MA**[278]	**Ms. Pitts' Revisions to VZ-MA**[279]	**per RR DTE-49**[280]
Analog Line Port per month	$2.55	$1.86	$1.93	$0.41
Switching – Originating per MOU	.0028880	.0013580	.0003133	.0000658
Switching – Terminating per MOU	.0025330	.0011920	.0002749	.0000577
Trunk Port – Common per MOU	.0005690		.0003931	.0000826
Tandem Switching per MOU	.0002720		.0000840	.0000176
Tandem Trunk Port per MOU	.0005940		.0001793	.0000377

The explanation of the numbers in this table – *i.e.*, the reasons why Ms. Pitts' restatement errs on the high side, including but not limited to new information just obtained regarding the even lower prices that Verizon in fact pays to purchase new switches via competitive bidding, and

[276] Verizon-VA's Response to the FCC's RR VZ-VA-32, reproduced in the proprietary and non-proprietary attachments to RR-DTE-49S.

[277] RR ATT-2 (Verizon's proposed recurring costs revised January 2002).

[278] *See* Verizon-Rhode Island's February 14, 2002, ex parte submission to the FCC in CC Docket No. 01-324. AT&T provided a copy of this ex parte submission to the Department and the full service list on February 21, 2002.

[279] Adapted from Ex. ATT-20, Pitts Revised Rebuttal, Ex. CP-1. Port rates reflect 0.5% reduction from original Pitts rate, to account for correction to non-conversation time factor. *See* Ex. ATT-21, Pitts Surrebuttal, at 10. End office switching rates reflect 2.0% reduction for correction to non-conversation time factor. *Id.* at 10.

[280] *See* Section III.B.2.a. beginning at page 62, below, for an explanation of why these numbers are the result that follows from Verizon's own record evidence in this proceeding.

why we now know that her restatement represents the results based on 100% growth part pricing, which the FCC has now emphatically rejected[281] – are discussed in the following sections.

B. Switch Material Prices Are Essential Inputs and Must Reflect Forward-Looking Economic Costs.

To estimate forward-looking switching costs one must start with accurate switch material prices. The material investments for Verizon's switch study were developed using the SCIS model developed by Telcordia.[282] SCIS contains the list prices of switch manufacturers in its databases.[283] Because SCIS does not contain the substantial discounts from the list price that telephone companies receive from switching vendors, discount inputs must be entered into the SCIS program in order for SCIS to compute a net price.[284] As the FCC has noted, the SCIS program cannot be used to produce meaningful outputs if it is run using incorrect price inputs.[285] The same is true for the HAI Model. When essential price inputs to a model are much too high, the ultimate switch UNE prices will also be much too high.[286]

1. Ms. Pitts' Switch Material Price Inputs Based on Verizon's Switching Contracts Are Validated by Verizon's Own Assumptions Regarding the Price for Nortel Switches, Which Verizon Asserts Will Be Half the Price of Lucent Equipment.

There has been substantial debate in this proceeding whether UNE switching rates should be set assuming the pricing for all new switches, or assuming some blend of new switch pricing and a (small) proportion of switch growth parts. This debate is analyzed Section III.B.3, which begins at page 68. However, it turns out that the switch material pricing used by Ms. Pitts to restate Verizon's cost study can be validated using Verizon's own cost study inputs. Verizon's

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[281] *FCC's Rhode Island 271 Order* ¶ 34 (emphasis added).
[282] Ex. VZ-36, Recurring Cost Panel Direct, at 131.
[283] Ex. ATT-20, Pitts Revised Rebuttal, at 9.
[284] Ex. ATT-20, Pitts Revised Rebuttal, at 10.
[285] *In the Matter of Open Network Architecture Tariffs of Bell Operating Companies*, Order FCC 93-532, ¶¶ 36-41, 83, 9 F.C.C. Record 440, 1193 WL 521040 (Dec. 15, 1993).
[286] Ex. ATT-20, Pitts Revised Rebuttal, at 8; Tr. 2100, 1/29/02 (Pitts).

own inputs and the fundamental requirements of TELRIC show that Verizon's overall switch material price assumptions are excessive.

Verizon's cost study assumes that a forward-looking local exchange network for Massachusetts would have a mix of Lucent and Nortel switches. Specifically, Verizon assumes that it would purchase the same number of Lucent and Nortel end-office switches that it currently has in its embedded network.[287] But Verizon has not conducted any analysis to determine whether this represents the least cost, most efficient arrangement. It merely assumes that the current placement of Lucent and Nortel switches would be replicated in a TELRIC network.[288] This is improper not only in concept, but also because it makes no sense given the specifics of Verizon's cost study.

Verizon has assumed that Lucent switching would cost almost twice as much as Nortel's on a per line basis. Per Verizon's cost study, the Nortel DMS switch average investment per POTS line (total non-ISDN switch investment divided by total POTS lines served) is $82.62; while the Lucent 5ESS switch average investment per POTS line is $157.87, or almost twice as much.[289] It is undisputed that comparing Lucent and Nortel pricing on a per line basis is proper.[290]

Since Lucent 5ESS and Nortel DMS-100 switches are "functional substitutes for one another as local-exchange switches,"[291] it makes no sense with these pricing inputs for Verizon to assume that today's mix of Lucent and Nortel switches would be replicated in a forward-looking network. To the contrary, taking Verizon's own switch investment pricing inputs as

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[287] Tr. 1594-1595, 1/24/02 (Matt).
[288] Tr. 1593-1595, 1/24/02 (Matt).
[289] Tr. 1591-1593, 1/24/02 (Matt). *See also* Ex. ATT-20, Pitts Revised Rebuttal, at 20 (The calculation in Ms. Pitts' revised rebuttal preceded Verizon's modification of the its switching study after Verizon revealed that the Springfield tandem host and three remotes were incorrectly included in both the end-office study and the tandem study.)
[290] Tr. 2379, 1/31/02 (Gansert).
[291] Tr. 1584, 1/24/02 (Gansert). *See also* Ex. ATT-20, Pitts Revised Rebuttal, at 20.

given, one must price unbundled switching for a forward-looking network that would use all Nortel switches and no Lucent switches. Even Verizon admits that if two switches are functionally interchangeable and one is priced considerably below the other, Verizon would pick the lower priced switch.[292] Dr. Tardiff testified that if one vendor is selling switching equipment for $160 per line, and another is selling interchangeable equipment for $80 per line, he "wouldn't expect – everything else being equal, someone is charging twice as much as another, I wouldn't expect to see that second vendor in the market. But assuming that were the case, [the Department] should pick the lower one" in setting unbundled switching rates.[293]

In determining switching costs using TELRIC, one must estimate the forward-looking costs that would be incurred using the "lowest cost network configuration."[294] As the FCC has stated, the rates for network elements should be "based on costs that assume that … the *reconstructed* local network will employ the most efficient technology for reasonably foreseeable capacity requirements."[295] As Verizon's own economist has explained, the touchstone of forward-looking pricing is not the embedded costs resulting from Verizon's existing deployment of switching technology, but what an efficient provider would do *if unconstrained by previous investments and decisions*.[296]

As Verizon's own economist has testified, the Department must estimate the costs that would result if Verizon could "choos[e] and arrang[e] its plant to produce the required level of output in the most efficient manner possible."[297] The "long-run" requirement that is the middle name of TELRIC means, among other things, "that all current technology is wiped off the

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[292] Tr. 1595, 1/24/02 (Gansert); Tr. 3151, 2/6/02 (Tardiff).
[293] Tr. 3151, 2/6/02 (Tardiff).
[294] 47 C.F.R. § 51.505(b)(1).
[295] *FCC's First Local Competition Order*, ¶ 685 (emphasis added).
[296] Tr. 24, 1/7/02 (Taylor).
[297] Ex. VZ-1, Taylor Direct, at 6.

board."[298] Thus, "the current state of [Verizon]'s network is irrelevant for purpose of a long-run cost analysis."[299]

This simple analysis regarding the per line prices of Nortel switches in Verizon's cost study versus those for Lucent equipment completely validates the switch material prices that underlie Ms. Pitts' restatement of Verizon's cost model. The restatement by Ms. Pitts of Verizon's Lucent prices results in an average investment per line for Lucent switches comparable to the average investment per line for Nortel switches. In restating Verizon's cost study, Ms. Pitts changed only the Lucent discount input into the SCIS model and did not restate the discount used for purchases from Nortel. Ms. Pitts assumed the Nortel growth discount because under Verizon's existing contract the new Nortel discount is equivalent to the Nortel growth discount (for more on this assumption see the following section).[300] For the Lucent switches, Ms. Pitts explained that she used a switch material price of $87 per line.[301] But this figure was the total per investment for both POTS and ISDN lines. The Lucent switch material price per POTS line that resulted from Ms. Pitts' analysis was $82.83.[302] As explained above, Verizon's own cost study compels the conclusion that one would substitute Nortel switching equipment at a cost of $82.62 per line.[303] For the purpose of setting rates in this proceeding the difference between these two figures is immaterial.

Thus, the results obtained by Ms. Pitts are validated by the fact that essentially the same results obtain by using the Nortel switch material price per line that comes directly from Verizon's own cost study.

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[298] Tr. 31, 1/7/02 (Taylor).

[299] *Bell Atlantic-Delaware, Inc. v. McMahon*, 80 F.Supp.2d 218, 238 (D.Del. 2000).

[300] Ex. ATT-20, Pitts Revised Rebuttal, at 21-22; Tr. 2062, 1/29/02 (Pitts).

[301] Ex. ATT-20, Pitts Revised Rebuttal at 21, and ex. CP-2 (excerpt from Ex. ATT-VZ 2-30); Tr. 2062, 1/29/02 (Pitts).

[302] *See* Ex. ATT-20, Pitts Revised Rebuttal, ex. CP-5, Workpaper Part C-2, Section 4, Page 1, Line 9 (total non-ISDN Lucent investment of $212,261,099) and Page 2, Line 1 (total Lucent POTS lines, from Verizon's cost study, of 2,562,505). $212,261,099 / 2,562,505 = $82.83 per POTS line.

2. But the Nortel Contract Prices that Validate Ms. Pitts' Restatement Are in Fact Much Too High, As Shown By New Information Regarding What Verizon Actually Pays for Switching.

a. Data Hidden By Verizon-MA Until Late in the Hearings Shows That Verizon Can Buy New Switches Through Competitive Bids for Much Less Than the Nortel Contract Price.

Ms. Pitts has explained that the $82.62 average investment per line for Nortel switches is conservatively high because it assumes that Verizon will purchase both new and growth switching equipment under its current Nortel contract.[304] New information from Verizon confirms that Ms. Pitts is correct, and that today Verizon does in fact pay substantially less for new Nortel switches than the contract price reflected in Verizon's cost study and therefore in Ms. Pitts' restatement.[305]

The Nortel pricing inputs used by Verizon, and therefore also used by Ms. Pitts in her restatement, are based solely on Verizon's current contract with Nortel.[306] Under that contract, Verizon is entitled to a discount of <**Begin Proprietary**> XXXX<**End Proprietary**> percent off of Nortel's list price for both new and growth equipment.[307] The actual price paid is, of course, the list price minus the discount. Ms. Pitts testified that this contract pricing is conservatively high, because in fact Verizon is able to purchase new switches and obtain higher discounts – i.e., lower prices – from Nortel through competitive bidding.[308]

The contract price is actually the absolute highest price Verizon would ever have to pay for a switch, not a fair predictor of the forward-looking material prices that should be used to

(..continued)

[303] Tr. 1591-1593, 1/24/02 (Matt).

[304] Tr. 2061-2062, 2065-1066, 1/29/02 (Pitts).

[305] Tr. 2061-2062, 1/29/02 (Pitts); Tr. 1596-1597, 1/24/02 (Matt). *See also* the proprietary attachment to RR-DTE-49S which includes the response to the FCC's RR VZ-VA 32 filed in the Virginia proceeding.

[306] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 153.

[307] RR DTE-56, proprietary attachment, pricing discounts shown for Nortel's DMS switches.

[308] Tr. 2061-2062, 1/29/02 (Pitts).

estimate the forward-looking cost of unbundled switching.[309] Verizon's experience confirms that its old switch contracts are not meaningful predictors of the prices that it will pay for new switches. Verizon admits this indisputable fact, stating that:

> If Verizon were to purchase a replacement switch today, Verizon would not use the existing contracts (and their respective discounts) as the existing contracts only cover additions to existing switches. The purchase of one or more switches as replacements is handled through competitive bid procedures. The discounts for a replacement switch would vary based on market conditions and the volume of the purchase at the time of the competitive bid.[310]

In recent competitive bidding processes, Verizon bought new Nortel switches placed in Chester, PA, and Eastwick, PA, at discounts of **<Begin Proprietary>** XXXXXXXXXX **<End Proprietary>** percent off the list price, respectively.[311] Thus, the discounted price that Verizon is in fact paying for new Nortel switches is at least **<Begin Proprietary>** XXXX **<End Proprietary>** percent lower than the discounted Nortel pricing Verizon assumed in its cost study.[312] This information was not provided by Verizon-MA until after Ms. Pitts testified.

The record evidence enables us to obtain an apples-to-apples comparison of the switch material price per line under the Nortel contract and under the recent competitive bidding results. One need only take the SCIS model filed as Ex. VZ-43, and for Nortel use the switch price discount that Verizon obtained through competitive bidding in lieu of the contract price discount that was assumed by Verizon. Making this one change, and otherwise taking Verizon's run of the SCIS model for Massachusetts as given, yields the following results, as compared to the results used as inputs to Verizon's cost study.

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[309] Tr. 2065, 1/29/02 (Pitts).

[310] Verizon-VA's Response to the FCC's RR VZ-VA-32, reproduced in the proprietary and non-proprietary attachments to RR-DTE-49S.

[311] *See* Verizon-VA's Response to the FCC's RR VZ-VA-32, in the proprietary attachment to RR-DTE-49S.

[312] **<Begin Proprietary>** XXXXXXXXXXXXX XXXXXXXXXXX XXXXXXX XXXXXX XXXXX XXXXXXXXXXXXXXXXXXXXX. **<End Proprietary>** *See* Verizon-VA's Response to the FCC's RR VZ-VA-32, in the proprietary attachment to RR-DTE-49S.

Nortel Switch Material Investment per POTS Line

	VZ-MA's SCIS Results[313]	Revised w/ Competitive Bid Pricing
Total non-ISDN Investment	159,848,646	33,368,559[314]
POTS Lines	1,934,847	1,922,925[315]
per POTS line price	$82.62	$17.35

The total non-ISDN investment figure in the second column is, therefore, readily derived from the record evidence provided by Verizon. If the Department would prefer that it also be made available in the form of a Record Request response, AT&T would of course be happy to answer such a request. As discussed in more detail in the following section, this simple analysis could not be done until after the hearings, because Verizon had refused to answer a straightforward discovery question regarding the prices it in fact pays for new switches.

The $17.35 per POTS line material price that results from running Verizon-MA's SCIS model with the Nortel new switch discount recently revealed by Verizon-MA is approximately 21 percent of (*i.e.*, 79 percent below) the per POTS line material price of approximately $82.62 that underlay Verizon's switch cost study and Ms. Pitts' restatement. Adjusting Ms. Pitts' analysis to account for a switch material price that is 79 percent lower will result in unbundled switching cost estimates that are 79 percent lower. This linear relationship can readily be seen by adjusting the switch material prices in the electronic version of Ms. Pitts' restated switch cost workpapers.[316]

[313] Ex. VZ-40, Revised Workpaper Part C-2, Section 4, Page 1, Line 9, Column B, and Page 2, Line 6, Column A.

[314] Reflects Nortel competitive bid discount of **<Begin Proprietary>**XXX **<End Proprietary>.** *See* Verizon-VA's Response to the FCC's RR VZ-VA-32, in the proprietary attachment to RR-DTE-49S. Calculated using Verizon-MA's own SCIS model submission, Ex. VZ-43.

[315] This is the number of Nortel POTS lines originally assumed in Verizon's cost study. *See* Ex. VZ-37.

[316] Ex. ATT-20, Pitts Revised Rebuttal, Ex. CP-7. This relationship is not precisely linear in Verizon's original workpapers, because of Verizon's misapplication of presumed RTU expenses.

Summary of Key Switching Rate Elements – Adjusted for New Information from Verizon Pitts Restatement, and Adjusted to Reflected Competitive Bid Data

Rate Element	Ms. Pitts' Revisions to VZ-MA[317]	per RR DTE-49[318]
Analog Line Port per month	$1.93	$0.41
Switching – Originating per MOU	.0003133	.0000658
Switching – Terminating per MOU	.0002749	.0000577
Trunk Port – Common per MOU	.0003931	.0000826
Tandem Switching per MOU	.0000840	.0000176
Tandem Trunk Port per MOU	.0001793	.0000377

As discussed in Section III.B.3, AT&T respectfully urges the Department to set unbundled switch rates that reflect 100% new switch prices. Thus, the Department should set switching rates at or near the figures shown in the right-most column of the preceding table. If growth part pricing were nonetheless to be taken into account, it should represent no more than 10 percent of the total pricing input with new switch pricing accounting for the remaining 90 percent (see Section III.B.4). Since we now know that the pricing reflected in Ms. Pitts' original restatement represents 100% growth part pricing, we know that it is much too high and does not reflect TELRIC pricing (see Section III.B.3.b).

Just as these new data confirm that Ms. Pitts' restatement has resulted in unbundled switching rates that are too high, they have similarly confirmed that the switching costs estimated by the HAI 5.2a-MA model are much too high. The HAI Model utilizes the FCC's switch material inputs adopted in the *FCC's USF Inputs Order*.[319] These switch cost estimates are based on 1983 to 1995 data, brought current to 1999 levels.[320] This was the best public data

[317] Adapted from Ex. ATT-20, Pitts Revised Rebuttal, Ex. CP-1. Port rates reflect 0.5% reduction from original Pitts rate, to account for correction to non-conversation time factor. *See* Ex. ATT-21, Pitts Surrebuttal, at 10. End office switching rates reflect 2.0% reduction for correction to non-conversation time factor. *Id.* at 10.

[318] Figures are 21% of the original Pitts Revisions, since $17.35 / $82.62 = 21.00%.

[319] *See* HAI 5.2a-MA Inputs Portfolio, in Ex. ATT-25, Mercer Direct, Ex. RAM-3.

[320] *FCC's USF Inputs Order* ¶ 296 and App. C.

that was available when HAI 5.2a-MA was prepared and filed. But, as discussed above, Verizon's own switch cost data is much more current and makes clear that the switch price inputs used in the HAI model are substantially overstated. Similarly, the high discounts now available for switches result in a much lower per line investment than is reflected in Verizon's cost study or in Ms. Pitts' restatement thereof.

b. Verizon Tried to Hide This Information Regarding What It Actually Pays for Switching, and Almost Succeeded.

Once again, Verizon has attempted to hide the truth about the prices it pays for switching, in an unconscionable attempt to obtain anti-competitive unbundled switching rates. Verizon did so in the first New York UNE rates proceeding, and got away with it for many years. In this proceeding it has tried to do so again, and almost succeeded.

In the first New York UNE rates proceeding, Verizon convinced the PSC to ignore the low prices that Verizon pays for new switches by claiming that these large discounts were atypical, were associated solely with Verizon's conversion of analog switches to digital technology, and would not be available under any other circumstances.[321] Only later was evidence presented "suggesting that the deep discounts might, in fact, be available for all purchases of new switches, not only large scale replacement programs."[322] Several CLECs moved to reopen the New York UNE rates. In evaluating Verizon's objection to that request, the New York PSC found as follows:

> We were unimpressed by Verizon's belittling, as "inadvertent misstatement," of its own assertion that the higher discounts were uniquely associated with the analog-to-digital replacements and by its suggestion that the new information lacked significance because of the manner in which switches are purchased.[323]

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[321] *See New York UNE Rates Order* at 20-21, recounting this important procedural history.
[322] *New York UNE Rates Order* at 21.
[323] *New York UNE Rates Order* at 21-22.

Having had an opportunity to revisit the issue, the New York PSC now finds it to be "clear … that relatively deep new-switch discounts are not limited to full-scale switch replacements, and there is no basis for agreeing with Verizon that incremental replacement of the system over time would entail growth discounts only."[324] In less polite language, Verizon misrepresented switch prices to the New York PSC, and eventually got found out.

Verizon, having finally been unmasked in its prior disinformation campaign of falsely claiming that new switch pricing was a one-time relic of the past, has not learned the lesson that it has an obligation to be truthful and forthcoming. In this proceeding, it has – apparently deliberately – attempted to hide the truth regarding the magnitude of the difference between the very low prices it pays for new switches and the much higher prices that it pays for growth parts.

Back in May 2001, AT&T asked Verizon-MA for the information that it deliberately hid until late in the hearings of this case. Discovery request ATT-VZ 12-19 specifically asked:

> Please list each entire new switch (*cf.* Verizon's direct panel testimony at page 139) purchased by Verizon since January 1, 2000, for use anywhere in Verizon's service territory, and for each such switch, list the switch maker, the switch model number, the switch size in terms of number of lines to be served by the switch, the total list price for the switch, the total net price paid for the switch, and the total price of the switch per line to be served by the switch.

Verizon refused to provide the information, asserting that the request was "overly broad and burdensome."[325] If not for the fact that the Department asked Verizon-MA to provide copies of its switching-related record request responses from the recent Virginia UNE rates proceeding, the significant new information showing that Verizon is actually paying much less for switching than it assumes in its cost study would have stayed hidden.[326]

Verizon's "burdensomeness" objection now appears to be bogus. But even if it were valid in May 2001, it certainly stopped being valid by the time in late 2001 that Verizon was

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[324] *New York UNE Rates Order* at 28.
[325] Ex. ATT-VZ 12-19.

compelled by the FCC to gather the same information. The groundrules for this proceeding imposed upon Verizon a continuing obligation to supplement its discovery responses. They state that:

> Information requests shall be deemed continuing so as to require further supplemental responses if a party or its witnesses receive or generate additional information within the scope of the requests between the time of the original request and the close of the record in the proceeding.

Verizon's switch cost witness in Massachusetts, Nancy Matt, was also its switch cost witness in the Virginia arbitration proceeding before the FCC.[327] Thus, there is no plausible excuse that Verizon's participants in the Virginia proceeding were unaware of the issues and discovery requests in this Massachusetts docket. Verizon's failure to provide this information regarding the actual prices that it pays for switching appears to be a deliberate attempt to withhold vital information.

3. This Newly Discovered Information Regarding Verizon's Actual Prices for Switch Purchases Must Inform Estimates of Forward-Looking Switching Costs.

a. TELRIC Requires the Use of New Switch Pricing to Estimate UNE Costs.

TELRIC – by its very nature, as a method of estimating long-run, forward-looking economic costs – requires that the Department price unbundled switching based on the most efficient, least cost way of serving the demand for the entire element of switching. Given the tremendous disparity between the prices Verizon actually pays for new switches and the prices it says it pays for growth parts under its existing contracts, it is inconsistent with TELRIC to base UNE switching rates on anything other than the prices available to Verizon for new switches.

(..continued)

[326] *See* RR DTE-49S, with VZ-VA's response to RR FCC-32.

[327] *See, e.g.*, Verizon-VA Response to FCC's RR VZ-VA 36, provided in RR DTE-49S.

Verizon's economists explain that under TELRIC "the ILEC's costs are determined with reference to a hypothetical carrier that is able to install new network equipment in the current locations of the ILEC's central offices."[328] TELRIC methodology calls for the construction of a local telecommunications network from scratch, using the best available technology and the existing locations of the wire centers.[329] Dr. Taylor has characterized this "reconstructed local network" requirement to mean "that all elements of the local network, including the switches, including the building that surrounds the switch...all of those elements get rebuilt as if the neutron bomb had flattened them."[330] Dr. Taylor also testified that the "long-run" requirement of the TELRIC standard "says rip every switch out. All of them. . . . Every switch in the network, rip them out. Leave the . . . wire center locations where they are. And build the network that you would build today to serve the demand."[331] During this proceeding, Dr. Taylor reaffirmed these statements, testifying that the forward-looking costs of switches "are determined with reference to a hypothetical carrier that is able to install new network equipment in the current locations of the ILEC's central offices."[332]

The FCC has held that, for purposes of TELRIC, the "long run is a period so long that all of the firm's present contracts will have run out, its present plant and equipment will have been worn out or rendered obsolete and will therefore need replacement."[333] This applies with full force to switching.

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[328] Timothy Tardiff, William Taylor, Charles Zarkada, and Jaime d'Almeida, *An Economic Evaluation of Network Cost Models*, Appendix A at 4, published by the National Economic Research Associates (Aug. 7, 2000); reprinted in relevant part at Ex. ATT-3, Hirshleifer Surrebuttal, Attachment JH-12.

[329] *FCC's First Local Competition Order* ¶ 685.

[330] *Bell Atlantic-DE, Inc.* v. *McMahon*, 80 F.Supp. 2d 218, 238 (D. Del. 2000) (quoting Taylor).

[331] *Bell Atlantic-DE, Inc.* v. *McMahon*, 80 F.Supp. 2d 218, 238 (D. Del. 2000) (quoting Taylor).

[332] Tr. 21, 1/7/02 (Taylor). *See also* Timothy Tardiff, William Taylor, Charles Zarkada, and Jaime d'Almeida, *An Economic Evaluation of Network Cost Models*, Appendix A at 5, published by the National Economic Research Associates (Aug. 7, 2000); reprinted in relevant part at Ex. ATT-3, Hirshleifer Surrebuttal, Attachment JH-12.

[333] *FCC's First Local Competition Order* ¶ 677 n.1682 (quoting William Baumol, *Economic Theory and Operations Analysis* (4th ed. 1977)) at 290).

> In the long run (a period of time that varies according to the technology at issue), an efficient and rational competitor would replace all of its existing switches with the most current technology and receive the bulk-rate discounts. Viewed in this light, [Verizon]'s proposed switch costs, which it premised upon the small add-on discounts for which it will qualify "in the coming years," looks only to the short-run.[334]

In its February 2000 UNE Rates Order, the Vermont Public Service Board specifically determined that recurring rates for switching should be set based on the presumption that in a forward-looking network the incumbent carrier would pay the lowest available prices for switches, meaning that it would pay the discounted price for new switches rather than the substantially higher price for switching growth parts.[335] The same is true here.

The FCC has also determined that when estimating the forward-looking economic cost of switching, one must look to the cost of installing new switches to serve anticipated demand, and must not factor in the higher cost of providing the same switching services by purchasing and installing switch equipment upgrades.[336] Specifically, the FCC stated:

> We reject the suggestion…that the costs associated with purchasing and installing switching equipment upgrades should be included in our cost estimates.[] The model platform we adopted is intended to use the most cost-effective, forward-looking technology available at a particular period in time….Switches, augmented by upgrades, may provide carriers the ability to provide supported services, but do so at greater costs. Therefore, such augmented switches do not constitute cost-effective forward-looking technology.[337]

As Drs. Taylor and Tardiff have explained, the "forward-looking economic cost" standard applied in the FCC's USF proceeding is "essentially the same cost standard" as TELRIC.[338]

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[334] *Bell Atlantic-DE, Inc.* v. *McMahon*, 80 F.Supp. 2d 218, 238-239 (D. Del. 2000).
[335] *Vermont UNE Rates Order*, at 27-28, 67, 99-102.
[336] *FCC's USF Inputs Order* ¶¶ 315-317.
[337] *FCC's USF Inputs Order* ¶ 317.
[338] Timothy Tardiff, William Taylor, Charles Zarkada, and Jaime d'Almeida, *An Economic Evaluation of Network Cost Models*, Appendix A at 4, fn. 4, published by the National Economic Research Associates (Aug. 7, 2000); reprinted in relevant part at Ex. ATT-3, Hirshleifer Surrebuttal, Attachment JH-12.

b. Verizon's Proposed Growth-Only Discount Is Improper, and Has Been Rejected by the FCC.

Verizon argues that it can base unbundled switching rates solely on the higher price that it will pay for switching growth parts, and that it may and the Department should just ignore the far lower prices that Verizon in fact pays for new switches.[339] Verizon's position has been rejected by the FCC, which recently found that:

> Even if some growth additions may be used in a forward-looking network, the absence of any new switches is inconsistent with the assumption in TELRIC pricing of a forward-looking network built from scratch, given the location of the existing wire centers. Although an efficient competitor might anticipate some growth additions over the long run, ***rates based on an assumption of all growth additions and no new switches do not comply with TELRIC principles***[340]

The FCC noted that because switch material prices are grossed up by factors accounting for installation (and other things), use of such multipliers "magnifies the effect of any other problematic assumptions underlying switching rates, such as inaccurate assumptions for new versus growth switch discounts," which thus underscores the importance of getting the switch material prices right.[341]

Even before the FCC's Rhode Island 271 Order, Verizon's position was indefensible. This is demonstrated in part by the lengths to which Verizon went to pretend that some authority supported its outlandish position. Verizon's recurring cost panel quotes a decision by the United States District Court for the Northern District of New York, stating that UNE rates "must be based on the incremental costs that an incumbent local service provider actually incurs or will incur."[342] Verizon tried to hide the fact that this is nothing more than a District Court quoting the Eighth Circuit's decision on the TELRIC standard that has now been stayed, and that the

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[339] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 138-141.

[340] *FCC's Rhode Island 271 Order*, at ¶ 34 (emphasis added).

[341] *FCC's Rhode Island 271 Order*, at ¶ 35.

[342] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 139, quoting *MCI Telecommunications Corp.* v. *New York Telephone Company*, 134 F.Supp.2d 490, 501 (N.D.N.Y. 2001), quoting in turn *Iowa Utilities Board* v. *FCC*, 219 F.3d 744, 751 (8th Cir. 2000).

Department and the FCC have already held is not currently relevant.[343] Incredibly, not a single member of Verizon's recurring cost panel had bothered to read the District Court decision that they swore under oath supported Verizon's view that only switching growth part prices are relevant here, and not one of them was even aware that the language they were quoting was taken from the Eighth Circuit decision which they acknowledge is not in effect.[344]

Thus, Verizon's cost study violates the requirements of TELRIC. Verizon calculates costs using only the substantially higher prices associated with switching growth parts.[345] With respect to the pricing for Nortel switches, Verizon applies the rates available under its contract with that vendor.[346] But as demonstrated in Section III.B.2.a, beginning at page 62, Verizon does not in fact purchase new switches from Nortel under this contract. Instead, it uses competitive bidding to get a much lower price. Thus, we now know that the Nortel contract prices in practice apply only to growth parts.

Verizon's Lucent bid data, which includes the discount received for only two new switches placed in 2000,[347] reflects pricing that is almost entirely for growth parts and upgrades. Verizon based its switch discount for Lucent switches on Verizon's year 2000 purchases of switches and switch parts from Lucent for the 13 Verizon East states.[348] Verizon supports its claim that its Lucent switching discount is based on a "mixture of ***new***, growth, and upgraded switching equipment discounts" by pointing to the fact that "importantly, the Lucent data includes the discount received for two new 5ESS switches, Benning, DC, … and Brookland, DC."[349] However, if the new switch data for the District of Columbia is removed from the

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[343] *See* Section I.C. at page 4, above.
[344] Tr. 1582-1583, 1/24/02 (Anglin, Gansert, Garfield, Livecchi, and Matt).
[345] Ex. VZ-36, Recurring Cost Panel Direct, at 139; Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 60.
[346] Ex. VZ-36, Recurring Cost Panel Direct, at 152-154.
[347] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, 59-62; Ex. RR-DTE-66, Proprietary Attachment 2.
[348] Ex. VZ-36, Recurring Cost Panel Rebuttal, 152.
[349] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, 59; Tr. 2068, 1/29/02 (Pitts). *See also* the proprietary attachment to RR-DTE-49S which includes Verizon-VA's response to VZ-VA RR-32 in the Virginia proceeding.

equation, the remaining 99.7 percent of the investment is all growth.[350] Thus, the new switches in the District of Columbia have almost no impact on Verizon's discount.[351] Moreover, the fact that only two new Lucent digital switches were installed in 2000 out of the 1740 Lucent switches in the 13-state territory only confirms that the Lucent bid data relied upon by Verizon do not reflect a "reasonable" mix of new switch purchases and growth additions, as Verizon claims.[352]

Under TELRIC, incremental cost refers to the total cost of providing the entire element, not the change in total cost required to maintain or upgrade an existing, embedded facility.[353] In the context of loop rates, Verizon admits that TELRIC rates must be based on the assumption that the existing network is replaced with new, forward-looking technology.[354] This same is true for switching. Verizon's cost study improperly assumes that an efficient carrier will not replace its switches in the long run, but would simply "add on" capacity or growth equipment. Verizon's method is akin to someone trying to calculate the price of a new car by going to the dealer and separately pricing all the car's parts.[355] It is in error, and that is why the FCC took pains to explain that in the Rhode Island 271 Order that Verizon's approach is unlawful.

4. Should the Department Opt Not to Adopt a 100% New Switch Discount, The Ratio of New to Growth Discounts in Any "Mix" Should Heavily Favor New Switch Discounts.

a. Any Melding of New and Growth Pricing Should Reflect No Less than 90% New Switch Pricing, and No More than 10% Growth Parts Pricing.

If the Department were not to adopt a 100 percent new switch discount, the Department should assume no less than 90 percent new switch pricing mixed with no more than 10 percent growth part pricing. This blend follows from the testimony of both Ms. Pitts for AT&T and

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350 Tr. 2066, 1/29/02 (Pitts).
351 Tr. 2066, 1/29/02 (Pitts).
352 Ex. RR-DTE-64.
353 47 C.F.R. § 51.511(a); *FCC's First Local Competition Order*, ¶¶ 682, 690.
354 Tr. 3367-3369, 2/7/02 (Gansert).
355 Tr. 2105-2106, 1/29/02 (Pitts).

WorldCom, and of Ms. Matt for Verizon. It may not be appropriate in other proceedings. And, as explained in the preceding section, the proper approach under TELRIC is to estimate the forward-looking costs of unbundled switching based on 100 percent new switching pricing. But if the Department were to disagree, and wished to review the switch cost estimates that would result from using a melding of the new switch and growth part prices, the record evidence supports applying at least a 90 percent weight to the new switch prices.

Verizon's Ms. Matt suggests that the proper way to meld new switch and growth part pricing would be to begin by modeling the installation of new switches that include "some reasonable amount of growth" and "then at the end of th[e] planning period [which Verizon says is three years[356]] we would need more growth and we would augment the switch."[357] Ms. Matt reiterated this point one week later, explaining it as follows:

> So incrementally, if we'd done our TELRICs right, which we have -- you're developing a unit cost that's a long-run incremental cost. So at the end of three years, in a real-life situation or in a cost-study situation, you need more equipment. So you add -- at the end of the planning period you would hypothetically add more switching equipment; right? Because you're going to have more lines.[358]

In other words, according to Verizon the proper way to meld new switch and growth part pricing under TELRIC is to begin by modeling the installation of all new switches at the beginning of the study period with sufficient capacity to cover demand for three years, and then to assume that the ILEC adds additional capacity to these then-existing switches at the end of year three in order to handle three more years of growth.

Of course, Verizon made no attempt to model such a scenario.[359] But one can apply Verizon's own data and assumptions to the conceptual construct described by Ms. Matt, and

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[356] Tr. 1624, 1/24/02 (Matt).
[357] Tr. 1628, 1/24/02 (Matt).
[358] Tr. 2357, 1/31/02 (Matt).
[359] Tr. 1628, 1/24/02 (Matt).

determine the mix of new switch and growth part pricing that will result. Indeed, Ms. Matt's explanation of a proper modeling construct is made concrete in Ms. Pitts' Discount Factor Adjustment Worksheet, provided on diskette in response to RR-DTE-56.[360]

Based on Verizon's own estimate of 1.5 percent of growth, Ms. Matt's construct suggests a mix of new and growth discounts in the range of 90:10. The Worksheet created by Ms. Pitts starts from the correct assumption – also articulated by Ms. Matt – that all switches will be replaced in year one and, looking forward to the next few years, estimates the growth equipment necessary for the switch.[361] If one were to assume annual line growth of three percent, the ratio of new switch investments to growth parts would be approximately 80:20.[362] In other words, "no more than 20% of the switch would be considered growth equipment."[363] But the percentage of annual line growth assumed should in fact be far smaller. Three percent annual growth is too high in light of recent actual changes in the total number of Verizon retail and wholesale access lines,[364] and it is twice the 1.5% annual line growth that Verizon assumes in its switch cost model.[365] If this Verizon estimate of 1.5 percent annual growth is plugged into Ms. Pitts' Discount Factor Adjustment Worksheet, the ratio of new switch to growth part pricing becomes 90.1:9.9.[366]

The 90:10 ratio has been adopted as a presumption by Rhode Island Public Utility Commission.[367] It is also consistent with the Vermont Public Service Board's explicit presumption that new switch discounts should be used to calculate the TELRIC cost of

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360 Tr. 1628, 1/24/02 (Matt); Tr. 2070-2072, 1/29/02 (Pitts).
361 Tr. 2070, 1/29/02 (Pitts).
362 RR-DTE-56, Proprietary Attachment.
363 Tr. 2070-2071, 1/29/02 (Pitts).
364 Ex. ATT-VZ 4-29 Second Supplemental, Proprietary Attachment, Page 3.
365 Tr. 1629, 1/24/02 (Matt); Tr. 2070-2072, 1/29/02 (Pitts); Ex. ATT-VZ 4-29 Second Supplemental.
366 RR-DTE-56, Proprietary Attachment.
367 *Rhode Island UNE Inputs Order*, at 35.

switching.[368] The Vermont PSB creates this presumption because the use of new switch discounts will produce a lower "life cycle" cost of a switch than reliance on growth-only switches.[369] Perhaps most importantly, this mix is consistent with very recent guidance by the FCC in its Rhode Island 271 Order:

> While the Commission has not to date specified an appropriate split between new, replacement switches and growth additions, we strongly question an assumption of only growth additions, as proposed by Verizon…Even if some growth additions may be used in a forward-looking network, the absence of any new switches is inconsistent with the assumption in TELRIC pricing of a forward-looking network built from scratch, given the location of existing wire centers.[370]

Verizon claims that, should the Department adopt a mix of new and growth discounts, this "blend" should reflect a 50/50 split between new and growth.[371] Verizon says that this ratio reflects the mix of equipment that it happened to purchase during the five-year period of 1996-2000.[372] Verizon's reliance on the last five year's worth of switch purchases to compute an accurate mix of new and growth discounts is not appropriate, because it has no relevance to the estimation of long-run, forward-looking economic costs under TELRIC.

b. A 90:10 Melding of the Rates Claimed by Verizon Yields Switch Material Prices Per Line That Are Far Below Those Used in the Pitts Restatement, and Even Further Below Those Assumed in New York Based on Much Older Data.

It is a simple matter to calculate a 90:10 melding of the prices that Verizon says it pays for growth parts under its current Nortel contracts, and of the substantially lower price that it is in fact paying per line for Nortel switches purchased through a competitive bidding process. The calculation is as follows: ($17.35[373] * 90%) + ($82.62[374] * 10%) = $23.88. This figure is only 28.9% of the material price per line of $82.62 that results from running the Nortel contract price

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368 *Vermont UNE Rates Order*, at 101.
369 *Vermont UNE Rates Order*, at 101.
370 *FCC's Rhode Island 271 Order*, at ¶ 34.
371 Tr. 2382, 1/31/02 (Matt); RR-DTE-66.
372 RR-DTE-66, Proprietary Attachment 2; RR-DTE-49S, Proprietary Attachment RR-VZVA -29.
373 *See* Section III.B.2.a, beginning at page 62.

through the SCIS model and that formed the basis for Ms. Pitts' revision of the Verizon switch cost study. Thus, the results of such a melding of switching rates is yet further proof that Ms. Pitts' restatement of Verizon's forward-looking switching costs has produced numbers that are still many times too high.

The following table depicts the switching rates derived by Ms. Pitts in her restatement of Verizon's cost study in the first column of numbers, while the last column reduces these figures by 21.0% to reflect the costs that result from the switch material prices Verizon has received from Nortel through competitive bidding. The middle column reduces Ms. Pitts' original restatement by only 28.9%, and therefore represents the result of estimating forward-looking switch costs using a 90/10 melding of the prices that Verizon actually pays for new Nortel switches and its contract price for Nortel growth parts.

Summary of Key Switching Rate Elements – Adjusted for New Information from Verizon with Results of Melding New Switch and Growth Part Pricing

Rate Element	Ms. Pitts' Revisions to VZ-MA[375]	w/ Melded $23.88/line	per RR DTE-49[376]
Analog Line Port per month	$1.93	$0.56	$0.41
Switching – Originating per MOU	.0003133	.0000905	.0000658
Switching – Terminating per MOU	.0002749	.0000794	.0000577
Trunk Port – Common per MOU	.0003931	.0001136	.0000826
Tandem Switching per MOU	.0000840	.0000243	.0000176
Tandem Trunk Port per MOU	.0001793	.0000518	.0000377

Thus, the last column represents the appropriate forward-looking switch rates for Massachusetts for the key pricing elements, based on the data obtained from Verizon in this proceeding and on

(..continued)

[374] Tr. 1591-1593, 1/24/02 (Matt).

[375] Adapted from Ex. ATT-20, Pitts Revised Rebuttal, Ex. CP-1. Port rates reflect 0.5% reduction from original Pitts rate, to account for correction to non-conversation time factor. *See* Ex. ATT-21, Pitts Surrebuttal, at 10. End office switching rates reflect 2.0% reduction for correction to non-conversation time factor. *Id.* at 10.

[376] Figures are 21% of the original Pitts Revisions, since $17.35 / $82.62 = 21.00%.

Verizon's own cost models. The middle column is a conservatively higher middle ground. As discussed above, however, the undisputed evidence demonstrates that the switching rates adopted by the Department should be substantially below the rates derived by Ms. Pitts in her restatement of Verizon's switch cost model.

C. Other Switching Inputs or Assumptions Used by Verizon Also Improperly Inflate Cost Estimates Above TELRIC Levels.

Switch material prices are the most fundamental input to any estimation of forward-looking switching costs. They are discussed separately in the preceding sub-section because Verizon's substantial overstatement of switch material prices is the single biggest reason why the switch costs it proposes are so far in excess of TELRIC-compliant levels. However, as Ms. Pitts proved and as the following discussion tries to make clear, a variety of other inputs or assumptions in the Verizon switch cost study are also unreasonable. Each of the errors discussed below is a further reason why Verizon's switch cost estimates are unreasonable, and why the Department should adopt switching rates that are well below those set forth in Ms. Pitts' restatement.

Ms. Pitts' analysis is entitled to substantial deference. She previously led the Telcordia group that developed the Switching Cost Information System ("SCIS") and other switching cost models,[377] and Verizon's lead cost witness acknowledges that Ms. Pitts is a true switch cost expert and that in the past he has relied upon her expertise.[378] (Indeed, the witness proffered by Verizon to discuss use of the SCIS model explained that although he and Ms. Pitts originally worked together at "basically at a comparable level" at Bellcore, now Telcordia, she then "got

[377] Ex. ATT-20, Pitts Revised Rebuttal at 1.
[378] Tr. 1584, 1/24/02 (Anglin).

promoted" and from then on he worked for Ms. Pitts.[379] Thus, Telcordia recognized in Ms. Pitts the same expertise upon which Verizon has in the past relied.)

1. Verizon's EF&I Factor for Switching Should Be Reduced to 25%.

In order to convert the material price of a switch, as described above, to the cost of a fully installed switch, an engineering, furnished and installed ("EF&I") factor is applied to the material price. The EF&I factor reflects the cost of vendor engineering, Verizon's engineering, the actual installation of the switch, and sales tax.[380] The fully installed or "in-place" cost of a switch has these predictable pieces to it and therefore should be similar industry-wide.[381]

Verizon's proposed EF&I factor is 40.27 percent, which greatly exceeds the 25 percent EF&I factor for other comparable ILECs.[382] One reason Verizon's EF&I costs are so much higher than other companies' EF&I costs is the refusal of New England Telephone to competitively bid installation jobs.[383] In New England, unlike elsewhere within Verizon and unlike other ILECs, switches are installed by Verizon's personnel.[384] Thus, Verizon does not allow the market to encourage efficiencies in the installation of switches.[385] The fact that New England Telephone has utilized inefficient switch installation practices under expensive labor contracts is irrelevant to the setting of TELRIC prices, since "the long run is measured by how long it takes for current contracts to become irrelevant, for the firm to be in a position where it can effectively change any decision – any capital technology, any hiring practice, anything like that – that it has currently in the ground today."[386]

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379 Tr. 1583-1584, 1/24/02 (Garfield).
380 Ex. ATT-20, Pitts Revised Rebuttal, at 39.
381 Tr. 2120-2121, 1/29/02 (Pitts).
382 Ex. ATT-20, Pitts Revised Rebuttal, at 40.
383 Ex. ATT-20, Pitts Revised Rebuttal, at 40-41; Ex. ATT-VZ 3-4.
384 Ex. ATT-VZ 3-4; *FCC's Rhode Island 271 Order* ¶ 35.
385 Ex. ATT-20, Pitts Revised Rebuttal, at 41.
386 Tr. 24, 1/7/02 (Taylor).

The 25% EF&I factor recommended by Ms. Pitts is the appropriate figure to use for estimating forward-looking economic cost under TELRIC. With respect to the EF&I work that is typically done by an ILEC, the FCC determined in 1999 in its USF proceeding that an appropriate estimate of this cost is 8 percent of the switch material price.[387] This was consistent with, albeit updated and thus somewhat lower than, the 10 percent figure reported by the old NYNEX and Bell Atlantic in the FCC's 1992 Open Network Architecture proceedings.[388] For the engineering and installation typically done by the switch vendor, SCIS reflects Telcordia's estimate that these vendor costs typically amount to 12% of the switch material cost.[389] Adding the 8% adopted by the FCC for telephone company engineering and installation, plus the 12% computed by SCIS for vendor engineering and installation, plus 5% sales tax, results in a more accurate EF&I of 25 percent.[390]

The sole basis for Verizon's proposed EF&I factor for switching is that the ratio derived by taking the total value of installed switching investments entered into its Detailed Continuing Property Record database in 1998 for Verizon-East, and dividing it by the total of corresponding material-only investments, equals 40.27 percent.[391] But Verizon has been unable to verify that this calculation based on historic costs as booked during 1998 has any relevance to the estimation of a forward-looking EF&I factor. The 1998 DCPR data relied upon by Verizon to support its claimed EF&I factor cannot be disaggregated on a per project basis.[392] Thus, Verizon is unable to compute the dollars or the labor hours associated with the installation of one switch,[393] so that it is impossible to verify that Verizon's estimation of total installed cost in its DCPR records is reasonable. Verizon itself admits that "[t]he EF&I factor depends on what

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387 *FCC's USF Inputs Order*, ¶ 307.
388 Ex. VZ-ATT/WCOM-1-6; RR-DTE-58.
389 Ex. ATT-20, Pitts Revised Rebuttal, at 40; Tr. 2113-2114, 1/29/02 (Pitts).
390 Ex. ATT-20, Pitts Revised Rebuttal, at 40.
391 Ex. VZ-37, Verizon Recurring Cost Study, Part G-3, "Methodology;" Tr. 2119-2120, 1/29/02 (Pitts).

equipment you're installing and the process of installing it…"[394] In other words, the cost of installing a switch is "facility-specific" in that it depends on the facility, where it is, how many stories it has, *etc.*[395] Yet, Verizon fails to provide a job-specific EF&I factor.[396] The Department cannot compute an accurate EF&I factor from Verizon's DCPR data because Verizon does not provide the necessary information.

Verizon has failed to meet its burden of proving that its very high EF&I factor is reasonable. Verizon has not substantiated any of the engineering and installation costs that make up the more than 40 percent EF&I factor.[397] It is undisputed that Verizon has not provided any information about the types of activities, labor rates, engineering labor hours, installation labor hours, or miscellaneous equipment explaining the basis for the difference between the material cost and the claimed installed cost in the 1998 DCPR data.[398] In order to prove its claimed EF&I factor, Verizon should have provided this data in detail.[399] Furthermore, Verizon has not provided any analysis showing that the array of equipment purchased in 1998, upon which it bases its EF&I factor, represents the array of equipment that would be purchased to put in place a forward-looking network.[400] Even if the 1998 DCPR data for Verizon-East was an accurate representation of the installation costs for the switching equipment that Verizon happened to buy and install that year, Verizon has made no showing that this 1998 data is in any way an accurate representation of forward-looking installation costs. Verizon's witnesses have suggested that the EF&I ratio derived from any one year's worth of DCPR data may vary substantially from that in

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[392] Tr. 2119, 1/29/02 (Pitts).

[393] Tr. 2119-2120, 1/29/02 (Pitts).

[394] Tr. 1610, 1/24/02 (Gansert).

[395] Tr. 2431, 1/31/02 (Anglin).

[396] Tr. 1608, 1/24/02 (Anglin).

[397] Ex. ATT-21, Pitts Surrebuttal, at 1-3.

[398] Tr. 2449-2453, 1/31/02 (Anglin); Ex. ATT-21, Pitts Surrebuttal, at 2; Tr. 2118-2120, 1/29/02 (Pitts); Tr. 2429-2431, 1/31/02 (Anglin).

[399] Tr. 2119, 1/29/02 (Pitts).

other years: "depending on the type of equipment installed that year, you'll get different relationships."[401]

In sum, Verizon has not met its burden of proving that the historic EF&I ratio it has calculated is relevant. The Department should therefore accept Ms. Pitts' expert recommendation that a proper, forward-looking EF&I factor for switching is approximately 25 percent.

2. Trunk Ports: By Assuming Underutilization of Common Trunks, Verizon Improperly Inflates their Cost.

The utilization of trunks and trunk ports is generally stated as a number of centum call seconds (CCS, or one hundred seconds) per busy hour,[402] but it can readily be restated in percentages. There are 3600 seconds, or 36 CCSs, in an hour. Thus, a utilization rate of, for example, 60 percent is the equivalent of 21.6 CCSs per busy hour (2160 / 3600 = 60%).

Verizon does three things in its switch cost model that, together, result in an unreasonably low assumption of common end office and common trunk port utilization. One of the inputs to the SCIS model used by Verizon to estimate switch material prices is the expected utilization of trunks (and therefore of trunk ports) in CCSs per busy hour.[403] Verizon sets this at 1500 CCSs. It then applies a 95% fill factor within SCIS (this represents a so-called administrative fill, which reserves capacity for testing of circuits and other network administration).[404] Finally, using the switch material prices generated by SCIS as an input to its cost model, Verizon then applies another utilization factor of 94.28%.[405] The net result is that Verizon is assuming an effective common trunk port utilization of only 37% [(1500 * .95 * .9428) / 3600 = 37.3%]. This is

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[400] Tr. 1613, 1/24/02 (Anglin).
[401] Tr. 2517-2523, 2/1/02 (Anglin).
[402] Ex. ATT-20, Pitts Revised Rebuttal at 24.
[403] Ex. ATT-20, Pitts Revised Rebuttal at 24.
[404] Tr. 2121-2122, 1/29/02 (Pitts).
[405] Ex. ATT-20, Pitts Revised Rebuttal at 26.

unreasonably low, and has the effect of unfairly inflating the common trunk port rates calculated by Verizon.

At a minimum, the Department should evaluate Verizon's costing model by making two changes to these trunk port utilization assumptions, as recommended by Ms. Pitts. First, it should set the SCIS input for trunk utilization to 20 CCSs per busy hour.[406] Twenty busy hour CCS/trunk is the absolute minimum trunk utilization that one would see in an efficient, forward-looking network, and it would be appropriate to increase to something more like 27 CCSs.[407] A trunk utilization of 27 CCS/BH would result in call blocking of a minimal, and acceptable, level of only 0.1% for a 50-member trunk group.[408] Second, since SCIS already accounts for administrative fill (dividing by 95%), Verizon should not make additional, duplicative utilization fill adjustment of 94.28% in its workpapers.[409] This factor should be changed from .9428 to 1.0. The effective utilization that results from these two changes is still a conservatively low 52.8% [(2000 * .95 * 1.0) / 3600 = 52.8%].

Verizon-MA reports that its actual trunk utilization as of November 1, 2001 is 76.6%. Oddly, it nonetheless argues that the effective utilization of 52.8% resulting from the inputs recommended by Ms. Pitts is too high. Of course, the opposite is true. If anything, Verizon's actual utilization confirms Ms. Pitts' suggestion that it would be more appropriate to assume a trunk utilization of closer to 27.3 CCSs. For example, assuming 27 CCSs and following Ms. Pitts' second recommendation yields an effective trunk utilization of 71.25% [(2700 * .95 * 1.0) / 3600 = 71.25%].

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[406] Tr. 2125, 1/29/02 (Pitts).

[407] Tr. 2008, 2074, 2126, 1/29/02 (Pitts); Ex. ATT-20, Pitts Revised Rebuttal, at 25 & fn. 24 (as corrected to read "27.3 CCS/trunk").

[408] *Id.*

[409] Tr. 2125-2126, 1/29/02 (Pitts).

Verizon makes no effort to defend its application of a second utilization factor of 94.28% in its cost study workpapers. Since the two SCIS inputs for trunk utilization already sizes the trunk port investment to leave adequate spare capacity, there is no need and indeed it is improper to apply a third trunk utilization factor within Verizon's cost study.

Verizon does try to defend its assumption of only 15 CCS/busy hour trunk utilization by asserting that its cost study does assume trunk usage of more than 20 CCS for trunks that connect Verizon switches to each other, but that the average trunk utilization in its network is "driven downward" by lower usage on trunks dedicated to interconnecting CLECs to Verizon's network.[410] But this argument about CLEC usage of dedicated trunks is irrelevant. What's at issue is the pricing of common or shared trunk ports,[411] which carry a mixture of Verizon's own traffic as well as traffic of CLEC's UNE-P customers.[412] It is Verizon, and not the CLECs, that determines how efficiently common trunks are used.[413] Verizon should not have used "actual trunk traffic usage data" for dedicated interconnection trunks that have no bearing on the most efficient, forward-looking design of common trunk and port utilization.[414]

In any case, TELRIC rates require that anticipated utilization reflect efficient practices in the long run. The fact that CLECs that are just starting their attempts to enter the local exchange market in Massachusetts experience lower utilization on dedicated trunking that they purchase from Verizon is not surprising. Verizon has presented no evidence showing, and therefore has not met its burden of proving, that the historic usage data upon which Verizon claims to have based its trunk utilization assumptions are in any way an accurate predictor of forward-looking trunk utilization over the long run. Furthermore, Verizon's arguments about historically low

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[410] Ex. VZ-38a, Verizon's Recurring Cost Panel Surrebuttal, at 62-63.
[411] Ex. ATT-20, Pitts Revised Rebuttal, at 25.
[412] Verizon-MA's Tariff DTE MA No. 17, Part B, § 6.2.2.
[413] Verizon-MA's Tariff DTE MA No. 17, Part B, § 6.2.4.
[414] *Cf.* Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal at 63.

trunk utilization cannot be squared with its further representation that "[a]s of November 1, 2001 trunk utilization is approximately 76.6%."[415]

3. IDLC: The TELRIC Network Should Be Designed So That All Fiber Fed Loops Are Served on IDLC with GR-303.

Line port rates should be set on the assumption that all fiber-fed loops are served with IDLC, and none with UDLC. This is true for two reasons.

First, as explained in Section IV.A.2.a. beginning at page 114, it is inappropriate to assume the use of any UDLC technology for setting UNE rates.

Second, as discussed in Section IV.A.2.a(3) beginning at page 125, it would in any case be inappropriate to assume that UDLC is needed to serve UNE-P customers. It is undisputed that "[t]he only UNE line-side switch ports that will be purchased by competitive carriers will be those associated with UNE-P."[416]

Thus, the switch ports for which costs are being estimated in this proceeding "would be either copper analog ports or fiber fed GR303-compliant integrated digital loop carrier."[417] The appropriate mix of analog ports and GR303 IDLC ports will match the appropriate economic mix of copper and fiber feeder in the forward-looking network. As explained in Section IV.A.3.b(4) beginning at page 155, this proper mix is 49.2 percent fiber fed IDLC and 50.8 percent copper feeder.

Applying this economic mix to the calculation of switch port rates within Verizon's switch cost model significantly reduces the line port rate.[418] Verizon improperly assumes that only 25 percent of lines are on IDLC technology.[419] The net effect of correcting this assumption is a 29 percent reduction in the cost of IDLC port rates and a 27 percent reduction in the melded

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[415] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal at 64.
[416] Ex. ATT-20, Pitts Revised Rebuttal, at 27.
[417] *Id.*
[418] Ex. ATT-20, Pitts Revised Rebuttal, at 27.

UNE-P port rate (melded meaning the final port rate, reflecting the cost of both the IDLC port and the analog line port).[420]

4. Non-Traffic Sensitive Costs Must Not Be Assigned To Traffic Sensitive Rate Elements.

a. "Getting Started" Costs Are Not Traffic-Sensitive.

"Getting started" costs should be recovered via non-usage-sensitive elements because they do not vary with traffic levels.[421] It is undisputed that they are "fixed" in that they do not increase if minutes or lines are added to the switch.[422] "Getting started" costs reflect the common equipment purchased to make a switch operational, regardless of the number of lines, number of trunks, or traffic carrier.[423]

The appropriate cost driver for today's digital switches is ports, not minutes of use.[424] Digital switches are basically large computers, and advances in technology associated with memory and processing power provide current digital switches with memory and processing power that far exceed expected demand.[425] This can be seen in Verizon's own study which shows that the average processor utilization over the life of a Lucent 5ESS switch is only **<Begin Proprietary>** XX **<End Proprietary>** % and the average processor utilization over the life of a Nortel DMS switch is only **<Begin Proprietary>** XX **<End Proprietary>** %.[426] Given the computing power available in modern switches, the primary limiting factor in today's digital switch is not processing capacity but rather the exhaustion of the number of ports.

(..continued)

[419] Ex. ATT-20, Pitts Revised Rebuttal, at 27.
[420] Ex. ATT-20, Pitts Revised Rebuttal, at 28.
[421] Ex. ATT-20, Pitts Revised Rebuttal, at 31.
[422] Tr. 1614, 1616, 1/24/02 (Matt).
[423] Tr. 2085, 1/29/02 (Pitts).
[424] Ex. ATT-20, Pitts Revised Rebuttal, at 32.
[425] Ex. ATT-20, Pitts Revised Rebuttal, at 32.
[426] Ex. ATT-20P, Pitts Revised Rebuttal, Ex. CP-4.

Verizon claims that "getting started" costs are driven by usage because every feature of the switch other than the port potentially requires augmentation as the level of usage on a line increases.[427] This claim is false. The record evidence shows conclusively that the fixed getting started cost of the switch does not vary with increases to either numbers of lines or usage.[428] Verizon's Ms. Matt explains that "getting started" costs would not increase if Verizon used a five year planning period as opposed to a three year planning period, even though the busy hour traffic in minutes of use ("MOUs") and investments necessarily would be increased.[429] Ms. Matt also concedes that the "getting started" cost will only increase if Verizon added an "exorbitant amount of lines" or added another switch.[430]

In sum, Verizon incorrectly assigns the "getting started" costs – as well as the related and similarly fixed RTU fees – to the traffic-sensitive MOU rate element.[431] Doing so results in over-recovery by Verizon. It permits Verizon to take an undisputedly fixed cost, divide it by an estimate number of minutes of use, and then see its UNE revenues increase with usage they the related costs remain fixed.[432] They way to correct this problem of over recovery is to assign switching costs that do not vary with usage to the fixed monthly rates for ports, and remove them from the costs used to calculate the per MOU rates.

In Verizon's model, because they take a fixed, getting started cost and charge for it on an MOU basis, you get a higher per MOU charge using Verizon's assumed three-year planning period than if one uses the five-year period over which the Department intends for these rates to be in place.[433] However, this problem disappears if the Department follows Ms. Pitts' advice and

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[427] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 68; VZ-42P, Garfield Surrebuttal, at 12-13.
[428] Tr. 1616, 1/24/02 (Matt); Tr. 2085-2086, 1/29/02 (Pitts).
[429] Tr. 2351-2352, 1/31/02 (Matt).
[430] Tr. 2355, 1/31/02 (Matt).
[431] Ex. ATT-20, Pitts Revised Rebuttal, at 32.
[432] Tr. 2087-2088, 1/29/02 (Pitts).
[433] Tr. 2087-2088, 1/29/02 (Pitts).

moves the non-traffic sensitive costs to the fixed monthly port charge, and takes them out of the variable MOU usage rates.[434]

b. Other Port-Related Costs Must Also be Assigned to Fixed Monthly Port Charges.

In addition to the getting started costs, all other switching costs that do not vary with traffic levels or are causally related to the port function should also be assigned to the port rates. These additional cost elements include: line termination costs, BRI and PRI costs (for ISDN line and trunks), Additional D Channel Termination costs, and Additional XAT Channel Costs should be assigned to ports.[435] These costs are listed in Verizon's Recurring Cost Model at Workpaper Part C-2, Section 4, page 1, at lines 1, 2, 11, 13, 14, 19, 20, and 21. In addition, the two EPHC ("Equivalent POTS Half-Call) categories at lines 2 and 10 should also be assigned to ports.[436] As explained by Ms. Pitts:

> EPHC is an output category that captures the common equipment in the switch module, which is the primary building block component of the 5ESS switch, which uses a "distributed" architecture. This common equipment's maximum port capacity is reached before its call processing capacity.[] Therefore, the cost driver is ports and the EPHC costs should be assigned to the ports.[437]

5. RTU Fees Must be Forward-Looking, and Should be Recovered through Monthly Port Rates, on a Non-Traffic Sensitive Basis.

a. Verizon's Proposed RTU Fees Are Improperly Based on a One-Time $200 Million Spike 1999 RTU Expenditures.

Right-to-use ("RTU") fees are the licensing fees paid to switch vendors for use of the switch software. Verizon's treatment of RTU fees "accounts for approximately ten percent of the total switch usage charges proposed by VZ-MA."[438] For this reason AT&T sought backup

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[434] *Id.*
[435] Ex. ATT-20, Pitts Revised Rebuttal, at 33-34.
[436] Tr. 2133-2136, 1/29/02 (Pitts).
[437] Ex. ATT-20, Pitts Revised Rebuttal, at 35.
[438] Ex. ATT-21, Pitts Surrebuttal at 10; Ex. VZ-37, *see also* Verizon's Recurring Cost Study, Workpaper Part C-2, Section 1, Page 1, Lines 19 and 20.

and justification for the RTU expenses assumed by Verizon in Part G-9 of its recurring cost study.

Verizon bases its RTU factor for switching on historical expenses for 1999 and 2000, and forecasts for 2001 and 2002.[439] But Verizon was unable to provide any supporting information to explain these historic costs.[440]

What we can tell is that Verizon's RTU factor for switching is inflated by 26 percent as a result of improper treatment of RTU investments for the year 1999. Verizon's 1999 RTU cost is overstated by almost $200 million. Verizon included $377.5 million in RTU costs for 1999 in calculating its factor, when it should have included only $184.6 million. In that year, Verizon changed its method of accounting for RTU fees.[441] This resulted in a "One Time Impact," without which the 1999 RTU costs would have been only $184.6 million.[442]

It is improper under TELRIC to base UNE rates on one-time, historic costs. Verizon attempts to explain the inclusion of this 1999 figure stating that "[s]oftware expenditures can and do vary year over year, and there is no reason to disregard any actual spike in expenditures in any year. Certainly there may be vendor software developed in the near future that may cause another spike."[443] However, this is not the reason for the 1999 spike and, even if it were, a one-time atypical RTU purchase should not be reflected in a forward-looking environment.[444] The impact of the one-time accounting change in 1999 reflects an embedded, historical cost and is not a recurring cost that Verizon will incur in the future. In fact, Mr. Anglin concedes that

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439 Ex. VZ-37, Verizon's Recurring Cost Study, Part G-9, Workpaper Page 1 of 3.
440 Ex. ATT-VZ 12-1
441 Tr. 1654-1657, 1/24/02 (Anglin); Ex. ATT-VZ 12-2P.
442 Ex. ATT-VZ 12-2-2S-R (second supplemental reply, redacted) (see the footnote in the attachment.)
443 Ex. VZ-38a, Recurring Cost Panel Surrebuttal, at 73.
444 Ex. ATT-20, Pitts Revised Rebuttal, at 37.

Verizon does not see "any significant spikes" in its planning horizon and Verizon's software engineers likewise do not predict any spikes in annual investment.[445]

The correct 1999 expenditure of $184.6 million therefore should be included in column C of Workpaper Part G-9, Page 1 of 3. This one change results in a decrease of the RTU factor by approximately 26 percent.

b. RTU Fees, Like "Getting Started" Costs, Should be Recovered Via Port Rates and Not Via MOU Rates.

Verizon incorrectly allocates RTU fees to the MOU rate for switch usage.[446] It is undisputed that the licensing fee paid for using the switch software "is not at all a function of the minutes of use on the switch."[447] Since RTU fees are in fact fixed, and do not vary with switch usage, they should not be assigned to the most volatile usage-sensitive element.[448] Rather, RTU fees should be recovered through the non-traffic sensitive port rates. As with "getting started" costs, the exhaustion of ports is the cost driver for the purchase of an additional switch and the concomitant RTU fees.[449] Verizon tries to support its traffic-sensitive RTU fee by claiming that RTU costs should be recovered in proportion to utilization, on the theory that "a user who utilizes a larger share of resources should be required to pay a proportionally larger amount for those resources than a user that uses less of the resources."[450] Yet, Verizon will not exhaust the processor usage or its RTU fees and, therefore, it is incorrect to require that one user of the switch should pay more toward RTU fees than another user.[451] As explained above, allocation of fixed switching costs to the traffic-sensitive MOU rates will unfairly result in over recovery by Verizon.

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[445] Tr. 2437, 1/31/02 (Anglin).
[446] Tr. 1644, 1/24/02 (Matt).
[447] Tr. 1644, 1/24/02 (Matt).
[448] Tr. 2130, 1/29/02 (Pitts); Ex. ATT-20, Pitts Revised Rebuttal, at 38.
[449] Ex. ATT-20, Pitts Revised Rebuttal, at 38-39.
[450] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 62.
[451] Tr. 2130, 1/29/02 (Pitts).

6. Feature Port Additive Charges Should Not be Levied On Top of Switch Usage and Port Prices, Since Verizon Has Not Met Its Burden of Proving the Nature or Magnitude of the Claimed Costs.

Verizon says that it proposes feature port additive costs to cover the hardware purchased to provision optional features such as conference calling, distinctive ringing, call forwarding, and automatic recall.[452] However, the costs of features should be included in the basic price of switches assumed by a model. There is no need to show feature costs separately.[453] These switched-based features associated with local telephone services are already included in the switch prices adopted by the FCC[454] and utilized in the HAI Model.[455] Verizon can and should be required to structure its rates the same way.

Verizon proposes feature port additive costs without reference to engineering data, marketing line penetration data,[456] or any other legitimate source of estimating the feature data inputs to its switch study.[457] The feature input data is unsupported by any document or explanation and can only be validated by "the opinion of the respective product manager."[458] The Department ordered Verizon to provide a further explanation, in the form of "a step by step delineation of the process product managers used to derive [each] estimate."[459] Verizon-MA's entire supplemental response was as follows:

> At a meeting between the cost analyst and the product manager:
> 1. Each SCIS/IN feature input was discussed.
> 2. The product manager estimated each input value.
> 3. The cost analyst recorded each value as input into SCIS/IN.[460]

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[452] Ex. VZ-37P, Recurring Cost Model, Workpaper Part C-1, Index, pages 1-2.
[453] Ex. ATT-25, Mercer Direct, at 9.
[454] *FCC's USF Platform Order* ¶ 75.
[455] Tr. 2080, 1/29/02 (Pitts)
[456] Tr. 2447, 1/31/02 (Matt).
[457] Tr. 2441, 1/31/02 (Matt).
[458] Exs. ATT-VZ 4-1, ATT-VZ 12-15, and ATT-VZ 12-16,; *see also* Ex. ATT-21, Pitts Surrebuttal, at 5.
[459] Docket DTE 01-20, "Interlocutory Order on AT&T's … Motions to Compel," at 26 (October 18, 2001).
[460] Ex. ATT-VZ 4-1, Supplemental Response.

To state the obvious, this is not a meaningful explanation of a key input to Verizon's switch cost study. The cost of feature hardware is directly impacted by the inputs Verizon-MA enters into the SCIS feature model, called SCIS/IN, and therefore Verizon's baseless inputs skew the feature port costs.[461]

The Department asked Ms. Pitts whether Verizon provided adequate support for its feature port input data in its response to ATT-VZ 22-3.[462] This response, however, only provides some penetration data. Penetration data is merely the starting point for a complete analysis of these costs.[463] As explained by Ms. Pitts, the input data required for SCIS/IN takes two forms: usage and penetration.[464] Verizon's penetration data does not identify how many lines in an office have a particular feature, although Verizon certainly could produce such information.[465] In addition, Verizon provides no support for the logic used by Verizon's product manager to estimate the input value for usage.[466]

Without adequate data to demonstrate the reasonableness of these inputs or their consistency with other inputs, Verizon's feature port costs should be eliminated. Verizon's feature investments are substantially overstated as a result of Verizon's incorrect switch discount inputs. Alternatively, should the Department decline to hold Verizon responsible for failing to meet its burden of proof on the feature port hardware costs, the rates set for feature port additives should be set at or substantially below the restated rates provided in Exhibit CP-1 to Ms. Pitts' Revised Rebuttal Testimony.[467]

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[461] Ex. ATT-21, Pitts Surrebuttal, at 4.
[462] Tr. 2082, 1/29/02 (Baldwin).
[463] Tr. 2082, 1/29/02 (Pitts).
[464] Ex. ATT-21, Pitts Surrebuttal, at 5.
[465] Tr. 2081-2082, 1/29/02 (Pitts).
[466] Tr. 2081-2082, 1/29/02 (Pitts).
[467] Ex. ATT-20, Pitts Revised Rebuttal, at 31.

7. The Call Completion Ratio Used to Compute the Non-Conversation Time Factor Should Be Increased to Reflect Growing Use of Call Answering Technology, and Verizon Must Revise its Tariff to Comport With Use of This Factor in Its Cost Study.

a. Verizon's Call Completion Ratio Is Artificially Low.

Verizon uses an inflated factor to increase the minute of use cost to account for non-conversation time.[468] Non-conversation time ("NCT") represents the time a switch is used not for conversation but to complete a call, including the time for dialing, ringing, and call set-up.[469] In order to arrive at a NCT factor, Verizon must estimate the total NCT per call. Verizon does this by dividing the NCT per attempted call by the call completion ratio.[470] The call completion ratio, as its name suggests, provides the percentage that a call is completed by a person or machine. This call completion ratio directly effects the NCT factor. The higher the percentage of call completions, the lower the NCT factor and, therefore, the lower the minute of use cost.

Verizon's 71.5% completion rate[471] is based on Bell Atlantic South data from 1992.[472] Thus, it cannot possibly capture the huge increase in call completions due to answering machines and voice messaging services.[473] Ms. Matt's contention that caller ID has somehow reduced the call-completion ratio is unfounded given the fact that, as admitted by her, answering machines and voice mail complete calls, which still occurs even when an individual decides not to pick up the phone after consulting caller ID.[474] Contrary to Verizon's contention, Verizon's proposed call completion ratio based on ten-year-old data is not anchored in the reality of today's network.[475]

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[468] Ex. VZ-37P, Recurring Cost Model, Part C-2, Section 1, Page 1, Line 29; Part C-3, Section 6.
[469] Ex. VZ-36, Recurring Cost Panel Direct, at 160.
[470] Ex. VZ-37P, Recurring Cost Model, Part C-3, Section 6, Page 1 of 1, line 15.
[471] Ex. VZ-37P, Recurring Cost Model, Part C-3, Section 6, page 1 of 1, line 14.
[472] Ex. ATT-VZ 12-12 (Matt); Tr. 2321, 1/31/02 (Matt).
[473] Ex. ATT-21, Pitts Surrebuttal, at 10.
[474] Tr. 2315-2316, 1/31/02 (Matt).
[475] Tr. 2317, 1/31/02 (Matt).

Verizon has not produced Massachusetts-specific data, and has not produced recent data from any jurisdiction. There is good reason to believe that the very old data upon which Verizon has relied underestimates the forward-looking call completion ratio. For these reasons, Verizon's completion ratio should be increased from 71.5 percent to at least 85 percent, to reflect the increased call completions as a result of subscriber reliance on answering machines, voicemail and caller-ID.[476] Utilizing the more appropriate 85 percent call completion ratio reduces the overall NCT adjustment factor and the minute of use cost by two percent.[477]

b. Tariff No. 17 Must Be Revised to Prevent Double-Counting of Non-Conversation Time.

As explained in the immediately preceding section, the Verizon cost study accounts for the non-conversation time and the call completion ratio in the computation of MOUs. For this reason, D.T.E. Tariff No. 17, Part B, Section 6.3 must be revised. This portion of Verizon's UNE tariff increases the recorded originating measured minutes by a total non-conversation time and call attempt additives.

If these tariff additives are combined with MOUs that already include non-conversation time and the call completion ratio, however, then Verizon will double recover for non-conversation time. Thus, Verizon should be ordered to revise its tariff to remove non-conversation time and call attempt additives, in order to make the tariff consistent with the basis upon which Verizon's cost study derives UNE rates.

8. Verizon's BH/AHD Conversion Factor Must Reflect the Usage of a Switch Over All Days, Not Just Business Days.

Switches are sized to handle the traffic of the busy hour.[478] Yet, MOU rates for UNE switch usage apply to all traffic, whether it occurs in the busy hour or not. Verizon's cost study

[476] Ex. 21, Pitts Surrebuttal, at 10.
[477] Ex. 21, Pitts Surrebuttal, at 10.
[478] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 79.

sizes switches to handle busy hour traffic, and estimates a busy hour MOU cost,[479] and then converts that cost to an Any Hour of the Day MOU by applying an "Annual to Busy Hour Ratio."[480] To calculate this ratio or conversion factor, Verizon starts with an assumed "Busy Hour to All Hours of the Day" ("BH/AHD") ratio,[481] and divides that by the number of days over which the usage costs are to be recovered.[482]

Verizon's cost study is based on an unsubstantiated BH/AHD ratio. It also improperly inflates switch usage charges by dividing that ratio by too small a number of days to calculate the annual conversion factor.

a. The BH/AHD Conversion Factor Should Spread Switching Costs Over 365 Days, Or at the Least, 308 Days.

Verizon further overstates switching costs by mis-calculating the busy hour to annual factor, derived from the BH/AHD ratio. Verizon calculates the BH to annual factor by spreading the assumed busy hour traffic across 251 business days a year.[483] But a factor that only distributes usage across business days, rather than across every day, improperly inflates the calculation of switch usage rates. The 251 days represent the "average business days" of the year and exclude all weekend and holiday traffic. The remaining 114 days of the year are pure profit for Verizon.[484] Ignoring these 114 days worth of traffic amounts to an estimated 20% over-recovery by Verizon.[485]

Verizon's use of only business days in a year allows Verizon to recover its entire switching investment by traffic that occurs only on business days.[486] Subscribers, however,

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[479] Ex. VZ-36, Recurring Cost Panel Direct, at 158-159.
[480] *E.g.*, Ex. VZ-37, Verizon Recurring Cost Study, Workpaper Part C-2, Section 1, Page 1, Line 27.
[481] "'All Hours of the Day' means averaged over all time-of-day periods." Ex. VZ-36, Recurring Cost Panel Direct, at 157, fn. 34.
[482] *See* Ex. VZ-37, Verizon Recurring Cost Study, Workpaper Part C-3, Section 7.
[483] Ex. VZ-37, Verizon Recurring Cost Study, Workpaper Part C-3, Page 1, Line 4.
[484] Tr. 2048-2049, 1/29/02 (Pitts).
[485] Tr. 2058, 1/29/02 (Pitts).
[486] Tr. 2058, 1/29/02 (Pitts).

make telephone calls on weekends and holidays, and CLECs have to pay for those minutes through Verizon's switching usage charge on an MOU basis.[487] "Because unbundled network elements are both residence and business, [and] are going to be used 365 days a year," Verizon's BH/AHD ratio should be divided by 365 days.[488]

The New York PSC recently found that Verizon's method of computing the BH/AHD conversion has "the effect…of spreading switching costs only over business day MOUs, not total MOUs."[489] As a result, the New York PSC adopted Judge Linsider's recommendation of spreading the costs over 308 days a year, a figure derived by treating each weekend day as one-half of a day.[490] In making this recommendation, Judge Linsider recognized that weekend usage must be taken into account when calculating the BH/AHD conversion.[491]

Use of 365 days will spread switching costs over *all* MOUs and therefore the Department should divide the BH/AHD ratio by 365 in order to arrive at the busy hour to annual conversion factor. In the alternative, the Department should utilize the 308 days adopted by the New York PSC which more accurately allocates the costs of switching in comparison to Verizon's proposal of 251 days.

b. Traffic Data from 1997 Cannot Be Relied Upon To Support the BH/AHD Ratio.

Historically, there had been an industry standard of using 10% as the BH/AHD ratio.[492] But this was based on earlier calling trends in which business calling peaked mid-morning and residential calling peaked in the early evening.[493] Now, however, switches often have multiple busy hours, rather than just one, for reasons ranging from Internet usage to "always on" work

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487 Tr. 2058, 1/29/02 (Pitts).
488 Tr. 2057, 1/29/02 (Pitts).
489 *New York UNE Rates Order*, at 38.
490 *New York UNE Rates Order*, at 36-38.
491 *New York UNE Rates Order*, at 36.
492 Tr. 2026, 1/19/02 (Pitts).
493 Ex. ATT-21, Pitts Surrebuttal, at 7-8.

hours.[494] In other words, the peakedness of old is flatting out. What this means is that the ratio of busy hour calls to total day calls is falling, as usage is getting spread more evenly through the day.[495] This is undisputed. Even Verizon's switch cost witness recognizes that "Internet traffic has flattened out the busy hour" and therefore the industry standard of 10% must be reduced.[496]

Verizon uses a ratio of 8.3%, not 10%.[497] But this 8.3% ratio is based on a New York traffic sample from 1997 from the defunct NCAT cost model, and has not been shown to be an accurate indicator of present day traffic.[498] Data on 1997 traffic cannot reflect current usage trends, given the changes associated with the increase in cell phone usage and internet usage.[499] "This factor was not documented and its impact on the minute of use cost is significant."[500]

If the ratio of the busy hour calls to total day calls dropped 20 percent from 1997 to today, *i.e.* the BH/AHD ratio had declined to 6.6%, the busy hour to annual conversion factor would drop 20 percent to .000265 and ultimately cause the minute of use costs to decline by 20 percent.[501] No recent study has been conducted by Verizon to establish that its proposed 8.3% busy hour to total day based on 1997 data accurately reflects traffic today. However, the evidence indicates that busy hour to total day is likely to decline.[502]

In the 1996 Consolidated Arbitrations, Verizon used a 10% figure based on 1995 data, while it uses in this proceeding an 8.3% figure based on 1997 data.[503] Given this trend, and the very good reasons to expect that it has been continuing and will continue into the future, the

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494 Ex. ATT-21, Pitts Surrebuttal, at 7-8; Tr. 2046-2047, 1/29/02 (Pitts).
495 Ex. ATT-21, Pitts Surrebuttal, at 8.
496 Tr. 2334-2335, 1/31/02 (Matt).
497 Ex. VZ-37, Verizon Recurring Cost Study, Workpaper Part C-3, Line 5.
498 Ex. ATT-VZ 4-48S; Tr. 2338, 1/31/02 (Matt) (Verizon no longer uses NCAT).
499 Ex. ATT-21, Pitts Surrebuttal, at 7.
500 Ex. ATT-21, Pitts Surrebuttal, at 6.
501 Ex. ATT-21, Pitts Surrebuttal, at 8.
502 Tr. 2047, 1/29/02 (Pitts).
503 Tr. 2334, 1/31/02 (Anglin).

Department should adopt Ms. Pitts' suggestion of a BH/AHD ratio approximately equal to 7.0%. This adjusted figure properly reflects the increased flattening of the busy hour.[504]

D. DUF Charges: Verizon Should Not be Allowed to Assess Extra Charges for Providing Billing Information in Daily Usage Files.

In addition to the switching rates proposed in Part C of Verizon's recurring cost workpapers, Verizon also seeks in Part F-3 to impose a substantial charge for each billing record reported to a CLEC that purchases unbundled switching. This crucial billing information is sent to CLECs in the Daily Usage File ("DUF"). CLECs that purchase unbundled switching from Verizon, typically as part of a UNE-P arrangement, need to get from Verizon the key billing information associated with each call originated by the CLEC customer, such as the length and destination of call. Without accurate and timely billing information from Verizon, CLECs relying on unbundled switching are unable to prevent and resolve consumer billing problems, and unable to collect proper amounts from their retail customers.[505]

"In the Phase 4-O Order in the Consolidated Arbitrations [docket], the Department rejected Verizon MA's DUF costs."[506] As a result, today there is no charge to CLECs for receiving the billing information that is gathered by Verizon's switches. In this proceeding, Verizon once again has not met its burden of proving that its claimed DUF costs are TELRIC-complaint, or indeed of proving that they are accurate or make any sense. The Department should therefore, once again, reject Verizon's proposed DUF charges in their entirety.

1. The Proposed DUF Charge Double Counts Costs Already Recovered Through Verizon's Common Overhead and Other Support ACFs.

The Department previously found that Verizon may not assess a separate charge for providing billing records where the relevant computer-related costs are already accounted for in

[504] Tr. 2059, 1/29/02 (Pitts).

[505] Ex. VZ-37, Verizon's Recurring Cost Study, Part F-3, Section 1.1 (DUF records are needed by CLECs "for timely and accurate billing of services to the end user").

the joint and common overhead factors used by Verizon to develop all of its UNE rates.[507] The Call Usage Detail Service ("CUDS") charges that the Department rejected in the *Consolidated Arbitrations* proceeding are for the same billing record provision that is covered by what Verizon now calls its DUF charge.[508]

Verizon asserts that it has eliminated any possibility of double counting by its proposed DUF charges and its overhead factors "through an explicit adjustment to the ACFs."[509] But a quick review of the evidence shows that this assertion is not true. The "explicit adjustment" to which Verizon refers was made only to the Other Support ACF, and it took into account only the OSS access costs addressed in Mr. Minion's direct testimony without making any reduction in this ACF for the separate costs claimed in Verizon's Workpapers Part F-3 for providing billing records through DUFs.[510] No downward adjustment was made to any ACF to prevent double counting of the claimed DUF-related costs.

If Verizon's proposed OSS access charges and its proposed DUF charges both cover the same costs, then Verizon is brazenly attempting to pad its UNE charges by counting the same item more than once in its direct rate elements. But if, as Verizon claims, the OSS and DUF charges are for different alleged underlying costs, then making an adjustment to the Other Support ACF with respect to the OSS access costs in no way corrects for double counting between that Other Support ACF and the proposed DUF charge.

Furthermore, no adjustment whatsoever was made to prevent double counting within the Common Overhead ACF. This common overhead factor is applied by Verizon to gross up all of

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(..continued)

[506] Ex. VZ-36, Verizon's Recurring Cost Panel Direct Testimony, at 188.

[507] *Consolidated Arbitrations* Docket, Phase 4-O Order at 9 (Jan. 10, 2000), citing Phase 4-L Order at 47-49 (Oct. 14, 1999).

[508] Ex. VZ-36, Recurring Cost Panel Direct, at 188 fn. 40.

[509] Ex. VZ-36, Recurring Cost Panel Direct, at 188.

its claimed recurring costs.[511] The Common Overhead ACF is the place in Verizon's cost study where it recovers for, among other things, computer hardware costs and the costs of information management personnel.[512] The large and broad categories of costs covered by the Common Overhead ACF subsume the smaller, narrower costs that Verizon seeks to recover in its proposed DUF charges. The DUF charges are based on total investment in general purpose computers, on the cost of computing capacity, and on the cost of a few support personnel.[513]

As the Department found in its Phase 4-L and 4-O Orders, Verizon should not be able to assess specific charges for computing and related support costs that fall within categories of common costs which are recovered through general factors applied in calculating all UNE rates.[514] For this same reason, the proposed DUF charges should be rejected in this proceeding just as they were in the *Consolidated Arbitrations* docket.

2. Even If Verizon Had Not Double Counted Them, Its Proposed DUF Charges Should Still be Eliminated or Greatly Reduced.

Verizon provided little discussion and no substantive explanation of its proposed DUF charges in the scant two pages of prefiled testimony addressing the topic,[515] and instead relies upon the poorly documented workpapers in Part F-3. Verizon has proposed that CLECs be charged a total of $0.001624 for each DUF billing record that is sent to the CLEC. This is the

(..continued)

[510] Ex. VZ-37, Verizon Recurring Cost Study, Part G-6, Tab 8 ("OSS Adjustment"); Ex. VZ-36, Recurring Cost Panel Direct, at 51 (Verizon subtracts from the Other Support ACF "an estimation of costs that are associated with access to OSS," which costs "are further discussed in Mr. Minion's testimony.").

[511] *See, e.g.*, Ex. VZ-37, Verizon Recurring Cost Study, Part B-1, Massachusetts Monthly Loop Cost Summary, lines 4, 11, 18, 25, 32 (loop rates); Part C-1, Section 1, Page 1, Line 20 (analog line port rate); Part C-2, Section 1, Page 1, Line 21 (local switch usage rate).

[512] Ex. VZ-37, Verizon Recurring Cost Study, Part G-2, Tab 2.

[513] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Sections 4.1B-4.1D, and 4.3A.

[514] *Consolidated Arbitrations* Docket, Phase 4-O Order at 9 (Jan. 10, 2000), Phase 4-L Order at 47-49 (Oct. 14, 1999).

[515] *See* Ex. VZ-36, Recurring Cost Panel Direct, at 187-189.

total of the $0.001363 cost to process each record, plus the $0.000261 to transmit each record to the CLEC electronically via an EDI interface, that is claimed by Verizon.[516]

Although these numbers seem small on their face, in practice they can be important. At the typical customer MOU volumes that FCC staff uses to evaluate the actual cost impact of particular UNE rates, Verizon's proposed combined per DUF record charge would result in a cost of over 60 cents per month per UNE-P customer. That is a material and significant amount.

a. Verizon's Proposed Record Transmission Costs are Unreasonable.

Verizon has not come close to meeting its burden of proof with respect to the proposed per record transmission charge of $0.000261. First, Verizon substantially overstated its claimed cost of computer processing, by basing its calculations on 1997 hardware costs. As explained in the next section, correcting for this one error would reduce the per record transmission charge to $0.00008. Second, Verizon rounds out its transmission charge cost study by applying arbitrary and unsupported assumptions regarding the number of "maintenance hours" and "daily CPU minutes" to be spent each day in transmitting DUFs. Since the cost study is unsupported, this charge should be disallowed in its entirety.

(1) Verizon overstates its data transmission costs by using 1997 costs of computer processing capacity.

One of the key inputs for Verizon's claimed DUF transmission cost is the assumption that computer cost per minute of central processing unit ("CPU") time equals $13.13.[517] Verizon provides absolutely no backup or explanation for this number. It just appears, and we are told that it comes from "Integration and Planning."[518]

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[516] RR ATT-2, p.4; Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, p.9, § 2.1.
[517] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Section 4.3A, Line 9.
[518] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Section 5.7A

But this is not the first time that Verizon has trotted out this assumed processing cost of $13.13 per CPU minute in support of claimed DUF charges. Verizon used the identical assumption in its 1997 cost study, which the Department rejected in its Phase 4-O order.[519] Thus, at least in this key respect, Verizon's assertion that "[i]n this filing, the DUF study is based on more current data than that provided in the Consolidated Arbitrations"[520] is patently false. This input was not justified in the 1997 cost study either. The only source for the $13.13 figure was that it was "estimated."[521] But the 1997 workpapers suggest that this figure was somehow derived from Verizon's calculation that its cost of computer processing capacity was $20,000 per Millions of Instructions Per Second ("MIPS") in 1997.[522]

If the Department intends to adopt UNE rates in this proceeding that will remain in effect for five years, then it should set those rates based on the computing costs one would expect in the middle of that period, *i.e.* in 2004. In its Phase 4-O order, the Department concluded that any attempt by Verizon to recover for DUF costs or other OSS costs must be rejected for failure by Verizon to meet "its burden of proving that the components of that cost estimate were accurate" so long as Verizon's cost estimates fail to "reflect the decrease in computational costs that are expected under 'Moore's Law," a widely accepted principle in the digital electronics industry, which holds that the cost of digital technology decreases by 50 percent every 18 to 24 months."[523] In testimony before Congress, Verizon Wireless has noted that there is every reason to expect this trend to continue: "Moore's observation, now known as Moore's Law, described a trend that has continued and is still remarkably accurate. It is the basis for many planners'

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[519] *Consolidated Arbitrations* Docket, Phase 4-O Order, at 8 (Jan. 10, 2000), citing *Consolidated Arbitrations* Ex. BA-OSS-3, Attachment C.
[520] Ex. VZ-36, Recurring Cost Panel Direct, at 188.
[521] *Consolidated Arbitrations* Ex. BA-OSS-3, Attachment C, Workpaper I, Line 4, column C.
[522] *Consolidated Arbitrations* Ex. BA-OSS-3, Attachment C, Workpaper I.
[523] *Consolidated Arbitrations* Docket, Phase 4-O Order at 8-9 (Jan. 10, 2000).

performance forecasts."[524] FCC Chairman Michael K. Powell agrees.[525] Verizon has made no effort to refute Moore's Law in this proceeding. To the contrary, its own records show that Verizon's cost for processing capacity in MIPS decreased by 60% from 1996 to 1999, and its cost for storage capacity (measured in gigabytes of memory) decreased by 80% over the same three years.[526]

The Department's prior findings provide guidance regarding how much Verizon has overstated its presumed DUF transmission costs by using a 1997 cost of $13.13 per CPU minute, rather than adjusting this cost forward to expected 2004 levels. Verizon concedes that its cost per MIPS had fallen from $20,000 in 1997 to $9,800 by calendar year 2000.[527] Applying Moore's Law, one would expect that Verizon's cost per MIPS will have fallen by at least 50% from 2000 to 2002, and another 50% from 2002 to 2004. In other words, one would expect that cost to fall by 75% over the four years from 2000 to 2004 (1*.50*.50=.25). If Verizon's cost per MIPS in 2000 was $9,800, then one would expect it to fall to $2,450 by 2004. In other words, Verizon's computing costs will have decreased by almost 90 percent from 1997 to 2004 ($2,450 ÷ $20,000 = 12.25 percent, *i.e.* an 87.75% decrease).

It is a simple matter to apply this adjustment to Verizon's DUF cost study. In the electronic workpapers, one goes to Part F-3, Tab 4.3A, and replaces the assumed cost per CPU minute of $13.13 with a new, circa 2004 cost of $1.61 ($13.13 * .1225 = $1.61). The effect of

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[524] Statement of Molly Feldman, Vice President - Tax, Verizon Wireless, Testimony Before the Subcommittee on Oversight of the House Committee on Ways and Means, September 26, 2000. Available at < http://waysandmeans.house.gov/oversite/106cong/9-26-00/9-26feld.htm >. Accord Vermont Telecommunications Plan, Department of Public Service, August 2000 ("Moore's observation, now known as Moore's Law, described a trend that has continued and is still remarkably accurate.") Available at < http://www.state.vt.us/psd/tel00/tel00c12.htm >.

[525] Address by Chairman Michael K. Powell to British American, Inc., May 24, 2001 ("we unleashed this thing that we now are pretty familiar with that we call Moore's law to describe this unbelievably relentless doubling and tripling of processing power"), available at < http://www.fcc.gov/Speeches/Powell/2001/spmkp107.html >. *See also, e.g.*, Keynote Address by Chairman Michael K. Powell, Georgetown Law Center First Year Orientation, August 30, 2000, ("Following Moore's Law, the speed of the microchip doubles every 18 months."), available at < http://www.fcc.gov/Speeches/Powell/2000/spmkp001.html >.

[526] Ex. VZ-26, Minion Direct, at 6.

updating this one input is to reduce the resulting data transmission charge per record calculated by Verizon's model to $0.00008 per record, down from the $0.000261 improperly calculated by Verizon.

As Verizon concedes, in the Phase 4-O order the Department found that the assumed investments underlying the DUF charges proposed in the *Consolidated Arbitrations* proceeding "were overstated."[528] The passage of time, in the context of steadily declining computing costs, means that repetition of the exact same cost assumptions today results in even greater overstatement of costs than was true in the prior UNE rates case.

(2) Verizon provides no support whatsoever for its assumptions regarding the required extent of CPU processing time or number of "maintenance" hours.

Two other key assumptions in Verizon's data transmission cost study are completely arbitrary. Verizon assumes that someone must spend two hours every day on "maintenance" related to DUF transmission, and that it will take 35 minutes of CPU processing time each day to transmit the DUFs.[529] No explanation or justification is provided for these key inputs. Verizon says only that they "were taken from the previous study."[530] But the previous, 1997 OSS study said only that these two numbers were "Estimated;" no other backup was provided.[531]

Verizon has not met its burden of proof with respect to its claimed DUF transmission costs, and that charge should be disallowed as it was in the *Consolidated Arbitrations* case.

b. Verizon's Proposed Record Processing Costs are Unreasonable.

As discussed in Section III.D.1 beginning at page 98, the computer hardware and support personnel costs that underlie the proposed DUF record processing charge are already recovered

(..continued)

[527] Tr. 929, 1/18/02 (Minion).

[528] Ex. VZ-36, Recurring Cost Panel Direct, at 189.

[529] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Section 4.3A, lines 2 and 10.

through Verizon's Common Overhead and Other Support ACFs, and thus no additional, separate DUF charge should be permitted. Even if there had been no double counting, however, Verizon has substantially overstated the "CLEC Support" costs that represent the vast majority of the proposed record processing charge. These support costs are for the individual service analysts who perform "usage error correction and adjustments" on billing records for CLEC customers.[532] Verizon substantially overstates these costs in at least two ways.

First, Verizon's own cost study shows that it misstates staffing levels for 2001. Verizon calculates the annual cost for 2001, 2002, and 2003, and then derives the "annualized levelized labor costs" for this function. But though Verizon acknowledges that for 2002 and 2003 this function can be performed by only three service analysts, it calculates its 2001 costs assuming four analysts.[533] If the forward-looking staffing level is three service analysts, that is the level that should be reflected in all years of a proper TELRIC study.

Second, Verizon substantially overstates the labor rate for this function. Verizon starts with direct labor rate for each position covered by its DUF cost study, and adds loadings for clerical support, management supervisory personnel, paid absence, premium time, and other associated costs.[534] One of the categories of loadings is the catch-all "Other." For the other three job categories covered by the DUF cost study, the "other" loading amounts to 3.2%, 6.5%, or 6.8% of the direct labor rate.[535] This averages to 5.5%. But for the Service Analyst position (coded as JFC 1250), the "other" loading is a whopping and literally incredible 188.7% of the direct labor rate. The direct labor rate is $24.21 per hour, and the loading for "other" is an

(..continued)

[530] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Section 5.8.

[531] *Consolidated Arbitrations* Ex. BA-OSS-3, Attachment C, Exhibit II.

[532] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Section 5.5C.

[533] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Section 4.1D, line 6.

[534] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Sections 5.3A to 5.3D; *see also Consolidated Arbitrations* Phase 4-L Order at 7, for discussion of use of such loadings to develop "directly assigned labor rates."

[535] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Sections 5.3B to 5.3D.

additional $45.70 per hour.[536] If one goes to Tab 5.3A of Part F-3 of Verizon's electronic workpapers and substitutes an "other" loading that is 5.5% of the direct labor rate, the total directly assigned labor rate for the Service Analysts drops from an unbelievable $100.42 per hour down to $56.05 per hour, which is more in line with the other labor rates assumed by Verizon in this DUF cost study.

If the Department permits any DUF charge for record processing, it should require that both of these corrections be made: the labor rate for Service Analysts in Tab 5.3A should be reduced as described, and the number of analysts presumed for 2001 in Tab 4.1D should be reduced from four to three. The impact of making these two changes is to reduce the total DUF record processing charge from the $0.001363 per record proposed by Verizon, to a more reasonable rate of $0.00081.[537]

E. Reciprocal Compensation Rates for Terminating a Call Should Equal Unbundled Switching Rates for Doing the Same Thing.

Ironically but not surprisingly, after all of its improper efforts to inflate unbundled switching rates, Verizon turns around and improperly ***understates*** reciprocal compensation costs. Its motivation for doing this is clear: Verizon is a net payor of reciprocal compensation charges in Massachusetts, due to its loss of Internet Service Provider ("ISP") customers to competitors, and thus it wishes to reduce those charges below TELRIC levels even as it tries to inflate other switching costs to excessively high levels.[538]

For its proposed reciprocal compensation rates, Verizon excludes "getting started" costs and RTU fees, even though it includes those costs in its switch UNE usage rates.[539] Verizon concedes that there is no difference in how a switch processes UNE traffic and how it process

[536] Ex. VZ-37, Verizon Recurring Cost Study, Part F-3, Sections 5.3A.

[537] The intermediate step is that making these two changes has the effect of reducing the per record "CLEC Support" cost calculated at Tab 4.1D from $0.00101 to $0.00050.

[538] *See* Verizon's filings in Docket DTE 97-116.

reciprocal compensation traffic.[540] After all, "'reciprocal compensation' traffic does not refer to a particular type of traffic, but rather to traffic subject to a particular compensation mechanism."[541] Verizon nonetheless claims that it is entitled to charge different amounts for these calls. Although "the switch does not treat either type of terminating call differently," "Verizon-MA has allocated the costs differently."[542] Verizon is obviously trying to maximize its UNE revenues (thereby injuring its UNE competitors) and minimize the amounts it pays in reciprocal compensation.[543] This is improper.

Verizon concedes that its proposed reciprocal compensation rates are not TELRIC-based. Verizon says that they reflect "additional costs," which it claims is a narrower concept than TELRIC.[544] This claim is wrong. The FCC has expressly ruled that the reciprocal compensation rate for terminating traffic shall be equal to the TELRIC rate for unbundled switching (unless reciprocal compensation is subject to a bill-and-keep mechanism).[545] When Ms. Pitts pointed out that unbundled switching and reciprocal compensation for call termination should be set using the same pricing standard, the Verizon Recurring Cost Panel accused her of "completely ignor[ing] the Act."[546] This *ad hominem* attack was unwarranted, especially since it was the Verizon Panel that ignored the governing law.

The New Jersey Board of Public Utilities recently found "that the end-office switching rate should be adopted as the appropriate reciprocal compensation rate."[547] Under the FCC's clear rules and guidance, this is the same result that the Department should reach here. Verizon

(..continued)

[539] Ex. VZ-36, Recurring Cost Panel Direct, at 162.
[540] Ex. ATT-VZ 12-10; Ex. ATT-VZ 12-11.
[541] Ex. ATT-VZ 12-10.
[542] Ex. ATT-VZ 12-10.
[543] Ex. ATT-20, Pitts Revised Rebuttal, at 43.
[544] Tr. 1616-1617, 1/24/02 (Matt).
[545] *FCC's First Local Competition Order* ¶ 1054; 47 C.F.R. § 51.705(a)(1).
[546] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal at 77.
[547] *New Jersey UNE Rates Order* at 12.

should not be able to charge different amounts to terminate a call on a reciprocal compensation versus a UNE basis.

As discussed in Section III.C.4. beginning at page 86, and Section III.C.5.b. beginning at page 90, the "getting started" cost of a switch and the RTU fees should not be included in the traffic-sensitive UNE elements, but properly belong in the non-traffic-sensitive port elements. If Verizon is required to include the "getting started" costs and RTU fee in the non-traffic-sensitive port charge, then the problem with the inconsistent reciprocal compensation charges is eliminated without any change in the basis for the reciprocal compensation charges.[548] The FCC has confirmed that this is the correct approach.[549] However, if the Department allows Verizon to allocate the getting started costs and RTU fees to the traffic-sensitive costs, then the "getting started" cost and RTU fees should be apportioned to all traffic, including reciprocal compensation, and not just to UNE switch usage rates.[550] In any case, the final rates for reciprocal compensation termination should be set equal to the final rates for unbundled switching termination, as required by the FCC.

IV. OUTSIDE PLANT: THE DEPARTMENT SHOULD REJECT THE EXCESSIVE RATES PROPOSED BY VERIZON FOR LOOPS, HARC, DSL-CAPABLE LOOPS, AND IOF, AND SHOULD INSTEAD ADOPT THE RECOMMENDATIONS MADE BELOW.

A. Loop Rates Should be Lowered Substantially.

1. Introduction to Loop Rates: Verizon's Model, When Run with Corrected Inputs, and HAI 5.2a-MA Both Show that the Statewide Average 2-Wire Analog Loop Rate Should Be Just Over $7.00.

In this proceeding, Verizon seeks a substantial increase in UNE loop rates above their current levels. Specifically, as shown on the following table, Verizon seeks increases of 91%,

[548] Ex. ATT-20, Pitts Revised Rebuttal, at 44.
[549] *FCC's First Local Competition Order* ¶ 1057.
[550] Ex. ATT-20, Pitts Revised Rebuttal, at 44.

18%, 25% and 41% in the metro, urban, suburban and rural 2-wire loop rates respectively. The proposed increases would amount to a severely inflated statewide average loop rate of $18.75, a more than 25% increase from the current statewide average of $14.98. But the evidence shows that even the current rates are substantially overstated.

If one uses appropriate, TELRIC compliant inputs and assumptions, Verizon's LCAM model and the HAI 5.2a-MA model come out with almost the exact same result for the statewide average 2-wire analog loop rate.

Two-Wire Analog Loop Rates

Zone	Current Rates[551]	VZ-MA[552]	Original Corrections to VZ-MA[553]	Updated Corrections to VZ-MA[554]	HAI 5.2a-MA[555]
Statewide	$14.98	$18.75	$7.76	**$7.27**	**$7.09**
Metro	7.54	14.41	5.33	5.01	4.92[556]
Urban	14.11	16.63	6.79	6.36	
Suburban	16.12	20.15	8.43	7.89	7.75
Rural	20.04	28.20	12.60	11.77	16.91

[551] Verizon Tariff DTE MA No. 17, Part M, § 2.5.1; *See also Consolidated Arbitrations* proceeding, NYNEX's February 14, 1997, compliance filing, Ex. Part A, Page 1 (for statewide average).

[552] RR ATT-2.

[553] Ex. ATT-23, Baranowski Rebuttal, ex. MRB-1.

[554] See following table, and related discussion, immediately below.

[555] Ex. ATT-26, Mercer Surrebuttal, at 4.

[556] AT&T recommends that the Department combine the 4-wire center Metropolitan Zone and the Urban Zone, as originally proposed by Verizon in the *Consolidated Arbitrations* proceeding. See Section IV.A.2.c, beginning at page 140 below.

The corrected Verizon model produces a statewide average rate of $7.27 per month (see below), which is very close to the HAI result of $7.09 per month. The record evidence supports adoption of a statewide average 2-wire analog loop rate within this range. Both results are less than 40 percent of (*i.e.*, 60 percent lower than) the excessive and indeed indefensible loop rates proposed by Verizon.

Throughout this section we will focus on the proposed monthly recurring charge for a 2-wire analog loop. However, all of the proposed loop rates, for all of the various flavors of loops, should be reduced proportionately. AT&T's analysis of other loop products such as digital and 4-wire loops also results in a significant reductions to Verizon's proposed figures.[557] These costs represent a more reasonable estimate of Verizon's forward-looking, economic costs to provide UNE loops.

The evidence presented in this case makes clear that these loop rates should, in fact, decrease from current levels. This is in part because they were set based on a much higher cost of capital than is appropriate based on the current record and information that has become available since the *Consolidated Arbitrations* proceeding, and in part because of similar downward adjustments that should be made to other inputs or assumptions. Indeed, since telecommunications is a declining cost industry,[558] one would expect that the forward-looking cost of loops has decreased substantially in the past five years. As with switching, Verizon's rates for outside plant elements should reflect the corrected cost of capital, depreciation, and other ACF adjustments discussed in Section II. In addition, they should reflect the plant-specific considerations discussed below.

[557] Ex. ATT-26, Mercer Surrebuttal at 4; Ex. ATT-25, Mercer Direct at 69.
[558] *See* Section I.D, beginning at page 8 above.

Mr. Baranowski's original restatement of the Verizon loop cost or LCAM model results in an average statewide cost of $7.76.[559] When that restatement is updated in three ways, to make it consistent with the record evidence regarding ACFs as discussed in Section II, it shows that the average statewide loop cost generated by Verizon's model when run with proper inputs is $7.27.

Mr. Baranowski's original restatement reflected a series of twelve adjustments to Verizon's inputs or assumptions, including general factors such as the cost of capital and proper depreciation rates, as well as adjustments specific to the loop model. All of these adjustments were explained in Mr. Baranowski's rebuttal testimony, further developed at the hearings, and are discussed in this brief.

In order to ensure that this restatement of Verizon's loop cost model fully reflects the complete record evidence, three changes or additions to Mr. Baranowski's original analysis are needed. First, for the reasons discussed in Section II.C.1. beginning at page 34, to account properly for future productivity increases the inflation factor should be set to zero, the network factors should reflect a 2% productivity adjustment, and the non-network expense factors should be multiplied by 0.844 in order to reflect a 15.6% productivity adjustment. Second, for the reasons discussed in Section II.C.2. beginning at page 36, Bell Atlantic/GTE merger savings of 3.57% should be reflected (rather than the very conservative 2.5% adjustment originally made by Mr. Baranowski). Third, for the reasons discussed in Section II.C.5. beginning at page 44, retail-related costs should be eliminated from Verizon's expense factors in the same proportions as mandated in the *Consolidated Arbitrations* rulings. If one takes the electronic workpapers that constitute Mr. Baranowski's original restatement of Verizon's loop model[560] and makes the three further adjustments described above, the result from Verizon's model is as shown in the

[559] Ex. ATT-26, Mercer Surrebuttal, at 4; Ex. ATT-23, Baranowski Rebuttal, Ex. MRB-1.

following table. Thus, these updated figures are readily derived from the record evidence. If the Department would prefer that this analysis also be made available in the form of a Record Request response, AT&T would of course be happy to answer such a request.

2-Wire Monthly Recurring Loop Costs
Revised Summary of Individual Impact of Changes to Verizon MA Cost Study
(Restatement of Baranowski Ex. 1 – With Final ACF Corrections)

		Recurring Cost (with Common Overhead & GRL)				
Adjustments		**Metro**	**Urban**	**Suburban**	**Rural**	**Statewide**
	VZ-MA Proposed Rates	$14.41	$16.63	$20.15	$28.20	$18.75
Adj. 01	100% IDLC	$9.86	$12.64	$16.17	$25.78	$14.80
Adj. 02	Distribution Fill @ 64.125%	$9.27	$11.85	$14.75	$22.63	$13.59
Adj. 03	Fiber Feeder Fill @ 100%, Metallic Feeder Fill @ 80%	$9.07	$11.35	$14.07	$20.80	$12.97
Adj. 04	RT Plug-in Electronics Fill @ 90%	$8.31	$10.77	$13.45	$20.22	$12.36
Adj. 05	Conduit Utilization @ 1	$8.22	$10.69	$13.33	$20.09	$12.26
Adj. 06	10 Year Growth Adjustment	$7.46	$9.69	$12.08	$18.20	$11.11
Adj. 07	FLC Factor @ 1	$6.73	$8.68	$10.80	$16.22	$9.94
Adj. 08	Revised Asset Lives and Salvage	$6.35	$8.30	$10.36	$15.64	$9.52
Adj. 09	Cost of Capital @ 9.54%	$5.58	$7.26	$9.08	$13.73	$8.35
Adj. 10	Merger Savings of 3.57%	$5.39	$7.04	$8.78	$13.27	$8.07
Adj. 11	30% reduction of Repair and Maintenance Expense	$5.30	$6.76	$8.39	$12.53	$7.73
Adj. 12	Adjusted Avoided Cost Study	$5.30	$6.72	$8.33	$12.41	$7.67
Adj. 13	Elim. ProdMgt and Ad Expense	$5.19	$6.59	$8.17	$12.18	$7.53
Adj. 14	Whsl Marketing Acct 6623 Adjustment	$5.19	$6.58	$8.16	$12.17	$7.52
Adj. 15	Productivity Adjustment	$5.01	$6.36	$7.89	$11.77	**$7.27**

(..continued)

[560] These electronic workpapers are contained within Ex. ATT-23. *See* Tr. 2168-2169, 1/29/02 (Salinger).

2. Loop Inputs and Assumptions Must be Based on an Efficient, Least Cost, Forward-Looking Network Design.

It is undisputed that under TELRIC UNE costs must reflect the forward-looking, economic costs that would be incurred in a reconstructed telecommunications network.[561] Though wire centers are assumed to remain in their existing locations, the remainder of the network must be redeployed in the "lowest cost network configuration,"[562] and the entire network must use "the most efficient technology for reasonably foreseeable capacity requirements."[563] Thus, in determining the proper level of investment in outside plant for the purpose of setting UNE rates, the Department must assume a network that maximizes the use of efficient technology and uses a network configuration that minimizes forward-looking cost. With the exception of existing wire center locations, it is inappropriate under TELRIC merely to assume that any other aspects of the embedded network would remain unchanged in the long run.

Verizon concedes these fundamental points in principle.[564] For example, Verizon specifically concedes that the use of IDLC and other technologies in a TELRIC network should reflect what is technically feasible and what represents the least-cost, most efficient design, even if Verizon does not in fact expect to achieve that forward-looking design in its actual network during the foreseeable future.[565]

However, Verizon's loop cost model violates TELRIC in key ways. With respect to inputs or assumptions, as distinguished from general model design, Verizon violates TELRIC by assuming that some fiber fed loops will be served on very inefficient UDLC rather than concededly more cost effective IDLC technology, and by proposing unduly low fill factors that reflect inefficient network usage. These fundamental inputs or assumptions are discussed in the

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561 *FCC's First Local Competition Order*, ¶ 685.
562 47 C.F.R. § 51.505(b)(1).
563 *FCC's First Local Competition Order*, ¶ 685.
564 Tr. 18, 1/7/02 (Taylor).

remainder of this section. Verizon's model design is also inconsistent with TELRIC, and relies on additional inputs that are arbitrary assumptions or otherwise have not been validated. Those further issues are discussed in Section IV.A.3.a, beginning at page 142.

a. IDLC vs. UDLC: TELRIC Requires that Costs be Modeled on the Forward-Looking Assumption that IDLC Interfaces Will be Used to Provision Fiber Fed Loops.

Verizon has come up with a new gambit designed unreasonably to inflate UNE loop rates. In the *Consolidated Arbitrations* proceeding the gambit was to argue that in a forward-looking network every single feeder cable would be a fiber optic cable.[566] CLECs argued that this was an inappropriate assumption, since copper feeder will remain more efficient for many portions of the outside plant, particularly for shorter feeder runs.[567] The Department instead accepted NYNEX's representations that it was no longer installing any new copper feeder, under any circumstances, and that 100% fiber feeder was therefore the proper forward-looking construct.[568] But we now know that these were misrepresentations. In fact, Verizon now concedes that if it were replacing feeder cable today it would use copper rather than fiber to serve customers located closer to a wire center and thus being served on shorter feeder runs.[569] The CLECs were right on this point all along, and the premise of Verizon's prior cost study diverged markedly from the facts. Verizon now admits that "copper cables continue to be the economically efficient design choice for many feeder loops nearer to the serving wire center,"[570] and that the proper forward-looking technical construct is an economic mix of both copper and fiber feeder, based on a life-cycle analysis.[571] (As discussed in Section IV.A.3. beginning at

(..continued)

565 Tr. 3368-3370, 2/7/02 (Livecchi and Gansert); Tr. 3403-3405 (Anglin and Gansert).
566 Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 76.
567 *Consolidated Arbitrations* Docket, Phase 4 Order at 15 (Dec. 4, 1996).
568 *Id*. at 16.
569 Tr. 3372, 2/7/02 (Gansert).
570 Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 71.
571 Tr. 2576-2577, 2/1/02 (Anglin and Gansert); Tr. 3372, 2/7/02 (Gansert); Tr. 3405, 2/7/02 (Anglin).

page 141, however, it is only the HAI model and not the Verizon model that conducts any analysis of the proper economic mix of fiber and copper.) In sum, Verizon has enjoyed inflated UNE loop rates for over five years on the basis of a network assumption it now admits is incorrect.

This time around, Verizon's new gambit is to argue that the portion of the network to be served by fiber feeder should be served mostly with universal digital loop carrier ("UDLC"), rather than the concededly more efficient integrated digital loop carrier ("IDLC). Verizon is assuming 20 percent copper feeder, 25 percent fiber-fed IDLC, and fully 55 percent fiber-fed UDLC.[572] This is rather strange, since it is undisputed that UDLC is much more expensive than IDLC. As discussed below, Verizon's defense of the new gambit evolved markedly during the course of the hearings. No aspect of that defense withstands scrutiny, however. Verizon conceded in 1996 that it is possible to unbundle IDLC-fed loops at the DS1 level, and that this is the appropriate technology to assume when estimating forward-looking costs under TELRIC.[573] That same assumption should be reflected when the Department sets UNE loop rates in this proceeding. For those distribution areas that are more efficiently served with fiber feeder rather than copper feeder, the TELRIC costs should be based on a network that uses only IDLC and has no UDLC.

(1) It is undisputed that IDLC is much more efficient than UDLC.

Verizon concedes that IDLC is more efficient than UDLC. In Verizon's words, "for POTS switched lines, an integrated digital-loop carrier configuration is more economic. It avoids the necessity of translating the signal back to analog and then redigitizing it for the

[572] Tr. 3362, 2/7/02 (Gansert).

[573] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 76; *Consolidated Arbitrations* Docket, Phase 4-O Order at 12 (Jan. 10, 2000).

switch."[574] Yet despite the acknowledged efficiencies of IDLC over UDLC, Verizon assumed in its model that only 31.25% of all fiber fed loops would be served using IDLC, and that fully 68.75% of fiber fed loops would be served with more costly and less efficient UDLC interfaces.[575] This makes no sense, and violates the TELRIC methodology.

An IDLC system allows for a completely digital pathway between a Remote Terminal (RT) in the field and a digital switch in the Central Office (CO). With this technology, individual copper pairs in the distribution cable are terminated at the RT, which digitizes the signal and multiplexes them so that the signals from multiple copper lines can be carried together on a single fiber optic cable.[576] Where the fiber feeder reaches the wire center, it is terminated on a fiber distribution frame and "connected from there, by fiber cabling, to a piece of equipment called the central office terminal ('COT')."[577] From the COT the signal can continue either to Verizon's switch or to another carrier's network at the DS1 level. Says Verizon:

> The COT can provide an interface to local switching equipment or other transmission systems (for example, those systems providing interconnection to another carrier's network) … in a standard, 24 DS0-line digital format (known as an "Integrated Digital Loop Carrier" [IDLC], or DS1 connection)….[578]

Thus, with IDLC, signals for multiple callers can continue on their way without ever being demultiplexed and put back onto copper pairs.

In contrast, the use of UDLC requires three separate, costly conversions between digital and analog signal. With UDLC, the analog signal from the end user is converted into a DS1 signal at the RT, then converted back to analog signal on copper wire at the CO, then converted back to a digital signal as it enters a digital switch.[579] Compared to IDLC, this doubles the cost of line cards, requires the addition of an analog line card to the digital switch, and necessitates

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[574] Tr. 2590-2591, 2/1/02 (Gansert).
[575] Ex. ATT-23, Baranowski Rebuttal, at 17.
[576] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 72.
[577] *Id*. at 74.

cross connection at the Main Distribution Frame – a process which inflates both non-recurring and recurring costs.[580] Moreover, the repeated conversion processes results in the degradation of the transmission due to bit rate speed reduction.[581] Yet, Verizon has modeled this less sophisticated and much less efficient mode of transfer. Rather than using IDLC technology to maintain a digital signal throughout, Verizon's proposed loop costs are based on the heavy use UDLC systems.

The reduction in cost achieved by a 100% IDLC assumption is substantial, as shown by Verizon's own calculations. At the Department's request, Verizon restated its model using a number of different sets of assumptions. Verzion ran Scenario B as requested by the Department, with an assumption of 100% IDLC, and then developed a Scenario B-1 that is identical except for assuming 31.25% IDLC and 68.75% UDLC.[582] Scenario B produced a statewide average monthly loop rate of $11.96, while Scenario B-1 increased that rate to $15.84. This, in these two scenarios the introduction of substantial amounts of UDLC technology increases the monthly loop costs produced by Verizon's LCAM model by $3.88, or 32.4%.[583]

(2) There is no reason to assume use of inefficient UDLC technology on fiber fed loops.

Verizon has tried in three ways to defend its assumption that in a forward-looking network there would be widespread deployment of inefficient UDLC systems. As explained below, none of these arguments withstand scrutiny. First, Verizon asserts that it is not technically feasible to unbundle IDLC at the DS1 level. This assertion is proven false by Telcordia's independent evaluation, has been rejected by the New Jersey Board and by Qwest,

(..continued)

[578] *Id.*
[579] *See, e.g.*, Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 27-29
[580] Ex. ATT-23, Baranowski Rebuttal, at 16-18.
[581] RR-DTE 44.
[582] RR DTE-51.
[583] *Id.*

and cannot be squared with Verizon's sworn testimony in the *Consolidated Arbitrations* proceeding. Second, Verizon argues in the alternative that technical feasibility is irrelevant, because "by definition" an unbundled loop must be terminated on a 2-pair copper wire. This assertion is belied by the FCC's definition of what constitutes the local loop, and by Verizon's concession that UNE-P – which is simply a combination of an unbundled loop and unbundled switching – can include loops that are served by IDLC fiber feeder. Third, Verizon suggests that it does not matter whether unbundled IDLC is technically feasible and consistent with the FCC's definition of a loop, because no ILEC has chosen to make it available and therefore existing OSSs and equipment have not been fully modified to support IDLC unbundling. But this flies in the face of the forward-looking, long-run nature of the TELRIC construct.

Verizon itself concedes that UNE rates should be set assuming a "hypothetical" network design that has far more IDLC feeder than in today's network, or than Verizon is likely to have in place in Massachusetts over the next five years.[584] The question is whether in constructing this hypothetical Verizon may assume that in place of today's copper feeder it would instead use mostly UDLC systems, with relatively little deployment of the vastly more efficient IDLC technology. The answer to that question is a simple, "No." Because most of Verizon's present network has copper feeder, today when a CLEC orders a loop it will be provided via a two-wire copper interconnection.[585] But under TELRIC, where Verizon is entitled to recover its forward-looking economic costs even for a 20 or 30-year old loop that has been paid for many times over, UNE rates must be set based on the most efficient, least cost technology and network design. That means fiber feeder using only IDLC, and no UDLC.

[584] Tr. 3367, 2/7/02 (Anglin, Gansert).
[585] Tr. 1382-1383, 1/23/02 (Ankum).

(a) IDLC unbundling is technically feasible.

In the 1996 *Consolidated Arbitrations* proceeding, Verizon recognized "that all unbundled two-wire loops could be served on an integrated digital loop carrier ('IDLC') interface," and assumed that 100 percent of its loops would be served on fiber feeder with IDLC.[586] As the Department explained in its Phase 4-O Order issued in January 2000:

> What is clear … is that Bell Atlantic presented a network design that does not rely on manual cross connects using the main distribution frame. Its assumption of a network based on fiber feeders was explicitly combined with an assumption that those loops would terminate at the DS1 level in the central office at a fiber distribution frame, which for fiber cable has a similar functionality to a main distributing frame, directly into the electronics that drive the fiber. The DS0 would not be disaggregated in the 24 individual loops, or DS0s, that constitute a DS1 circuit, which, in contrast, would terminate at a main distribution frame and require a manual cross connection (Tr. 7, at 58-63). This assumption was also contained in the TELRIC compliance filing submitted by Bell Atlantic on February 14, 1997, which only refers to digital loop electronics and makes no mention of main distribution frames (Workpapers Part A, at 1-45).[587]

Thus, over five years ago Bell Atlantic (now Verizon) championed the position that forward-looking, TELRIC pricing should reflect the technical feasibility of unbundling IDLC-fed loops at the DS1 level.

Verizon's contrary position in this case is inconsistent with its prior admissions. Verizon now argues that the technical construct that underlay its loop rates in the *Consolidated Arbitrations* proceeding "is not technically feasible."[588]

But Mr. Donovan was able to disprove this claim by pointing to the neutral, expert opinion of Telcordia.[589] The October 2000 edition of Telcordia's "Notes on the Network" details a number of options for IDLC unbundling and interconnection using GR-303 technology.[590]

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[586] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 76.

[587] *Consolidated Arbitrations* Docket, Phase 4-O Order at 12 (January 10, 2000), citing *Consolidated Arbitrations* Tr. Vol. 7, at 58-63 (Anglin).

[588] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 31.

[589] Tr. 3112-3114, 2/6/02 (Donovan).

[590] RR-DTE 81, Telcordia's Notes on the Network, at 12-51 to 12-61 (Oct. 2000); Tr. 3109-3114, 2/6/02 (Donovan).

Verizon states that it would expect to use this very technology in a forward-looking network.[591] Indeed, despite its general protestations that unbundling IDLC at the DS1 level is technically impossible, Verizon did acknowledge that IDLC loops at the DS1 level can be sent "to another carrier's network" just as easily as they are sent today to Verizon's switch.[592] Under this forward-looking construct, the transmission enters the CO as a digital signal and it is delivered to the CLEC as a digital signal.[593]

The New Jersey Board of Public Utilities recently adopted a 100% IDLC assumption. It found that "Verizon inappropriately includes UDLC in its design," and concluded that "the use of 100% IDLC is an appropriate and realistic forward-looking assumption" that should be adopted when setting UNE rates.[594] The propriety of adopting a 100% IDLC assumption for fiber-fed loops has also been recognized elsewhere. For example, the ILEC Qwest assumes in its UNE cost studies that 100% of fiber-fed loops will be served using IDLC and 0% with UDLC.[595] The record in this proceeding supports the same, forward-looking conclusion for Massachusetts.

(b) Verizon cannot define away IDLC as the most efficient network design in a forward-looking network under TELRIC.

Verizon also argues, apparently in the alternative, that an IDLC provisioned loop does not fit within the definition of a 2-wire analog UNE loop. According to Verizon, "providing CLECs (up to) 24 individual 2-wire unbundled loops on a single multiplexed 'IDLC/DS1,' connected to the CLEC's central office collocation arrangement, it if is every technically feasible, would constitute a new separate and different unbundled element…."[596] This claim is also wholly insubstantial.

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591 Tr. 3366, 3379, 3499, 2/7/02 (Gansert); Tr. 3497, 2/7/02 (Livecchi).
592 Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 74.
593 Ex. ATT-23, Baranowski Rebuttal, at 17-18.
594 *New Jersey UNE Rates Order* at 6.
595 RR-DTE 44.
596 Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 31.

In the original version of this argument, Verizon started out by asserting that "[a] two-wire analog loop is a transmission circuit consisting of two wires."[597] But that is only true for loops that happen to be served over copper feeder.[598] It is patently not true for a so-called two-wire analog unbundled loop served over fiber feeder.[599] Such a facility is run over two-pair copper wire in the distribution portion of the loop, but is then digitized at the RT and commingled with other signals with in the fiber feeder.[600]

During the hearings Verizon's panel therefore revised its position, asserting instead that "[t]he definition of a UNE loop that we've stated is a two-wire interface at both ends, and an IDLC loop is different."[601] When Verizon states that this is the "definition" of a two-wire analog loop, what it means is that at present Verizon has defined this facility with reference to a two-wire analog interconnection "in its wholesale handbook and Massachusetts tariff."[602] Under this logic, Verizon may not ever use an IDLC interconnection to provision analog loops because it would not comply with the tariff's definitions of individual UNE loops and their interfaces. But when a CLEC purchases a UNE-P combination from Verizon, it is purchasing a combination of the loop, the switch, and the port that connects them.[603] Verizon concedes, as it must, that in a UNE-P arrangement the loop may well be connected to the switch on an IDLC connection.[604]

Verizon's attempt to "define" a loop as always consisting of or terminating in a two-pair copper wire cannot be reconciled with the definition of a loop promulgated by the FCC.[605] As a matter of law, the UNE loop element has been defined to include "all features, functions, and

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[597] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 65.
[598] Tr. 1807, 1/25/02 (Anglin).
[599] Tr. 1808, 1/25/02 (Anglin).
[600] Tr. 1810-1811, 1/25/02 (Livecchi).
[601] Tr. 1850, 1/25/02 (Livecchi).
[602] Tr. 1812, 1/25/02 (Gansert).
[603] Tr. 1850, 1/25/02 (Anglin).
[604] Tr. 1851, 1/25/02 (Gansert); Tr. 2599, 2/1/02 (Anglin).
[605] Tr. 1813-1814, 1/25/02 (Gansert).

capabilities of the transmission facilities . . . and attached electronics."[606] The FCC's intention is "to ensure that the loop definition will apply to new as well as current technologies. . ."[607] Verizon witness, Mr. Gansert, even conceded on cross-examination that though the Massachusetts tariff had a particular definition, "that doesn't mean there couldn't be another."[608]

It is the FCC's definitions, and not Verizon's current tariff language, that resolves the issue. The cross-connect between an unbundled loop and a CLEC's collocation facility is "a means of interconnection," and not part of the network element.[609] Verizon is required to provide interconnection "at any technically feasible points," "including at a minimum" all "central office cross-connect points."[610] Since it is technically feasible to unbundle IDLC-fed loops and permit a DS1 level cross-connection, that is the network design that must serve as the basis for setting TELRIC-compliant rates. The fact that Verizon does not do that way today, and therefore defines interconnection with a two-wire loop differently, is irrelevant for the distinct purpose of setting forward-looking UNE rates.

(c) ILEC delays in offering unbundled IDLC are not relevant.

At the end of the hearings, after Mr. Donovan quoted from Telcordia's "Notes on the Network" to demonstrate conclusively that it is possible to provide unbundled loops over IDLC, and after cross-examination regarding the FCC's UNE Remand Order had proven false Verizon's assertion that "by definition" all unbundled loops must be provided via a 2-pair copper wire interconnection, Verizon's sole question to its recurring cost panel on redirect was an effort to come up with a new reason why loop rates should be increased by assuming a need for UDLC technology. The exchange is sufficiently interesting to quote much of it here:

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606 47 C.F.R. § 51.319(a)(1).
607 *FCC's UNE Remand Order*, ¶ 167.
608 Tr. 1848, 1/25/02 (Gansert).
609 *FCC's UNE Remand Order* ¶ 179.

> Q. [McBRIDE] Mr. Gansert, during the course of the cross-examination of the past few weeks, many questions have come up about the provisioning of stand-alone loops over IDLC GR-303. Can you comment on the ability to provision stand-alone loops over IDLC with the GR-303 interface?
>
> ***
>
> A. [GANSERT] Yes. The comment I would make is that Verizon has never -- doesn't and has never contended that there hasn't been defined methodologies that could be used, that could be developed, to do that. Indeed, we've been a sponsor of that and an advocate of that and a participant in that in the industry.
>
> The question, I think, before the Department here is not whether or not such a theory exists. I mean, I was sitting here yesterday when the Telcordia document was read. No doubt, Telcordia has some ideas. They got some of those ideas from us about how to unbundle loops.
>
> The real question is, is the equipment available and the software available that can support the kind of environment that's needed for unbundled loops, and that environment requires additional capabilities and in terms of security, administration, testing, many other functions.[611]

Suddenly, Verizon acknowledged that protocols for unbundling IDLC fed loops "could be developed." It position on unbundling IDLC-fed loops seems to have moved from "you can't do it," or "by definition there's no such thing," to the assertion that of course it is possible and indeed it has been Verizon's idea all along! In its last gasp argument, Verizon suggests that IDLC unbundling should be ignored for present purposes because to date no ILEC has chosen to unbundle IDLC loops, and therefore final arrangements have not been made as to the details for "security, administration, testing," etc.[612] This suggestion seems to be a conscious attempt to ignore the requirements of TELRIC.

It is worth again quoting Dr. Taylor, Verizon's economist, regarding what the "long-run" assumption that gives TELRIC its middle name actually means. "[T]he long run is measured by how long it takes for current contracts to become irrelevant, for the firm to be in a position where

(..continued)

[610] 47 C.F.R. § 51.305(a)(2).

[611] Tr. 3526-3527, 2/7/02 (Gansert).

[612] Ex. VZ-38a, Verizon's Recurring Cost Panel Surrebuttal, at 33.

it can effectively change any decision -- any capital technology, any hiring practice, anything like that -- that it has currently in the ground today."[613] Thus, the goal here is to estimate the costs that would result if Verizon could "choos[e] and arrang[e] its plant to produce the required level of output in the most efficient manner possible."[614]

Verizon's assertion that the systems to administer unbundled IDLC have not been fully developed misses the mark, as it has no bearing on the setting of forward-looking costs. This assertion is very similar to an argument made by Verizon and rejected by the Department in the *Consolidated Arbitrations* proceeding. In that docket, Verizon argued that the Department should assume that fully 15 percent of all CLEC orders would fall out of Verizon's OSSs for manual handling, because Verizon had been unable to achieve any greater flow through in its existing OSSs to date.[615] The Department rejected this argument and instead assumed a two percent fallout rate, on the ground that Verizon "has not met its burden of proof that the 15 percent fallout rate ... is an appropriate reflection of forward-looking technology that will be in place to process service orders."[616] Similarly, under TELRIC the Department must estimate UNE rates that reflect forward-looking technology that will be in place to implement the IDLC unbundling described in Telcordia's technical papers. As the Department noted in its cross examination of Mr. Walsh, Verizon's own exhibit No. 25, a slide presentation printout from a 1998 GR-303/IDLC Symposium, notes that "technical issues and challenges of implementing GR-303 IDLC systems can be successfully resolved with cooperation and support from the vendors, the ILECs, and Bellcore [now Telcordia]."[617]

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[613] Tr. 24, 1/7/02 (Taylor).
[614] Ex. VZ-1, Taylor Direct, at 6.
[615] *Consolidated Arbitrations* Docket, Phase 4-L Order, at 10-11 (Oct. 14, 1999).
[616] *Id*. at 16.
[617] Tr. 878, 1/18/02 (Walsh) (questions by Baldwin); Ex. Vz-25, slide No. 11.

The FCC has observed that an ILEC "has little economic incentive to assist new entrants in their efforts to secure a greater share" of the local exchange market, and "also has the ability to act on its incentive to discourage entry and robust competition by not interconnecting its network with the new entrant's network," and in other ways.[618] The fact that no ILEC has yet widely offered IDLC unbundling merely reflects the tremendous incentive that ILECs have to provision UNEs in costly and inefficient ways, as a barrier to competitive entry by CLECs. As Mr. Donovan explained, "whether ILECs are doing the unbundling using IDLC I think is a question of strategy more than one of technical issues."[619]

(3) UNE Platform Costs Should be Based on 100% IDLC.

Verizon's purported justifications for assuming UDLC all concern the alleged need to do so in order to provision unbundled loops.[620] In contrast, it concedes that IDLC works just fine for a UNE-P arrangement.[621] When a CLEC purchases a UNE-P combination from Verizon, it is purchasing a combination of the loop, the switch, and the port that connects them.[622] But since Verizon has stated that it currently performs signal transfers at the DS1 level from its own fiber-fed loops to its own switches using IDLC, it makes absolute sense for UNE-P costs to be based on a 100% IDLC assumption.[623] Indeed, Verizon's Recurring Cost Panel conceded that IDLC loops could be provisioned to a CLEC purchasing a UNE-Platform.[624] Given Verizon's current ability to provision UNE-P using IDLC interfaces, the Department should adopt this technology as a forward-looking assumption with regard to these elements.

The Department should not base UNE rates on the assumption of any UDLC technology, as discussed in the preceding section. But Verizon's assumption makes even less sense when it

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618 *FCC's First Local Competition Order* ¶ 10.
619 Tr. 3113-3114, 2/6/02 (Donovan).
620 Tr. 2592, 2/1/02 (Gansert); Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 75.
621 Tr. 2592-2593, 2/1/02 (Anglin).
622 Tr. 1850, 1/25/02 (Anglin).
623 Tr. 1850-1851, 1/25/02 (Gansert).

comes to rates for UNE-P, which can be provisioned over IDLC-fed loops with no need for any UDLC whatsoever. As the FCC has explained, UNE costs must allocated on a "cost-causative" basis.[625] Even under Verizon's erroneous view of the forward-looking network, UNE-P orders would not cause any increase costs for UDLC.

b. Fill Factors: UNE Loop Rates Should be Based on Reasonable Utilization Factors and Demand Forecasts.

(1) Introduction: The low fill factors proposed by Verizon are out of line with those adopted by the FCC and other states.

Verizon also improperly inflates its estimates of UNE-L costs with unreasonable assumptions regarding facility utilization. To comply with TELRIC, a cost model must set a proper, forward-looking level of network utilization. It must strike a balance between supporting sufficient investment to allow for growth within the network while not imposing costs upon UNE purchasers for network equipment that will never be used.[626] A model that projects an unreasonably low usage of various portions of the network will dramatically over-estimate UNE costs, by accounting for plant investment for demand that is never expected to materialize.[627]

In this proceeding, Verizon once again bases its proposed UNE loop rates on unreasonably low fill factors, or assumptions regarding effective utilization of outside plant. In the current proceeding, Verizon proposes unduly low fill factors of 40% for distribution cables, 55.2% for copper feeder, and 60% for fiber feeder. AT&T proposes more reasonable fill factors of 64.1% for distribution cable, 80% for copper feeder, and 100% for fiber feeder.[628]

(..continued)

[624] Tr. 1850-1851, 1/25/02 (Anglin, Livecchi, Gansert).
[625] *FCC's First Local Competition Order*, ¶ 691.
[626] *See FCC's First Local Competition Order*, ¶ 682.
[627] Ex. ATT-28, Donovan Rebuttal, at 6; Ex. ATT-23, Baranowski Rebuttal, at 19.
[628] Ex. ATT-23, Baranowski Rebuttal, at 28.

Summary of Key Fill Factors in Verizon's Loop Model

	VZ-MA[629]	VZ-RI[630]	AT&T[631]
Distribution	40%	50%	64.1%
Copper Feeder	55.2	75	80
Fiber Feeder	60	75	100
RT Electronics	80		90

As discussed below, spare fiber feeder capacity is provided separately by the allocation of two extra fibers per remote terminal, and thus it is double counting to add even more spare capacity via a separate utilization factor.[632]

Verizon's fill factor assumptions are not reasonable. The FCC has already questioned use of a 40% fill factor for distribution plant, making clear that it is much too low.[633] Verizon itself has effectively repudiated the distribution and feeder fill factors that it has used in this proceeding, by conceding in connection with its Rhode Island 271 application that markedly higher factors are "reasonable" and "TELRIC-compliant."[634] But even the fill factors that Verizon recently accepted in Rhode Island are too low.

Fill factors adopted in other state proceedings make clear that Massachusetts' current fill factors and those proposed by Verizon in this proceeding are out of line. New York recently adopted a 50% distribution fill factor,[635] while the Kansas Commission adopted a 53% distribution fill factor.[636] Furthermore the New Jersey Board of Public Utilities recently adopted fill factors of 53% for distribution, 75% for copper feeder, and 77.5% for fiber feeder.[637]

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[629] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 78-83.

[630] Ex. ATT-9, Joint Declaration of Donna C. Cupelo, Patrick A Garzillo and Michael J. Anglin, filed by Verizon-RI in CC Docket No. 01-324, in support of Verizon's Section 271 Application for Rhode Island, ¶ 44.

[631] Ex. ATT-28, Donovan Rebuttal, at 6-12; Ex. ATT-23, Baranowski Rebuttal, at 19-32.

[632] Ex. ATT-23, Baranowski Rebuttal at 28.

[633] *FCC's Massachusetts 271 Order*, ¶ 39.

[634] Ex. ATT-9, Joint Declaration of Donna C. Cupelo, Patrick A Garzillo and Michael J. Anglin, filed by Verizon-RI in CC Docket No. 01-324, in support of Verizon's Section 271 Application for Rhode Island, ¶¶ 41, 44.

[635] *New York UNE Rates Order* at 101.

[636] *FCC's Massachusetts 271 Order*, ¶39.

[637] Ex. ATT-8, excerpt from *New Jersey UNE Rates Order* at 4-5.

Furthermore, the FCC has adopted fill factors consistent with AT&T's current proposals. The distribution fill factors adopted by the FCC ranged between 50 and 75% while the feeder fill factors ranged between 70 and 82.5%.[638] Verizon concedes that it has not presented any Massachusetts-specific evidence that would justify lower fill factors here than in other jurisdictions.[639]

Verizon should not be permitted artificially to inflate the UNE rates charged to its competitors by using unreasonably low fill factors as inputs to its loop model.

(2) Effective Utilization vs. Cable Sizing Factor: While AT&T and Verizon's models approach network utilization differently, for decision-making purposes the Department should focus on "effective fill."

The utilization-related inputs to the two different loop models in this proceeding are very different from one another conceptually. In order to avoid confusion, the Department can focus on comparisons of effective utilization or fill. Then it need only remember that this effective utilization is an ***input*** to Verizon's capacity-cost models in the form of a "fill factor" or "utilization factor," whereas effective utilization is a ***result*** of the engineering practices reflected in the HAI model.[640]

The HAI 5.2a-MA model sizes outside plant cables exactly the way an outside plant engineer would.[641] It first determines the number of access lines that must be served by a given cable, then uses a "cable sizing factor" to artificially inflate the number of access lines in order to ensure an appropriate amount of spare capacity, then selects the next larger available cable size (the fact that cables come in discrete sizes is known as "breakage").[642] The cable-sizing factor input is therefore not an effective utilization assumption; rather, the effective fill is not produced

[638] *FCC's USF Inputs Order*, Appendix A.
[639] Tr. 1845-1846, 1/25/02 (Anglin).
[640] *See* Ex. ATT-27, Donovan Direct at 17.
[641] Ex. ATT-27, Donovan Direct, at 15.

until the model has completed its design of distribution areas and the model has actually sized cable to serve those distribution areas.[643] The HAI Model, therefore, generates an effective fill factor based on an actual distribution design, factoring in cable modularity and other actual design considerations.[644]

In contrast, Verizon's fill factors are *inputs* into its LCAM model.[645] The Verizon fill factors represent achieved fill or effective utilization, and should not be confused with the cable-sizing factors (sometimes, and confusingly, called target fill) that are the inputs to the HAI model.[646]

It may be simplest to analyze the issue of fill factors or utilization in terms of effective fill. Focusing on the actual utilization levels proposed by AT&T and Verizon will provide a consistent benchmark and facilitate a TELRIC compliant analysis of total demand for a particular network element. The Department should simply keep in mind that AT&T and Verizon arrive at their respective fill factor results using different methodologies that reflect vastly different attitudes toward the TELRIC construct. As discussed further in IV.A.3. beginning at page 141, HAI reflects actual outside plant engineering practices for designing the entire outside plant network, while Verizon's model does not design the entire element as required by TELRIC but instead attempts to estimate capacity costs based on a set of fixed assumptions. The difference in modelling approaches explains why Verizon has a fill factor input in its model, while HAI sizes cables consistent with actual engineering practices.

(..continued)

642 Ex. ATT-27, Donovan Direct, at 15; Ex. ATT-25, HAI Inputs Portfolio (Mercer Direct, ex. RAM-3) § 2.6.
643 Tr. 3117-3118, 2/6/02 (Donovan); Tr. 2842, 2/4/02 (Mercer).
644 Tr. 2842, 2/4/02 (Mercer).
645 Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 78-83.
646 Tr. 3460, 2/7/02 (Anglin); Tr. 3251, 2/6/02 (Tardiff).

(3) Verizon's proposed distribution fill factor is derived from inaccurate assumptions and adjustments.

The 40% fill factor assumed by Verizon was "derived" by assuming that one should build two pairs per living unit, and then making a series of specific adjustments to produce an assumed effective fill of 40%.[647] However, the adjustments that Verizon made to derive this 40% figure did not hold up on examination by other witnesses, or on cross-examination. If one corrects the many errors revealed in Verizon's analysis, one instead derives a distribution fill factor of 64.1%.[648] This is lower than the distribution fill factor adopted elsewhere.[649] More importantly, it makes good sense from the perspective of an outside plant engineer.[650]

Distribution Fill Factor Derivation

		VZ-MA	Corrected[651]
1.	Lines per unit – design	2.0[652]	1.6
2.	Lines per unit – demand	1.2[653]	1.2
3.	line 2 / line 1	0.60	0.75
4.	zoned but unbuilt	0.10[654]	0.0
5.	vacancies	0.05[655]	0.05
6.	competition	0.10[656]	0.0
7.	1 minus (sum of lines 4, 5, 6)	0.75[657]	0.95
8.	line 3 * line 7	0.45[658]	0.7125
9.	breakage	0.90[659]	0.90
10.	Effective Fill: line 9 * line 10	0.405[660]	0.64125

[647] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 78-83.
[648] Ex. ATT-23, Baranowski Rebuttal, at 20-27.
[649] The Michigan PSC has approved a distribution fill of 75%. *See* Ex. CC-3, Ankum Rebuttal, at 30.
[650] Ex. ATT-28, Donovan Rebuttal, at 6.
[651] Ex. ATT-23, Baranowski Rebuttal, at 27.
[652] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 79.
[653] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 79.
[654] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 79.
[655] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 80.
[656] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 80.
[657] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 80.
[658] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 81.
[659] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 83.
[660] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 83.

It is interesting to note that this 64.1% effective fill derived by correcting Verizon's analysis is consistent with data provided by Verizon from the engineering survey it used to produce fixed estimates of feeder lengths. That data showed the number of working lines and available lines in each of the distribution areas included in Verizon's survey. Dividing the total working lines into the total available lines reveals a current effective utilization of 60%.[661]

(a) A modeling assumption of 2 pairs per living unit does not comply with TELRIC requirements.

It is unreasonable to begin deriving a forward-looking distribution fill with the assumption that one would build a network with two copper pairs per living unit. The actual demand is only 1.2 pairs per living unit,[662] and Verizon has confirmed that this number "would remain the same, relatively stable," over the next five years.[663] Indeed, if new competitive pressures were able to force Verizon to offer DSL services more widely, one would expect to see this number start to decline. "Verizon's acknowledgement of only 20% second line penetration is a clear indication that providing a minimum of two lines for everyone overstates the amount of outside plant needed."[664]

During the hearings, Verizon tried to justify its two-pair per living unit assumption with the argument that two pairs must be dedicated to each unit, because the termination of distribution pairs cannot be moved and one does not know in advance which locations might seek a second line.[665] But further cross-examination confirmed that, in fact, one does have flexibility to "move lines around between your neighbors."[666] This is why generally accepted

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[661] Ex. ATT-23, Baranowski Rebuttal at 27-28.
[662] Ex. ATT-VZ 14-20 (data for 2000 through April 2001 show demand of 1.19 lines per living unit); Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 79; Tr. 2543-2544, 2/1/02 (Livecchi).
[663] Tr. 3346, 2/7/02 (Livecchi).
[664] Ex. ATT-23, Baranowski Rebuttal, at 26.
[665] Tr. 2555, 2/1/02 (Livecchi).
[666] Tr. 3337, 2/7/02 (Livecchi).

engineering practices permit outside plant designs with as little as 1.5 lines per living unit.[667] Verizon has failed to meet its burden of proving that a design criterion of 1.6 lines per living unit is inadequate, in a world where actual demand is never expected to exceed 1.2 lines per living unit. Verizon's assumption of 2 pairs per household should therefore be disregarded by the Department, in favor of AT&T's proposed 1.6 lines per household input.

(b) A reduction in distribution fill to serve vacant parcels is illogical and unsupported.

No reduction in the distribution fill factor should be allowed for "zoned but unbuilt" living units.[668] Verizon says that it reduced the distribution fill factor by 10 percent on the theory that in designing a network one should "[a]llocat[e] pairs consistent with zoning [to] provide[] for the long-term demand that ***could*** occur in an area if all the zoned land is developed."[669] This adjustment has the effect of raising UNE rates to cover future costs associated with providing lines on currently "undeveloped land."[670] But this makes no sense. When pressed on cross-examination, Verizon conceded that it does not build, and that it makes no sense to design for, units on vacant land "in the hopes that someday it is going to be developed."[671] This raises a logical disconnect. CLECs should not have to pay for theoretical distribution plant that would in fact not be built in a forward-looking network.

Having been forced to concede this common sense point, Verizon then tried to justify this 10 percent reduction in its distribution fill factor on the ground that it had nothing to do with vacant land, but instead reflected parcels that have not been developed to the maximum density permitted by zoning: *e.g.*, a single-family home has been built in a district zoned for two-family

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667 Ex. ATT-27, Donovan Direct, at 18.
668 Ex. ATT-23, Baranowski Rebuttal, at 22-24.
669 Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 79 (emphasis added).
670 *Id.*
671 Tr. 3341, 2/7/02 (Livecchi), Tr. 2553, 02/1/02 (Gansert).

homes.[672] But this *post hoc* justification also cannot withstand scrutiny. When the Department asked Verizon for documentation to justify its "zoned but unbuilt" reduction of 10%, Verizon responded by citing Department of Revenue ("DOR") data regarding the number of vacant parcels in Massachusetts as a percent of total parcels.[673] But the "vacant land" figures reported by DOR are truly vacant, and stand in contrast to the other categories of "single family, multi-family, condos, apt, open space, commercial, industrial, other usage, total."[674] When pressed further, Verizon acknowledges that it can point to absolutely no data to support its conjecture regarding the percentage of land in Massachusetts that is neither vacant (and thus for which no distribution plant is or should be built) nor built to maximum allowable density.[675] Furthermore, the Verizon Panel relied upon no data concerning net development of parcels in Massachusetts. This raises the possibility that developed parcels that become vacant are counted by Verizon, while vacant parcels that become developed and provide Verizon with revenue are not counted.[676] Verizon's conjecture cannot and does not come close to meeting Verizon's burden of proving that this 10 percent decrease in its assumed distribution fill factor is reasonable. The adjustment should therefore be ignored.

Moreover, Verizon has failed to account for several other logical flaws within the application of this factor. By assuming a reduced utilization to account for undeveloped parcels at the outset of its analysis but failing to make any subsequent adjustment as those parcels are developed, Verizon implicitly assumes that spare cable will forever be needed for future development. Under such an approach, revenue from new developments is forever chasing new

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[672] Tr. 3338-3339, 2/27/02 (Gansert).
[673] Ex. DTE-VZ 1-6.
[674] The Website address given by Verizon in Ex. DTE-VZ 1-6 has moved. This data, and the DOR's categories, can now be found at: < http://www.dls.state.ma.us/MDMSTUF/prcl8601.xls >.
[675] Tr. 3491, 2/7/02 (Gansert).
[676] Tr. 3491, 2/7/02 (Gansert).

investments in a vicious cycle of cost inflation.[677] Under a more reasonable and efficient approach, the revenue from the newly developed parcels would be allowed to defray the cost of plant investment. The FCC, in fact, has supported such an approach to rate-setting.[678]

(c) Verizon's 10% adjustment for competitive loss is unsupported and unnecessary.

As the Verizon recurring cost panel readily admitted during evidentiary hearing testimony, it possessed no data supporting its 10% fill factor adjustment for customers lost to competitive alternatives.[679] Rather, the Verizon adjustment was a pure guess.[680]

Moreover, Mr. Gansert stated that the 10% figure was arrived at in preparation for proceedings in New York, rather than Massachusetts.[681] The state of local exchange competition in New York is very different from that in Massachusetts, as the Department is well aware.

Verizon tried to justify importing this adjustment from New York on the ground that here it could represent the percent of customers giving up their wireline service in order to rely totally on wireless service.[682] But Verizon's own testimony proves this to be rank conjecture. Verizon states that it current market penetration in Massachusetts is approximately 97%, and that the 3% of households going without telephone service is primarily due to people simply choosing not to have a phone, and not a result of people switching to competitive alternatives.[683] And when the Department asked Verizon to explain "over what period of time does Verizon project a 10 percent loss to its competitors?," the complete answer by Mr. Gansert was that "it wasn't a specific time frame. We're trying to come up with a forward estimate."[684]

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677 Ex. ATT-23, Baranowski Rebuttal, at 22-24.
678 *FCC's USF Inputs Order*, ¶¶ 56-58.
679 Tr. 2556-2557, 2562-2563, 2/1/02 (Livecchi, Gansert).
680 Tr. 2556-2557, 2/1/02 (Livecchi, Gansert).
681 Tr. 2556, 2/1/02 (Gansert).
682 Tr. 2556-2557, 2/1/02 (Livecchi, Gansert).
683 Tr. 2557, 2/1/02 (Gansert).
684 Tr. 2557, 2/1/02 (Gansert).

Furthermore, Verizon's arbitrary 10% adjustment also fails to take into account the additional network capacity created by the loss of customers to competing alternatives.[685] As Mr. Baranowski pointed out in his rebuttal testimony, "as customers are lost to competitors, facilities will become available to serve new customer demand."[686] Thus, plant that becomes idle due to customer migration does not remain in that state indefinitely – it becomes available to serve other customers, generating revenue for Verizon.[687] A downward adjustment to Verizon's effective fill is not warranted.

(d) An appropriate effective fill for distribution cable is 64.1%

Once Verizon's unreasonable adjustments to effective fill are removed, it is possible to arrive at a more practical estimate of distribution fill. The restatement of Verizon's model performed by Mr. Baranowski arrived at an effective distribution fill factor of 64.1%, which was strongly endorsed by Mr. Donovan.[688] This is depicted in tabular form in Section IV.A.2.b(3), which begins at page 130. Adopting a 64.1% distribution fill factor would comply with TELRIC's requirement of an efficient, least-cost network design.

(4) Verizon's proposed <u>feeder fill</u> factors are too low.

Verizon assumes a fill factor for copper feeder of 55.2% and a fiber feeder fill factor of 60%.[689] Both of these fill factors are much too low in a TELRIC least-cost network configuration and stand at complete odds with feeder fill factors recently adopted by the FCC and New Jersey Board.[690] Verizon itself has endorsed use of much higher fill factors in other

[685] Ex. ATT-23, Baranowski Rebuttal, at 24-25.
[686] Ex. ATT-23, Baranowski Rebuttal, at 25.
[687] Ex. ATT-23, Baranowski Rebuttal, at 25.
[688] Ex. ATT-23, Baranowski Rebuttal, at 27; Ex. ATT-28, Donovan Rebuttal, at 6.
[689] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 83.
[690] *FCC's USF Inputs Order*, ¶¶ 207-208, Appendix A; Ex. ATT-8, excerpt from *New Jersey UNE Rates Order* at 4-5.

jurisdictions.[691] AT&T's proposed fill factors of 80% for copper feeder cable and 100% for fiber feeder cable represent much more reasonable utilization levels that will provide sufficient capacity for growth while avoiding costs for unnecessary levels of feeder plant investment.[692]

(a) AT&T's proposed copper feeder fill factor will avoid modelling stranded investment.

Verizon's assumed 55.2% copper feeder fill will surely result in stranded outside plant investment.[693] Though the feeder plant engineering guidelines submitted by Verizon in this proceeding conflict, at a minimum they establish that copper feeder is designed with the expectation that relief or reinforcement will be available sometime between 2 to 5 years.[694] As Mr. Donovan established in his rebuttal testimony, even if one assumes 3 to 5 year relief interval with aggressive 3% annual growth, far too much copper feeder cable is left unused in a network operating with 55.2% fill.[695] Indeed, Verizon's own prefiled testimony gives credence to the concern that continued large investments in copper feeder will result in further stranded investment:

> Optical DLC is usually installed first in feeders serving distribution areas that are more distant from the wire center, since it is in such areas that optical DLC provides the greatest efficiencies. The copper feeder cable that is made spare (i.e., freed up) by the DLC installation is then cut and used to provide capacity to distribution areas closer to the wire center. Over time a greater and greater portion of the feeder will be moved to optical facilities.[696]

Verizon's support for the 55.2% fill factor is another example of its effort to avoid complying with TELRIC's requirement of a forward-looking network. Rather than attempting to model an efficient, least-cost configuration, Verizon arrives at the 55.2 figure purely upon an

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[691] Ex. ATT-9, Joint Declaration of Donna C. Cupelo, Patrick A Garzillo and Michael J. Anglin, filed by Verizon-RI in CC Docket No. 01-324, in support of Verizon's Section 271 Application for Rhode Island, ¶ 44.
[692] Ex. ATT-28, Donovan Rebuttal, at 9-10.
[693] Ex. ATT-28, Donovan Rebuttal, at 7.
[694] Ex. ATT-29, Donovan Surrebuttal at 35; Tr. 2996, 2/5/02 (Hong).
[695] Ex. ATT-28, Donovan Rebuttal, at 9.
[696] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 79.

examination of historic fill levels in its embedded network.[697] Given the increasing deployment of fiber feeder, Verizon's proposal to keep copper fill at the same low levels it has experienced in its embedded network is clearly incorrect. A proper, TELRIC compliant network configuration would seek to increase efficiency by raising copper feeder fill to 80%, as AT&T has proposed.

(b) A fiber fill factor of 100% is appropriate given fiber's inherent redundancy and expandability.

Ther FCC has determined that a 100% fill factor for fiber feeder is an appropriate measure of utilization, given fiber's inherent redundancy.[698] As the FCC has properly explained, "a fill factor of 100 percent for fiber does not equate to 100 percent fiber utilization."[699] As Mr. Donovan demonstrated in his rebuttal testimony, a 100% fiber feeder fill factor input actually results in a 50% effective fill given the extra transmit and receive fibers that are run for every fiber to multiplexers.[700]

The capacity of fiber feeder is not limited by the number of fiber strands in place. When higher throughput is needed, one changes the electronics so that a given number of fibers now have greater capacity.[701] Furthermore, methods for expanding the capacity of in-place fiber feeder cable continue to be developed. One of the latest examples involves the use of wave division multiplexing, which expands fiber capacity by using different colored lasers over a single fiber.[702] Given this inherent redundancy and flexibility, AT&T's 100% fiber fill factor is reasonable. Thus, the Department should follow the FCC's lead and adopt a 100% assumption and reject Verizon's anti-competitive 60% factor.

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[697] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 88.
[698] *FCC's USF Inputs Order*, ¶ 208.
[699] *FCC's USF Inputs Order*, ¶ 208, fn. 803.
[700] Ex. ATT-28, Donovan Rebuttal, at 9-12.
[701] Tr. 1393, 1/23/02 (Ankum).
[702] Ex. ATT-28, Donovan Rebuttal, at 9.

(5) The remote terminal electronics fill should be set at 90 percent.

Verizon's proposed 80% fill factor for Remote Terminal (RT) Electronics is seriously inflated, particularly considering the rapidity with which RT plug-in equipment may be replaced.[703] Verizon has stated that "[l]ine cards are deployed to provision for six (6) months of growth."[704] This is the generally accepted standard in the industry.[705] This is why the New York PCS recently rejected Verizon's proposed 80% RT electronics fill, and instead adopted an RT electronics fill factor of 88%.[706]

Verizon's unsupported argument that 80% fill is necessary to avoid excessive field dispatches is a red herring.[707] Even assuming an aggressive annual growth estimate of 3%, plug-in card fill would only experience a marginal increase of 1.5% between six month relief periods.[708] Given these facts, AT&T's proposed 90% fill is conservative. Nonetheless, it represents a much more reasonable estimate of RT electronics utilization.

(6) Verizon's application of a duct utilization factor to its level of conduit investment is improper.

Verizon's proposed 44% duct utilization factor is wholly unnecessary, resulting in unjustified plant investment and substantially inflated conduit costs.[709] Verizon's arrives at the 44% figure by drawing assumptions concerning conduit construction that do not take into account proper engineering standards. Verizon first assumes that an entire spare conduit pipe between manholes is needed to house future facilities.[710] But this assumption ignores the

[703] Ex. ATT-28, Donovan Rebuttal, at 10-11.
[704] Ex. CC-VZ 2-43.
[705] Ex. ATT-28, Donovan Rebuttal, at 11.
[706] *New York UNE Rates Order*, at 102.
[707] Ex. ATT-28, Donovan Rebuttal, at 11.
[708] Ex. ATT-28, Donovan Rebuttal, at 11.
[709] Ex. ATT-23, Baranowski Rebuttal, at 29.
[710] Ex. ATT-23, Baranowski Rebuttal, at 30.

standard industry practice of reserving a spare maintenance duct within each conduit.[711] This spare duct is constantly available for reserve purposes, as defective cable is removed and replaced by functioning plant.[712]

Verizon also overstates the amount of innerduct capacity necessary in a forward-looking network. Verizon's study assumes a spare innerduct for every two in service to facilitate the placement of fiber cable.[713] As a typical duct contains three to four innerducts each capable of handling a fiber sheath, adequate capacity is created with the allocation of one spare innerduct for an entire conduit section, rather than adding the multiple spare innerducts that Verizon's assumption would require.[714]

The application of this additional fill factor also overlaps with the cable fill factors mentioned above.[715] The distribution and feeder fill factors are already designed to accommodate additional demand. Applying a duct utilization fill factor on top of the cable factor results in an unnecessary inflation of cost. The New York Commission made note of the overlapping nature of Verizon's duct utilization factor when it eliminated it from the cost analysis within it UNE Rates Order.[716] Based on the record in this proceeding, the Department should eliminate the duct utilization factor (*i.e.*, have it set to 1.0) for the reasons discussed above.

(7) Growth in demand must be accounted for in determining per unit costs.

In addition to requiring that a sufficient amount of plant investment is made to accommodate future demand, the Department should also take into account the "need to spread

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[711] Ex. ATT-23, Baranowski Rebuttal, at 30.
[712] Ex. ATT-23, Baranowski Rebuttal, at 30.
[713] Ex. ATT-23, Baranowski Rebuttal, at 30.
[714] Ex. ATT-23, Baranowski Rebuttal, at 30.
[715] Ex. ATT-23, Baranowski Rebuttal, at 30-31.
[716] *New York UNE Rates Order*, at 114.

to costs of [investment] in a manner that is fair to both present and future customers."[717] Thus, the increase in revenue that will be experienced as network demand grows must be balanced against the increased investment necessary to service that demand. Ignoring this principle forces current customers to pay for facilities they may never use. Future consumers of new plant investment should share the burden of that investment.[718]

AT&T's proposed 3% annual demand growth adjustment accomplishes a proper balance – allowing new users of the network to contribute to investments made for their benefit. Indeed, the New York Public Service Commission recently adopted this demand adjustment as part of its UNE Rates Order.[719] The record here supports the same result.

c. Geographic Density Zones: The Department Should Reconsolidate the Metropolitan and Urban Zones.

In the *Consolidated Arbitrations* proceeding, Verizon had proposed three density zones, but its original urban zone was divided into two parts, with the four densest wire centers in downtown Boston being segregated into a separate "Metropolitan" zone.[720] The change from three to four zones was made at the request of AT&T, and not opposed by Verizon.[721] AT&T has now realized that the small Metropolitan zone bears no relation to practical marketing considerations, and therefore respectfully requests that the Department reconsolidate the metropolitan and urban zones.

Quite frankly, downtown Boston is just a lot smaller than Manhattan. It turns out that it is one thing for New York to identify Manhattan as a separate geographic density zone, and quite another for Massachusetts to carve out four downtown Boston wire centers as a separate Metropolitan zone. Manhattan is large enough to have a critical mass of potential customers that

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717 *New York UNE Rates Order*, at 98.
718 Ex. ATT-23, Baranowski Rebuttal, at 33; Tr. 2163, 1/29/02 (Baranowski).
719 *New York UNE Rates Order*, at 98.
720 RR AG-1; Tr. 2397, 1/31/02 (Anglin).

a CLEC can market separately if it choose to do so. The portion of downtown Boston today cabined within the Metropolitan zone is not.

In this proceeding, when Verizon set up to define geographic denisty zones it started "arbitrarily, based on prior orders, [to] take the four downtown Boston offices and establish that they indeed would be in one density zone."[722] When asked, Verizon did not voice any opposition to the notion of recombining the metropolitan and urban zones into a single urban zone.[723] The change makes no difference from the perspective of recovering forward-looking cost.[724]

3. Outside Plant Models: Though the Inputs Matter More than the Models, the Evidence Shows that Verizon's LCAM Model is Not TELRIC-Complaint and Has Not Been Validated, in Marked Contrast to the Robust HAI 5.2a-MA Model.

As explored at the outset of this brief, the Department's objective in this proceeding is not to select a particular cost model. Rather, the goal of the Department should be to set appropriate, TELRIC compliant UNE rates that spur local exchange competition. As witnesses for both Verizon and AT&T have stated, the underlying assumptions and principles set forth by particular cost models are often more useful tools for rate-setting purposes than the outcomes produced by those models.[725] Indeed, the evidence shows that with the proper, TELRIC-compliant inputs Verizon's LCAM model and the HAI 5.2a-MA model produce statewide average rates for two-wire analog loops that are within pennies of each other: $7.27 versus $7.09. (See Section IV.A.1, beginning at page 108.)

(..continued)

[721] Tr. 1803-1805, 1/25/02 (Anglin).
[722] Tr. 1859, 1/25/02 (Anglin).
[723] Tr. 1804-1805, 1/25/02 (Anglin); Tr. 3520-3521, 2/7/02 (Anglin).
[724] *Id.*
[725] Tr. 3011, 2/5/02 (Mercer); Tr. 3134, 2/6/02 (Tardiff).

That being stated, the HAI 5.2a-MA Model proposed by AT&T in this proceeding provides a realistic, yet forward-looking method for setting UNE rates in Massachusetts. In contrast, Verizon's model does not comport with TELRIC, and it relies upon key assumptions that have not been validated or proven by Verizon.

At the most superficial level, the models' documentation differs substantially. AT&T has provided: (i) an extensive written Model Description that lays out the model's methodology, and provides substantial information regarding the history of its development; (ii) an exhaustive Inputs Portfolio, which provides a full explanation and cites the documentary support for all of the many inputs used in the model; and (iii) written instructions for how to boot up and run the electronic version of the model, which enables the user to change any or all of the 1400 user adjustable default inputs.[726] Verizon has not bothered to provide anything of the kind. The methodology of its models is hidden, little or no justification is provided for most of the inputs, and someone wishing to run the model electronically is embarking on a special challenge.

Verizon has the burden of proof in this proceeding, and it cannot meet that burden by asserting with minimal or no explanation that the methodology and inputs underlying its outside plant models are sound. Furthermore, what we have learned about Verizon's model proves that it is not TELRIC-complaint, and that it is largely unsubstantiated. It stands in marked contrast to the robust HAI 5.2a-MA model.

a. <u>Verizon's LCAM</u> Model Has Methodological Weaknesses Beyond the Improper Inputs Discussed in Section II and Section IV.A.2.

As Dr. Tardiff acknowledged, data validation concerns should be applied equally to any party sponsoring a cost model in this proceeding, including Verizon.[727] Verizon's LCAM model

[726] Ex. ATT-25, Mercer Direct, ex. RAM-2 ("Automation Description and User Guide" and "Model Description") and ex. RAM-3 ("Inputs Portfolio"); Tr. 2763, 2/4/02 (Donovan).

[727] Tr. 3232-3233, 2/6/02 (Tardiff).

suffers both from a myriad of arbitrary assumptions, and from some fundamental methodological choices that deviate sharply from the requirements of TELRIC.

(1) Verizon has used a "capacity-costing" approach, and ignored TELRIC's requirement that one start by modeling the incremental cost of serving the entire demand for each element.

Verizon's proposed LCAM model manifests Verizon's continued inability, or refusal, to comply with the fundamental principles of TELRIC. Rather than attempting base costs on the concept of forward-looking and efficient network as TELRIC requires, Verizon continues to propose rates that reflect assumptions primarily derived from its embedded network experience. This is largely a result of the very different approach Verizon has taken in attempting to model forward-looking costs. Verizon's LCAM model is "based on taking statistics from the network as it is and making what they assert are forward-looking adjustments, as opposed to constructing a network from the bottom up."[728] This is undisputed.

Verizon's outside plant models do not try to estimate the cost to serve the entire element and then derive a per unit cost. Rather, they are – in Verizon's words – "capacity costing" models that try to estimate the cost of individual facilities that a CLEC might order, rather than measure the cost of the entire increment of demand for each element.[729] Mr. Gansert described Verizon's outside plant models as follows:

> It's a capacity-costing approach that tries to come up with -- that estimates the representative cost of the different elements. It doesn't try to estimate the cost of the total network in Massachusetts and then divide by different types of units to get the cost. It's a different approach. [730]

Thus, Verizon attempts to estimate the cost of individual facilities that a CLEC might order, rather than measuring the cost of the entire increment of demand for a particular element and

[728] Tr. 3013, 2/5/02 (Mercer).

[729] Tr. 2475-2476, 1/31/02 (Gansert); Tr. 2626-2631, 2/1/02 (Gansert & Anglin); Tr. 3258, 3288, 2/6/02 (Gansert).

then calculating a per unit cost. As a result, its outside plant models are not TELRIC-compliant.[731]

(2) Verizon's assumed average feeder lengths are based entirely on its embedded network and current FDI locations.

TELRIC says to take the current wire center locations as given, but otherwise to model a forward-looking, most efficient network design. Verizon claims that it cost study was "designed to reconstruct the local network" in accord with TELRIC.[732] But this statement reflects a fair amount of poetic license. In fact, it is undisputed that Verizon assumes that the average feeder lengths in a reconstructed, forward-looking network would be identical to the average feeder lengths for each geographic density zone as determined in Verizon's essentially undocumented "engineering survey."[733] This assumption is arbitrary, and not based or even justified on any attempt to evaluate the most efficient outside plant design based on current wire center locations and known customer locations.[734] Verizon did not undertake any analysis whatsoever to confirm its assumption that present feeder design and location of feeder-distribution interfaces (or serving area interfaces) would be replicated as the most efficient outside plant layout in a forward-looking network.[735]

In sum, Verizon proposes a redesign of the network based largely on a "straight draw" of information from its embedded network.[736] Because Verizon's purported reconstruction of its network is nothing more than a "mirror image" of its current network, it is inconsistent with

(..continued)

730 Tr. 3258, 2/6/02 (Gansert).
731 *FCC's First Local Competition Order*, ¶¶ 682, 690; 47 C.F.R. § 51.511(a).
732 Ex. VZ-38a, Verizon's Recurring Cost Panel Surrebuttal, at 23.
733 Tr. 1827, 1/25/02 (Gansert); Tr. 1829, 1/25/02 (Livecchi).
734 Tr. 1831-1832, 1/25/02 (Gansert).
735 Tr. 1833, 1/25/02 (Gansert).
736 Ex. ATT-24, Baranowski Supplemental Rebuttal, at 8.

TELRIC and fails to reflect efficiencies that could be gained in a truly forward-looking network.[737]

(3) Verizon arbitrarily assumed that the average distribution cable length should equal one-half of the longest known distribution cables.

Verizon's assumptions regarding the average length of distribution cables may be even more arbitrary than its assumptions regarding average feeder lengths. For each existing distribution area, Verizon merely assumed that the average distribution length is one half of the longest distribution pair that currently exists on the ground today.[738] Verizon is unable to provide any data, documentation, or analysis in support of this gross assumption.[739] Verizon defends this initial assumption only with the further assumption that customers are evenly dispersed within each distribution area.[740] But its "even dispersion" assumption is not based on any analysis either.[741] When the Department asked how Verizon can validate that its "halfway" assumption is reasonable, it was told that Verizon "just do[es]n't have that information."[742]

(4) Verizon set arbitrary fiber/copper break points by looking solely at historic data, with no economic analysis of the most efficient design.

Verizon assumed that for each density zone there would be a fixed "fiber/copper break point," such that feeder runs shorter than that length would be copper and longer than that length would be fiber. The break points assumed by Verizon were: zero feet in the Metropolitan zone; 4,000 in the Urban zone; 5,000 feet in the Suburban zone; and 10,000 in the Rural zone.[743] The only "data" or "analysis" presented in support suggest that the selection of these breakpoints was

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[737] Ex. ATT-24, Baranowski Supplemental Rebuttal, at 8.
[738] Tr. 1837, 1/25/02 (Livecchi).
[739] Ex. CC-VZ 10-33; Tr. 3310, 2/7/02 (Livecchi).
[740] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal at 36; Tr. 1840-1841, 1/25/02 (Livecchi); Tr. 3326, 2/7/02 (Livecchi).
[741] Tr. 1837, 1/25/02 (Livecchi).
[742] Tr. 3324, 2/7/02 (Gansert).
[743] Ex. ATT-VZ 4-25, p.2.

completely arbitrary. Verizon claims that it set this "threshold by determining the point along the feeder route that we begin to see predominant placement of digital-loop carrier," based on data from its embedded network.[744]

But this justification fails on two grounds. First, it is nothing more than a claim about the distribution of fiber vs. copper feeder in today's network, with no analysis whatsoever to suggest that this distribution is a meaningful predictor of the economic distribution in a forward-looking network.[745] Second, even accepting this historic data at face value, one cannot look at the data presented by Verizon and tell why Verizon chose the fiber/copper break points that it did.[746]

(5) Verizon's EF&I factors for outside plant electronics are unsupported.

Verizon has failed to provide any validation for the very high installation costs that it assumes for loop electronics equipment.

The Verizon model relies upon outdated Detailed Continuing Property Record (DCPR) information to model the total cost installed of its loop electronics equipment.[747] Investment loading factors for engineering, furnishing and installation (EF&I) and power for digital circuit equipment hardwire and plug-in investment are derived from historic, 1998 DCPR information.[748] AT&T sought documentation showing what equipment was associated with this historic data, to determine whether it resulted in information of any relevance to the EF&I costs for loop electronics in a forward-looking network. Verizon was unable to produce documentation or information sufficient to show that its 1998 booked costs are a reasonable predictor of future EF&I costs.[749]

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[744] Tr. 3319, 2/7/02 (Anglin), citing Attachment C to Ex. ATT-VZ 4-25.
[745] Tr. 2576-2577, 2/1/02 (Anglin).
[746] *See* Attachment C to Ex. ATT-VZ 4-25.
[747] Ex. ATT-24, Baranowski Supplemental Rebuttal, at 5.
[748] Ex. ATT-24, Baranowski Supplemental Rebuttal, at 6.
[749] Ex. ATT-24P, Baranowski Supplemental Rebuttal, at 3-7.

This is not merely a theoretical concern. If one takes Verizon's propsoed EF&I dollar costs and translates them into installation times, one can readily see that the costs assumed by Verizon are exorbitant.[750] Thus, Verizon's blind reliance upon the unverified, embedded DCPR data produces unnecessary costs associated with the connection of new loop equipment to existing equipment. Such costs would not be realized in a forward-looking, partially reconstructed network configuration.

b. The HAI Model can be Relied Upon to Produce TELRIC Compliant Loop Rates.

In marked contrast to Verizon's "capacity-costing" approach, the HAI 5.2a-MA model adheres to the key principles of TELRIC outlined by the FCC. The HAI model acknowledges that the entire quantity of the network element provided is the increment that forms the basis of a TELRIC cost study.[751] The model analyzes all of the costs associated with providing a particular element, including primary plant investment and expenses, as well as the incremental costs of shared facilities and operations.[752] Importantly, the HAI Model only includes forward-looking, economic costs, while ignoring embedded costs associated with a particular element.[753] The Model reflects TELRIC's "scorched node" methodology as existing wire center locations are assumed, but the most efficient technology available is designed to transport telecommunications throughout the network.[754] Furthermore, HAI models costs on a cost-causative basis, meaning it accounts for the costs incurred as a direct result of providing the network element, and not those that could be avoided in the long run.[755]

The general approach of the HAI model may be summarized, in admittedly rough terms, as follows. The modelling process starts with quite detailed information regarding the location

[750] Ex. ATT-28, Donovan Rebuttal at 14.
[751] Ex. ATT-25, Mercer Direct, at 17.
[752] Ex. ATT-25, Mercer Direct, at 17.
[753] Ex. ATT-25, Mercer Direct, at 17-18.

of telephony customers in Massachusetts, both residential and business, and the total demand for wireline services in the state.[756] These customers are then grouped into clusters, which are essentially the equivalent of distribution areas using Verizon's nomenclature. This clustering process yields very detailed information regarding the size, shape, location, number of lines, and existing wire center location that will serve each cluster.[757] Based on this information and local terrain attributes, the HAI model determines the amounts of each network component that will be needed to serve the total demand, using the most efficient network design and available equipment.[758] The model calculates the cost to build, operate, and maintain the network, and then converts that cost into per-unit costs for each UNE.[759]

(1) Development: The HAI model has benefited from scrutiny by other state commissions and the FCC.

The model uses a sophisticated and precise methodology that has been steadily improved. The model's calculations and methodology have been honed extensively since version 2.2.2 of the Hatfield Model was proposed in Massachusetts in 1996.[760] Indeed, all the criticisms of the model raised by the Department during the *Consolidated Arbitrations* proceeding have been specifically addressed by subsequent enhancements to the model.[761] The scrutiny of the Massachusetts Department and other state and federal commissions, in addition to thorough internal review, have played an integral role in many of the significant improvements the model has experienced since 1996.[762]

(..continued)

[754] Ex. ATT-25, Mercer Direct, at 17.
[755] Ex. ATT-25, Mercer Direct, at 17.
[756] Ex. ATT-25, Mercer Direct, at 25.
[757] Ex. ATT-25, Mercer Direct, at 26.
[758] Ex. ATT-25, Mercer Direct at 26.
[759] Ex. ATT-25, Mercer Direct at 26-27.
[760] Ex. ATT-25, Mercer Direct, at 6.
[761] Ex. ATT-25, Mercer Direct, at 6.
[762] Ex. ATT-25, Mercer Direct, at 6.

The model has also benefited tremendously from input provided by the FCC. Versions 3.0 and 4.0 of the Hatfield Model were introduced to specifically address concerns raised by the FCC within its *Universal Service* Docket and by the Commission's Competitive Pricing Division.[763] On July 18, 1997, the FCC released its *Further Notice of Proposed Rulemaking*, which specifically addressed certain guidelines and inputs that a proper cost study should incorporate. The Commission stated that an appropriate cost model should include:

- A sophisticated and precise method of locating customers;
- A choice of outside plant technologies and structures that closely reflects local cost conditions;
- Explicit modeling of host/remote relationships between end office switches; and
- Flexible assignments of expenses based either on lines or relative investments.[764]

In December of 1997, AT&T and MCI-Worldcom submitted version 5.0 of the Hatfield Model, which contained a number of enhancements designed to address a number of the concerns outlined by the FCC.[765] The most dramatic improvements included a much more precise identification of customers locations through the use of geocoded data, where available, and the assignment of non-geocoded locations to Census Blocks rather than the higher-level Census Block Groups.[766] In addition, the new version identified outside plant serving areas with small clusters of customer locations, rather than the much less granular Census Block Groups, allowing for a much more accurate targeting of outside plant deployment.[767]

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[763] Ex. ATT-25, Mercer Direct, Ex. RAM-2, Appendix A at 3.

[764] Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC Docket Nos. 96-45, 97-160, Further Notice of Proposed Rulemaking, 12 FCC Rcd 18514, 18532, ¶¶ 35-36 (1997).

[765] Ex. ATT-25, Mercer Direct, Ex. RAM-2, Model Description, Appendix A ("History of the Hatfield/HAI Model) at 4.

[766] *Id.*

[767] *Id.*

A number of small adjustments to the model's data and logic were made subsequent to the release of version 5.0, resulting in version 5.0a, which was filed with the FCC in January, 1998.[768] During 1998, the FCC continued to review cost models sponsored by various parties, including the Hatfield or HAI Model.[769] At the same time, the FCC began to develop its own cost model platform for Universal Service purposes, known as the Synthesis Model.[770] In October, 1998, the Commission released its model platform, which adopted the switching, interoffice and expense portions of the HAI 5.0a Model, as well as the road surrogating alternative that is currently used in the HAI 5.2a-MA Model for customer location purposes.[771]

Version 5.1 of the HAI Model was developed to address concerns expressed by the FCC as part of its Platform Order.[772] The HAI 5.2 Model was next developed to take advantage of the FCC's development of certain investment values and model inputs as part of its *USF Inputs Order*.[773] The HAI 5.2a Model adopted some investment values for certain network components that were suggested by ILECs submissions to the FCC, as well as correcting and improving upon calculations within version 5.2 of the model.[774] The HAI 5.2a-MA Model represents the HAI 5.2a Model with a number of Massachusetts-specific input values.[775]

(2) Geocoding: The HAI 5.2a-MA model relies upon modern and sophisticated methods to determine precise customer locations.

The HAI 5.2a-MA model uses the most sophisticated techniques available to accurately determine customer locations. Using information derived from the U.S. Census Bureau's Topologically Integrated Geographic Encoding and Referencing ("TIGER") database, geocoding

768 *Id.*
769 *Id.* at 5.
770 *Id.*
771 *Id.*
772 *Id.*
773 *Id.*
774 *Id.*
775 *Id.*

is used to accurately assign known customer locations to physical locales.[776] The process involves the assignment of latitude and longitude values to street addresses.[777] The geocoding software employed by HAI is able to determine the accuracy level of the latitude and longitude coordinates selected, allowing the model to choose only the most accurately determined locations as input.[778] Wherever geocoding has been able to determine precise customer locations, that information is used in the model.[779] In Massachusetts geocoding enjoyed a success rate of 87.5% in determining customer locations throughout the state.[780] The geocoded locales within the HAI 5.2a-MA Model locate customers fifty feet from the center of the roads on which they reside.[781]

For the 12.5% of Massachusetts locales with no geocoding information available, positions are distributed uniformly along roads that lie on and within the boundaries of the census block.[782] Roads where customers are unlikely to be found, such as limited access highways or road segments within tunnels or underpasses are eliminated from consideration.[783] This is the exact same road surrogating methodology that was endorsed and adopted by the FCC.[784]

The business and residential customer location data underlying the HAI Model is derived from commercial providers Metromail, Inc. and Dun & Bradstreet.[785] Both firms' databases are used in critical business applications, such as credit verification and mass mailings.[786] The commercial success of these firms depends almost entirely upon the accuracy of the database

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776 Ex. ATT-25, Mercer Direct, Ex. RAM-2, Model Description § 5.36.
777 *Id*.
778 *Id*.
779 Ex. ATT-25, Mercer Direct, at 39.
780 *Id*.
781 *Id*.
782 *Id*.
783 *Id*., at 40.
784 *See* Ex. ATT-25, Mercer Direct at 39-40; *FCC's USF Inputs Order* ¶¶ 40-47.
785 Ex. ATT-26, Mercer Surrebuttal, at 24.

information they provide.[787] Verizon's attempted attack on the accuracy of these databases is plainly absurd, particularly considering that Verizon has failed to produce its own customer location data in this proceeding.[788] The customer location data has been assembled by a company called TNS in its proprietary National Access Line Model ("NALM"), which "uses a variety of information sources, including: survey information, the LERG, Business Location Research ("BLR") wire center boundaries; Dun & Bradstreet's business database; Metromail's residential database; Claritas's demographic database; and U.S. Census Bureau estimates. [TNS's] model uses these sources in a series of steps to estimate the number of residential and business locations, and the number of access lines demanded at each location. The model makes these estimates for each Census Block, and for each wire center in the United States."[789]

This is precisely the same "process for estimating the number of customer locations" that has been endorsed and adopted by the FCC.[790] The FCC concluded that it is appropriate to take the number of customer locations estimated from the data sources underlying the NALM, and to true them up to the most recently available ARMIS line counts.[791] That is exactly what was done to generate customer counts for use as inputs to the HAI 5.2a-MA model.[792]

The FCC's *USF Inputs Order*, while not yet adopting a geocoded location database due to data availability concerns, did express approval for a geocoded approach to customer location. The FCC found that such a process "should be used for developing customer-location data" and

(..continued)

[786] *Id*.

[787] *Id*.

[788] Tr. 2736-2737, 2/4/02 (Mercer).

[789] *FCC's USF Inputs Order* ¶ 51; *see also* Ex. ATT-25, Mercer Direct ex. RAM-2, HAI 5.2a-MA Model Description, at 24-34.

[790] *FCC's USF Inputs Order* ¶ 51.

[791] *FCC's USF Inputs Order* ¶ 61.

[792] Tr. 2848-2851, 2/4/02 (Mercer).

that it represented a "reasonable method for determining the number of customer locations to be served in calculating the cost of providing supported services."[793]

(3) Clustering: The HAI model's method of customer clustering facilitates the efficient engineering of serving areas.

After the HAI Model has identified customer locations, a clustering process identifies customer locations that are close enough to one another to be efficiently engineered as telephone plant serving areas.[794] Clusters are developed according to several criteria. First, no customer may be more than 18,000 feet from the cluster's centroid. Second, clusters are targeted not to exceed 1,800 lines in size. Clusters are identified as "main clusters" if they contain five or more lines and "outlier" clusters if they have fewer than five lines.[795]

The HAI Model's clustering algorithm then places customers belonging to a main cluster within the confines of a rectangular cluster shape that allows the model to estimate the type and amount of outside plant needed to serve each cluster area.[796] Cluster data, including information pertaining to the type and shape of each cluster, is then used as the demographic input data for the HAI Model's calculations.[797] Copper or fiber feeder cable is extended to each cluster and copper distribution cables are modeled to reach customers at their plotted locations. Should the distance from a particular cluster's wire center to a particular customer exceed a set maximum copper loop distance, the cluster is divided into two or more sub-clusters, and fiber feeder is extended to terminals and Serving Area Interfaces designed to serve those sub-clusters. Copper cables enhanced with electronics using digital transmission also extend from the main feeder cable in order to service remote customers within the confines of the main cluster.

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[793] *FCC's USF Inputs Order*, at ¶51.
[794] Ex. ATT-25, Mercer Direct, at 40.
[795] Ex. ATT-25, Mercer Direct, at 40-41.
[796] Ex. ATT-25, Mercer Direct, at 41.
[797] *Id*.

The FCC expressly approved of the use of a clustering algorithm in mapping serving areas in its *USF Platform Order*, stating that a "clustering approach, as first proposed by HAI in this proceeding, is superior to a grid-based methodology in modeling customer serving areas accurately and efficiently."[798] When Mr. Gansert complained that the HAI model produces clusters of customers in "odd shapes spread out along the road,"[799] he was paying a backhanded complement. HAI's data reflects customer locations along the roads of Massachusetts because that is where the customers in fact are located – households and businesses are generally aligned along a roadway of some kind.[800]

The HAI Model recognizes the economic efficiencies created through the use of larger distribution areas (DAs) and serving area interfaces (SAIs) than may exist in the embedded network that evolved during the days of all copper feeder. The use of this design allows the HAI Model to enjoy economies of scale that Verizon refuses to acknowledge. As Mr. Donovan demonstrates in his surrebuttal testimony, Verizon's argument for smaller distribution areas defies logic when taken to its natural extreme, largely due to the increased costs associated with fiber feeder electronics.[801] Maximizing fiber feeder, therefore, will frequently result in inefficiencies. The HAI Model effectively avoids these.

The HAI Model also uses rectilinear, or right angle, distance calculations to determine loop lengths for each cluster within Massachusetts.[802] This approach has been specifically endorsed by the FCC, while the use of straight-line or "airline" miles to determine distance was

[798] *FCC's USF Platform Order*, at ¶42.
[799] Tr. 3203, 2/6/02 (Gansert).
[800] Tr. 2741, 2/4/02 (Mercer).
[801] Ex. ATT-29, Donovan Surrebuttal, at 15.
[802] Tr. 2838-2839, 2/4/02 (Mercer).

rejected.[803] The FCC noted that "rectilinear distance more accurately reflects the routing of telephone plant along roads and other rights of way."[804]

In contrast, Verizon has stated that it used straight-line distances as the basis for its distribution loop length assumptions in this proceeding.[805] As the FCC has observed, HAI's approach results in a more accurate measurement of length.

(4) Feeder Mix: The HAI model selects an economic mix of copper and fiber feeder cable.

The HAI Model makes reasoned judgments concerning feeder cable technology based on specific criteria. For feeder routes over 9,000 feet, the model selects fiber feeder because it is the most economic choice at this distance and generally accepted industry standards call for fiber systems at such distances.[806] At feeder distances below 9,000 feet, the model chooses the most economically sound technology on a cluster-by-cluster basis.[807] When run for Massachusetts, this process resulted in a 49.2% fiber, 50.8% copper feeder technology mix.[808] It is undisputed that this approach, of determining the economic mix for copper and fiber feeder for each cluster or distribution area, makes sense. That is the way that Verizon is now attempting to analyze the issue in other states.[809]

c. Verizon's Attacks on the HAI 5.2a-MA Model are Not Credible.

Verizon funded three witness in an effort to impugn the HAI model and its two sponsors. Ultimately, however, neither Mr. Dippon, Dr. Tardiff, nor Mr. Gansert proved to be very credible. There is not sufficient room or time to present an exhaustive catalogue of each of their

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803 *FCC's USF Inputs Order*, at ¶82.
804 *FCC's USF Inputs Order*, at ¶81.
805 Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 36.
806 Ex. ATT-25, Mercer Direct, at 13.
807 *Id.*
808 *Id.* at 13, 58.
809 Tr. 2586-2587, 2/1/02 (Gansert and Anglin).

misrepresentations or misstatements. A reminder of some of the key ones will have to suffice to illustrate the point.

(1) Mr. Dippon was not credible.

Mr. Dippon states correctly that Verizon sought, and AT&T was ultimately ordered to make available, "the geocoded [database] for the State of Massachusetts used to produce the clusters in HAI 5.2a."[810] But he then goes on to state, falsely, that he was "only able to access and review a minute portion of the database."[811] He indicates that all he received were 12 data fields.[812] He neglects to mention that he was provided with access to this information for each of approximately three million separate business and residential customer locations in Massachusetts.[813] The simple fact is that Verizon and Mr. Dippon, like the Department, were provided with complete access to the entire geocoded database used to generate the customer clusters used in HAI 5.2a-MA.[814] He was also provided with the entire cluster file, which showed the detailed information gleaned by TNS from the geocoded data set for each of the 4,166 customer clusters identified in Massachusetts.[815]

Mr. Dippon then complained that he could not conduct any meaningful analysis because he was not provided sufficient time to access the geocoded data.[816] The truth is, however, that after Mr. Dippon had one day of access on November 7, 2001, Verizon's attorney checked with Mr. Dippon and reported to the Department that Verizon could complete its analysis with five more days of access.[817] Verizon was given the additional five days, and Mr. Dippon used only

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[810] Ex. VZ-59, Dippon Surrebuttal, at 6, quoting Ex. VZ-ATT 1-23.
[811] *Id*. at 12.
[812] *Id*. at 10.
[813] Tr. 3153, 2/6/02 (Dippon).
[814] Tr. 3171, 2/6/02 (Salinger).
[815] Tr. 3153-3154, 2/6/02 (Dippon).
[816] Ex. VZ-59, Dippon Surrebuttal, at 11, 13.
[817] Tr. 3169, 2/6/02 (Dippon).

four of them.[818] Verizon never came back to the Department or AT&T and said that it wanted any additional time with the geocoded database.[819] When it asked for the additional five days, Verizon had also reported that the analysis Mr. Dippon wanted to work on was mapping the geocoded data.[820] It is undisputed that Mr. Dippon in fact completed that work: he "mapped all the customer locations … in Massachusetts."[821] Mr. Dippon's assertion that he did not have time to complete his analysis cannot be squared with the fact that he completed the only analysis he set out to do.

Mr. Dippon also asserted that his analysis was purportedly "hampered by the lack of specific definitions and details on how the source data was [sic] manipulated."[822] But the fact is that TNS technical support was available at all times, and was "quite responsive."[823]

In discussing the customer location file, Mr. Dippon states that "the FCC rejected the use of this database and opted for an all road-surrogate database instead."[824] In fact, however, the surrogated locations used by the FCC were all derived from the very customer location database that Mr. Dippon claimed was "rejected" by the FCC.[825] Like the HAI model, the FCC's synthesis model: (i) "allows the user to estimate the cost of building a telephone network to serve subscribers in their actual geographic locations, to the extent these locations are known," and otherwise to estimate those locations using a "road surrogate" method; (ii) "employs a clustering algorithm to group customers into serving areas in an efficient manner that takes into consideration relevant engineering constraints," and (iii) then "designs outside plant to the customer locations" using "a number of cost minimization principles designed to determine the

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818 Tr. 3169-3170, 2/6/02 (Dippon).
819 *Id.*
820 Tr. 3169, 2/6/02 (Dippon).
821 Ex. ATT-59, Dippon Surrebuttal, at 17.
822 Ex. VZ-59, Dippon Surrebuttal, at 11.
823 Tr. 3174, 2/6/02 (Dippon).
824 Ex. VZ-59, Dippon Surrebuttal, at 8.
825 *See FCC's USF Inputs Order* ¶¶ 51-60.

most cost-effective technology to be used under a variety of circumstances, such as varying terrain and density."[826] Ultimately, the FCC chose not to run the model using known geocoded locations, and instead used only the road surrogate method to map locations of all residential and business customers within each Census Block.[827] (The HAI model can similarly run on such a 100 percent surrogate database, should the Department so order, albeit at the expense of not taking full advantage of a great deal of more precise customer location information.[828]) But the road surrogate method of estimating customer locations starts with the same geocoded data to estimate the number of customer locations within each Census Block and wire center, and does so using the same National Access Line Model developed by PNR (now TNS).[829] Thus, the customer location information that is the subject of Verizon's appeal is the same customer location information that was used by the FCC to run its synthesis model.

One of Mr. Dippon's more vigorous complaints is his repeated assertion that AT&T never provided the clustering algorithm.[830] But that is false. AT&T provided an electronic copy of the clustering algorithm to Verizon on September 21, 2001.[831] Faced with this inconvenient fact, Mr. Dippon then complained that he had been given only a compiled version of the clustering algorithm, and what he really wanted to see was the underlying C++ code.[832] That is not what Verizon asked for in request VZ-ATT 1-26, or elsewhere. But, more interestingly, Mr. Dippon's fallback assertion is also false. AT&T produced this C++ code to Verizon-MA on September 21, 2001, and indeed Verizon has had access to it since January 13, 1998, when it was

[826] *FCC's USF Inputs Order* ¶¶ 17-18; *cf.* Ex. ATT-25, Mercer Direct at 38-49, and ex. RAM-2, HAI 5.2a-MA Model Description at 24-53.
[827] *FCC's USF Inputs Order* ¶¶ 36-47.
[828] Tr. 3105, 2/6/02 (Mercer).
[829] *FCC's USF Inputs Order* ¶ 51.
[830] *E.g.*, Ex. VZ-59, Dippon Surrebuttal, at 22; Tr. 3178, 2/6/02 (Dippon).
[831] Ex. VZ-ATT 1-26, Supp'l Response.
[832] Tr. 3182, 2/6/02 (Dippon).

filed with the FCC in its USF proceeding.[833] "[T]he C++ code provided to the FCC and available to Bell Atlantic and GTE in 1998, and reproduced in response to [VZ-ATT 1-83], is the code that underlies the clustering algorithm provided to Verizon-MA in electronic form in this proceeding in response to VZ-ATT 1-26."[834]

Even on the little points Mr. Dippon could not see his way to truthfulness. He insisted that AT&T refused to and never did provide the "latitude and longitude of each geocoded and surrogate customer location," as requested in VZ-ATT 1-9.[835] But the truth is that the geocoded data set to which Mr. Dippon was given access had the latitude and longitude for each of the three million customer locations.[836]

Perhaps the most interesting thing we learned from Mr. Dippon, however, concerns something he did not mention in his prefiled testimony. He did not say that he made absolutely no attempt, whatsoever, to validate any portion of the geocoded data set by evaluating it against Verizon's own customer location data.[837] Mr. Dippon took pains to emphasize that this was not his choice, explaining that: "I was not retained to do that. When you said 'you made no effort,' it sounds like I just chose it out of ignorance. That's what I'm objecting to. I simply say that was not the scope of my assignment."[838] But in the next moment he conceded that the decision of how best to analyze the geocoded data was his to make, and was not dictated to him.[839] He then asserted that it was impossible to compare the geocoded data to any Verizon customer location data, because the geocoded data was proprietary and therefore had to remain on TNS' computer.[840] But when confronted with the fact of an October 23, 2001, letter from AT&T to

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833 Ex. VZ-ATT 1-83, Supp'l Response, Tab 1.
834 Ex. VZ-ATT 1-83, Second Supp'l Response.
835 Ex. VZ-59, Dippon Surrebuttal, at 7-8; Tr. 3187, 2/6/02 (Dippon).
836 Tr. 3190, 2/6/02 (Dippon).
837 Tr. 3155-3160, 3223-3224, 2/6/02 (Dippon).
838 Tr. 3158, 2/6/02 (Dippon).
839 Tr. 3158-3159, 2/6/02 (Dippon).
840 Tr. 3161, 2/6/02 (Dippon).

Verizon – in which AT&T offered to make all arrangements necessary to ensure that "whatever software Verizon may wish to use to review or analyze the geocoded data [was] loaded onto the TNS computer in advance" – Mr. Dippon fell back to the seemingly safer excuse that "this was not the scope of my assignment."[841]

Whatever the reason, Mr. Dippon made absolutely no effort to have any Verizon customer location data loaded onto the TNS computer for comparison to the geocoded data set.[842] His complaint that the geocoded data was purportedly unverifiable is not entitled to any weight, since he made no attempt to undertake the kind of validation that he, as a consultant to Verizon, was in a unique position to attempt.

(2) Dr. Tardiff was not credible.

Dr. Tardiff's credibility problems were perhaps not as glaring as those of his colleague, Mr. Dippon. But it is fair to say that he proved quite willing to engage in hyperbole in lieu of providing substantive testimony.

For example, Dr. Tardiff criticized Dr. Mercer and the HAI 5.2a-MA model for taking into account purportedly "speculative and unspecified savings attributable to the Bell Atlantic/GTE merger."[843] This rhetorical slur is not merely baseless, it is truly outrageous. Dr. Mercer made clear in his prefiled testimony that the merger savings he was taking into account were the very savings that had been quantified by Verizon.[844] These savings are well documented, and not in dispute.[845] When confronted with these facts, Dr. Tardiff acknowledged that he was not aware of any statement by Verizon that it is or will be unable to achieve its self-proclaimed merger savings.[846] Despite these facts, however, Dr. Tardiff insisted that the merger

[841] Tr. 3162, 2/6/02 (Dippon).
[842] Tr. 3167, 2/6/02 (Dippon).
[843] Ex. VZ-58, Tardiff Rebuttal, at 71.
[844] Ex. ATT-25, Mercer Direct, at 29.
[845] *See* Section II.C.2, beginning at page 36.
[846] Tr. 3275, 2/6/02 (Tardiff).

savings are nonetheless speculative and uncertain because they are "predictions of the future," and "any forecast has uncertainty."[847]

Another example nicely captures Dr. Tardiff's demonstrated propensity to overreach. He asserts that "customer locations in the Hatfield Model are simply assumed to be uniformly spread across the rectangular serving areas."[848] This statement is troubling on two levels. First, it is not true. As Dr. Mercer explained in his surrebuttal testimony, the HAI Model now incorporates a route distance mechanism — also referred to as "strand normalization" – that captures the effect of customers being concentrated in portions of certain clusters.[849] Second, it is quite strange that Verizon would criticize the HAI model on the ground that it purportedly assumes even dispersion of customers in rectangularized clusters. Verizon's LCAM is in fact the model that uses a distribution length assumption justified solely by the belief that distribution areas are regularly shaped and that customers are evenly dispersed within them.[850]

In a final example, it is similarly troubling that Dr. Tardiff attacks the HAI Model on the ground that total investment levels it produces are substantially less than the historic investment carried on VZ-MA's books.[851] First, the FCC has "reject[ed] the explicit or implicit assumption of most LEC commenters that company specific values, which reflect the costs of their embedded plant, are the best predictor of the forward-looking cost of constructing the network investment… . … [To the contrary,] the forward-looking cost of constructing a plant should reflect costs that an efficient carrier would incur, not the embedded cost of the facilities,

[847] Tr. 3278-3279, 2/6/02 (Tardiff).
[848] Ex. VZ-58, Tardiff Rebuttal, at 49.
[849] Ex. ATT-25, Mercer Surrebuttal, at 27-28.
[850] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal at 36; Tr. 1840-1841, 1/25/02 (Livecchi); Tr. 3326, 2/7/02 (Livecchi).
[851] Ex. VZ-58, Tardiff Rebuttal, at 26 *et seq.*

functions, or elements of a carrier."[852] Second, Verizon has testified that its own outside plant model implies total plant investment that is substantially below booked values.[853]

(3) Mr. Gansert was not credible.

Mr. Gansert joined in Dr. Tardiff's effort to tar the HAI model for modelling forward-looking costs rather than trying to match book investment figures. He specifically focused on poles, faulting the HAI model for assuming only about 1/3 the number of poles as are shown on Verizon's books.[854] This was an interesting choice of targets. Dr. Tardiff shows that the dollar value of the poles placed in the HAI model is $87.2 million.[855] But Verizon's LCAM results imply a mere $9.1 million investment in poles.[856] Mr. Gansert was a cosponsor of the testimony demonstrating this fact about Verizon's own model. And when Mr. Gansert was asked to evaluate Verizon's model by comparing the total investments it suggests to total booked investments, he took the position that such a comparison is "completely meaningless."[857]

On at least one occasion Mr. Gansert managed to contradict himself within a single answer. This occurred during a conversation about Verizon's assumption that the average distribution cable for a distribution area will be half the length of the longest distribution cable. Mr. Gansert began an answer by stating that in "the vast majority of the distribution areas" the transmission design point will correspond with the what is actually the longest distribution pair, but by the end of the answer he concluded that the transmission design point "tends to be somewhat shorter than the longest loop in general."[858]

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[852] *FCC's USF Inputs Order*, ¶ 90. *See also FCC's USF Platform Order*, ¶ 66.
[853] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, Attachment, at 1-2.
[854] Ex. VZ-57, Gansert Rebuttal, at 23.
[855] Ex. VZ-58, Tardiff Rebuttal, at 27.
[856] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, Attachment, at 2.
[857] Tr. 1705, 1/25/02 (Gansert).
[858] Tr. 3317-3318, 2/7/02 (Gansert).

Mr. Gansert is also prone to being proven wrong by his Verizon colleagues. For example, Mr. Gansert insists that a DSL customer cannot receive service over digital loop carrier on fiber feeder.[859] His company's own planning guidelines disagree.[860]

Similarly, he attacked the HAI Model on the ground that it models outside plant cables that reach the SAI but are not actually terminated. Mr. Gansert asserted at some length that if cables are not terminated, then they are not available and cannot be counted in measuring effective fill.[861] But the very next day Mr. Livecchi explained that in fact Verizon brings cables to SAIs without terminating them, and nonetheless counts them as available and factors them in when measuring effective fill.[862]

B. OSS Charges: The Department Should Reject Verizon's Proposed Per Line Surcharge for OSS Related Costs.

Verizon seeks to charge CLECs an extra 46 cents each month for every UNE-Loop, UNE-Platform arrangement, or resold line that they purchase in Massachusetts: this charge is justified as a recovery of the purported cost of providing access to Verizon's OSSs.[863] This OSS surcharge would be material. As explained below, it should be denied in its entirety.

Verizon bases its claimed OSS-related costs on the cost of maintaining, and providing computer hardware to support, modifications to previously existing OSSs (the "core network systems") as well as some newly developed "gateway" systems.[864] The latter category are costs associated with the "interfaces or front ends between the Verizon MA's OSSs and the CLEC users," which act as "middleware between the CLEC and Verizon MA's core OSS."[865] The "core" systems are the OSSs that always have performed the basic functions such as pre-

[859] Tr. 3501, 2/7/02 (Gansert).
[860] Ex. CC-VZ 2-17, pages 3-4, 13-14, 16-17, 26-27 (proprietary).
[861] Tr. 3241-3243, 2/6/02 (Gansert).
[862] Tr. 3254-3255, 2/7/02 (Livecchi).
[863] Ex. VZ-26, Minion Direct Testimony, Ex. OSS p.2; *see also* RR ATT-2, Attachment, p.5, line for Part F-5.
[864] Ex. VZ-26, Minion Direct Testimony, at 4, 5, and Workpaper 4, page 1.
[865] Ex. ATT-VZ 17-1; *see also* Ex. VZ-26, Minion Direct Testimony, at 6, 11.

ordering, ordering, and provisioning of service orders, whether for Verizon retail customers or on a wholesale basis for CLECs.[866] Verizon is unable to differentiate between those costs incurred to support modifications to its core system functionalities and those costs incurred to develop new gateway systems.[867]

1. The Proposed OSS Surcharge Should be Disallowed, as it Would Double Count Computer-Related Costs Already Covered by Verizon's ACFs.

In its Phase 4-L Order in the *Consolidated Arbitrations* proceeding, the Department disallowed Verizon's proposed OSS charges because they were an attempt to recover categories of costs that were already covered by Verizon's joint and common cost factors. "Thus, to permit Bell Atlantic to now assign these same costs to OSS would result in a double-counting of these costs."[868] Verizon claims that it solved this double-counting problem in this case by making a reduction to the Other Support annual cost factor.[869]

However, Verizon neglected to make any adjustment to the Common Overhead factor, and for that reason has not eliminated its fatal double-counting problem.[870] The Common Overhead ACF is applied by Verizon to gross up all of its claimed recurring costs.[871]

The large and broad categories of costs covered by the Common Overhead ACF subsume the smaller, narrower costs that Verizon seeks to recover in its proposed OSS charges. The Common Overhead ACF is the place in Verizon's cost study where it recovers for, among other things, computer hardware costs and the costs of information management personnel.[872] Verizon's proposed OSS charges are in turn derived from estimates of the cost of certain General

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[866] Ex. ATT-VZ 17-1.
[867] Ex. ATT-VZ 18-1; Tr. 934-935, 1/18/02 (Minion).
[868] *Consolidated Arbitrations* Docket, Phase 4-L Order at 49.
[869] Ex. VZ-26, Minion Direct Testimony, at 14.
[870] Ex. VZ-26, Minion Direct Testimony, at 14.
[871] *See, e.g.*, Ex. VZ-37, Verizon Recurring Cost Study, Part B-1, Massachusetts Monthly Loop Cost Summary, lines 4, 11, 18, 25, 32 (loop rates); Part C-1, Section 1, Page 1, Line 20 (analog line port rate); Part C-2, Section 1, Page 1, Line 21 (local switch usage rate).

Purpose Computer hardware (all of which is booked to ARMIS account 2124), and of the cost of maintaining certain computer software ("predominantly" booked to ARMIS account 6724).[873] But these same categories of costs are already recovered through the Common Overhead ACF, and cannot be recovered a second time through an additional OSS charge.

As the Department found in its Phase 4-L and 4-O Orders, Verizon should not be able to assess specific charges for computing and related support costs that fall within categories of common costs which are recovered through general factors applied in calculating all UNE rates.[874] For this same reason, the proposed OSS charges should be rejected in this proceeding just as they were in the *Consolidated Arbitrations* docket.

2. Even If Verizon Had Not Double Counted its OSS-Related Costs, Its Proposed Charges Should Still be Greatly Reduced.

AT&T respectfully urges the Department to reject Verizon's proposed OSS charge in its entirety, for the reasons discussed in the immediately preceding sub-section. If for some reason the Department does not do so, however, then it should: (i) reduce the OSS charge to reflect forward-looking computer hardware costs, rather than the 1999 prices assumed by Verizon; and (ii) asses the resulting OSS costs across all of Verizon's access lines, both retail and wholesale, so that these costs are recovered in the competitively neutral manner required by the Department's Phase 4-O order.

a. Verizon Should Not be Permitted to Set OSS Charges for the Next Five Years Based on 1999 Hardware Costs.

Verizon has based its claimed investment-related OSS costs on the 1999 costs of computer hardware.[875] Verizon attempts to justify this backward-looking pricing on the ground

(..continued)

[872] Ex. VZ-37, Verizon Recurring Cost Study, Part G-2, Tab 2.

[873] Tr. 913, 915, 917, 1/18/02 (Minion); Ex. VZ-26, Minion Direct Testimony, at 4, 5.

[874] *Consolidated Arbitrations* Docket, Phase 4-O Order at 9 (Jan. 10, 2000), Phase 4-L Order at 47-49 (Oct. 14, 1999).

[875] Ex. VZ-26, Minion Direct Testimony, at 6, and Workpaper 4, page 2, note 1.

that the gateway systems at issue here were all in place by the end of 1999.[876] Verizon further argues that the prices it paid for computing equipment in the year 2000 happened not to decline as much as in previous years.[877] But a forward-looking cost study should not use outdated, backward looking material price estimates.

If the Department intends to adopt UNE rates that will remain in effect for five years, then it should set those rates based on the computing costs expected in 2004, the middle of that period. In accord with the Phase 4-O Order in the *Consolidated Arbitrations* proceeding and Moore's Law,[878] and as discussed in more detail in Section III.D.2.a(1) beginning at page 101, one would expect the cost of computer equipment to decline by 75% over the four years form 2000 to 2004. Mr. Baranowski made the conservative estimate (conservative in the sense of yielding a higher rate) that computer hardware costs should be reduced by at least 50 percent below the 1999 cost levels used by Verizon.[879] But the more appropriate adjustment is the 75% reduction mandated by the Department's findings in the Phase 4-O Order.

One can go to the electronic version of Workpaper 4, Page 2, of Verizon's OSS cost study, and reduce the computer hardware costs estimated in line 10 in 1999 values by 75% to convert them into forward-looking hardware costs as of 2004. The result of this one change is to reduce Verizon's proposed OSS charge from 46 cents per wholesale line to 37 cents.

b. Any OSS Access Costs for which Verizon Is Permitted to Charge Should be Assessed in a Competitively Neutral Manner, by Calculating a Per Line Charge Based on the Total Number of Verizon Access Lines.

In addition, however, if Verizon is permitted to assess an OSS charge it should be required to do so in a competitively neutral manner, as the Department previously ordered. In

[876] Tr. 930-931, 1/18/02 (Minion).
[877] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 100-101.
[878] *Consolidated Arbitrations* Docket, Phase 4-O Order at 8-9 (Jan. 10, 2000).
[879] Ex. ATT-23, Baranowski Rebuttal, at 46.

1999, the Department ordered that for any future OSS cost study Verizon "should propose a competitively neutral rate design under which costs are born by the very carrier that benefits from [Verizon's modifications to its] OSS[s], including [Verizon]."[880] The Department explained the basis for this ruling as follows:

> [I]t is clear that the kinds of improvements made to the OSS[s] enhance both the ability of the CLECs to carry out their business and the ability of [Verizon] to remain competitive in a rapidly changing telecommunications environment. As Dr. Selwyn notes, for example, [Verizon]'s attempt to win back customers from other carriers is enhanced by an integrated OSS, permitting [Verizon] to quickly and efficiently locate the facilities used by the customer, process the service order, and provision any facilities needed to return the customer to [Verizon].
>
> * * *
>
> [B]ecause the CLECs have made a persuasive presentation that many of the OSS improvements bring benefits to [Verizon], as well as the CLECs a rate design that assigns all of the costs of OSS upgrades to the CLECs does not appear appropriate. A better approach may be to allocate [any permitted OSS] costs with reference to the total number of access lines" provided by Verizon on either a wholesale or a retail basis.[881]

Verizon did not seek reconsideration of these findings.

In this proceeding, however, Verizon simply ignores the Department's prior conclusion that any OSS charges must be assessed in a competitively neutral manner. Verizon proposes a rate structure under which these OSS access costs are spread only across access lines purchased by CLECs on a wholesale basis from Verizon, either as UNE-P, UNE-L, or through resale.[882] That is improper. To the extent that the Department permits Verizon to assess charges for any of the OSS-related costs claimed by Mr. Minion, it should require Verizon to assess them in a competitively neutral manner as previously ordered.[883] The claimed OSS costs should be allocated across all of Verizon's access lines, whether sold at wholesale to a CLEC or to a Verizon retail customer.

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[880] *Consolidated Arbitrations* Docket, Phase 4-L Order at 57 (Oct. 14, 1999).
[881] *Consolidated Arbitrations* Docket, Phase 4-L Order at 52-53 (Oct. 14, 1999).
[882] Ex. VZ-26, Minion Direct Testimony, at 12.

Verizon argues that "absent a need for these abilities by the CLECs and Resellers, Verizon MA would be able to discontinue such support and not incur the costs associated with such support."[884] But this statement merely confirms that Verizon would prefer to remain a monopolist, and not have to permit CLECs to purchase UNEs. This sentiment is not relevant here. In a world in which Verizon retains a legal obligation to make UNEs available to CLECs, all retail customers share the benefits of competition whether they continue to get service from Verizon or choose to sign up with a CLEC.

In Verizon's OSS cost study, in the Exhibit at page 2, Verizon calculates its proposed OSS charge by dividing its cost estimate by the total estimated ***wholesale*** demand for Verizon access lines, which Verizon estimates to be 1,257,141 wholesale lines.[885] But under the prior Phase 4-L Order, Verizon should actually be calculating the per unit OSS charge by dividing costs by the total number of all Verizon access lines, including both ***wholesale and retail*** lines.[886] The record in this proceeding, which incorporates the record from Docket 01-31, suggests that a reasonable number for the total number of Verizon wholesale and retail lines for this purpose is 4,500,000.[887] Mr. Baranowski made the conservative estimate that OSS software maintenance costs shared 50/50 between Verizon and the CLECs.[888] But the proper adjustment is the one mandated by the Phase 4-L order.

If one goes to the electronic version of Verizon's OSS workpapers at Exhibit Page 2, and inserts a total access line estimate of 4,500,000 in lieu of the purely wholesale access line

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(..continued)

[883] Ex. ATT-23, Baranowski Direct, at 47.

[884] Ex. VZ-26, Minion Direct Testimony, at 14.

[885] Ex. VZ-26, Exhibit OSS, Page 2, and Workpaper 4, Page 9.

[886] *Consolidated Arbitrations* Docket, Phase 4-L Order at 52-53 (Oct. 14, 1999).

[887] *See, e.g.*, Verizon's Initial Brief filed in Docket 01-31 at 13 (filed Feb. 12, 2002) (for estimate of Verizon's retail access lines); Ex. VZ-26, OSS Cost Study Workpaper 4, Page 9 (for estimate of Verizon's wholesale access lines); Verizon's Second Supplemental Reply to ATT-VZ 4-29, Attachment p.3 (Verizon's proprietary Business Plan access line forecast, for both retail and wholesale access lines).

[888] Ex. ATT-23, Baranowski Rebuttal, at 47-48.

forecast improperly used by Verizon, the result (combined with the one change discussed in the preceding subsection) is to reduce Verizon's proposed OSS charge from 46 cents per wholesale line to 10 cents. Thus, if the Department does not reject the OSS charge entirely on the ground of double counting, the Department should reduce the charge to 10 cents in order to make it conform to the Department's prior rulings, which Verizon has failed to refute.

C. HARC: Verizon's Proposed Charges for House and Riser Cable Are Unreasonable.

Verizon's proposed charges for unbundled house and riser facilities are excessive and anticompetitive. There are two major problems. First, Verizon's claimed recurring cost for the monthly use of a terminal block is grossly overstated, due in large part to unreasonable assumptions regarding, among other things, installation time, material cost, network plant configuration, and fill factors. The difference is dramatic as illustrated by the difference in the proposed charges for horizontal cable, when the cost of the termination block is included:

	Verizon	AT&T
Horizontal Cable Cost per month (including termination block)	$1.075 [889]	$0.168 [890]

Second, Verizon's proposed non-recurring charge of $112.93 for an intermediate termination block with the purchase of any combination of house and riser facilities is based on a Verizon requirement for an intermediate termination block that is technically unnecessary and, therefore, anticompetitive. Furthermore, the Department has already prohibited Verizon from requiring an intermediate terminal block when it provides house and riser cable to its competitors. The Department should reject altogether Verizon's proposed $112.93 for an intermediate termination block.

[889] ATT-28, Donovan Rebuttal, at 43.

[890] Although AT&T initially proposed $.271 per month for the cost of horizontal cable and the terminal block (see Ex. ATT-28, Donovan Rebuttal, at 43), it did so on the basis of an assumed 25 pair block. If a 300 pair block is assumed, as Verizon does, then the cost is $0.168. ATT-28, Donovan Rebuttal, at 43.

1. Background: How House and Riser Cable is Used.

Verizon has a number of different rate elements that apply when a CLEC purchases various parts of house and riser cable. In order to understand Verizon's proposed rates for house and riser cable, it is necessary to understand how Verizon intends to apply its various rate elements. The economic impact on the CLEC purchasing house and riser cable to serve a customer, as well as the revenue stream to Verizon, is determined not only by the level of each rate, but also by how many of those rate elements are applied and how they are applied. Unless properly and carefully specified by tariff, the *application* of the rates determined in this proceeding could produce double charging and over recovery by Verizon.[891] As a result, it is important to understand how CLECs will use Verizon's house and riser cable.

In order for a CLEC to provide service to tenants in multiple tenant unit buildings ("MTUs") and depending on what the CLEC and Verizon already own, the CLEC may purchase from Verizon only the horizontal cable facility, only the riser cable facility or both the horizontal and riser cable facilities.[892] A cable facility, whether it be a horizontal or riser cable, is made up of twisted copper cable pair. Each end of the cable pair is "punched down," or terminated, on termination blocks. The riser cable runs vertically through the different floors of the MTU. The horizontal cable runs horizontally from a riser closet on each floor to each tenant location on that floor.[893]

In any given situation when a CLEC wishes to purchase some or all of unbundled house and riser facilities, Verizon imposes several different charges. Take, for instance, the situation where the CLEC already has facilities in the MTU up to the tenth floor.[894] The CLEC needs to

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[891] Verizon witness Anglin was candid about the potential problem of rate application in the context of house and riser cable: "Although I'll be honest: When we did the cost study, I didn't think far enough ahead to various applications of the rates in the tariff." Tr. 2/1/02, at 2654.

[892] *See* Ex. ATT-VZ 19-1 Supplemental, at Diagrams A1, A2 and A3.

[893] *See* Ex. ATT-19, Salvatore Direct, for a detailed description of how HARC is deployed and used.

[894] *See* Ex. ATT-VZ 19-1 Supplemental, at Diagram A1.

purchase only the horizontal cable facility from Verizon in order to provide service to the tenant. Verizon's proposed recurring charges in this scenario are $0.70 for access and use of the horizontal terminal (see point H on A1) plus $0.26 for access and use of the horizontal cable.[895]

Verizon imposes different charges, however, when a CLEC wishes to purchase riser cable and not horizontal cable. As depicted in Diagram A2, Verizon's claimed recurring charges differ. In this particular scenario, the CLEC has no facilities in the building and the landlord, not Verizon, owns the horizontal cable facility. The CLEC, therefore, needs to purchase only the riser cable facility from Verizon in order to reach the customer.[896] Verizon's proposed recurring charges for this situation are $0.70 for access and use of the riser terminal (see point F on Diagram A2), $0.15 for the access and use of the basement terminal (see point D on Diagram A2), $0.05 for the basement cable splice (see point E on Diagram A2) and $0.02 x 10 for the riser cable necessary for tenth floor access.[897]

2. Verizon's Inflates HARC Charges With Unreasonable Assumptions as to Terminal Blocks and Average Length.

a. Verizon's Assumptions Used To Estimate Terminal Block Costs Are Unreasonable.

Verizon charges for a terminal block in the telephone closet on the floor of the end user when providing *riser* cable (in this case, a riser terminal, see Diagram A2, point F). Verizon also charges for a terminal block in the telephone closet on the floor of the end user when providing a *horizontal* cable (in this case, a horizontal terminal, see Diagram A1, point H). In either case, the 70 cents per month that Verizon proposes to charge is excessive and represents a principal source of the disagreement between AT&T and Verizon.

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[895] Ex. ATT-VZ 19-1 Supplemental, at Diagram A1.
[896] Ex. ATT-VZ 19-1 Supplemental, at Diagram A2.
[897] Ex. ATT-VZ 19-1 Supplemental, at Diagram A2.

> The primary difference between Verizon's cost study and AT&T's cost study is Verizon's claim that the material and labor to install a simple 50-pair punch-down termination [block] costs $442.09. AT&T believes that a reasonable installed cost of such a termination would be $32.00.[898]

The principal reasons for Verizon's over estimate of terminal block costs are that:

- ?? Verizon assumes an unnecessary 20-foot length of 50 pair cable (stub), which adds an unnecessary splice point to join a 50-pair cable to a 300-pair cable;
- ?? Verizon assumes labor productivity which is a tiny fraction of the labor productivity found appropriate by the FCC and determined by Mr. Donovan to be appropriate in his own experience; and
- ?? Verizon assumes a fill factor of 40% based on an unsupported assumption that the fill factor for house and riser cable will be the same as that of distribution plant.[899]

Each of these factors is discussed below.

(1) Verizon assumes an unnecessary 20-foot length of 50 pair cable (stub), which adds an unnecessary splice.

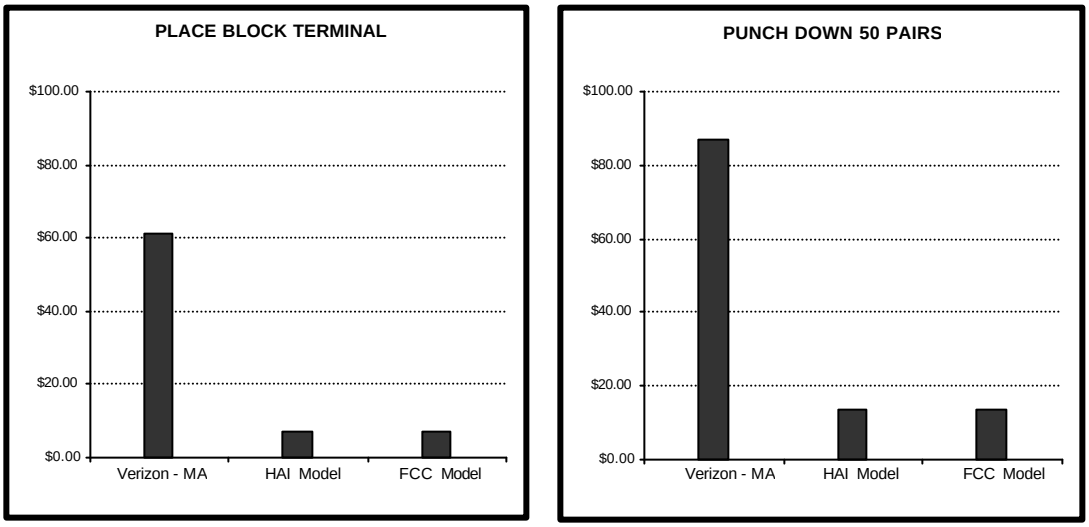
Verizon modeled its costs on the assumption that it would place a 20-foot length of 50 pair cable (stub) in connection with each terminal block. The cable stub and the resulting splice that it requires is unnecessary, however. Mr. Donovan, who has himself placed horizontal and supervised others placing it, explained in some detail why this is so.[900]

(2) Verizon assumes unduly low labor productivity.

Verizon assumes labor time necessary to place a punchdown terminal block and punch down 50 pairs onto such a terminal block that exceed by orders of magnitude labor times found appropriate by the FCC and determined to be reasonable in the HAI Model. The chart below

[898] Ex. ATT-28, Donovan Rebuttal, at 37.
[899] Ex. ATT-28, Donovan Rebuttal, at 37-41
[900] Ex. ATT-28, Donovan Rebuttal, at 38-40

compares Verizon's assumptions with those in the FCC's Synthesis Model and with those in the HAI Model.[901]



In its *Inputs Order,*[902] the FCC accepted a reasonable set of costs as follows:

Item	FCC Analysis & Recommendation	Verizon Recommendation
Place 50-pair punchdown terminal	1 minute per terminal	44 to 98 minutes per terminal-Floor 139 to 308 minutes per terminal-Basement
Punch down pairs onto terminal	200 pairs per hour	21 to 48 pairs per hour-Floor 7 to 16 pairs per hour-Basement
Material cost of a 50-pair punchdown terminal	$6.00 each	Not explicitly identified in HARC cost study
Labor Rate	$60.00 per hour	Not explicitly identified in HARC cost study

As the above comparisons make clear, Verizon's assumptions regarding labor time are unreasonable. Moreover, Mr. Donovan's own experience installing such terminal blocks and supervising the installation of them also confirms that Verizon's assumptions are inflated.[903]

[901] Ex. ATT-28, Donovan Rebuttal, at 40
[902] FCC 99-120, FNPRM, *Inputs Order*, May 28, 1999, Appendix D-2.
[903] Tr. 2938-2939, 2/5/02 (Donovan) (emphasis added).

(3) Verizon assumes a house and riser cable fill factor of 40% based only on the undemonstrated assumption that the house and riser fill factor should be the same as the distribution plant fill factor.

Verizon's assumption of a 40% fill factor for HARC has a substantial impact on its cost estimate. Despite the significance of this assumption, Verizon made no special effort to determine what an appropriate fill factor should be for house and riser cable. Instead, Verizon simply used the same fill factor that it used for distribution plant (40%).[904] For the reasons discussed below, a fill factor for house and riser cable should be higher than a fill factor for general distribution plant. If the Department nevertheless concludes that the fill factors for house and riser cable and general distribution plant should be the same, it should require Verizon to adjust its house and riser fill factor in accordance with its decision in this case regarding distribution plant fill factor. (See Section IV.A.2.b(3).)

The purpose of the fill factor is to allow for under utilization of the built network on account of uncertainty and fluctuation in actual use. Among the factors that affect uncertainty of use of distribution plant are changes in zoning, amount and pace of development, and the likelihood of additions to existing subdivision and even existing houses within subdivisions.[905] None of these influences are present in the case of HARC, however, because "the overall size and layout of an office or apartment building will change little."[906] The New York PSC has concluded that house and riser fill factors should be five percentage points higher than distribution plant fill factors.[907] For the same reasons, the record in this case also supports setting the fill factor for house and riser cable at least five percentage points higher than the fill factor assumed for distribution plant.

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[904] Ex. VZ-38a, Verizon Recurring Cost Panel Surrebuttal, at 96.
[905] Ex. ATT-36, Verizon Recurring Cost Panel Direct, at 78-83.
[906] Tr. 2658, 2/1/02.
[907] New York UNE Rates Order, at 101 and 118.

b. Verizon's Assumption that Horizontal Cables Average 150 Feet is Unsupported.

Verizon's proposed recurring charge for horizontal cable is based on an unsupported assumption that horizontal cable will average 150 feet long.[908] Since horizontal cable runs between the telephone closet on a floor and an end user's unit, and since the telephone closet is usually placed in or near the elevator banks in the middle of each floor, such an assumption requires a building that is approximately 300 feet from one side to the other – the size of a football field.[909] That is not plausible, especially as the average-sized multi-tenant unit building.

In order to test Verizon's unsupported assumption of 150 feet, AT&T conducted a survey of MTUs. While the survey MTUs were not scientifically selected, there is no reason to believe that the result over or underestimates the length of horizontal cable, and in any event it provides a reasonableness check on Verizon's completely unsupported assumption of 150 feet.[910] In a survey of 23 locations, AT&T found that the average distance for horizontal cable is 90.6 feet.[911]

Accordingly, Verizon's assumed cost for horizontal cable should, at a minimum, be reduced by 39.6% [1.00 – (90.6/150) = .396].

c. Correcting the Assumptions for Terminal Blocks and Cable Length Produces a More Reasonable Cost Estimate.

Mr. Donovan adjusts Verizon's cost study to show what it would produce for horizontal cable, including the horizontal terminal block, using more reasonable assumptions for (a) labor productivity and material cost, (b) house and riser cable fill factors, and (c) average length of horizontal cable. Although Mr. Donovan believes that Verizon's assumption of a 20-foot length

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[908] Ex. VZ-36, Verizon Recurring Panel Direct, at 121.

[909] Tr. 2944, 2/5/02 (Donovan) ("buildings that are football-field long and football-field wide seemed too big to me").

[910] Tr. 2945, 2/5/02 (Donovan).

[911] Ex. ATT-28, Donovan Rebuttal, at 36-37.

of 50 pair cable (stub) is unnecessary and adds unnecessary costs, he did not alter that assumption for purposes of his adjustment to Verizon's cost study.[912]

Under Verizon's unmodified cost study, the assumed monthly cost of horizontal cable and terminal block is approximately one dollar. If Verizon's cost study is modified to adjust for more reasonable assumptions as discussed above, its monthly costs are approximately 17 cents.[913] As Mr. Donovan explains:

> Labor content is the culprit. AT&T estimates that it takes 26 minutes to travel between floors and place a simple $6 punch-down terminal block and backboard. Verizon assumes that it takes 352 minutes for the same function.[914]

Verizon's only defense for the unrealistic travel times is that it loaded other undefined and unexplained costs into this estimate. One of the few factors that it actually specified as having been loaded into the travel time estimate per floor is the travel time between the building where the work is to be performed and the technician's office location. Such travel time, however, would add little to a terminal block installation on a *per floor* basis, and performed at the same time as other jobs are being performed.[915]

For the reasons discussed above, the Department should reject Verizon's proposed recurring charges for house and riser cable and adopt more reasonable recurring charges. The Department should adopt either the recurring charges proposed by AT&T, or the lower ones that would result from a Verizon cost study modified to adjust for Verizon's unreasonable labor time, fill factor and cable length assumptions.

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[912] Ex. ATT-28, Donovan Rebuttal, at 41.

[913] Ex. ATT-28, Donovan Rebuttal, at 43. As Mr. Donovan notes, this 17 cents per month estimate from Verizon's cost study is even less than the 27 cents per month from AT&T's cost study, because AT&T assumes a higher monthly carrying factor, and assumes a 25 pair cable compared to Verizon's 300-pair cable. AT&T's 25 pair cable assumption increases the per pair cost. See, Ex. ATT-28, Donovan Rebuttal, at 42.

[914] Ex. ATT-28, Donovan Rebuttal, at 42.

[915] Tr. 2939-2940, 2/5/02, p. (Donovan).

3. Verizon's Proposed Charge For An Intermediate Terminal Block Is Prohibited By Department Order.

As noted above, Verizon proposes to install an intermediate termination block for CLECs to cross-connect to termination blocks; a method that the Department previously rejected.[916] However, Verizon nonetheless proposes a non-recurring charge of $112.93 for the service establishment of an intermediate termination block.[917] As the Department previously found,[918] and as Mr. Donovan has explained,[919] this is an attempt by Verizon to impose unnecessary costs on its competitors. There is no need for the intermediate terminal. Instead, a direct cross connection from one terminal to the other should be performed.[920]

Verizon acknowledges that the Department did, in fact, rule that Verizon may not force the CLEC to pay for a backboard and terminal block.[921] The panel then notes:

> What the Department has ruled is that the arrangement is optional, and that is exactly what Verizon MA is proposing in this case. A review of the Massachusetts Wholesale Tariff (DTE MA No. 17, Part B, Section 12, Page 3) clearly shows that Verizon MA has complied with the Department's ruling and our proposal here is fully compliant with the tariff.[922]

Unfortunately, what Verizon gives with one hand, it tries to take away with another. After many months of attempts to obtain from Verizon its proposed rate applications with respect to house and riser cable, Verizon finally filed a supplemental response to AT&T-VZ 19-1, which became part of the record upon its filing on February 22, 2002, as a supplement to an existing exhibit. In AT&T-VZ 19-1 Supplement, Verizon appears once again to propose placement of an intermediate terminal. At best, Verizon's position on this issue is ambiguous, and AT&T has

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916 *See Consolidated Arbitrations* Docket, Phase 4-L Order at 36 (October 14, 1999).
917 Ex. ATT-VZ 19-1 Supplement.
918 *See Consolidated Arbitrations* Docket, Phase 4-L Order at 36 (October 14, 1999).
919 Ex. ATT-28, Donovan Rebuttal at 33.
920 Ex. ATT-28, Donovan Rebuttal at 34-35 (emphasis in original).
921 Ex. VZ-38A, Panel Surrebuttal at 96.
922 Ex. VZ-38A, Panel Surrebuttal at 96.

learned the hard way that, when Verizon has control over a facility that is essential for its rivals to compete, it will construe any ambiguity in its own favor.

The Department needs to *re*clarify that AT&T and other CLECs can cross-connect directly to Verizon's horizontal and riser cable in the most efficient manner possible. The Department should reject any attempt by Verizon to mandate a charge for the establishment of an intermediate block.

D. DSL: Verizon Has Failed to Propose Important DSL Charges, and the Charges It Has Proposed Are Inflated.

1. Given Verizon's Failure to Propose Any Recurring Charges for Fiber Fed DSL Loops, the Department Should Approve AT&T's Proposed Recurring Charge.

Although AT&T and Verizon disagree vigorously on the forward looking cost of a loop, both AT&T and Verizon agree that the recurring charges for all two wire and four wire DSL capable loops should be the same as the properly set recurring charges for two wire and four wire analog loops, when the entire loop is provisioned over copper.[923] Therefore, the Department should adopt for the recurring charges for a DSL capable copper loop the same charges that it adopts for loops.

With respect to fiber fed DSL capable loops, however, a different issue is raised. Despite the FCC's requirement that ILECs provide DSL capable fiber fed loops to CLECs at UNE prices when the ILECs use them to provide DSL service to their own customers, and despite Verizon's own proposal for providing such functionality to CLECs in Docket D.T.E. 98-57 (Phase III), Verizon claims here that there is no such thing as a DSL capable fiber fed loops and fails to propose a recurring charge for it. AT&T has proposed a rate for fiber-fed DSL loops that covers

[923] Ex. Vz-36, Verizon Recurring Cost Panel Direct, at 96-97; Exh. AT&T 26, Mercer Direct, at 68-69.

the cost of the loop, the cost of upgrading the RT to accept ADSL line cards, and the fiber feeder capacity for both the data and voice signals.[924]

In the first subsection below, AT&T presents its proposed recurring charge for DSL capable fiber fed loops and asks the Department to approve it, given the absence of any countervailing evidence from Verizon. In the next two subsections below, AT&T explains that (i) Verizon's purported justification is wrong as a factual matter and belied by its own admissions, and (ii) Verizon's failure to propose a charge for fiber fed DSL capable loops is a violation of FCC requirements.

a. The Department Should Adopt a Recurring Monthly Charge of $11.28 for DSL Capable Fiber Fed Loops.

Using the HAI model, Dr. Mercer estimates the recurring monthly cost of a DSL capable fiber fed loop. The loop that was modeled includes cooper distribution plant, upgrades to the remote terminal to permit the introduction of line cards that split the voice signal from the data signal for the purpose of placing each on its own pathway over fiber back to the central office, and the fiber feeder capacity for both signals.[925] Dr. Mercer estimates the cost of both ADSL two wire and HDSL 4 wire loops.[926] (In the case of HDSL, Mr. Mercer also estimates the cost of such a loop when the ILEC equips it with the requisite electronics.) His costs and proposed rates are summarized below.[927]

UNE-Type	ADSL	HDSL 4-Wire
DSL Capable	$11.28	$12.65
DSL Equipped	NA	$32.23

In the absence of any evidence from Verizon that impeaches or undermines the foregoing proposed rates for DSL capable fiber fed loops, and in the absence of any affirmative evidence

[924] Ex. ATT-25, Mercer Direct at 15.
[925] Ex. ATT-25, Mercer Direct at 15.
[926] Ex. ATT-25, Mercer Direct at 14-16, 65-69.

from Verizon proposing costs and charges for DSL capable fiber fed loops, the Department should adopt the AT&T rates proposed above.

b. There Is No Sound Basis for Verizon's Failure to Propose Recurring Charges For Fiber Fed DSL Loops.

When filing its cost study, Verizon chose not to propose recurring charges for fiber-fed DSL loops. Verizon did this despite the fact that the Department opened this docket in order to determine rates for UNEs and interconnection that will be in place over a five year period.[928] Because DSL over fiber ***is*** technically feasible and will be provided within the next five years, the Department should require rates for this service.

Verizon's primary argument for not proposing rates for a DSL UNE was that it is impossible to provide DSL over fiber because, according to Verizon, DSL is a purely copper based technology.[929] This argument, however, was contradicted by another argument made by Verizon – that the Department defer its decision on this issue here because the Department is already considering the method by which a fiber-fed DSL UNE loop would be provided in D.T.E. 98-57 (Phase III).[930] Verizon cannot have it both ways. Since the Department is considering how Verizon should be required to provide DSL over fiber fed loops in D.T.E. 98-57, it is necessary for the Department to adopt rates for it in this docket.

More importantly, Verizon's claim that DSL over fiber is not technically feasible is simply untrue as admitted by internal Verizon documents. Verizon's own planning guidelines indicate that **<Begin Proprietary>** XXXXXXXXXXXXXX XXXXXXXXXX XXXX XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX **<End**

(..continued)

927 Ex. ATT-25, Mercer Direct at 69.

928 DTE 01-20, Vote and Order to Open Investigation, 1/12/01.

929 Ex. Vz-18, Verizon NRC/DSL Panel Surrebuttal, at 56-59.

930 Ex. Vz-18, Verizon NRC/DSL Panel Surrebuttal, at 56-59.

Proprietary>.[931] Thus, Verizon's own internal documents demonstrate that DSL can be provisioned over fiber-fed lines. As Mr. Donovan explained, Alcatel now offers a single line card for the RT that "performs the splitting function as well as performing th[e] DSLAM, the DSLAM function all integrated into a single card, and that the equipment itself in its backplane then segregates the data and voice, sends the data as a separate packetized data stream, and puts the voice into, back into, the integrated digital-loop carrier system."[932]

Verizon's inconsistent and false reasons for not filing proposed DSL UNE loop rates is not a sufficient justification for Verizon's failure to comply with Department directives. The Department should require rates for a DSL UNE, just like it has required rates for all other services that will be available during the next five years.[933]

c. Verizon's Failure To Propose Recurring Charges For Fiber-Fed DSL Loops Violates FCC Orders.

In any event, Verizon's claim that fiber fed loops cannot be DSL capable is contradicted by the well informed and detailed requirements of the FCC that require ILECs to provide DSL capable fiber fed loops to CLECs as UNEs. In its January 19, 2001 Linesharing Reconsideration Order, the FCC stated:

> We clarify that the requirement to provide line sharing applies to the entire loop, even where the incumbent has deployed fiber in the loop (e.g., where the loop is served by a remote terminal). Our use of the word "copper" in section 51.319(h)(1) was not intended to limit an incumbent LEC's obligation to provide competitive LECs with access to the fiber portion of a DLC loop for the provision of line-shared xDSL services. As noted above, incumbent LECs are required to unbundle the high frequency portion of the local loop even where the incumbent LEC's voice customer is served by DLC facilities. The local loop is defined as a transmission facility between a distribution frame (or its equivalent) in an incumbent LEC central office and the loop demarcation point at an end user customer premises, including inside wire owned by the incumbent LEC. By using the word "transmission facility" rather than "copper" or "fiber", we specifically intended to ensure that this definition was technology-neutral. … When we

[931] Ex. CC-VZ 2-17, pages 3-4, 13-14, 16-17, 26-27 (proprietary).
[932] Tr. 2898, 2/4/02 (Donovan).
[933] DTE 01-20, Vote and Order to Open Investigation, 1/12/01.

> concluded in the Line Sharing Order that incumbents must provide unbundled access to the high frequency portion of the loop at the remote terminal as well as the central office, we did not intend to limit competitive LECs' access to fiber feeder subloops for line sharing.[934]

The FCC imposed this requirement because it found "that it would be inconsistent with the intent of the Line Sharing Order and the statutory goals behind sections 706 and 251 of the 1996 Act to permit the increased deployment of fiber-based networks by incumbent LECs to unduly inhibit the competitive provision of xDSL services."[935]

Given the FCC's clear and unambiguous requirements, the Department should reject Verizon's baseless assertion that there is no such thing as a fiber fed DSL capable loop and approve AT&T's proposed rates in the absence of any evidence to the contrary.

2. Verizon's Proposal For Non-Recurring Charges To Recover OSS Costs For Line Sharing Should be Rejected.

a. Verizon May Not Recover Historic OSS Costs.

Verizon is seeking to recover historic expenses that it claims to have incurred to develop the new line sharing OSSs.[936] This is improper. The Telcordia (capital) and TGS (IS) costs that Verizon seeks to recover are historic costs, and Verizon presents no evidence that they reflect the forward-looking cost of provisioning these services.[937]

The Department has previously concluded that it is inappropriate for Verizon to include historic costs in proposed OSS pricing. "The pricing of UNEs, per the TELRIC method, is not an exercise in cost recovery. … A TELRIC proceeding is not the place to enable or ensure that an incumbent local exchange carrier recovers its historic costs."[938] Verizon has not met its

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[934] *FCC's Line Sharing Clarification Order*, ¶ 10.

[935] *FCC's Line Sharing Clarification Order*, ¶ 13. See also, *id*., n. 23, citing to Rhythms and Covad comments ("noting assertions by Covad and Rhythms that, in many instances, it may be cost prohibitive to collocate a traditional DSLAM at a remote terminal, there may not be space for requesting carriers to do so, and the means to connect the DSLAM to the unbundled fiber feeder network element may not be commercially viable").

[936] RR DTE-50, ¶ d.

[937] RR-DTE-41.

[938] *Consolidated Arbitrations* Docket, Phase 4-L Order at 46 (Oct. 14, 1999).

burden of proving that its claimed DSL OSS costs are forward-looking, and that they avoid being an impermissible attempt at recovery of past expenses. These historic costs should be rejected for the same reasons that Verizon's original OSS cost study was rejected in the *Consolidated Arbitrations* proceeding.

b. Verizon's Common Overhead Factor Already Recovers Its OSS Costs For Line Sharing.

Even if it were not wholly backward looking, Verizon's line sharing OSS cost study should be rejected because it seeks to recover for categories of costs that are already covered in the general ACFs used to calculate all other recurring charges proposed by Verizon. Verizon proposes to recover OSS costs for Line Sharing via a per line recurring charge.[939] According to Verizon, this charge will recover "one-time expenses in connection with the required Telcordia-provided OSS software for line sharing (and its associated installation and testing)."[940] Thus, the entire basis of Verizon's proposed Line Sharing OSS charge is for a software upgrade and, presumably, technical support of that software.[941] Because Verizon is already recovering these costs in other charges proposed in this docket, the Department should reject Verizon's attempts to inflate its UNE costs through double-counting here.[942]

Verizon's proposed Line Sharing OSS charges are for software upgrades. Verizon already recovers these computer costs through its Common Overhead ACF. This common overhead factor is applied by Verizon to gross up all of its claimed recurring costs.[943] The Common Overhead ACF is the place in Verizon's cost study where it recovers for, among other

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[939] Ex. Vz-36, Verizon Recurring Cost Panel Direct, at 113.

[940] Ex. Vz-36, Verizon Recurring Cost Panel Direct, at 113.

[941] Ex. Vz-36, Verizon Recurring Cost Panel Direct, at 113.

[942] Even if Verizon's proposed non-recurring charges for DSL loops were not double-counting, its method for estimating such charges produces inflated results. *See* RR-DTE-41.

[943] *See, e.g.*, Ex. VZ-37, Verizon Recurring Cost Study, Part B-1, Massachusetts Monthly Loop Cost Summary, lines 4, 11, 18, 25, 32 (loop rates); Part C-1, Section 1, Page 1, Line 20 (analog line port rate); Part C-2, Section 1, Page 1, Line 21 (local switch usage rate).

things, computer costs and the costs of information management personnel.[944] Thus, the large and broad categories of costs covered by the Common Overhead ACF subsume the smaller, narrower costs that Verizon seeks to recover in its proposed Line Sharing OSS charge.

As mentioned above, in the discussion concerning Verizon's attempts to double-recover its DUF charges, see Section III.C.8.b. beginning at page 96, the Department found in its Phase 4-L and 4-O Orders that Verizon should not be able to assess specific charges for computing and related support costs that fall within categories of common costs which are recovered through general factors applied in calculating all UNE rates.[945] Just as with its DUF proposal, Verizon has ignored this mandate of the Department and attempted to recover specific charges for computing and related support costs for Line Sharing OSS which are already recovered through general factors applied in calculating all UNE rates. Thus, for the same reasons that the Department should reject Verizon's proposed DUF charges, it should also reject Verizon's proposed Line Sharing OSS charge.

c. Verizon Knows That Its Proposed Non-Recurring Charge For Line Sharing-Related OSS Is Weak.

Apparently aware that its position regarding a separate charge for OSS cost recovery is weak, Verizon recently entered into a settlement agreement in New York in which it agreed not to seek recovery of OSS costs for Line Sharing, Line Splitting, Unbundled Sub-Loop Arrangements, Feeder Sub-Loops, and other DSL-related items.[946] There is no reason that Massachusetts end-users should have to pay for Verizon's double recovery of its DSL-related OSS costs when New York end users do not. The Department should reject Verizon's attempts to inflate its UNE costs through double-recovery of Line Sharing OSS costs.

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[944] Ex. VZ-37, Verizon Recurring Cost Study, Part G-2, Tab 2.

[945] *Consolidated Arbitrations* Docket, Phase 4-O Order at 9 (Jan. 10, 2000), Phase 4-L Order at 47-49 (Oct. 14, 1999).

3. Loop Conditioning Costs Would Not Be Incurred In A Forward-Looking Network.

In its filing, Verizon has claimed that it should now be allowed to charge for loop conditioning, even though such relief has recently been denied by the Department. Verizon's argument appears to be based on its shift from modeling an all fiber network to modeling a network that is part fiber and part copper.[947] Regardless of this shift, however, Verizon's argument is still based on the inefficiencies of its embedded network and is not TELRIC compliant.

Even when copper is used in a forward-looking network, that does not mean that loop conditioning is required.[948] Conditioning costs arise from the removal of load coils and excessive bridge taps.[949] No copper loop in a forward-looking network would contain load coils and excessive bridge taps.[950] CLEC Coalition witness Mr. Stacy properly pointed out that, even in the network that serves as the basis of Verizon's cost study, no loop conditioning would be required.[951]

For example, load coils are only required in copper loops that are more than 18,000 feet long.[952] Because, in a forward-looking network, there would be no cable runs with more than 18,000 feet of copper, load coils would not be required. Notably, in Verizon's cost study, it assumes that all cable runs of more than 10,000 feet will be fiber and that copper will only be used on shorter runs.[953] Thus, the network construct in Verizon's own cost study precludes the

(..continued)

[946] Joint Proposal Concerning Verizon Incentive Plan for New York, NY PSC 00-C-1945, at 13-14 (filed Feb. 8, 2000).

[947] Ex. ATT-28, Donovan Rebuttal, at 29.

[948] Ex. ATT-28, Donovan Rebuttal, at 30.

[949] Ex. ATT-28, Donovan Rebuttal, at 30.

[950] Ex. ATT-28, Donovan Rebuttal, at 30.

[951] Tr. 429-430, 1/16/02 (Stacy).

[952] Ex. ATT-28, Donovan Rebuttal, at 30-31.

[953] Tr. 388, 1/16/02 (Stacy); Ex. ATT-13, Walsh Direct at 23-24.

need for load coils and demonstrates the impropriety of Verizon's attempts to recover loop conditioning costs.

Furthermore, if Verizon had merely followed its own engineering guidelines, it would not even require loop conditioning in its current embedded network. The Serving Area Concept employed by Verizon since 1972 eliminated excessive bridged taps for all loops and the Carrier Serving Area Concept employed by Verizon since 1980 eliminated all load coils, which are required whenever a loop has in excess of 18,000 feet of copper cable.[954] If Verizon had been following its own practices, then it would not require loop conditioning of any loop that it has put into service since 1980. It certainly will not require loop conditioning in a forward-looking network.

Thus, whether recurring costs for a loop are based on an all fiber-fed network, or whether costs for a loop are based on copper feeder cable for short loops plus fiber-fed DLC for long loops, the outcome is the same.[955] Verizon should be denied any additional non-recurring charges to remove loop defects that will not exist in a forward-looking network. Any attempts to recover loop conditioning costs, therefore, are attempts by Verizon to recover for expenses related to its current, inefficient, embedded network—not expenses that Verizon would incur in connection with a forward-looking network. Verizon's attempts to recover loop conditioning costs are not TELRIC compliant and should be rejected by the Department.

Finally, should the Department abandon its established precedent and allow Verizon to recover loop conditioning costs,[956] those costs should be recovered as part of a recurring rate, not as a separate NRC. Loop conditioning, much like loop maintenance, provides a benefit to the

[954] Ex. ATT-28, Donovan Rebuttal, at 30-31.
[955] Ex. ATT-28, Donovan Rebuttal, at 31.
[956] See explanation in Section VI.A as to why such costs should not be recovered at all under the TELRIC methodology.

network and all subsequent users of the network.[957] Southwestern Bell has offered CLECs a recurring rate for loop conditioning.[958] Verizon's proposal to recover such costs as part of a nonrecurring rate would force the CLEC first seeking to use a conditioned loop to incur, as a sunk cost, the entire cost of such conditioning. The barrier to competitive entry this creates is obvious. Recovering this cost through a recurring rate assures that all who benefit for such work will share that cost proportionately.

4. The Proposed Loop Qualification Charges Are Excessive And Not Based On The Use Of Forward Looking Technology

Verizon estimated its loop qualification charge on the basis of assumptions that reflect an antiquated, inadequate and backward looking method for storing and accessing loop information. As a result, its proposed charges for loop qualification are excessive even if CLECs were able to obtain complete and adequate information. But it is worse than that. The method that Verizon assumes for storing and accessing loop information does not comply with FCC requirements and does not provide the CLECs with what they need. As explained below, Verizon's claims that its database complies with FCC requirements are wrong and its estimate for loop qualification charges are excessive. Instead, as Mr. Donovan testifies, the cost of a loop information query, when using a forward-looking, mechanized system for storing and accessing loop information, should be a simple database DIP charge.[959] A simple database charge, therefore should apply, even where Verizon's cumbersome method requires manual intervention.

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[957] Ex. ATT-13, Walsh Direct at 24.
[958] Tr. 405-06, 1/16/02 (Stacy).
[959] Ex. ATT-28, Donovan Rebuttal, at 31

a. Verizon Provides Only Loop Information It Has Selected, Rather Than Access To All Of Its Loop Information.

The FCC could not be clearer regarding the ILEC's responsibility for providing to CLECs the same loop information available to the ILEC.[960] Verizon says that it is building a mechanized data base that provides information limited to loop length and an indicator simply indicating that the loop is deemed "qualified." Says Verizon:

> The principal loop qualification information that is available from the Database and that would be of interest to CLECs is the total metallic loop length (including bridged taps), as determined by an MLT test. *The Database will also indicate, however, whether the loop is qualified for the offering of DSL service*. (A loop is *deemed* qualified for DSL if the total loop length, including bridged tap, is less than 15,000 feet, if the loop is not served by DLC, and if T1 is absent from the loop's binder group.)[961]

But that is far from adequate. Verizon is obligated to provide "nondiscriminatory access to the same detailed information about the loop that is available to the incumbent, so that the requesting carrier can make an independent judgment about whether the loop is capable of supporting the advanced services equipment the requesting carrier intends to install."[962] As the FCC has made clear, this means that Verizon "must provide access to the underlying loop information and may not filter or digest such information to provide only that information that is useful in the provision of a particular type of xDSL that the incumbent chooses to offer."[963]

Verizon made the unilateral judgment that loop length information was all the CLECs needed and that is all. Verizon does not provide all of the information regarding loop length that is generated by the method it uses, "MLT" (a method that is, as explained below, inferior to others for obtaining loop length information). Verizon instead takes the loop length information provided by the MLT and filters it to provide only some of the information the MLT provides.

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960 *FCC's UNE Remand Order*, ¶¶ 427-428 (footnotes omitted; emphasis added).
961 Ex. Vz-36, Verizon Recurring Cost Panel Direct, at 99-100 (emphasis added).
962 *FCC's UNE Remand Order*, ¶¶ 427-428 (footnotes omitted; emphasis added).
963 *Id.*

When developing the database for CLECs, instead of permitting a download of all the MLT information, Verizon took the time to deliberately write its program to exclude the specific fault information regarding voltage, capacitance and resistance that the MLT system provides to Verizon. Verizon has apparently developed its database to frustrate CLEC entry and thereby thwart competition. And it has most certainly done exactly what the FCC prohibits ILECs from doing, that is to "filter or digest such information" by determining for the CLEC the type of information that will be made available in its database to evaluate whether a loop is qualified or not.

b. Verizon Uses A Method For Determining Loop Length That Ensures That Even This Minimal Information Provided Is Inaccurate.

Even if, however, Verizon had provided a complete download of the MLT test into its proposed CLEC database, Verizon would not have developed a loop qualification mechanism that provides the information necessary to accurately pre-qualify a loop. The MLT test is not even a reliable indicator for loop length.[964] There are a number of factors that can cause errors that the MLT test does not take into consideration, such as leakage, alternating current and moisture just to name a few. So, if Verizon had actually made an evaluation of the options available to implement a forward-looking, least cost method to efficiently qualify a loop, making what Verizon terms as a significant investment to build a database based on the fault ridden out put of the MLT test results is not an appropriate choice, especially given the other options available to Verizon at the time.

c. Verizon Uses A Different And Superior Tool For Itself.

At the same time that Verizon proposes for CLECs an inadequate pre-qualification database, it uses for itself a superior tool for determining whether the loop is qualified for DSL.

[964] Ex. ATT-28, Donovan Rebuttal, at 24-26.

Verizon has touted the superiority of its new tool from Teradyne, named "Celerity." Verizon has proclaimed that:

> ?? Verizon Communications (NYSE:VZ) has placed a multi-million dollar order for key features of Celerity, a comprehensive ADSL test system *solution that pre-qualifies copper wire for broadband services in less time than other methods and at significantly reduced costs.* Celerity provides Verizon with very accurate detection of load coils and verification of correct splitter installation.
>
> ?? Verizon's initial need was to address load coil and central office splitter issues. With the Celerity system infrastructure in place, Verizon is positioned to add additional Celerity enhancements in the future providing the ability to perform mass qualification of their millions of copper loops.
>
> ?? [Celerity] reduces Verizon's dependence on switch based testing and manual methods to verify network equipment configurations.
>
> ?? Celerity can detect the presence and verify correct installation of exchange splitters in the network. This reduces manual verification and provides broadband service to consumers faster.
>
> ?? Celerity detects load coils installed in the network so they can be removed before consumers attempt to go online. This results in fewer customer problems when service is turned up.
>
> ?? Celerity's measurements provide LECs the capability to pre-qualify every line in the current voice network using the current switching infrastructure. This allows the LEC's to meet the quality and cycle time requirem*ents of the market at a significantly reduced cost.*
>
> ?? Celerity reduces the effort and cycle time to qualify lines previously requiring skilled engineers using network drawings by automatically detecting impairments in the network that must be removed or repaired to support DSL service. This provides *real-time accuracy* to the information in the records database and makes *DSL service initialization more reliable*.[965]

Verizon's database tool has proven enormously successful and, more importantly for the purposes of this case, it is not an "experimental" tool used only in "pilot" projects. Verizon has

[965] Ex. ATT-28, Donovan Rebuttal, Exhibit JCD-2, Press Release April 24, 2001, at JCD-2.1-2.2 (emphasis supplied).

represented that the Celerity system was "testing over 20 Million subscriber lines since the product was launched on June 5, 2000."[966] Verizon goes on to state, in pertinent part:

> ?? Celerity augments line record systems to enable accurate pre-qualification of copper loops for DSL services by testing *all lines in the network* by directory number, *refreshing information in the line record database weekly or monthly*, and operating independently of other systems without requiring complex interfaces.
>
> ?? Celerity *accurately qualifies millions of lines in hours* enabling Local Exchange Carriers (LEC's) *to test every line exposed to DSL every month.* In addition, Celerity enables LEC's to deploy more DSL sooner by increasing the pool of available DSL-ready lines and increasing the productivity of the provisioning process.
>
> ?? Celerity is a product that addresses the key business issues of DSL: provisioning, loop qualification and service assurance. . . . The proven technology allows customers to successfully meet their goal of speeding up and dramatically reducing the cost of DSL deployment." [967]

A simple comparison shows the disparity between the detection capabilities of the Verizon proposed CLEC pre-qualification database and the electronic Teradyne pre-qualification tool available to Verizon. The detection capabilities of the two alternatives are as follows.

PROPOSED CLEC DATABASE	TERADYNE TOOL
- Loop Length	- Loop Length. - Loss, accounting for the presence of bridged taps. - Presence of Load Coils. - Imbalance Faults. - Metallic Faults. - Termination Detection, including splitters

In addition, the Teradyne tool accurately qualifies millions of lines in hours and develops a database that separates lines based on whether they are qualified to install immediately, lines that require conditioning and lines that are disqualified, while the proposed CLEC database can pre-qualify a maximum of 6 (six) lines per hour.

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[966] Ex. ATT-28, Donovan Rebuttal, Exhibit JCD-2, Press Release April 24, 2001, at JCD-2.3.

[967] Ex. ATT-28, Donovan Rebuttal, Exhibit JCD-2, Press Release April 24, 2001, at JCD-2.3 (emphasis added).

The joint Verizon and Teradyne press releases contradict the Verizon Panel Surrebuttal Testimony in this case.[968] The Panel Testimony states that the Teradyne tool is simply another tool for compiling loop information and will be used in a few offices. If this were simply another tool, it is unlikely that Verizon would place a "multi-million dollar order" for a tool that will pre-qualify a loop "in less time than other methods and at a significantly reduced cost." In fact, Verizon purchased the Teradyne tool to give it an advantage when selling to end-users, with the additional benefits of cost and efficiency savings. Contrary to the Verizon Panel Testimony, the Teradyne tool permits Verizon to pre-qualify millions of lines in Verizon's current network, not just a few central offices. Moreover, Verizon's intent to use the Teredyne tool for all lines is evident from the fact that, in the press release, Verizon identifies the fact that it provides 109 million access line equivalents. This figure clearly includes Verizon as well as the former GTE.

In any event, Verizon cannot limit its responsibilities to CLECs by claiming that the Teradyne tool will only be used in a few offices in the former GTE territory and by implication is inapplicable to the Massachusetts market. The FCC has made explicit requirements regarding loop qualification information. To the extent that Verizon or its affiliate has access to the information available from the Teradyne tool, Verizon must also provide non-discriminatory access to a requesting competitor in the same format, *i.e.*, manual or electronic via an electronic interface.[969] Therefore, the Department should require Verizon to make the Teradyne tool available for use by CLECs that choose to use the tool to pre-qualify loops in Massachusetts. Anything less would be discriminatory, because the tool Verizon provides for use by CLECs in Massachusetts does not provide real time testing information to CLECs which supplements the Verizon records database, nor does it have the ability to detect CO splitters and load coils.

[968] Ex. Vz-18, Verizon NRC/DSL Panel Surrebuttal, at 66-67.
[969] *FCC's UNE Remand Order*, ¶ 429.

In keeping with the principle of parity and the FCC requirements, since Verizon and its affiliate have access to a sophisticated electronic database that performs the loop pre-qualification function, CLECs should also have access to the same superior loop information and in the same manner as Verizon. Furthermore, during the period before the merger Verizon stated that the two companies, Verizon and GTE, would adopt each other's best practices in an effort to bring about greater efficiencies and cost savings. It is evident that the use of the Teradyne tool is one of those best practices. CLECs that choose to use the loop pre-qualification mechanism provided by Verizon should not be forced to incur high costs as well as inefficient and ineffectual service because Verizon in Massachusetts did not follow corporate policy and use the best practice for loop pre-qualification, *i.e.*, the Teradyne tool.

d. If Verizon's Line Sharing OSS Charge Is Not Completely Rejected, It Should Be Substantially Reduced.

Verizon's proposed costs are not TELRIC based and are unnecessarily high, due to Verizon's intentional development of a database for CLEC use that does not meet the need for which it was built and will cause CLECs to incur exorbitant manual charges from Verizon. Those charges come in the form of overstated costs for the ineffectual system that Verizon has developed and the resulting additional charges that the proposed pre-qualification database will cause CLECs, based on the high numbers of false indications that the loop is qualified. This will also result in a significant delay in the customer's service being installed, extremely high manual database search costs to determine why the loop did not work and, if Verizon has its way and it should not, even higher costs to remove the problems on the loop.

As stated in the AT&T Rebuttal Testimony of John Donovan, CLECs should pay no more than a simple data DIP charge for loop pre-qualification, whether or not a manual search is

also required.[970] Since the loop qualification only has to occur once, the database dip charge should be a non-recurring, and not a recurring charge, that is recovered over a specific period of time. The cost should be based on the number of lines requiring pre-qualification.

Moreover, the absolute number requiring pre-qualification should be the number of lines in service as of January 1, 1985, since Verizon's own practices required populating the LFACS database with loop makeup information for lines in service after that date. Accordingly, if Verizon had been following its own practices, the development of a completely new database for all loops would not be necessary. CLECs choosing to use the tool should not pay for Verizon neglecting to do what it should have been doing from 1985 to the present.

If, contrary to AT&T's position, Verizon is permitted to implement and charge for use of its proposed CLEC pre-qualification database, the cost for pre-qualification of the remaining loops, *i.e.*, those in-service prior to January 1, 1985, should be further reduced by the actual number of lines tested since Verizon proposes to qualify, *i.e.*, test, only 5% or 10% of a group of lines depending on the size of the group. Moreover, since the pre-qualification tool will be used by CLECs as well as Verizon, no matter which tool Verizon ultimately is permitted to offer, the cost for the pre-qualification tool that Verizon makes available should be recovered from Verizon retail customers and the CLECs based on the proportionate share of local exchange lines held by Verizon and the CLECs.

5. Verizon's October 2001 Tariff Modifications for Providing DSL Capable Loops to CLECs' UNE-P Customers Is Acceptable, Assuming That No Additional Charges are Required.

AT&T has expressed its concern in this case that Verizon not be permitted to impose any additional charge where a UNE-P arrangement is used to provide DSL data services in addition

[970] Ex. ATT-28, Donovan Rebuttal, at 31.

to voice services.[971] In response, Verizon contended that the terms and conditions reflected in Tariff 17, as modified by an October 5, 2001, tariff filing, have fully addressed these concerns.[972] If by this Verizon means that a CLEC is to pay only the charges related to adding DSL capability and does not pay additional charges related to the existing voice capability, then AT&T agrees that its previously stated concerns are moot.

However, as Mr. Salvatore explained on the stand, Verizon's tariff filing of October 5, 2001, is not a model of clarity.[973] In order to eliminate any potential for confusion, AT&T recommends the following sentence be struck from Part B, Section 22.1.1.D of Tariff 17:

> The addition of data will trigger the conversion of the UNE-P to a 2 wire line split loop (i.e., UNE ADSL compatible loop) and a UNE analog end office switch port.

It should be replaced with the following language:

> The addition of data will not trigger any additional charges for network elements needed to provide voice service.[974]

E. Interoffice Transport: Verizon's Dedicated and Common Transport Costs Are Overstated.

Interoffice transport consists of the transmission facilities, *i.e.* large capacity cables and associated electronic equipment, used to transport calls between two switches, including end office as well as tandem switches.[975] A dedicated interoffice facility is one that a CLEC buys and occupies entirely for its own purposes, meaning that it is "dedicated to a particular [wholesale] customer" and used entirely by that one carrier.[976] In contrast, common or "shared" transport involves facilities used by more than one carrier, each of which pays for its share on a usage basis.[977] Verizon's proposed IOF charges are excessive. Any IOF cost estimate

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[971] Ex. ATT-28, Salvatore Rebuttal, at 6; Tr. 1229, 1/23/02 (Salvatore).
[972] Ex. Vz-18, Verizon NRC/DSL Panel Surrebuttal, at 69.
[973] Tr. 1230, 1/23/02 (Salvatore).
[974] Tr. 1234-1235, 1/23/02 (Salvatore).
[975] Ex. VZ-36, Recurring Cost Panel Direct, at 169.
[976] Ex. VZ-36, Recurring Cost Panel Direct, at 169.
[977] Ex. VZ-36, Recurring Cost Panel Direct, at 173.

must be adjusted to account for the Department's decisions regarding cost of capital and depreciation inputs, as well as proper treatment of merger savings and productivity. In addition, Verizon's proposed IOF charges should be further reduced for the following reasons.

1. The Department Should Set Rates on the Basis of AT&T's Restatement of Verizon's Dedicated and Common Transport Costs.

The cost models of AT&T and Verizon utilize different rate structures for dedicated and common transport costs. Verizon's dedicated transport costs have been developed on a fixed per monthly basis and on a per mile basis. In contrast, the HAI Model has no mileage component to it because of assumptions that the Model makes about circuits transiting fiber rings with redundancy schemes. As such, there is no way to make a straightforward comparison between the two rate structures. For purposes of this analysis, AT&T will rely on Verizon's cost model to provide the starting point for transport costs since the HAI Model only yields a fixed monthly cost for dedicated transport that is not easily translated into a fixed and per mile monthly cost.

Before the Department can use Verizon's IOF study to produce reasonable dedicated transport costs, five adjustments to Verizon's study must be made. First, the number of nodes per SONET ring must be reduced from 6 to 3.79. Second, the costs for digital cross connect systems ("DCS") should be excluded from transport costs, and DCS should be provided as a separate element. Third, Verizon's EF&I factor for transmission equipment should be reduced from 53.2 percent to a more reasonable 36.4 percent. Fourth, Verizon' incorrect 75 percent fill factor for the DS1 to DS0 multiplexing equipment should be changed to 1.00. Finally, Verizon's IOF costs should be reduced to reflect proper cost of capital and depreciation inputs and proper treatment of merger savings and productivity.

For ease of reference, the table below provides AT&T's proposed rates for dedicated transport after the above-listed corrections have been made to Verizon's cost study. As is shown in this table, Verizon revised its original IOF Transport cost model after Steven Turner pointed

out that Verizon incorrectly ran the IOF cost model with the IEC POP option instead of running the model with the IntraLATA option.[978] The IntraLATA cost study option studies the costs for transport between any two of Verizon's central offices.[979] In contrast, the IEC POP cost study option assumes that one end of the transport is always for a central office connected to a CLEC's POP.[980] In its December surrebuttal testimony, Verizon admitted its mistake in running the IOF cost study with the IEC option and produced revised rates after running the model using the IntraLATA option.[981] As shown in the following table, Verizon's revised model produces lower rates for most transport elements, thereby confirming Mr. Turner's criticism that the IEC POP option "skews costs significantly above what Verizon would actually experience between its own central offices – the cost that is to be studied in this proceeding."[982] Mr. Turner utilized the IntraLATA option when he revised Verizon's rates.

Summary of Proposed Interoffice Dedicated Transport Monthly Rates

Rate Element	**Verizon [983] (IEC POP Option)**	**Verizon [984] (IntraLATA Option)**	**AT&T [985] (IntraLATA Option)**
DS0 Dedicated Transport (Fixed)	NA	NA	$18.00
DS0 Dedicated Transport (Per Mile)	NA	NA	$0.04
DS1 Dedicated Transport (Fixed)[986]	$46.42	$53.00	$23.26
DS1 Dedicated Transport (Per Mile)	$1.41	$1.45	$0.88
DS3 Dedicated Transport	$768.89	$495.93	$157.00

[978] Ex. ATT-16, Turner Rebuttal, at 16-17.
[979] Ex. ATT-16, Turner Rebuttal, at 16.
[980] Ex. ATT-16, Turner Rebuttal, at 16-17.
[981] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 93.
[982] Ex. ATT-16, Turner Rebuttal, at 17.
[983] Ex. VZ-37P, Recurring Cost Model, Part D-6, Section 2.1, page 1 of 1 (May 4, 2001).
[984] Ex. VZ-39P, Revised Recurring Cost Model, Part D-6, Section 2.1, page 1 of 1 (December 17, 2001).
[985] Ex. ATT-16, Turner Rebuttal, at 17-18.
[986] It is difficult to compare precisely the AT&T and Verizon proposed rates for dedicated transport in that Verizon has averaged DCS investment into its rates rather than allowing CLECs to elect this UNE if they wants to as does Verizon. Allowing CLECs to elect DCS accounts for 72.7 percent of the DS1 investment difference between AT&T and Verizon. Verizon's failure to separate the cost of DCS from it overall transport costs is described in section IV.E.3 below.

Rate Element	Verizon [983] (IEC POP Option)	Verizon [984] (IntraLATA Option)	AT&T [985] (IntraLATA Option)
(Fixed)			
DS3 Dedicated Transport (Per Mile)	$19.86	$20.90	$11.85
STS-1 Dedicated Transport (Fixed)	$784.66	$511.70	$163.57
STS-1 Dedicated Transport (Per Mile)	$20.22	$21.26	$11.99
OC-3 Dedicated Transport (Fixed)	$2,253.18	$1418.00	$502.82
OC-3 Dedicated Transport (Per Mile)	$60.05	$62.81	$37.33
OC-12 Dedicated Transport (Fixed)	$2,596.78	$2987.77	$1,688.09
OC-12 Dedicated Transport (Per Mile)	$117.03	$125.79	$81.05
OC-48 Dedicated Transport (Fixed)	$1,483.12	$1483.12	$964.13
OC-48 Dedicated Transport (Per Mile)	$11.49	$11.49	$8.51
Multiplexing DS1 to DS0 – Common	$352.90	$352.90	$172.06
Multiplexing DS1 to DS0 – Plug-In	$14.70	$14.70	$7.17
Multiplexing STS-1/DS3 to DS1	$546.19	$546.19	$266.29
Multiplexing STS-1/DS3 to DS1 – Plug-In	$19.51	$19.51	$9.51
DCS DS1 Port	NA	NA	$6.35
DCS DS3 Port	NA	NA	$121.77
DCS STS-1 Port	NA	NA	$121.77
DCS OC-3 Port	NA	NA	$341.20

Because AT&T recommends that the Department utilize the Verizon cost study to estimate dedicated transport costs, AT&T is constrained to rely on the Verizon model for the cost of common or shared transport. Both the Verizon cost study and the HAI Model make assumptions about overall costs based on the cost of a circuit. Verizon uses as the underlying cost element for common transport the cost from the dedicated transport study for DS1

Dedicated Transport and STS-1 Dedicated Transport.[987] Specifically, Verizon developed the MOU cost for Common IOF Transport "by dividing the Dedicated Transport investments by the capacity of annual minutes of usage that could be transported by those investments."[988] Thus, if Verizon's cost study is used to develop the cost of a circuit for purposes of dedicated transport, that same circuit cost must be used for common transport. Otherwise, the dedicated and common transport costs will not be internally consistent.

In order to produce reasonable common transport costs, three adjustments must be made: (1) AT&T's restatement of the costs from the dedicated transport cost study should be incorporated into the common transport cost study; (2) the weighted average distance between Verizon's wire centers must be reduced from 37.52 miles to 12 miles; and (3) the annual cost factors and overhead factors discussed in Section II must be used. These adjustments to Verizon's cost study result in a rate for common transport of $0.000091 per MOU. See Section IV.E.6, beginning at page 207, for an explanation of this common transport rate.

2. Verizon's IOF Dedicated Transport Cost Should Be Corrected to Assume 3.83 Nodes Per SONET Ring.

Without any explanation or support, Verizon simply assumes six nodes per SONET ring for the calculation of the non-distance sensitive or "fixed" portion of IOF UNE rates. Six nodes per SONET ring is a 57 percent increase over the average 3.83 nodes per ring found in Verizon's interoffice network in Massachusetts.[989] The 3.83 figure for Massachusetts is comparable to the average 3.76 nodes per ring in New York and the average 3.79 nodes per ring in Virginia.[990] Because the cost of a SONET ring increases in relation to the number of nodes on it, Verizon's failure to support its six node assumption is a failure to support its inflated costs.

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[987] Ex. ATT-16, Turner Rebuttal, at 18.
[988] Ex. VZ-26, Recurring Cost Panel Direct, at 173.
[989] Tr. 2466, 1/31/02 (Gansert).
[990] Tr. 2466, 1/31/02 (Gansert); Ex. ATT-17P, Turner Surrebuttal, at 9.

The dedicated IOF element includes the facilities, such DS1, DS0, and DS3-level circuits, which connect Verizon's wire centers.[991] In Verizon's IOF study, the costs of these dedicated transport facilities are developed on either (1) a "fixed" monthly basis, meaning the costs are not mileage sensitive, or (2) on a "per mile" basis, meaning the costs vary with the length of the facility.[992] The fixed component of dedicated IOF represents the cost of electronics equipment called add/drop multiplexers or ADMs and other necessary equipment at the SONET nodes.[993] The Verizon recurring cost panel provides a helpful description of a node and its relation to the SONET ring:

> A node represents a point at which transport circuits may enter and exit a SONET ring, and it is typically located at a wire center. Each node on a SONET ring contains a piece of electronics equipment called an…ADM, and the nodes on a ring are connected by fiber optic cables. Other types of equipment, such as digital cross-connect systems (DCS), are typically deployed at SONET nodes, as well. These systems facilitate the management of circuits entering and exiting the SONET rings. They also allow for more efficient interconnection between different SONET rings.[994]

The number of nodes per SONET ring is, therefore, directly relevant to the fixed cost of dedicated transport. The larger the number of nodes assumed per SONET ring, the greater the number and therefore the higher the cost of the ADM and DCS equipment placed at the nodes. The actual, average number of nodes per ring in Massachusetts currently is 3.83, which Verizon uses to calculate the mileage-sensitive components of the IOF UNE rates.[995]

Verizon insists that six nodes per ring is an appropriate "forward-looking" assumption for the fixed dedicated transport cost because it permits the efficient interconnection of different SONET rings. However, Verizon was unable to provide any support whatsoever for its assumption of six rings. In Mr. Gansert's words:

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[991] VZ-36, Recurring Cost Panel Direct, at 169.
[992] VZ-36, Recurring Cost Panel Direct, at 170.
[993] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 83.
[994] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 83.

> The short answer is, the six-node ring assumption is a fact. That's what the model does. That's all the testimony says, is that the model assumes six nodes…I don't know what other support I can give to that, other than to look in the workpapers, and you'll see that it uses the six-node assumption.[996]

When pressed, Mr. Gansert reveals that the six node assumption was simply chosen by a costing group to produce a "ring configuration that we [a team of experts] believed best represented the cost of a forward SONET ring."[997] In other words, no analysis supports the six node assumption.

Verizon's failure to validate its six node per ring assumption is particularly troublesome given that an increase in the number of nodes per ring reduces the utilization of each node on a SONET ring and, therefore, is inefficient.[998] In other words, there is a point where continuing to add nodes to SONET rings has an adverse impact on the utilization of each individual ADM.[999] Mr. Gansert concedes this point.[1000]

Thus, the result of assuming six nodes per ring is higher costs and less efficient use of the electronics equipment placed on the ring, which is the most expensive part of SONET ring architecture. Moreover, "the forward-looking impact on SONET network engineering is to realize *smaller* numbers of nodes per ring" in order to increase the utilization of the equipment necessary to support "the growth in data traffic and the related growth in transport."[1001] Mr. Gansert concedes that higher nodes per ring is efficient only "where the nodes on the ring have very small demand."[1002] Finally, the consistent number of nodes per ring in Verizon's network – 3.83 in Massachusetts, 3.76 in New York and 3.79 in Virginia – undercuts Verizon's suggestion that six nodes per ring is anything other than an assumption made to produce a cost estimate that

(..continued)

[995] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 83.
[996] Tr. 2465, 1/31/02 (Gansert).
[997] Tr. 2465, 2467, 1/31/02 (Gansert).
[998] Ex. ATT-17P, Turner Surrebuttal, at 9.
[999] Ex. ATT-17P, Turner Surrebuttal, at 9.
[1000] Ex. VZ-57, Gansert Rebuttal, at 30.
[1001] Ex. ATT-17P, Turner Surrebuttal, at 9-10.
[1002] Ex. VZ-57, Gansert Rebuttal, at 30.

satisfied Verizon's cost group, given the absence of any analysis showing that the six nodes assumption would be more efficient in a forward-looking network.

3. Digital Cross Connect Systems Should Be Available for Separate Purchase.

Verizon's cost study includes the cost of Digital Cross-Connect Systems ("DCS") within its overall dedicated transport costs. DCS allows telecommunication providers electronically to cross connect different speeds of interoffice traffic. For example, telecommunications carriers can take multiple DS1 dedicated transport circuits and place them on a DS3 circuit to carry a signal to another location. DCS equipment is expensive, and other technology (*e.g.* ATM switching) performs many of the same functions as DCS with a much lower lever of investment.[1003] As a result, CLECs may not wish to use DCS, but under Verizon's method for costing dedicated transport CLECs do not have the option of using other methods.[1004]

Verizon's inclusion of DCS facilities as part of the dedicated transport costs contradicts the requirement that DCS should be made available separately to CLECs, and CLECs should be free to determine if they want to purchase this service. The FCC requires ILECs to provide access to DCS, stating "[w]e believe that access to [DCS] will improve competitors' ability to design efficient network architecture, and in particular, to combine their own switching functionality with the incumbent LEC's unbundled loops."[1005] An efficient network requires that new entrants be permitted *not* to purchase DCS since technology affords other alternatives for accomplishing the same functionality as DCS in a much less costly manner.[1006] Moreover,

[1003] Tr. 1530-1531, 1/24/02 (Turner).
[1004] Ex. ATT-16, Turner Rebuttal, at 10-11.
[1005] *FCC's First Local Competition Order*, at ¶ 447.
[1006] Ex. ATT-16, Turner Rebuttal, at 11.

Verizon's interconnection agreements with AT&T and WorldCom specify that dedicated transport includes DCS as an *option* where DCS equipment is available.[1007]

Verizon claims that DCS functionality cannot be separated from dedicated transport because "dedicated transport UNEs can[not] be provided at the same efficient cost developed in the Verizon study without the DCS functionality."[1008] This is true for the DCS included in the interconnection part of Verizon's cost study, as readily admitted by Mr. Turner and reflected in the fact that Mr. Turner does not remove the DCS in the interconnection part of the cost study.[1009] However, the DCS at the termination ends of a circuit purchased as a UNE can and should be separated. As Mr. Turner explains:

> Verizon itself doesn't always put DCS at the terminal ends of the circuit, even in their own cost study and in reality. So there's no reason, if the CLEC wants to provide that functionality themselves in their collocation cage, that DCS is able to do on the terminal end, they should be allowed to do that, by either collocating that asset in their cage or potentially just routing that DS3 back out to their own node, where they'd have the asset that's able to do that. They shouldn't be forced – and, in fact, their interconnection agreements provide that they cannot be forced – to buy that terminal DCS from Verizon.[1010]

Accordingly, the terminal DCS cost should be separately identified from the Verizon proposed rate for dedicated transport.[1011] This simple adjustment accounts for 72.7% of the investment difference between AT&T's and Verizon's IOF rate for fixed DS1 dedicated transport.[1012]

4. Verizon's EF&I Factor For Transmission Equipment Is Inflated.

Verizon proposes an EF&I factor for transmission equipment of 53.2 percent in Massachusetts.[1013] An EF&I factor is utilized by Verizon to gross up the material investment of

[1007] Ex. ATT-16, Turner Rebuttal, at 11.
[1008] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 91.
[1009] Tr. 1527-1528, 1530, 1/24/02 (Turner).
[1010] Tr. 1528-1529, 1/24/02 (Turner).
[1011] Ex. ATT-16, Turner Rebuttal, at 13.
[1012] Ex. ATT-16, Turner Rebuttal, at 17, n. 17.
[1013] Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 92.

dedicated transport facilities to arrive at the fully installed cost of the equipment.[1014] Verizon's proposed 53.2 percent figure is significantly higher than comparable EF&I factors for transmission equipment, which are typically in the 30 percent range.[1015] In New York, Verizon proposed and the administrative law judge accepted an EF&I factor for transmission equipment of 36.4 percent.[1016] There is no reason to believe that installation costs in Massachusetts should be 46 percent greater than the 36.4 percent factor used in New York.

Verizon claims that the significant discrepancy in the Massachusetts and New York EF&I factors is the result of Verizon's use of 1997 installed equipment in New York as opposed to Verizon's use of 1998 installed equipment in Massachusetts.[1017] This one year difference in the equipment purchases relied upon by Verizon cannot justify a factor in Massachusetts that is 46 percent greater than in New York.[1018] As admitted by Verizon, the components that make up the EF&I factor are "the same in New York as they would be in Massachusetts."[1019] Although telecommunications is a declining cost industry, pricing of dedicated transport equipment is not changing so quickly that a 46 percent increase in the EF&I factor would result in just one year.[1020] As demonstrated by Mr. Turner in his response to RR-DTE-47, to justify an increase in the EF&I factor from 36.4 percent to 53.2 percent, Verizon would need a reduction in price of approximately 11 percent across all of its transmission equipment, combined with proof that its EF&I costs have not changed, in order for the fully installed cost of such equipment to remain the same.[1021] Verizon, however, only points to one piece of equipment, ADM equipment, for

[1014] Ex. ATT-16, Turner Rebuttal, at 15.
[1015] Ex. ATT-16, Turner Rebuttal, at 15.
[1016] New York PSC Case 98-C-1357, Workpaper Part C-1 – Section 1.0 to the Panel Testimony of Bell Atlantic-New York on Revised Costs and Rates for Unbundled Network Elements and Related Wholesale Services, Feb. 24, 2000, p. 3.
[1017] Ex. VZ-38P, Recurring Cost Panel Direct, at 93.
[1018] Tr. 1512-1513, 1/24/02 (Turner).
[1019] Tr. 2521, 2/1/02 (Anglin).
[1020] Tr. 1513, 1/24/02 (Turner).
[1021] Ex. RR-DTE-47 (Turner).

which Verizon received a reduction in price from 1997 to 1998 of 5-7 percent.[1022] This small reduction for one piece of IOF equipment certainly does not justify a 46 percent increase in the EF&I factor. Accordingly, in the absence of evidence that Verizon's proposed Massachusetts EF&I factor is reasonable, the Department should adopt an EF&I factor of 36.4 percent for transmission equipment in Massachusetts.[1023]

5. Verizon Incorrectly Assumes a 75 Percent Multiplexing Utilization Factor.

DS0 to DS1 multiplexing is an arrangement which converts 24 voice frequency channels into a DS1 channel. The same conversion can be made as a result of DS1 to DS3 multiplexing.[1024] When a CLEC purchases DS0 to DS1 multiplexing, the CLEC is buying the entire capacity of DS1 multiplexing equipment. Verizon does not bear any risk if the CLEC does not utilize the whole element. For this reason, the utilization factor for the DS1 to DS0 multiplexing equipment should be 100 percent.[1025] To make this more concrete, if a CLEC elects to use three of the available 24 channels on a DS1, the CLEC will pay Verizon for the entire DS1 worth of capacity and Verizon will bear no risk or cost associated with the CLEC's election not to use 21 of the 24 channels on the multiplexing equipment.[1026] The same is true for DS1 to DS3 multiplexing.[1027]

Verizon, however, proposes a 75 percent utilization factor, claiming that "although a CLEC does 'purchase' the DS1/DS0 channel bank, one must consider the utilization of the number of channel banks per bay, and apply that utilization to the associated equipment that is utilized by all channel banks contained in the bay."[1028] That is, Verizon is claiming that, because

[1022] RR-DTE-71 (Matt).
[1023] Ex. ATT-16, Turner Rebuttal, at 16.
[1024] VZ-37, Recurring Cost Model, IOF Transport, Section 1.1 Study Overview, page 2 of 2.
[1025] Ex. ATT-16, Turner Rebuttal, at 13.
[1026] Ex. ATT-16, Turner Rebuttal, at 14; Tr. 1523-1524, 1/24/02 (Turner).
[1027] Tr. 1524, 1/24/02 (Turner).
[1028] Ex. RR-DTE-69 (Matt).

the entire bay must be devoted to a CLEC even though the CLEC is only using three-quarters of it, the CLEC should be required to pay for all of the bay and for all of what the bay could (but does not in fact) hold.

AT&T agrees that in principle it should pay for all of the bay even though it uses less than a full bay, because Verizon will have to provision a full bay, *i.e.*, that bay costs should have a fill factor of less than 1.00. AT&T does not agree, however, that the fill factor of 1.00 should be applied to the Channel Bank Common Equipment and Plug in Equipment that is placed in the bay. AT&T should not have to pay for a full bay of such equipment because Verizon will not have to provide it. Since on average CLECs will purchase enough Channel Bank Common Equipment and Plug in Equipment to fill 75% of the bay, they should only pay for that amount of equipment. Because Verizon does not need to provide more than what the CLECs need, the fill factor for Channel Bank Common Equipment and Plug in Equipment is 1.00.

Because a bay can hold more than one channel bank, Verizon should have separated the multiplexing equipment costs into three categories: (1) Bay cost; (2) Channel Bank Common Equipment costs; and (3) Plug-in Cards cost. If Verizon had done this, it would be appropriate to apply a fill factor less than 1.00 (such as Verizon's proposed 0.75) to the Bay equipment and then separately apply the 1.00 to the Channel Bank Common Equipment and the Plug-in Cards. However, Verizon's investments are not broken out in this way. Moreover, the Bay represents a very small fraction of the investment associated with the "hardwired" investment and therefore, on a weighted basis (weighting the Bay at 75 percent fill and the Channel Bank investment at 100 percent fill) the overall weighting should be almost 100 percent. As such, even though Verizon is right about the Bay, the aggregation of the multiplexing equipment in Verizon's study still requires that a 1.00 fill factor be used for the "hardwired" investment.

Verizon references the D4CB file that is attached to RR-DTE 69, stating that Verizon has applied a 0.75 fill factor to the appropriate "bay" investments and the 1.00 fill factor to the other investments. This however is not accurate. In the D4 CB file that Verizon provided in its cost study, the application of the fill factor is never done. Rather, the investments per DS0 are simply summarized in the D4CB file. The fill factor is actually applied in the MA01-20 IOF Invest file at the "Parameters" worksheet.[1029] As demonstrated on this worksheet, Verizon unilaterally applies the 0.75 "utilization" or fill factor to both the Hardware and Common investments. Verizon's response to RR-DTE-69 where Verizon indicates that at least some of the investment should receive a 1.00 fill factor entirely contradicts its cost study.

In summary, Verizon's response to RR-DTE-69 confirms that Verizon has not reflected in its cost study a proper treatment of the fill factors for multiplexing. Moreover, while Verizon is correct that the bay should receive a fill factor lower than 100 percent, the method that Verizon has used in developing its investments does not separately identify this bay investment. Further, since the bay investment represents *de minimus portion* of the Hardware investment, it is only proper to use the 1.00 fill factor for all of the investment given that Verizon's aggregation of the data does not permit a more accurate analysis of the fill factor.

6. Verizon Overstates the Weighted Average Distance Between Its Wire Centers in Estimating Common Transport Costs.

Under Verizon's proposal for common transport costs, Verizon requests that the Department approve a cost for common transport which assumes that, on average, every minute of a call in Massachusetts has to travel 37.52 miles between end offices.[1030] Common transport facilities are those facilities shared by more than one carrier, including the incumbent LEC,

[1029] VZ-37, Recurring Cost Model, Workpaper Part D-6, IOF Invest Worksheet, "Parameters" Spreadsheet, Row 38.

[1030] Tr. 1518, 1/24/02 (Turner).

between wire centers in the incumbent LEC network.[1031] Verizon has significantly overstated the weighted average distance between these wire centers and developed a correspondingly overstated estimate of the cost for common transport.[1032] The more appropriate distance of 12 miles accounts for both the common transport mileage between end offices as well as the common transport distance between end office and tandem switch.[1033]

In order to develop an accurate estimate of the weighted average distance between wire centers, Verizon should have evaluated how its switched transport network is used. Specifically, Verizon should have investigated how many minutes of transport traverse each of its IOF segments (transport between any two wire centers) and then Verizon should have used these minutes to weight the mileage between these same segments.[1034] By doing this Verizon would have developed a weighted average distance based on the number of minutes traversing its switched network.[1035]

Verizon did not follow this approach, however. Verizon simply examined the mileage between the wire centers, without any consideration of the minute-of-use rate.[1036] It then applied average mileage between wire centers statewide to the minutes of use, even though the vast majority of those minutes of use were traversing much shorter IOF segments in urban areas. As Mr. Turner explained in oral testimony:

> [Y]ou can't apply a circuit calculated distance to a minute-of-use rate. What you have to do is, you have to weight the circuit mileage distances by the number of minutes that pass across those trunks. They [Verizon] have affirmatively said that they calculated their distance from simply taking circuit mileages, and that's just on its face wrong. So in other words, if you had two central offices in downtown, th[ey] would probably have a very close proximity to one another and have a very high level of usage between one another, you wouldn't just want to take the one

[1031] FCC Rule 319(d).
[1032] Ex. ATT-16, Turner Rebuttal, at 19.
[1033] Ex. ATT-16, Turner Rebuttal, at 20.
[1034] Tr. 1516-1517, 1/24/02 (Turner).
[1035] Tr. 1516-1517, 1/24/02 (Turner).
[1036] Tr. 1515-1516, 1/24/02 (Turner); Ex. VZ-38P, Recurring Cost Panel Surrebuttal, at 94.

> mile -- let's just say, arguably -- one mile between those offices and average it with, say, a 20-mile distance that you might find out in Springfield between two offices that might not have a lot of traffic in common. You would want to weight that one mile with however many millions of minutes that you had there and then take the 20 miles in Springfield and weight it with the number of minutes there, which would likely be lower.[1037]

In jurisdictions such as Texas, Missouri and Kansas which are larger and less population dense than Massachusetts, the resulting weighted average distance is in the range of 12 miles.[1038] Mr. Turner explains that "you wouldn't have an average mileage [of 12] in a geographically big state like Texas and have such a high mileage figure [of 37.52] in a more dense state like Massachusetts."[1039] Moreover, Mr. Turner's proposal of 12 miles is consistent with the 12 mile distance adopted in the New York rate case.[1040]

Verizon's method for estimating common transport costs is flawed in another way as well. Verizon acknowledges in its cost study that its common transport includes the distances between "end offices or from an end office to a tandem."[1041] However, Verizon claims that its circuit distance is *only* based on where the CLEC interconnects and does not consider the total demand for common transport in its network.[1042] Common transport, however, is also used with UNE-P and the usage of this element would not be based on where the CLEC interconnected, but rather, would be based on common transport between any two Verizon central offices for Verizon's own usage. Nonetheless, Verizon proposes a distance of 37.52 miles. The problem with this approach is that most common transport actually traverses between two end offices where the mileage will be much shorter than 37.52 miles. In Verizon's development of common transport, Verizon did not account for this shorter distance.[1043]

[1037] Tr. 1516, 1/24/02 (Turner).
[1038] Tr. 1517, 1/24/02 (Turner).
[1039] Tr. 1518, 1/24/02 (Turner).
[1040] Ex. ATT-16, Turner Rebuttal, at 21.
[1041] Ex. VZ-31, Recurring Cost Model, Workpaper Part C-2, Section 1.1.
[1042] Ex. ATT-16, Turner Rebuttal, at 19; Tr. 1520, 1/24/02 (Turner).
[1043] Ex. ATT-16, Turner Rebuttal, at 20.

Based on these adjustments to Verizon's study, AT&T proposes that the more appropriate cost of common transport is $0.000091 per minute of use.[1044] This adjustment also reflects previously discussed adjustments to Verizon's annual cost factors and overhead factors.[1045]

V. VERIZON'S COLLOCATION RATES FAR EXCEED TELRIC LEVELS.

A. Introduction: Verizon's Collocation Rates are Excessive.

Verizon's proposed charges for provision of collocation facilities to its competitors are inconsistent with TELRIC methodology. The Verizon rates for DC Power Distribution, Land and Building, and DC Power Consumption are greatly inflated by the non-forward-looking costs developed from small projects not designed to meet total demand. They are also skewed by the erroneous inclusion of undersized emergency engines, the application of the switching ACF to circuit-based equipment, and the assumption of a cable distance twice as long as found in an efficiently engineered power cabling arrangement. Finally, the corrections to Verizon's circuit-based ACFs discussed in Section II must also be incorporated into Verizon's proposed collocation rates.

When Verizon's DC Power Distribution and Land and Building rates are revised to eliminate the above errors and to convert Verizon's cost study from a historical model based on small projects to a forward-looking, total element cost study, the following rates proposed by AT&T are the highest possible rates that can be supported by the record evidence.

Summary – Collocation DC Power Distribution and Land & Building

Rate Element	VZ-MA's Proposed Rate	AT&T's Proposed Rate
DC Power Distribution	$15.16 [1046]	$2.17 [1047]

[1044] Ex. ATT-16, Turner Rebuttal, at 21.
[1045] Ex. ATT-16, Turner Rebuttal, at 21.
[1046] Ex. VZ-28, Verizon Cost Model, Part CA, Workpaper 5.0, page 2 of 2, line 27 (attached to Clark's Rebuttal).

(per cable run fused up to 30 amps) Land and Building (per square foot)	$4.02 [1048]	$2.52 [1049]

With respect to the DC Power Consumption rate, Verizon made a partial correction in its response to RR-DTE-40. The late-filed workpapers attached to that response reflect a DC Power Consumption rate based on the correct assumption that the emergency engine should be sized by DC amp capacity rather than AC amp capacity. Adjustments to the revised Verizon study are still necessary, however, to correct the inaccurate DC power installation factor and annual cost factor. The table below provides the restatement of Verizon's newly updated DC Power Consumption cost study that is required based on the record evidence.

Summary – Proposed Monthly DC Power Consumption Rate (per amp, for less than 60 amps)

VZ-MA's Original Proposed Rate[1050]	VZ-MA's Revised Rate[1051]	AT&T's Proposed Rate (based on VZ-MA's revised rate)[1052]
$22.79	$15.88	$5.39

Finally, the Verizon collocation proposed cost recovery structure fundamentally differs from the current structure of recovering collocation costs. In propounding this new structure, Verizon has not offered any transition plan to allow collocators operating under the old structure to convert to the new structure. Wholesale implementation of this new structure will have significant and detrimental financial impact on collocators.[1053] If the Department adopts

(..continued)

[1047] Ex. ATT-16, Turner Rebuttal, Attachment 3.

[1048] Ex. VZ-28, Collocation Cost Model, Part CA, Workpaper 3.0, page 1 of 1, line 15 (attached to Clark's Direct).

[1049] Ex. ATT-16, Turner Rebuttal, Attachment 3.

[1050] Ex. VZ-28, Collocation Cost Model, Part CA, Workpaper 5.0, page 1 of 2, line 77 (attached to Clark's Direct).

[1051] RR-DTE-40, Attachment 1, Workpaper 1.0, page 1 of 1, line 77.

[1052] Addendum to Brief, AT&T Restatement of Collocation Cost Model, Part CA, Workpaper 5.0, page 1 of 2.

[1053] Ex. DTE-ATT 1-5.

Verizon's proposed recovery structure, the Department should order Verizon to provide a transition period for converting to the new rate structure.

B. DC Power Installation Factor: Verizon's DC Power Installation Factor Inappropriately Relies on Augment Jobs and Suspect Data.

Verizon's installation cost factor of 2.7852[1054] is based on the historic relationship between installation costs and material costs of *small* augments to its 50-60 year-old existing DC power plants.[1055] This installation cost factor does not estimate the relationship between installation costs and material costs for a DC power plant necessary to serve current and expected demand.[1056] Rather, it assumes that the total installed cost for power plant facilities is almost three times the cost of the facilities themselves. This assumption is improbable and unreasonable. In addition, the small augment jobs upon which Verizon relies do not provide the economies of scale inherent in a forward-looking network sized to meet current and expected demand.[1057]

1. The Power Jobs in the DCPR Database Are Not Representative of the Cost of the Power Job Which Verizon Estimates in Its Cost Study.

There is no dispute that the data upon which Verizon relies for the development of its installation factor reflects the installation of power equipment for small job augments.[1058] Verizon's Ms. Clark readily concedes that the average power plant installation job in the 1998 data from the DCPR database is a tiny fraction of the size of a power plant sized to meet total demand.[1059] The installation factor, however, is supposed to represent the relationship between material costs and installation costs of the power plant whose costs Verizon is estimating in its cost study. Verizon's installation factor fails to do so.

[1054] Ex. VZ-28, Collocation Cost Model, Part CA, Workpaper 5.0, page 2 of 2, line 4 (attached to Clark's Direct).
[1055] Ex. ATT-16, Turner Rebuttal, at 15.
[1056] Ex. ATT-17, Turner Surrebuttal, at 12.
[1057] Ex. ATT-17, Turner Surrebuttal, at 13.
[1058] Ex. ATT-17, Turner Surrebuttal, at 16; Tr. 1040, 1/22/02 (Clark).

The discrepancy between the size of the jobs that underlie Verizon's installation factor and the size of the plant for which Verizon is estimating installation costs is striking. It can readily be seen by comparing the average size, by material cost, of the jobs in the DCPR database to the total material cost for the 6,000-amp power plant assumed in Verizon's cost study. The total material cost of the 6,000-amp power project in the Verizon cost study is $392,459. This figure is obtained by adding the total material investment for each collocation element as provided in lines 2, 9, 14, 17, 20, and 25 of Part CA, Workpaper 5.0, page 1 of 2.[1060] In comparison, the average material investment made in the central offices in 1998 as reflected in the DCPR data is **<Begin Proprietary> XXXXXXX <End Proprietary>**.[1061] Thus, Verizon's material investment for the 6,000-amp power plant assumed in its cost study is over **<Begin Proprietary> XX <End Proprietary>** times greater than the average material investment from the DCPR database used to compute the installation factor.

Verizon has not met its burden of showing that its 1998 DCPR data provides a meaningful indicator of the cost of installing the equipment at issue in its collocation cost study.

2. A Power Installation Factor Based on Augment Jobs Violates the "Total Demand" Requirement of TELRIC.

Verizon inappropriately calculates its proposed installation factor by developing this factor using the (dis)economies of scale associated with the small power jobs in the one year of DCPR data and then applying that cost factor to the installation and equipment for a comprehensive DC power job – a 6000-amp plant.[1062] The mistake in Verizon's calculation can best be seen in Steven Turner's example of the construction of his house and his subsequent

(..continued)

[1059] Tr. 1040, 1/22/02 (Clark).

[1060] Tr. 1038, 1/22/02 (Clark).

[1061] Ex. ATT-17P, Turner Surrebuttal, at 16.

[1062] Tr. 1042, 1/22/02 (Clark); Ex. ATT-17P, Turner Surrebuttal, at 16; Tr. 1421, 1/24/02 (Turner).

desire to finish an additional room.[1063] Mr. Turner was able to finish the inside of his whole house at a cost of $27 per square foot. However, he had to pay $54 per square foot to finish an extra 150 square feet of space at a later time. The difference in price per square foot results from the economies of scale inherent in finishing the whole house at once as opposed to finishing a small space.

In the Phase 4-G Order in the *Consolidated Arbitrations* proceeding, the Department recognized the "substantial efficiencies" in the construction of collocation cages that are "subject to the economies of scale."[1064] The same costing principle holds true for Verizon's power jobs: it will always cost more per amp to augment an existing power job than it would to complete an entire power job. Verizon, however, capitalizes on the higher cost associated with augments by using the costs of augments to develop the installation factor and then applying that factor to larger installation jobs, thereby producing fantastically exaggerated installation costs for a properly sized power plant.[1065] As Mr. Turner explains:

> [W]hat Verizon has done here is, they developed the in-place factor as if they were finishing my house 150 square feet at a time, but then they want to apply that factor to the material cost as if you were building the house all at one time.[1066]

As a result of this reliance on augment jobs, Verizon's costs for DC power distribution and consumption are substantially inflated and should be rejected. Verizon ignores the TELRIC requiring that forward-looking costs be developed from a "total demand" perspective and not from an augment perspective.[1067] (See Section I.C.2, beginning at page 7.)

A detailed analysis of the individual items in the DCPR database for each central office shows that the size of the jobs reflected in the database are even smaller than Ms. Clark suggests.

[1063] Tr. 1421-1423, 1/23/02 (Turner); Tr. 1495-1496, 1/24/02 (Turner).
[1064] *Consolidated Arbitrations*, Phase 4-G (June 11, 1998), at 10-11.
[1065] Tr. 1040, 1/22/02 (Clark).
[1066] Tr. 1423, 1/23/02 (Turner).

In order to make the smaller augment jobs appear larger, Verizon simply assumes that the individual items installed in each central office during Verizon's "sample" year (1998) were part of one project.[1068] However, nothing in the DCPR database indicates that all of the work in the central office designated by the CLLI code BLTMMDHM, for instance, occurred in one project.[1069] Multiple power jobs for one central office may have been performed during that year.[1070] For example, the DCPR database shows plug-in equipment and hardware equipment both being installed in a central office over the course of a year. Yet plug-in equipment is not necessarily placed at the same time as hardware equipment.[1071] Verizon's assumption that the individual items from the 1998 data were all part of one job cannot be verified, is unreasonable, and merely attempts to make small power jobs look as large as possible.[1072]

3. The DCPR Data Underlying the EF&I Factor Contains Errors and Has Not Been Validated.

a. The Erroneous DCPR In-Place Costs Improperly Inflate Verizon's Installation Factor.

Verizon's reliance on the DCPR accounting system to compute the power installation factor is inappropriate. For one thing, the DCPR data contains rampant inconsistencies in the costs of installation. Mr. Turner highlighted various individual data points in the DCPR data which are not consistent with the entirety of the dataset.

Looking at the over <**Begin Proprietary**> XX <**End Proprietary**> instances where 200-amp rectifiers were installed across the 13-state Verizon territory, the average material price for a

(..continued)

[1067] Ex. ATT-16, Turner Rebuttal, at 30.
[1068] Tr. 1003, 1/22/02 (Clark); Tr. 1005-1007, 1/22/02 (Clark).
[1069] Tr. 1420, 1/23/02 (Turner); Ex. VZ-31P.
[1070] Tr. 1420, 1/23/02 (Turner).
[1071] Tr. 1420, 1/23/02 (Turner).
[1072] Tr. 1421, 1/23/02 (Turner).

200-amp rectifier was approximately $3,000 and the average installation cost was approximately $4,000. Thus the total in-place cost for a 200-amp rectifier averaged about $7,000.[1073]

However, in the DCPR data sort for Maryland alone,[1074] there are approximately 15 instances where the data show material costs and installation costs outside of any reasonable range of variation, and inexplicably greater by orders of magnitude than the rest of the dataset.[1075] For example, for the Landover, Maryland, central office (indicated by CLLI code LDVRMDLO), the DCPR database purports to identify the material cost of two 200-amp rectifiers as <**Begin Proprietary**> XXXXXXX <**End Proprietary**> and the cost to install these two rectifiers as <**Begin Proprietary**> XXXXXXX <**End Proprietary**>.[1076] Similarly, for the Maryland central office identified by CLLI code NRBHMDNE, the material cost of one 200-amp rectifier is listed at <**Begin Proprietary**> XXXXXXX <**End Proprietary**> and installation costs listed at <**Begin Proprietary**> XXXXXXXX <**End Proprietary**>.[1077] These outliers in Verizon's dataset skew the data and significantly overstate material installation costs.[1078]

Verizon claims that these inconsistent in-place costs are the result of DCPR's allocation of the cost of miscellaneous items, such as nuts and bolts, to the pieces of equipment placed during the entire calendar year.[1079] According to Verizon's Ms. Clark, it is this "spreading" of the miscellaneous items across the entire year that causes the "dramatic difference" in the material cost versus the in-place cost.[1080] However, if this were the case, the miscellaneous costs would be spread out over all of the 200-amp rectifiers and individual central offices would not

[1073] Tr. 1416, 1/23/02 (Turner).
[1074] Tr. 1002-1003, 1/22/02 (Clark); Ex. VZ-31P.
[1075] Tr. 1416-1417, 1/23/02 (Turner).
[1076] Ex. VZ-31P, at 32.
[1077] Ex. VZ-31P, at 34; Attachment to Ex. ATT-VZ 5-6S, page 1 of 7 (Maryland data).
[1078] Ex. 17P, Turner Surrebuttal, at 17; Tr. 1418-1419 (Turner).
[1079] Tr. 1008-1009, 1/22/02 (Clark).
[1080] Tr. 1007, 1009, 1/22/02 (Clark).

stand out as having grossly overstated in-place costs.[1081] Verizon's purported explanation fails to justify the outliers like Landover, Maryland.

b. The DCPR Database is Impervious to Independent Review and Validation.

The extreme in-place costs for certain central offices only illustrates a fundamental problem with Verizon's reliance on the DCPR database. These in-place costs are the artifact of accounting rules that have never been described by Verizon.[1082] Moreover, Verizon has not submitted invoices from third parties or any independent verification to prove that the installation costs alleged for the DCPR power jobs are in fact the actual costs of those jobs.[1083] Thus there is no way to verify or validate whether the installation factor proposed by Verizon represents any real cost relationship between material costs and installation costs.

c. Actual Vendor Invoices Provide Accurate Installation Costs.

Verizon's use of an installation power factor based on the DCPR database is completely unnecessary. Vendor invoices can be used in two different ways to produces accurate costs. The first and best way is to use the invoices to compute the total cost per amp. An alternative method is to develop a cost factor from the invoices. Verizon has opted to do neither, relying on a factor based on the DCPR database.

Estimating the total cost of a power plant based on the total material and labor charges of a vendor chosen by competitive bid is the best method for determining total material and installation cost.[1084] Verizon should have utilized actual vendor invoices to compute material and installation costs. Vendors are capable of providing not only the material cost for

[1081] Tr. 1416-1417, 1/23/02 (Turner).
[1082] Tr. 1021, 1/22/02 (Clark).
[1083] Tr. 1020, 1/22/02 (Clark).
[1084] *Consolidated Arbitrations*, Phase 4-G (June 11, 1998), at 12 (stating that "Bell Atlantic's prequalified contractors have agreed to limitations on their profit and overhead rates in no way guarantees that the material and installation costs included in their final invoices reflect the influence of competition.")

installation jobs, but also the installation costs.[1085] Use of an invoice that includes both material and installation costs ensures that a factor is not misapplying installation costs to material costs.[1086] Even Verizon admits that reliance on contractor invoices is an appropriate method to compute costs and that the Department has espoused this methodology in past proceedings. Verizon's Ms. Clark explains the benefit of relying on actual invoices:

> These are actual costs that you can look at and determine that obviously the work that was performed in these various central offices over a period of time reflected the costs that Verizon actually incurs, and that's what we're trying to recover here.[1087]

Utilizing this methodology, Verizon relied on recent vendor-discounted material prices in order to compute the material prices for power equipment.[1088] Yet, despite Verizon's acknowledgment that use of general contractor invoices is the preferred method for estimating costs, Verizon insists on using an installation factor and compounds the problem of relying on an installation factor by deriving the factor from accounting data. Verizon's methodology should be rejected as inconsistent with past Verizon practice and Department approved methods.

Because Verizon utilized an installation factor derived from the DCPR database, Verizon did not provide invoices necessary to compute the installation costs for the 6000-amp power job modeled in the Verizon cost study.[1089] Thus, without actual invoices to demonstrate the installation costs of the 6000-amp power plant, an installation factor based on actual invoices for installation is the next best alternative. Mr. Turner's analysis of actual installation data for two DC power plant jobs in Pennsylvania demonstrate that 1.454 is a more accurate installation factor for comprehensive DC power plants.[1090] This factor is based on the installation of two

[1085] Ex. ATT-16, Turner Rebuttal, at 42.
[1086] Tr. 1535, 1/24/02 (Turner).
[1087] Tr. 1026, 1/22/02 (Clark).
[1088] Ex. VZ-28, Clark Direct, at 21.
[1089] Ex. ATT-VZ 5-6 (original reply).
[1090] Ex. ATT-17, Turner Surrebuttal, at 19.

complete DC power plants, not on augment jobs, and relies on actual installation data from Lucent which specifies the material, installation, and miscellaneous costs of the equipment.[1091]

Employing this more accurate installation factor, and keeping everything else constant, Verizon's originally proposed costs for DC Power Consumption drop from $22.79 to $11.90 per amp.[1092] Such a reduction brings Verizon's proposed costs in line with the DC Power Consumption rates adopted by other state commissions. While power costs may vary slightly across regions of the country, the range of rates set by other states provide at least a reasonableness check on Verizon's proposed costs here.[1093] The states identified by Mr. Turner in the list on page 37 of his rebuttal testimony set rates for DC power consumption in the range of approximately $7.28 to $13.80. These commissions employed the same methodology that Verizon propounds in this proceeding, with the exception that some states rely upon invoices, as opposed to a factor, to compute the installation cost.[1094] In addition, Mr. Turner's restatement of Verizon's DC Power Consumption rates is more comparable to the New Hampshire PUC's adoption of DC power consumption rates ranging from $3.03 to $5.27 per amp per month depending upon density zone.[1095] Thus, use of an installation factor based on actual invoices, instead of a factor based on Verizon's accounting data, results in a DC power consumption rate for Massachusetts comparable to the rates adopted in other states.

C. ACF Selection: Verizon's Use of the Digital Switching Annual Cost Factor Is Inappropriate Because the Majority of Equipment Placed in a Collocation Arrangement is Circuit-Based.

Verizon used an incorrect annual cost factor to develop the monthly recurring rate for DC power investment. This mistake results in inaccurate costs for both DC power consumption and

[1091] Tr. 1470, 1/24/02 (Turner); Tr. 1426, 1/23/02 (Turner).
[1092] Ex. ATT-16, Turner Rebuttal, at 44.
[1093] Ex. ATT-16, Turner Rebuttal at 36.
[1094] Ex. ATT-16, Tumer Rebuttal, at 37; Tr. 140-1492, 1/24/02 (Turner).

DC power distribution. An ACF accounts for the costs incurred by Verizon in providing a group of elements or services that cannot be attributed directly to individual elements or services.[1096] Examples of such costs are capital costs and maintenance expenses. Instead of the more appropriate Digital Circuit Other ACF of 0.2388, Verizon uses the Digital Switch Annual Cost Factor of 0.3183.[1097] There is no dispute that the type of equipment which uses the majority of power requirements in a collocation arrangement is circuit-based equipment.[1098] Verizon itself admits that the Digital Circuit Other ACF should be used to recover its capital costs and maintenance expenses associated with a circuit-based investment.[1099] Thus, it is more appropriate to utilize the circuit ACF for equipment used in a collocation arrangement.[1100]

The fact that switching and circuit-based equipment are unrelated is demonstrated by the FCC's *Designation Order* (CC Docket No. 01-140, Transmittal Nos. 1373 and 1374 and Transmittal Nos. 23 and 24, June 26, 2001) in Paragraph 33 in which the FCC stated:

> [W]e direct Verizon to recalculate its federal EF&I factor including *only* costs of engineering, furnishing, and installing the following hardware items: microprocessor plant (BUSS BAR), rectifiers, batteries, automatic breakers, power distribution service cabinets, emergency engine*s*/turbines, power plant distribution bays, and battery distribution fuse bays.

The FCC issued this directive within the context of considering whether "switching" factors should be used for developing the cost for power elements. The FCC instructions here are intended to ensure that only DC Power Plant investments are included in developing this factor

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[1095] *Bell Atlantic Petition for Approval of Statement of Generally Available Terms Pursuant to the Telecommunications Act of 1996*, New Hampshire Public Utilities Commission Docket 97-171, Order Addressing Motions for Reconsideration, Order No. 23,847 (issued November 21, 2001), at 73, line 41.

[1096] Ex. VZ-36, Recurring Cost Panel Direct, at 18-19.

[1097] Ex. ATT-16, Turner Rebuttal, at 46-47; Ex. ATT-VZ 5-7; Ex. VZ-28, Collocation Cost Model, Part CA, Workpaper 5.0, page 1 of 2, lines 39, 64; page 2 of 2, line 14 (attached to Clark Direct).

[1098] Tr. 1203, 1/23/02 (Clark); Tr. 1502, 1/24/02 (Turner).

[1099] Ex. WCOM-VZ 2-17 (Clark); Ex. VZ-28, Collocation Cost Model, Part CD, Workpaper 8.0, lines 12 and 13 (attached to Clark Direct).

[1100] Tr. 1502-1503, 1/24/02 (Turner).

because of the obvious differences between the installation of switching equipment from DC power equipment.[1101]

Verizon argues that the "digital switch is…the 'cost-causer' of the power plant placement" and, therefore, the digital switch ACF should be applied.[1102] Verizon, however, ignores the important distinction between what consumes the vast majority of the power in a Verizon serving wire center and what consumes the vast majority of power in a collocation arrangement. Verizon does not permit CLECs to install switching equipment in their collocation cages. Thus, in a collocation arrangement, circuit-based equipment utilizes the majority of the power requirements and thus Mr. Turner is correct in recommending that the Department apply the circuit ACF in order to compute a "more accurate" power consumption rate.

"More accurate" is the appropriate terminology given that no distinct ACF for DC power investment exists.[1103] Incumbents do not track factors associated with a power plant.[1104] The circuit ACF is the closest approximation because the circuit ACF is associated with the asset class being studied – circuit-based equipment.[1105] However, if a power-expense ACF were actually developed, it would be substantially lower than the circuit-based ACF,[1106] for the following reasons:

> One is that the depreciation lives for power assets are much longer than the depreciation lives for circuit equipment…the expenses associated with maintaining the equipment are much lower, and…the depreciation cost is much lower, because you're dealing with much longer lives and you get to recover the capital cost for the power assets over a longer life than circuit equipment.[1107]

Thus, the circuit ACF is not as low as a power-expense ACF would be, but it is a substantiated factor which calculates the annualized costs of circuit-based equipment, the kind of equipment

[1101] Ex. VZ-ATT/WCOM 1-89.
[1102] Ex. VZ-29A, Clark Surrebuttal, at 42.
[1103] Ex. ATT-16, Turner Rebuttal, at 47.
[1104] Tr. 1503, 1/24/02 (Turner).
[1105] Tr. 1503, 1/24/02 (Turner).
[1106] Tr. 1504, 1/24/02 (Turner).

which utilizes the power in a collocation arrangement. Using the circuit ACF, the DC power investment portion of the recurring rate is reduced by 23.5 percent.[1108]

D. DC Power Consumption Rate: Verizon's Correction of the Emergency Engine Capacity from AC to DC Amps Significantly Reduces DC Power Consumption Rates.

Verizon's response to RR-DTE-40 proves: (1) that Verizon significantly overstated its DC Power Consumption cost in its original DC Power Consumption cost study and (2) that Verizon continues to overstate these rates in its revised cost study. Instead of undersizing its emergency generator, as Mr. Turner rightly assumed based on the original cost study submitted by Verizon, it is clear that Verizon now has substantially *oversized* the emergency engine and attempts to double recover for the emergency engine investment.

1. Verizon Admits in Its Revised Cost Study that Verizon Improperly Sized the Emergency Engine in AC Amps.

It is important to understand the origination of this conflict about the sizing of the emergency generator. In Mr. Turner's Rebuttal Testimony, he explained that Verizon had undersized the backup generators for its metro, suburban, and rural central offices.[1109] Mr. Turner made this conclusion based on the fact that Verizon's DC Power Consumption Cost Study claimed to analyze the investment for a variety of elements on a *DC* amp basis. This was clearly documented in the original DC Power Consumption cost study at Line 41 which shows that the cost study was estimating the "Total Annual Cost per DC Amp."[1110] Line 41 summarizes the cost after application of Verizon's cost factors to the *DC* investment per amp (line 28). Line 28 ("total unit investment") adds together the unit investment per amp for the microprocessor, rectifier, battery, automatic breaker, power distribution service cabinet and,

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[1107] Tr. 1504-1505, 1/24/02 (Turner).

[1108] Ex. ATT-16, Turner Rebuttal, at 48.

[1109] Ex. ATT-16, Turner Rebuttal, at 45.

finally, the emergency engine.[1111] Mr. Turner assumed that, in order for Verizon's cost study to be consistent and therefore calculated correctly, the emergency engine must be in DC amps, just like the other DC elements to which it is being added. Under the assumption that the emergency engine was being calculated in DC amps, the metro, suburban, and rural backup generators of 1,505, 1,216 and 278 amps, respectively, were insufficient to provide the necessary power for the power plant.

Verizon's Ms. Clark stated at the hearings that Verizon had actually expressed the backup generator capacity in *AC* amps – not *DC* amps.[1112] Therefore, the 1,505 amp capacity for the metro office represented AC amps and not DC amps, as Mr. Turner had assumed. Verizon continues to advocate this position in its response to RR-DTE-40. This approach, however, is improper from a costing standpoint in that all of the investment elements: microprocessor plant, rectifiers, batteries, automatic breaker, power distribution service cabinet, *and the emergency engine* need to be expressed in the same unit – DC amps – so that the investments can be summed, and the cost factors can be applied to the investment to arrive at a DC rate per amp.

2. Verizon's Correction Results in a Reduction of Its DC Power Consumption Rate from $22.79 to $15.88; Yet Verizon Still Has Overstated Its Costs.

In response to the Department's record request, Verizon corrected its DC Power Consumption cost study so that it is now using the DC amperage equivalent for its backup generators in reevaluating the cost for DC power.[1113] After making this correction, Verizon reduced its rate for DC power consumption from $22.79 per DC amp to $15.88 per DC amp.[1114]

(..continued)

[1110] Ex. VZ-28, Collocation Cost Model, Part CA, Workpaper 5.0, page 1 of 2, Line 41 (attached to Clark Direct).

[1111] Ex. VZ-28, Collocation Cost Model, Part CA, Workpaper 5.0, page 1 of 2 (attached to Clark Direct).

[1112] Tr. 1206-1207, 1/23/02 (Clark).

[1113] Verizon continues to assert that it is meaningless to express the capacity of the backup generator in DC amps and that there is "no direct relationship between emergency engines and DC power." RR DTE-40. Nonetheless, Verizon demonstrated that it is relatively straightforward to convert the capacity of the backup

(continued…)

Nonetheless, even with Verizon's restatement expressing the capacity of the backup generator on a DC amp basis, the record evidence shows that two corrections still must be made to Verizon's cost study as a result of clear errors in Verizon's revision.

First, Verizon has significantly overstated the DC capacity required for the backup generator. In the metro central office, Verizon has included a 1000 kw backup generator that is capable of providing 20,833 amps of DC power.[1115] This 1000 kw backup generator represents an emergency engine investment of $86,700.[1116] By utilizing a 1000 kw generator capable of providing 20,833 amps of DC power for the metro central office, Verizon assumes that only 29 percent of its capacity, or 6,000 DC amps, will be used to support the telecommunications equipment in the central office; while 14,833 amps, or 71 percent of the engine's capacity, will be available for the ancillary equipment such as air conditioning and lighting.[1117]

This is an unreasonable assumption given that the primary necessity of the backup generator is to provide power to the telecommunications equipment in the event of a utility power failure.[1118] It is customary to provide additional power from the backup generator above that which is needed for the telecommunications equipment to support ancillary functions in the central office such as lighting and air conditioning.[1119] However, the telecommunications

(..continued)
generator (which is always expressed in AC kilowatts) in DC Amps. Mr. Turner explained this at the hearings. *See* Tr. 1432-1433, 1/23/02; Tr. 1505-1506, 1/24/02 (Turner). The backup generator capacity is expressed in kilowatts and that produces AC current. However, the capacity must be converted to DC amps so that an overall cost per DC amp can be produced.

[1114] RR-DTE-40, Attachment 1, Workpaper 1.0, page 1 of 1, line 77.
[1115] RR-DTE-40, Attachment 1, Workpaper 4.0, page 1 of 1, lines 2 and 5.
[1116] RR-DTE-40, Attachment 1, Workpaper 1.0, page 1 of 1, line 25(C).
[1117] RR DTE-40, page 3 (Clark); Attachment 1, Workpaper 3.0, page 1 of 1, lines 4, 5, 6, and 7.
[1118] ATT-16, Turner Rebuttal, at 46.
[1119] ATT-16, Turner Rebuttal, at 44-45.

equipment generally represents approximately 80 percent of the use of the backup generator[1120] – not the 29 percent that Verizon has assumed in its metro offices.[1121]

Verizon's utilization in its urban offices is not much better. Verizon assumes the placement of a 350 kw emergency engine capable of providing 7,292 DC amps, representing an investment of $55,800.[1122] Under this assumption, only 36 percent of the backup generator capacity, or 2,600 amps, is used for the telecommunications equipment; while 64 percent, or 4,692 amps, is necessary for ancillary equipment in urban offices.[1123] Thus, as is obvious from these lopsided percentages in favor of ancillary equipment, Verizon has grossly overstated the capacity required for the metro and urban central offices. The capacity must be adjusted to provide a TELRIC cost study for DC power. Instead of using the oversized metro office engine of 1000 kw, Verizon's urban backup generator of 350 kw and its associated investment ($55,800)[1124] and capacity (7,292 DC amps)[1125] can support the metro central office. Verizon's 200 kw suburban backup generator and its associated investment ($45,600)[1126] and capacity (4,167 DC amps)[1127] should be used to support the urban central office.

Second, Verizon's restated cost study has mistakenly assumed the same capacity for the backup generator as the capacity of the microprocessor plant.[1128] For example, Verizon assumes a 6,000 amp microprocessor for the metro office and a 6,000 DC amp capacity for the emergency engine. However, Verizon identified the DC capacities of the backup generators in Verizon's

[1120] ATT-16, Turner Rebuttal, at 46.
[1121] RR-DTE-40, page 3; RR-DTE-40, Attachment 1, Workpaper 3.0, page 1 of 1, lines 6 and 7(C).
[1122] RR-DTE-40, Attachment 1, Workpaper 4.0, page 1 of 1, lines 7 and 10; Workpaper 1.0, page 1 of 1, line 25(D).
[1123] RR-DTE-40, Attachment 1, Workpaper 3.0, page 1 of 1, lines 4, 5, 6 and 7(D).
[1124] RR-DTE-40, Attachment 1, Workpaper 1.0, page 1 of 1, line 25(D).
[1125] RR-DTE-40, Attachment 1, Workpaper 4.0, page 1 of 1, line 10.
[1126] RR-DTE-40, Attachment 1, Workpaper 1.0, page 1 of 1, line 25(E).
[1127] RR-DTE-40, Attachment 1, Workpaper 4.0, page 1 of 1, line 15.
[1128] RR-DTE-40, Attachment 1, Workpaper 1.0, page 1 of 1, lines 1 and 22.

workpapers.[1129] Since the entire investment for the backup generators is being attributed to the telecommunications equipment,[1130] the full capacity of the backup generator should be utilized in the calculations. In short, the DC capacities that Verizon documents in its workpapers for the urban (7,292 amps), suburban (4,167 amps), and rural (1,667 amps) backup generators[1131] should be used for the DC amp capacity in the DC power consumption cost estimate.[1132]

Verizon provided its revised DC Power Consumption workpaper in electronic form. That makes it easy to take Verizon's revised analysis with backup generators sized in DC amps, and make the corrections to Verizon's revised cost study explained above. This recalculated DC Power Consumption cost study produces a rate of $5.39 per DC Amp, as shown in Page 2 of the Addendum to this brief. This restated rate is very close to the New Hampshire DC power consumption rates ranging from $3.03 to $5.27 per amp per month depending on density zone.[1133]

The revision to Verizon's late-filed revised workpaper is readily derived from the record evidence. If the Department would prefer that it also be made available in the form of a Record Request response, AT&T would of course be happy to answer such a request. This simple analysis of the record evidence could not be done until after the hearings, because Verizon did not provide its revised workpaper in response to RR DTE-40 until February 26, 2002, long after the hearings and only one week before this initial brief had to be filed.

[1129] RR DTE-40, Attachment 1, Workpaper 4.0, page 1 of 1, lines 5, 10, 15, and 20.
[1130] RR-DTE-40, Attachment 1, Workpaper 1.0, page 1 of 1, line 25.
[1131] RR DTE-40, Attachment 1, Workpaper 4.0, page 1 of 1, Lines 10, 15, and 20.
[1132] RR-DTE-40, Attachment 1, Workpaper 1.0, page 1 of 1, line 25.
[1133] *Bell Atlantic Petition for Approval of Statement of Generally Available Terms Pursuant to the Telecommunications Act of 1996*, New Hampshire Public Utilities Commission Docket 97-171, Order Addressing Motions for Reconsideration, Order No. 23,847 (issued November 21, 2001), at 73, line 41.

3. Verizon's Additional Rate For "AC Amp Per DC Amp" Attempts to Double Recover the Emergency Engine Investment

Verizon states that "for the purposes of this record request only" it calculates two different rate elements for DC power: (1) PER DC AMP; and (2) AC AMP PER DC AMP.[1134] Verizon intimates that it would need to recover both elements to fully recover the investment associated with the backup generator. This is not the case and Verizon's work papers demonstrate the mistake. In developing the PER DC AMP rate element, Verizon included the full investment in the backup generators.[1135] This can be confirmed by comparing this investment in Verizon's response to the record request to the investment Verizon included in its initial DC Power cost study filing.[1136] Verizon's "new" rate element – AC AMP PER DC AMP – recovers the same full investment in the backup generators again, but multiplied by the incorrect percentage of the backup generator that is used for the ancillary equipment, 71 percent.[1137] If Verizon is permitted to recover both rate elements it would fully recover the investment in the backup generator through the DC power rate element and then recover 71 percent of the same backup generator again through this new AC power rate element (for metro offices). This would represent a clear double-recovery in that the same investment would be recovered through both rate elements. Verizon cannot be permitted to double recover using these two rate elements.

In summary, Verizon's response to the Department's record request demonstrates that correction of the emergency engine amperage from AC to DC amps significantly reduces the DC Power Consumption rate. Moreover, the numerous mistakes in the Verizon restatement demonstrate that the DC Power Consumption rate should be even lower. It is unfortunate that it

[1134] RR DTE-40, page 5 (Clark); Attachment 1, "Cost Summary," lines 1 and 2.
[1135] RR DTE-40, Attachment 1, Workpaper 1.0, page 1of 1, lines 25 and 26.
[1136] VZ-28, Collocation Cost Study, Part CA, Workpaper 5.0, Page 1 of 2, Lines 25 and 26 (attached to Clark Direct).

took until after the hearings were completed for Verizon to acknowledge the error in the approach it used to develop the investment per *DC* amp for the backup generator. However, with the additional information Verizon has provided in RR-DTE-40, it is clear that Verizon's currently proposed rate for DC Power Consumption is wrong and its incorrect use of AC amperages in its DC cost study is only intended to overstate the cost for DC power to collocators. Further, the information provided has allowed AT&T to correct the calculations for DC Power Consumption. The restated DC Power Consumption workpaper, included in the addendum to this brief, should be used by the Department in setting the DC Power Consumption Rate for Massachusetts.

E. DC Power Distribution Rate: Verizon's Cost Study Grossly Overstates the DC Power Distribution Costs Because It Uses Cabling Distances Inconsistent With TELRIC.

The blatant error made by Ms. Clark on the cabling distances in Verizon's cost study demonstrates the inability of Ms. Clark to provide sound analysis of the information fed to her by Verizon. Indeed based on the argumentative style of Ms. Clark's prefiled testimony and the repeated references to herself in the third person, it appears that her erroneous "testimony" was taken from a legal brief in another jurisdiction. Because she is not an engineer, she was unable to correct Verizon's mistake and instead attempted, unsuccessfully, to argue the correctness of wrong cable lengths.

The cabling distances in the Verizon cost study are significantly greater than what central office engineering guidelines require.[1138] Based on his extensive experience as an engineer, Mr. Turner testified that the cabling distance between a BDFB and a collocation arrangement is

(..continued)

[1137] RR DTE-40, Attachment 1, Workpaper 2.0, page 1 of 1, Lines 4, 5, and 7.

[1138] Ex. ATT-16, Turner Rebuttal, at 49-50.

typically about 45 feet.[1139] The Texas PUC, after a thorough evaluation of collocation costs, determined that this cabling distance, for purposes of setting the DC Distribution rate, should be 55 feet.[1140] Yet, the average cabling distance from the BDFB to the collocation arrangement that Verizon proposes for the metro zone is 121 feet.

Ms. Clark attempts to explain the large discrepancy by stating the that "when Mr. Turner speaks of a 45-foot average for power cable, he is really endorsing a 90-foot long *total* cable" because a power source requires the placement of "two" power cables: (1) the "battery" and (2) the "ground" or "return" cable.[1141] Ms. Clark's statement is correct.[1142] However, in calculating Verizon's cable distances, Ms. Clark failed do the same calculation. As demonstrated by the data on page 1 of the attachment to Ex. ATT-VZ 5-12, the Verizon cost study shows an average total loop length for both the battery and return for metro offices of 242.35.[1143] (In order to arrive at this figure, the numbers in column E (loop length and battery return) are added for the metro zone. This results in 4120 feet of battery and return lengths for cable in the metro density zone. In order to arrive at the average total cable of 242.35 feet, 4,120 is divided by 17, the number of COs in the metro zone, as provided in line 19).[1144] Once the total loop length for battery *and* return is calculated at 242.35 feet, that length for both cables must be halved in order to arrive at the distance between the BDFB and the collocation arrangement – the distance for one cable.[1145] Thus, the average cable length in the metro zone in Verizon's cost study is 121.17 feet.[1146] Ms. Clark errs in stating that this 121 feet should be halved again to arrive at 60.5

[1139] Ex. ATT-16, Turner Rebuttal, at 49.
[1140] Ex. ATT-16, Turner Rebuttal, at 51; Ex. VZ-29A, Clark Surrebuttal, at 43, n.139.
[1141] Ex. VZ-29A, Clark Surrebuttal, at 43; Tr. 1048-1049, 1/22/02 (Clark).
[1142] Ex. VZ-ATT/WC 1-97.
[1143] Ex. ATT-VZ 5-12, page 1 of 10; Tr. 1052-1053, 1/22/02 (Clark).
[1144] Tr. 1052-1053, 1/22/02 (Clark).
[1145] Tr. 1053, 1/22/02 (Clark).
[1146] Tr. 1053, 1/22/02 (Clark).

feet.[1147] The Verizon data clearly shows that the total length for battery and return has already been halved. Thus, Verizon's cable length of 121 feet for one way of cable greatly exceeds the 45 feet recommended by Mr. Turner and the 55 feet adopted by the Texas PUC for that same one-way cable distance.

Perhaps most remarkable about Ms. Clark's erroneous claim that the cable length of 121 feet must be halved again is the purpose for which the error was committed. Ms. Clark made this error in an effort to demonstrate that her assumed cable length is about the same as the cable length utilized by the Texas PUC (55 feet), thus demonstrating that even Verizon concedes its assumed 121 foot cable is far too long.

Utilizing the Texas PUC's distance of 55 feet for cable length, as well as the DC Power Installation Factor and the Digital Circuit Annual Cost Factor, the DC Power Distribution Cost drops from $15.16 per month for cable fused up to 30 amps to $2.17 per month.

F. Land and Building Rate: Verizon's Proposed Building Investment Does Not Comply With TELRIC and Should Not Be Used To Calculate the Land and Building Rate.

Verizon's proposed building investment per square foot of assignable space ignores the TELRIC requirement that costs must be developed from a "total demand" perspective. Verizon's estimate of the land and building rate, however, violates this TELRIC requirement in a different way than Verizon's power installation factor. In this instance, Verizon includes more costs than the costs of network facilities needed to serve expected demand. Verizon includes in its forward-looking costs the costs of maintaining its existing network while building a new network and transition costs associated with moving its operation from one set of facilities to another.

[1147] Ex. VZ-29A, Clark Surrebuttal, at 43.

In 1998 Verizon filed rates for the forward-looking cost of a building. Verizon would be hard-pressed to justify the notion that the forward-looking cost of a building would double in a three-year period. However, this is exactly what Verizon's analysis purports to show. Comparing data on building investment produced by Verizon in the 1998 compliance filing and the Verizon data produced in this proceeding, Verizon claims that its forward-looking cost per-square-foot for buildings doubled.[1148] For example, in Sharon the investment per square foot for this building increased from $89.88 per square foot to $191.76 per square foot.[1149] Verizon's explanation for this inconsistency only confirms that Verizon's building investment contradicts TELRIC principles.[1150] Verizon's costs doubled not because a forward-looking building is much more expensive now, but because Verizon included in its "forward-looking" costs temporary buildings that will not even be used in a forward-looking network.

In his rebuttal testimony, Mr. Turner points to two Massachusetts central offices, Sharon and Tewksbury, to demonstrate the failure of Verizon's dramatically higher building investment to increase assignable space.[1151] In 1998, the Sharon office had a building investment of $449,475.48 and assignable space of 5,001 square feet.[1152] In 2001, Verizon shows that the Sharon office had a building investment of $958,977.78, and assignable space of, again, 5,001 square feet.[1153] Verizon states that the increased building investment at the Sharon central office resulted from a Dial-with-Dial ("DWD") central office conversion.[1154] In order to accommodate this new switch replacement, Verizon constructed a temporary building to house the existing switch while the new switch was being installed in the existing building.[1155] Similarly, Verizon

[1148] Tr. 1056-1057, 1/22/02 (Clark).
[1149] Ex. ATT-16, Turner Rebuttal, at 30.
[1150] Tr. 1427, 1/23/02 (Turner).
[1151] Ex. ATT-16, Turner Rebuttal, at 29-30.
[1152] Ex. ATT-16, Turner Rebuttal, at 29; Attachment 1 to Ex. ATT-VZ 5-1.
[1153] Ex. ATT-16, Turner Rebuttal, at 29-30; Attachment 2 to Ex. ATT-VZ 5-1.
[1154] Ex. VZ-29, Clark Surrebuttal, at 7.
[1155] Tr. 1057, 1/22/02 (Clark).

states that the reason for the increased investment but identical assignable space in Tewksbury is that the Tewksbury office underwent a switch conversion which "required a temporary addition to the central office while new walls, flooring, lighting, ductwork, air conditioning, and a new roof were installed in the existing central office."[1156]

Verizon's justification for these costs demonstrates that Verizon is not complying with TELRIC. Costs that Verizon incurs to maintain the current operation of its existing network during the time that it is constructing a new building are not the forward-looking costs of a network. It is instead a cost that arises from the fact that Verizon has been operating out of a pre-existing building that it now wants to change. As Mr. Turner states:

> …in essence what was going on is, they had a central office which had a certain amount of square feet in it – let's just say 5,000, for example -- and had an investment of a half million dollars, for an illustration. And then they built, according to [Ms. Clark's] testimony, a temporary structure so that they could migrate the lines off of the old switch onto a temporary switch, then migrate the lines back to a new switch in a now-retrofitted building. So there was effectively $500,000 of cost for the building that in 1997 they represented as being forward-looking, but then they built a temporary building, renovated the existing building, and then closed up the holes in the wall that they made and put a new roof on the building, and they've summed those four things -- the old building plus the temporary building plus the new building that's been renovated plus the fixing of the wall and putting on a new roof -- they've added all that up together, divided it by the same amount of square feet, and have said that the now-doubled cost of that building is now TELRIC.
>
> It's not possible to do TELRIC in that way. You can't build effectively two buildings to do the work of one building, [and] divide it by the [area] of only one building[].[1157]

Thus, AT&T recommends that the data from Verizon's 1998 compliance filing be used to calculate the building investment. The Department has already approved these 1998 costs which

[1156] Ex. VZ-29, Clark Surrebuttal, at 8.
[1157] Tr. 1428-1429, 1/23/02 (Turner).

more accurately state the forward-looking costs of a building opposed to the inflated, non-forward-looking costs proposed by Verizon in this proceeding.[1158]

G. Transition Mechanism: Verizon Should Be Required To Implement a Transition Plan If the Department Adopts Verizon's New Collocation Cost Recovery Structure.

With the submission of its proposed collocation rates in this proceeding, Verizon has altered the way it charges CLECs for interconnection arrangements in Massachusetts from a recurring cost structure per interconnection arrangement placed in service to a largely nonrecurring cost structure per interconnection arrangement ordered whether in service or not.[1159] As a result, collocators will now be required to pay a large nonrecurring charge to Verizon as soon as they order an interconnection arrangement, as opposed to paying a recurring cost upon use of an element through an interconnection arrangement.[1160] Unless managed properly, transition to this new cost recovery structure will have a huge financial impact on collocators. Due to the nature of the existing system, CLECs may have ordered large numbers of interconnection arrangements that they are not fully using. Under the new rate structure, those CLECs could be liable for a large nonrecurring charge for the interconnection arrangements that they ordered in the past, but have not yet placed into service.[1161] Moreover, there are many interconnection arrangements for which CLECs may have been paying a large recurring charge during the past few years. To the extent that Verizon has already been completely compensated, the nonrecurring charge that Verizon is now proposing would be wholly inappropriate. Verizon has not indicated how it will handle situations where the CLEC has already paid a considerable

[1158] Ex. ATT-16, Turner Rebuttal, at 33.
[1159] Ex. ATT-16, Turner Rebuttal, at 53.
[1160] Ex. ATT-16, Turner Rebuttal, at 53.
[1161] Ex. DTE-ATT 1-5.

sum for the interconnection arrangements and whether there will be true-up mechanisms in the other direction for these interconnection arrangements that have been in service.[1162]

Verizon simply propounds this new structure without a plan for adjusting collocators to this new charging method. In the absence of a transition plan, Verizon is likely to recoup a substantial windfall simply from the change in rate structure. AT&T does not object in principle to the new rate structure but vigorously opposes any transition to it without a plan to mitigate transitory impacts. If the Department decides to change the cost structure in Massachusetts to conform to Verizon's proposed cost recovery structure, Verizon should be required either to grandfather "existing interconnection agreements" or to formulate an appropriate transition plan for collocators in Massachusetts to move from the old structure to Verizon's new cost recovery structure.[1163] Without a transitional plan, Verizon will be left with too much discretion and could easily cause damage to collocators.

VI. NON-RECURRING CHARGES SHOULD NOT COVER THE COST FOR NETWORK MOVES OR ADMINISTRATION THAT WILL BENEFIT SUBSEQUENT USERS, AND IN ANY CASE MUST REFLECT EFFICIENT, FORWARD LOOKING TECHNOLOGY AND PROCESSES.

Verizon proposes a mind-boggling non-recurring charge ("NRC") of $307.34 for a Two Wire Hot Cut Initial with field dispatch.[1164] This represents a more than three-fold increase from the $86.01 to $98.66 non-recurring charge currently imposed for a local loop, even with a manual intervention surcharge and dispatch out charge.[1165] Many if not most of Verizon's other proposed NRCs are similarly outrageous.

[1162] Ex. DTE-ATT 1-5.
[1163] Ex. ATT-16, Turner Rebuttal, at 53.
[1164] Ex. VZ-21 (VZ Revised Non-Recurring Cost Summary) line 3, columns C, D, E and F.
[1165] Verizon's DTE MA Tariff No. 17, § 1.3.1 (adding service order, manual intervention surcharge, service connection-central office wiring, service connection-other and installation dispatch out for a single local loop).

Even if VZ-MA's ***recurring*** charges are brought down to pro-competitive, TELRIC-compliant levels, exorbitant NRCs would still stifle the emergence of robust local exchange competition. It would take months of customer gross revenue for a CLEC just to recover this NRC, without anything left to cover all the recurring UNE rate and other CLEC expenses in providing service to a customer. It would be years before a CLEC could hope to make a profit on a low-margin customer, in the face of such an exorbitant NRC. Because customers may change service providers frequently, the barrier to competitive entry posed by such an excessive NRC is significant. Such high NRCs would mean that the only possible way for CLECs to consider UNE-based entry would be to rely solely on UNE-P, and to avoid all UNE-L orders so as not to incur such outrageous non-recurring charges. Thus, high NRCs for loop hot cuts will discourage CLEC investment in their own switches and related facilities, and more generally discourage competitive entry at all.

There are two primary reasons why the NRCs proposed by Verizon are so untenably high.

First, most of Verizon's proposed non-recurring charges are for activities that are or should be recovered through recurring charges. The vast majority of Verizon's proposed NRCs are either for moving and rearranging wires within its network, or for coordinating those moves and rearrangements. As will be explained below, these categories of costs are already covered in Verizon's recurring charges by application of the Network and Wholesale Marketing ACFs. It is improper, and bad public policy, to permit Verizon to segregate a portion of these categories of costs and to charge for them on a non-recurring basis. Verizon's recurring cost model demonstrates that a modest increase in the monthly loop rates of only 2.2% is adequate to permit Verizon to recover fully the costs it seeks to assess as a non-recurring charge, and permit adoption of NRCs at the pro-competitive levels recommended by AT&T.

Second, even if Verizon were to be permitted to assess non-recurring charges for costs that could and should be amortized and included within the recurring rates, those NRCs must be reduced substantially to reflect efficiencies that the Department should expect to result from forward-looking technologies and processes. The TELRIC methodology governs the determination of all costs used in establishing prices for UNEs, whether those costs are recovered through recurring rates or through a non-recurring charge.[1166] TELRIC requires that "only forward-looking, incremental costs" be used and further requires that costs "must be based on the most efficient technology available."[1167] Verizon's proposed NRCs fail to reflect proper forward-looking costs based on the most efficient technology available. Verizon acknowledges that it did not model a forward looking process and then cost out the activities necessary for that process, but instead "started off with how things are today."[1168] As a result, Verizon proposes unreasonably high non-recurring rates based on embedded costs and inefficient technologies.

A. The Cost of Activities That Benefit Verizon or Subsequent Users of a Facility as Well as the Ordering CLEC Should Not Be Recovered Through Non-Recurring Charges.

1. The Test for Whether to Recover a Cost Through a Recurring or a Non-Recurring Charge Is Not Whether the Cost is "One-Time."

Verizon's proposed NRCs repeatedly seek to recover costs that should be recovered as part of a recurring rate and in fact, often are included in those recurring rates, resulting in Verizon's double recovery of a wide range of costs.[1169]

Verizon cannot and does not provide any reasoned distinction between those UNE costs that it seeks to recover through recurring monthly charges, and those that it seeks to recover up front through a non-recurring charge. Verizon suggests that NRCs are intended to cover "one-

[1166] 47 C.F.R. §§ 51.503(b) and 51.507(e)
[1167] *FCC's First Local Competition Order*, ¶ 690.
[1168] Tr. 511, 1/16/02 (Goldrick).
[1169] Ex. ATT-14, Walsh Rebuttal at 37.

time" costs, or "service costs that occur once in the life of a service."[1170] But this fails to explain the distinction between the two kinds of rates. After all, the vast majority of the costs that Verizon seeks to recover through recurring monthly charges are for one-time expenses. In particular, they cover the one-time cost of purchasing the switch, IOF, or other facilities at issue, along with the one-time cost of the engineering, furnishing, and installation required to put the equipment into service.[1171] In its recurring cost studies, Verizon takes these one-time costs and converts them into recurring monthly charges. It is the charge that recurs or does not recur, not the underlying cost.

Costs associated with activities to produce facilities that can be reused to provide service to a subsequent customer without change should be recovered through recurring charges, rather than NRCs. Only those costs which benefit only the ordering CLEC, with no benefit to a successor carrier serving the same retail customer location, should be included in NRCs.[1172] This should be the standard for determining whether a cost can be recovered through an NRC, not whether the cost is incurred only once.

Proper identification of one-time costs that provide the ordering CLEC, and *only* the ordering CLEC with a benefit, and so should be recovered through nonrecurring rates, is particularly important in a competitive environment where more than one local exchange carrier (including the incumbent) may use a particular facility at different points in that facility's economic life. If the first telecommunications provider to use the facility bears all the forward-looking costs of a one-time activity benefiting multiple users, then obviously the first user will be

[1170] Ex. ATT-VZ 6-1; Tr. 584, 1/17/01 (Meacham).
[1171] Ex. ATT-VZ 6-1.
[1172] Ex. ATT-13, Walsh Direct at 12.

forced to pay more than its fair share.[1173] The FCC, recognizing this problem, has expressly authorized the recovery through recurring rates of costs that are incurred only once.[1174]

a. Field Installation Costs Should be Recovered Through Recurring Rates.

Throughout its NRC study, Verizon seeks to include costs for tasks that provide the network and its subsequent users with a continuing benefit. For example, Verizon's proposed field installation tasks clearly benefit its network as a whole and are available to benefit subsequent users. The "Place intermediate field X-Conn. and NI(SI)", "Place plug-in if required/work at remote terminal", "Place block and/or drop wire from serving terminal to Network Interface Device (NID)", and "Place Network Interface Device (NID) at premise where one does not already exist" tasks are clear examples of work activities that benefit Verizon's network and subsequent users of the network.[1175] These activities are part of building a loop element and so are properly recovered in the recurring rate for that loop, not an in onerous one-time, up-front charge.[1176]

In particular, Verizon has proposed a non-recurring field installation cost of $104.92 for a basic loop.[1177] The proposed charge is for making the cross-connection between feeder and distribution plant at a feeder/distribution interface, if necessary, when a request for service is received.[1178] Verizon's NRC Panel, however, admitted that an intermediate cross-connection at a feeder distribution interface or serving area interface stays connected in the normal situation even after service is discontinued and so benefits subsequent entities seeking a loop provided

[1173] Ex. ATT-14, Walsh Rebuttal at 37-38; Ex. ATT-15, Walsh Surrebuttal at 4-5; *FCC's First Local Competition Order*, ¶ 750.
[1174] *FCC's First Local Competition Order*, ¶ 749; 47 C.F.R. § 51.507(e).
[1175] Ex. ATT-14, Walsh Rebuttal at 39.
[1176] Tr. 815, 1/18/02 (Walsh).
[1177] Ex. VZ-21, Revised NRC Cost Summary, Line 1, Column F.
[1178] Ex. VZ-20, Revised NRC Ex. G, Field Installation Activity Description, line 8.

through the same interface.[1179] Each of the field installation activities included in Verizon's model is needed either in order to make a new connection between the network and the CLEC customer, making the ordered UNE functional, or to deal with a network related problem, both of which improve the network and benefit subsequent users.[1180] Thus, such costs should be shared with those other network users as part of a recurring rate.

AT&T does not include a field dispatch and installation NRC because such fieldwork costs are properly treated as recurring costs. Under the FCC rules, "The local loop element is defined as a transmission facility between a distribution frame (or its equivalent) in an incumbent LEC central office and … an end user customer premises."[1181] Because the Verizon recurring cost loop study includes everything required for a complete path, including the cross-connection at the feeder-distribution interface, it would be incorrect to include those same costs in non-recurring charges. Once a line is connected at the FDI, any subsequent customer served out of that area can reuse the loop without Verizon making that connection or incurring the cost again.[1182] Thus, consistent with cost causation principles, AT&T's proposed NRCs do not reflect such field installation costs as non-recurring costs.[1183]

b. Loop Maintenance Costs Should be Recovered Through Recurring Rates.

Verizon also improperly seeks to recover costs for maintenance related tasks through its NRCs, disregarding the FCC's clear mandate in its *First Local Competition Order* that maintenance costs be recovered as part of a recurring rate:

> [R]ecurring costs must be recovered through recurring charges, rather than through a nonrecurring charge. . . For example, we determine that maintenance

[1179] Tr. 540, 1/16/02 (Peduto).
[1180] Ex. ATT-14, Walsh Rebuttal at 39-40.
[1181] 47 C.F.R. § 51.319(a).
[1182] Ex. ATT-14, Walsh Rebuttal at 38-39.
[1183] Ex. ATT-14, Walsh Rebuttal at 40-41.

> expenses relating to the local loop must be recovered through the recurring loop charge, rather than through a nonrecurring charge imposed upon the entrant.[1184]

For example, Task 10 in the RCCC task list for a two wire loop covers "remove any facility roadblock or problem." More than 22 minutes are allocated to complete that task.[1185] Verizon's NRC panel acknowledged that if removing the problem requires a field dispatch, a field dispatch NRC also will be charged to the CLEC.[1186] When that facility roadblock or problem is caused by defective plant or other Verizon-caused reasons, the costs of fixing the problem, including the coordination of that repair, should not be assessed as an NRC to the CLEC ordering service.[1187] Instead, that cost should be recovered through recurring rates.

The Verizon NRC Panel admitted that if Verizon technicians encounter defective outside plant during the installation of a UNE ordered by a CLEC, the costs associated with repairing that plant are recovered through a non-recurring charge.[1188] Verizon also admitted that the repair of such a loop would also benefit subsequent users.[1189] This is a clear example of the entire cost of a network benefit improperly being forced onto a single CLEC. In particular, Verizon NRC Panel members stated that field installation activities such as "Contact MLAC, if necessary, for new pair assignment" and "Work with Frame, and/or RCCC if necessary, for new pair assignment", are resolved by rearrangement of loop plant.[1190] The costs associated with this maintenance and rearrangement of the network should be recovered in Verizon's recurring rates.

[1184] *FCC's First Local Competition Order*, ¶ 745.
[1185] Ex. VZ-20, Revised NRC Ex. G, RCCC Activity Description, line 10.
[1186] Tr. 684, 1/17/01 (Peduto).
[1187] Ex. ATT-15, Walsh Surrebuttal at p. 18.
[1188] Tr. 674-75, 1/17/02 (Peduto).
[1189] Tr. 677-78, 1/17/02 (Peduto).
[1190] Tr. 688, 1/17/02 (Peduto).

AT&T's proposed NRCs do not include loop maintenance and repair activities.[1191] Instead, the NRCs proposed by AT&T are properly limited to those costs that benefit only the ordering CLEC.

2. The Categories of Cost that Verizon Seeks to Recover Through NRCs are Already Recovered In Its Recurring Rates, Through Its ACFs.

Verizon acknowledges that its various ACFs are intended to recover the "operations costs … that can be ascribed to purchasing and operating a UNE investment."[1192] In particular, Verizon's Network ACF permits Verizon to recover through its recurring UNE charges the same categories of costs that Verizon also is trying to assess as non-recurring charges.

Verizon's Network ACF covers, among other things, "repair expenses, rearrangement expenses, [and] testing expenses."[1193] Thus, this factor is specifically designed to capture the costs of "moves and rearrangements" (the "M" subfactor) and repairs (the "R" subfactor).[1194] Verizon takes its 1999 ARMIS expense in specified accounts and develops a factor that it applies to plant investment in order to create an associated expense level which is part of the recurring rate.[1195] Review of the ARMIS accounts used in the development of these factors reveals that over $85,000,000 in expenses associated with moves and rearrangements of aerial cable (ARMIS account 6421.1) is included in the development of the "M" subfactor, as well as over $95,000,000 in expense for repair of such loop facilities in the "R" subfactor.[1196] More generally, these subfactors cover costs associated with moving wires, other rearrangements of plant, and repairs for all categories of Verizon's switching, circuit, and outside plant

[1191] Ex. ATT-15, Walsh Surrebuttal at 4.
[1192] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 37.
[1193] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 42.
[1194] Ex VZ-37, Verizon Recurring Cost Study, Part G-5, "Overview of Factor Methodology" and Tab "1.NtwkFctr."
[1195] Ex. VZ-37, Verizon Recurring Cost Study, Part G-5, "Overview of Factor Methodology".
[1196] Ex. VZ-37, Verizon Recurring Cost Study, Part G-5, Tab 6."M", line 10, and Tab 7."R", line 10.

equipment.[1197] As Mr. Walsh explained, "[r]earrangements fall under the maintenance category of the recurring expense. And so those dollars are recovered, or should be recovered, in the recurring rate for those elements."[1198]

The Network ACF also encompasses "Other" subfactors, which among other things recoup tens of millions of dollars of expenses in the 6534 ARMIS account for activities allocated to the central office ("CO") or to outside plant ("OSP").[1199] This account encompasses expenses for "supervising plant operations" as well as "planning, coordinating and monitoring plant operations."[1200] These categories of expenses encompass, therefore, the coordination and related expenses that Verizon seeks to impose anew through NRCs.

Furthermore, Verizon acknowledges that portions of the network expenses used in the recurring rate calculation are also being recovered through NRCs.[1201] Mr. Peduto testified that defective loop plant generating a field installation NRC is resolved by loop rearrangements.[1202] Rearrangements are covered by the "M" factor in the recurring rates, but Verizon also seeks to impose a field installation NRC when such rearrangements occur in the process of provisioning a CLEC loop. The MLAC and RCCC are also involved in such loop rearrangements.[1203] The costs for these activities are therefore included in both the "M" factor and the provisioning and CO wiring NRCs. In addition, the cost of the coordination activities performed by the RCCC should be reflected in the "coordinating plant operations" expense used to generate the "other network" factors applied in Verizon's recurring cost study.

The FCC has expressly recognized that nonrecurring changes must be set so as to prevent "an incumbent LEC [from] recover[ing] more than the total forward looking economic cost of

[1197] Ex. VZ-37, Verizon Recurring Cost Study, Part G-5, Tab 5.M&RExp., Tab 6."M", and Tab 7."R".
[1198] Tr. 816. 1/18/02 (Walsh).
[1199] Ex. VZ-37, Verizon Recurring Cost Study, Part G-5, Tab 9.
[1200] 47 C.F.R. § 32.6534.
[1201] Ex. VZ-36, Verizon Recurring Cost Panel Direct at 43.

providing the applicable element."[1204] Verizon's proposed NRCs violate this basic principle because many of the costs included in the field installation and provisioning NRCs are already recovered through the recurring rates Verizon is proposing. The Department has already rejected efforts to impose separate additional charges for expenses that are recovered through general factors applied in calculating UNE rates.[1205]

The plant rearrangement, maintenance and coordination related expenses Verizon seeks to recover in field installation and provisioning NRCs should be rejected because they are already recovered through the network factors Verizon used to calculate its recurring costs. Verizon should not be allowed double recovery of these expenses.

3. Verizon's "NRC Revenue Adjustment" Is Not the Solution to Double Counting, As it Makes No Sense.

Verizon recognizes that the categories of cost it seeks to impose as non-recurring charges are already covered within its Network ACFs. In Verizon's words, "non-recurring revenues recover the costs of activities that are captured by the expense accounts contained within the Network ACFs."[1206] Therefore, in an attempt to avoid charges of double-counting, Verizon subtracts from the expenses reflected in the Network ACFs "an amount equal to the total non-recurring revenues from the customer interfacing (service order) and provisioning (network) expenses."[1207] These offsets are an admission by Verizon that all of its NRCs are for expenses that are covered by its ACFs.

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[1202] Tr. 687-88, 1/17/02 (Peduto).

[1203] Tr. 687-88, 1/17/02 (Peduto) and Tr. 535, 1/16/02 (Peduto).

[1204] 47 C.F.R. § 51.507(e); *see also FCC's First Local Competition Order*, ¶ 750 (incumbent LECs cannot "recover nonrecurring costs twice.")

[1205] *See* Phases 4-L and 4-O *Orders in Consolidated Arbitrations Docket*, disallowing a separate OSS charge; see also discussion at § III.F. *supra*., explaining why imposing a separate CUDS charge would result in improper double recovery of those costs.

[1206] Ex. VZ-36, Verizon Recurring Cost Panel Direct, at 47.

[1207] Ex. ATT-VZ 6-1.

Verizon reduces the CO and OSP expense categories used in the development of the "other network factor" by approximately $35.6 million in NRC revenue received in Massachusetts in 1999.[1208] This is intended to offset NRC revenue from installation-related charges.[1209] Thus, the categories of expense covered by the "M" and "R" dollars in the Network ACF would fully encompass the central office wiring, provisioning, and field installation NRCs, but for this revenue adjustment.

Verizon makes a conceptually similar adjustment for all "service order" NRC revenue, but it chooses to make this adjustment to its Wholesale Marketing ACF.[1210] Again, by making this revenue adjustment, Verizon is conceding that its "service order" NRCs are for expenses that would be fully encompassed by its ACFs, but for the NRC revenue adjustment.

But this subtraction makes no sense, and does not comport with TELRIC. For example, the effect of subtracting installation NRC revenues is to reduce the Network ACFs slightly so that they now cover the expense of moves and rearrangements everywhere in Verizon's network ***except*** for the discrete portions provisioned as UNEs. Verizon says that it has identified particular activities related to the provisioning of UNEs, and charges NRCs for those activities. But all other similar activities throughout the rest of the network then serve as the basis for the Network ACFs used to adjust Verizon's UNE costs upward. This is absurd.

Under TELRIC, one is supposed to estimate the forward-looking economic cost of the entire element, and then divide by demand to derive a per unit cost.[1211] By using these NRC revenue adjustments, Verizon has effectively calculated the service ordering and provisioning expenses associated with the entire element ***except*** for any portions actually ordered by and

[1208] Ex. VZ-37, Verizon Recurring Cost Study, Part G-5, Tab 9, cell L205.
[1209] Ex. VZ-37, Verizon Recurring Cost Study, Part G-5, Tab 4, Line 3.
[1210] Ex. VZ-37, Verizon Recurring Cost Study, Part G-4, Tab 2, line 15 (cell E22), and (in the electronic version only) the embedded "NRC Adjustment Study" spreadsheet; *see also* Ex. VZ-36, Verizon Recurring Cost Panel, at 49.

provisioned to a CLEC, and then incorporated the cost associated with that non-CLEC portion into its proposed UNE rates. This is improper, and makes no sense.

4. Verizon's Model Demonstrates that a 2.2% Increase in its Monthly Loop Rates Is All That Is Needed to Cover Fully the Purported Service Ordering and Provisioning Costs Upon Which Verizon Bases its Proposed Non-Recurring Charges.

These NRC revenue adjustments do not appropriately cure the double recovery problem. The NRC revenue adjustments to Verizon's ACFs do serve an important analytic purpose, however, and thus inadvertently advance the goal of sensible, pro-competitive UNE rates. Mr. Walsh has demonstrated conceptually why the overwhelming majority of the NRCs proposed by Verizon should instead by recovered through recurring charges. Because these expenses will benefit subsequent users of the network, and not just the ordering CLEC, they should be recovered in recurring rates, not in NRCs.

We can now see that the NRC revenue adjustments provide a simple way within Verizon's cost models to quantify the result. All one need do is zero out the NRC revenue adjustments in the Network and Wholesale Marketing ACFs that were discussed in the preceding section. Reversing the NRC Revenue Adjustments in Verizon's development of its Network and Wholesale Marketing ACFs and then eliminating all field installation and provisioning activities from the NRCs assures that Verizon will recover such costs only once through recurring rates.

Making this one change has the effect of increasing monthly recurring loop rates in Verizon's model by 2.2 percent. The loop rates generated by making this one change to Verizon's electronic workpapers are depicted in the second column below, and the percent difference between Verizon's original result and the result after zeroing out the NRC revenue adjustments is shown in the middle column. (Though this result comes directly from the record

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[1211] 47 C.F.R. § 51.511(a).

evidence, AT&T would also be happy to provide it in the form of a record request response if that is helpful to the Department.) If one takes the 2.2 percent resulting increase and applies it to the corrected result from Verizon's loop model, as discussed in Section IV.A.1 beginning at page 108, the result is a statewide average 2-wire analog loop rate of $7.43.

Two-Wire Analog Loop Rates
Revised to Zero Out Verizon's NRC Revenue Adjustments

Zone	VZ-MA[1212]	Without NRC Revenue Adjustments	Percent Difference	Updated Corrections to VZ-MA[1213]	Increased by Percent Difference
Statewide	$18.75	$19.16	2.2%	$7.27	$7.43
Metro	14.41	14.74	2.2	5.01	5.12
Urban	16.63	17.00	2.2	6.36	6.50
Suburban	20.15	20.58	2.1	7.89	8.06
Rural	28.20	28.80	2.1	11.77	12.02

In sum, Verizon's model demonstrates that the Department can eliminate the very high up-front NRCs that serve as a barrier to competitive entry and permit Verizon full recovery of the expenses it has claimed simply by taking what should be final 2-wire average loop rates of slightly over $7.00 and increasing them by about two percent. As discussed below, Verizon's claimed NRCs are substantially overstated on their own terms, so an adjustment to loop rates of even less than two percent would be justified on this record.

The key point, though, is that Verizon's own cost model proves that: (i) it is entirely appropriate to recover UNE service ordering and provisioning costs through recurring charges; and (ii) even if one accepts at face value Verizon's claims regarding the magnitude of those costs, they can be fully recovered through a very modest increase in the monthly loop rate. Moreover, this approach will comply with the TELRIC methodology, which requires that the

[1212] RR ATT-2.

forward looking cost for the total demand for the element be calculated and then spread across the total usage of the element.[1214] Verizon's methodology, on the other hand, results in a recurring rate that does not comply with TELRIC in order to impose high upfront NRCs on CLECs seeking to compete with Verizon.

B. Proper TELRIC Non-recurring Costs Must be Based on Efficient, Forward Looking Processes.

To the extent that the Department nonetheless permits Verizon to impose NRCs for service ordering and provisioning, rather than make the pro-competitive move of incorporating those costs into the recurring charges, Verizon's proposed NRCs should be reduced substantially. Verizon has proposed NRCs that are far in excess of forward-looking, long-run economic cost.

1. NRCs Should be Based on the Efficient Use of IDLC Without Unnecessary Copper Connections.

For the reasons discussed in Section IV.A.2.a, beginning at page 114, TELRIC rates should be set on a forward-looking network design in which loops on fiber feeder are served using IDLC technology, with no UDLC technology and those no cross-connects at any main distributing frame in the central office.

In determining NRCs for loops, however, Verizon has wrongly assumed that all loops provided to CLECs over IDLC will have to be transferred from fiber optic facilities to copper at the main distribution frame.[1215] Verizon proposes to impose an NRC of $338.62 for an IDLC to Copper Hot Cut with field dispatch, an additional $31 above the already excessive Hot Cut NRC proposed by Verizon.[1216] The end result is a double whammy – the NRC rises significantly because of the manual tasks involved in converting to copper facilities at the MDF and service

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[1213] See following table, and related discussion, immediately below.

[1214] See Section I.C.2. above.

[1215] Ex. ATT-14, Walsh Rebuttal at 53 citing Verizon Worksheet 5.

[1216] Compare Ex. VZ-21, Revised NRC Cost Summary, line 3 to line 5.

quality declines because of the multiple analog to digital and digital to analog signal conversions.[1217]

As described more fully in Section I.C, beginning at page 4, the TELRIC methodology requires that costs be calculated based on a forward-looking efficient network. The appropriate network construct is not limited to the technology that is currently deployed today by the ILECs. Instead costs must be based on the most efficient technology available in a forward-looking network. Loops served by IDLC are not connected to the MDF, but rather bypass the MDF, thereby keeping digital signals digital and eliminating the need for manual cross-connections at the MDF. With IDLC, connections to reach the switch are provisioned by an electronic instruction, not by a jumper wire.[1218] The Department should establish NRCs for loops based on an efficient electronic process for unbundling IDLC loops.

The October 2000 edition of "Telcordia's Notes on the Networks", a document provided in response to RR-DTE 81, lists up to eight different options for unbundling IDLC loops. In fact, one of the options cited by Telcordia is adopted by the AT&T NRC Model.[1219] Unbundling IDLC, therefore, is technologically feasible and should be adopted as a forward-looking and efficient design assumption by the Department in setting NRCs for loops.

The reason why Verizon and other ILECs have not yet unbundled IDLC loops at the DSL level is simple: Verizon has no commercial or market incentive to implement efficient IDLC unbundling for its CLEC competitors. To the contrary, Verizon's commercial interests are best served by the expensive IDLC to copper NRC it is proposing. This very high NRC significantly increases the sunk costs faced by a new entrant seeking to use a UNE loop, while Verizon can

[1217] Response to RR DTE-44; Ex. ATT-14, Walsh Rebuttal at 10-11.
[1218] Ex. ATT-14, Walsh Rebuttal at 53.
[1219] Ex. ATT-15, Walsh Surrebuttal at 28.

provide service to its own customers over IDLC without incurring any such costs.[1220] Verizon's assertion that it cannot unbundle IDLC is particularly suspect because it has made no effort to do so. Cooperative efforts between the ILEC, the CLECs and the vendor could resolve any remaining issues in unbundling such IDLC systems.[1221]

The importance of the Department requiring that NRCs for loops be based on the efficient electronic unbundling of IDLC cannot be overstated. As reflected in the AT&T NRC Model, loops served by an IDLC connection can be electronically provisioned, eliminating entirely any manual cross-connection costs for such fiber-fed loops.[1222] Instead Verizon is proposing a $233.70 NRC for the IDLC to Copper Hot Cut Initial, even after excluding the separate $104.92 field installation cost imposed whenever a dispatch is required.[1223] This $233.70 cost includes $68.43 for C.O. Wiring costs, which would be entirely unnecessary for fiber loops which can be unbundled and connected electronically to the switch[1224]. In addition, Verizon has failed to explain the additional $31 in provisioning costs for this UNE as compared to the Two Wire Hot Cut Initial proposed by Verizon.[1225] Although all the manual coordination costs Verizon seeks to impose for hot cut loops are unnecessary and should not be included in NRCs (see Section VI.A, beginning at page 236), there certainly should be no additional manual coordination costs imposed because of any unnecessary IDLC to copper conversion in the provisioning of hot cut loops.

If Verizon were permitted to impose a manual cross connection charge for IDLC loops, it would deny CLECs the very efficiency which Verizon provides to itself and which is inherent in the forward-looking network. That is not appropriate because the operational savings associated

[1220] Tr. 2892, 2/4/2002 (Donovan).
[1221] Tr. 878-79, 1/18/02 (Walsh).
[1222] Ex. ATT-13, Walsh Direct, Tab 3, page 6 showing cross-connection activity only for the 50.8% of loops provisioned on copper.
[1223] Ex. VZ-21, Revised NRC Ex. H, line 5.

with avoiding manual cross connections are part of the economic justification for placing fiber and IDLC. CLECs should not pay recurring charges based on technology that is placed, in part, to reduce the cost of one-time activities that are recovered through non-recurring rates and then pay non-recurring rates that do not capture these cost savings.

Forward-looking loop NRCs should be based on the electronic unbundling of IDLC as reflected in AT&T's proposed loop NRCs, not the unnecessary conversion of IDLC to copper requiring manual cross-connection as used by Verizon in its NRC calculations. Verizon's proposed NRCs fail to satisfy the TELRIC standard.

2. TELRIC Requires that NRCs be Based on the Efficient Use of OSSs.

The forward-looking requirement of the TELRIC methodology also mandates that NRCs be based on the assumption that CLECs and ILECs will conduct their business electronically using efficient OSSs.[1226] The efficient, electronic ordering and processing of goods and services is a reality in many parts of today's economy, and there is no reason for Verizon to assume that the same efficiencies cannot be realized between ILECs and CLECs in the forward-looking world TELRIC requires.

Verizon, however, fails to reflect the efficient use of electronic communications through OSSs in its proposed NRC. Verizon relies too heavily on manual intervention that could be avoided through the use of more efficient electronic processes. Furthermore, Verizon significantly overstates the percentage of service orders that will have to be processed manually. Verizon also continues to model excessive coordination activity for processes that could be accomplished more efficiently, and without coordination, using properly functioning OSSs.

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[1224] Ex. ATT-14, Walsh Rebuttal at 53.

[1225] Compare Ex. VZ-15, NRC Workpapers Tabs 3 and 5

[1226] Ex. ATT-13, Walsh Direct at 16.

Indeed, the Verizon NRC Panel admitted that the starting point for its modeling efforts was "how things are done today", rather than a forward-looking network.[1227]

a. Service Order Processing Can be Accomplished Through OSSs Requiring no Manual Intervention.

Verizon fails to take advantage of OSS efficiencies in calculating service order processing costs. Indeed, when an OSS system is functioning properly there should be no human intervention required to process CLEC service orders. Orders enter the OSS computer system directly and flow through to the appropriate provisioning personnel within Verizon electronically. CLECs would place orders much like Verizon's own sales representatives do their own customers. If there is a problem with the order, it should be rejected back to the CLEC automatically.[1228] It is the CLEC, not Verizon, that is in the best position to correct errors in a service order. This efficient use of OSSs in service order processing is reflected in AT&T's proposed non-recurring rates.[1229]

Yet, Verizon has proposed a service ordering cost of $7.04 for all initial loop and port orders. This is due to Verizon's unsupported assumption that manual handling by Verizon service representatives will be necessary for 38% of all orders.[1230] Even if all the Verizon forward-looking adjustment is applied to this occurrence factor, manual service order processing is still assumed over 23% of the time in Verizon's NRC calculation.[1231] The Verizon NRC Panel admitted, however, that such manual activities would not be required if an order could flow through the Verizon OSS electronically.[1232] Instead of assuming costly human intervention by Verizon to correct CLEC errors in their orders, the OSS should automatically return defective orders back to the CLEC for correction and no service order charge should be imposed.

[1227] Tr. 511, 1/16/02 (Goldrick)
[1228] Ex. ATT-14, Walsh Rebuttal at 26-28.
[1229] Ex. ATT-15, Walsh Surrebuttal at 5-6.
[1230] Tr. 520, 1/16/02 (Peduto).

Verizon attempts to justify its extremely high level of human intervention in service order processing by claiming that it has designed its system so that "complex" orders in which 5 or more lines are included in a single order fall out for manual handling by the TISOC.[1233] Verizon's choice about how to design its system, however, should not be the basis for establishing proper forward looking NRCs. Again, Verizon has no incentive to make such improvements to its OSS, for such modifications will only benefit its CLEC competitors. Instead, Verizon has used its policy choice not to automate such functions as the basis for imposing a $7.04 order processing charge on every loop and port order. This charge is particularly inappropriate for the typical one or two line residential orders, where even Verizon acknowledges that no manual intervention should be required.[1234] In an effort to stifle competition in the residential market, Verizon has skewed its rate structure to impose charges on CLECs serving residential customers for which no corresponding Verizon work activity will ever be incurred.

Proper forward-looking NRCs should be based on fully electronic service order processing. AT&T's proposed NRCs, which fully reflect the use of efficient OSSs for service order processing, comply with TELRIC. Verizon's proposed NRCs do not.

b. A Two Percent Fall Out Rate Should be Used in Calculating NRCs.

Even with efficient forward-looking provisioning systems, it is inevitable that some orders will fall out of the provisioning system and require some manual intervention. When the CLEC is responsible for that fallout, it is appropriate to include the costs of that manual

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[1231].Ex. ATT-14, Walsh Rebuttal at 25.

[1232] Tr. 518, 1/16/02 (Meacham).

[1233] Tr. 518 and 528-29, 1/16/02 (Meacham).

[1234] Tr. 530-31, 1/16/02 (Meacham).

intervention in the NRC.[1235] When such fallout is due to problems for which Verizon is responsible, such as defects in its database inventory, however, the costs of that manual intervention should not be included in the NRC.[1236] Instead, as discussed above, the costs of such Verizon maintenance of its own system should be recovered through recurring rates.[1237] If an unreasonably high fall-out rate is used in calculating NRCs, the CLECs will be forced to pay for excessive manual efforts which will not in fact be incurred in the forward-looking efficient network.

This Department has previously ordered Verizon to use a 2% fall-out rate in calculating NRCs.[1238] Use of a 2% fall-out rate in calculating NRCs has also been ordered by several other state commissions, including in the recent New York UNE Rates Order.[1239] That is the fall-out rate used consistently by AT&T in calculating the NRCs it proposes.[1240] Verizon, on the other hand, has used varying fall-out rates for different components of its NRC study and, because of the ambiguous nature of the Verizon forward-looking adjustment, is difficult to ascertain what fall-out rate is reflected in the final costs proposed by Verizon.[1241]

The primary justification offered by Verizon for its use of higher fall-out rates is that no ILEC currently achieves a 2% fall-out rate in provisioning UNE orders.[1242] Again, however, no ILEC currently has the incentive to fine tune its OSSs to achieve this capability. As long as the

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[1235] Tr. 793-94, 1/18/02 (Walsh).
[1236] Ex. ATT-15, Walsh Surrebuttal at 8.
[1237] Ex. ATT-15, Walsh Surrebuttal at 8; Tr. 796-97, 1/18/02 (Walsh).
[1238] *Consolidated Arbitrations Docket*, Phase 4-L Order at 10-16 (October 14, 1999).
[1239] *Investigations into the Compliance of Illinois Bell Telephone Company with the order in Docket 98-0486/056/Consolidated regarding the filing of tariffs and the accompanying cost studies for interconnection, unbundled network elements and local transport and termination and regarding end to end bundling issues.* Illinois Commerce Commission, Order Case No. 98-0396. Oct. 16, 2001; Connecticut Department of Public Utility Control, *Investigation of the Southern New England Telephone Company's Proposed Unbundled Network Elements (UNE) Non-Recurring Charges (NRCs)* Docket No. 98-09-01, Jan. 5, 2000, at 34; *In the Matter of a Generic Investigation of US West Communications, Inc.'s Cost of Providing Interconnection and Unbundled Network Elements*; OAH Docket No. 12-2500-10956-2, Nov. 17, 1998 at 75; *New York UNE Rates Order* at 143.
[1240] Ex. ATT-13, Walsh Direct at 30.
[1241] Ex. ATT-14, Walsh Rebuttal at 20-21 and 23; Tr. 863, 1/18/02 (Walsh).
[1242] Tr. 374, 1/16/02 (Question to Stacy)

ILECs like Verizon can continue to operate their systems inefficiently and force CLECs to absorb these costs through inflated NRCs, such improvements will never happen. In fact, Verizon acknowledged that it made no forward looking adjustment whatsoever to its loop assignment costs, reflecting no improvement in either time spent or occurrence rates, nor did it attempt to determine who the cost-causer was for the fallout in such processes.[1243]

A fundamental benefit of the forward-looking efficient pricing requirement of the TELRIC methodology is that it will provide Verizon and other ILECs with the incentive to implement the most efficient technology. The Department's prior recognition that a 2% fallout rate was proper for a forward looking provisioning process is reflected in AT&T's NRC calculations.[1244] AT&T has presented evidence concerning the types of fallout experienced and their causes that fully justifies the 2% fallout rate.[1245] Continuing to use that 2% fallout rate will provide the needed incentive to force Verizon to make its electronic processes more efficient, benefiting all concerned.

c. Verizon's Non-Recurring Costs Reflect Inefficient Manual Coordination Costs That Grossly Inflate the Cost of Provisioning CLEC Orders.

Verizon's proposed NRCs contains very substantial costs for manual coordination that are completely unnecessary and inappropriate in a forward-looking, efficient system. For example, unnecessary coordination costs through the RCCC account for at least $107.49 of the $127.14 provisioning cost sought by Verizon for a Two Wire Hot Cut Initial.[1246] Verizon admitted that the RCCC group that performs this role does not fulfill a single physical task that is

[1243] Tr. 533, 1/16/02 (Meacham); Tr. 534, 1/16/02 (Peduto).
[1244] Ex. ATT-13, Walsh Direct at 30.
[1245] Tr. 896-97, 1/18/02 (Walsh); Ex. ATT-13, Walsh Direct, Tab 2, NTAB at 20-21.
[1246] Ex. VZ-15, NRC Workpapers, Tab 3

actually required to provision service, but is simply an overlay to a normally mechanized flow of such work activity.[1247]

Verizon's costs of manual coordination reflect the inefficiencies of its existing network and procedures and are not forward-looking. These RCCC costs reflect an existing administrative process that requires substantial amounts of inefficient labor to coordinate and monitor Verizon's employees' work progress and to resolve internal Verizon roadblocks. Verizon would not incur these costs if its operations for CLEC orders were truly mechanized and efficient. In a forward-looking efficient network environment, employees use automated systems to coordinate as well as perform the work required by service order requests. Flow through of provisioning activities is one of the basic capabilities of modern OSSs,[1248] and a forward-looking cost study must recognize this capacity. Charging for manual activities that mimic the inherent capabilities of the OSSs, as Verizon seeks to do through RCCC charges, is not forward looking.

The Rhode Island PUC recently rejected all of Verizon's proposed RCCC costs as double recovery of the supervisory administration overhead inconsistent with TELRIC, stating:

> The Commission shares the Division's concern that the costs associated with the Coordination Bureau are unnecessary. Special coordination charges that apply only to work being done for UNEs might well amount to double-recovery or ordinary supervision overhead expenses and could, therefore, constitute a barrier to entry. Accordingly, we order that no such costs be included in any future TELRIC cost studies in this docket.[1249]

In addition, the Vermont Public Service Board rejected Verizon's proposed NRCs because they included significant costs that are "likely to be unnecessary" and found that eliminating such costs would "eliminate virtually all the loop and switch port provisioning costs."[1250]

[1247] Tr. 538, 1/16/02 (Peduto).
[1248] Ex. ATT-14, Walsh Rebuttal at 17-18.
[1249] *Rhode Island UNE Inputs Order* at 68.
[1250] *Vermont UNE Rates Order* at 81.

It is particularly telling that Verizon's costs of manual coordination are significantly higher than the cost of the work effort that is actually required to make the connection. For example, Verizon's cost study for a hot cut loop includes 126.46 minutes of RCCC time, even after application of the alleged forward looking adjustment.[1251] The total forward looking CO Frame time is 62.41 minutes, of which at least half appears to be for interfacing with the RCCC.[1252] The coordination time assumptions by Verizon are not reasonable.

Verizon seeks to justify including all this manual coordination cost in the NRCs on the ground that CLECs have asked for coordination. The current coordinated hot-cut process, however, was developed to eliminate repeated errors committed by Verizon in migrating loops in New York, as a result of problems within its OSSs and its line provisioning practices. These errors caused many customers to lose dial tone and service altogether after signing up with a CLEC. Because Verizon proved incapable of successfully implementing an uncoordinated hot cut process when first learning how to provision unbundled loops to CLECs, it became necessary to implement the present coordinated hot cut process to avoid service outages caused by Verizon errors.[1253]

The problems that were experienced in the initial network environment and the resulting hot-cut provisioning practices currently used between Verizon and CLECs are not relevant to the setting of TELRIC-compliant rates in this proceeding. Those rates must be set for a forward-looking network environment, under the assumption that Verizon will have fixed its OSS databases and that it will follow best and most efficient provisioning practices.[1254] The most efficient means of provisioning unbundled loops in the forward-looking environment relevant to the setting of TELRIC-compliant rates would be an uncoordinated, but no less accurate, hot-cut

[1251] Ex. VZ-15, NRC Workpapers, Tab 3.
[1252] Ex. VZ-15-NRC Workpapers, Tab 3.
[1253] Response to RR-DTE-24.

migration process.[1255] Verizon will have no incentive to deploy an accurate uncoordinated process if they are permitted to recover NRCs including manual coordination costs from CLECs.

Moreover, much of the manual coordination time that Verizon has included in its NRCs is for internal coordination among Verizon's work groups. It is not coordination with the CLEC. For example, the study includes five separate tasks (even for a single line order) totaling almost 15 minutes for a person called a screener to assign an order to another person (the coordinator) who will do the coordination. The same five tasks are piled on the disconnect costs, but the different and higher task times for the identical activities reveals another obvious flaw in Verizon's survey data.[1256] This redundant manual effort is used instead of having electronic orders from new entrants automatically channeled to qualified personnel.

In addition, some work activity identified for the RCCC relates to field dispatch work. For example, RCCC tasks 11, 17 and 35 each involve alleged coordination with field installation activities.[1257] These three tasks account for almost 40 minutes in the RCCC cost calculation for a new two-wire loop.[1258] Even though Verizon proposes to charge for field installation only when dispatch occurs, costs for these related activities of the RCCC and other groups are improperly included in the provisioning component of the NRC charged on all orders.

3. Verizon's Survey Methodology for Determining Task Times Improperly Focuses on Current Processes, not Efficient Forward-Looking Processes, and its Arbitrary Forward-Looking Adjustments do not Cure This Serious Defect.

Verizon claims that the task times it used to calculate NRCs are more reliable than the estimates made by the AT&T panel of experts, because Verizon used the results of an employee

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[1254] Response to RR-DTE-24.
[1255] Tr. 821-22, 1/18/02 (Walsh)
[1256] Ex. VZ-20, Revised NRC Ex. G., RCCC Activity Description, Lines 1-5.
[1257] Ex. ATT-15, Walsh Surrebuttal at 20-21.
[1258] Ex. VZ-20, Revised NRC Exhibit G, RCCC Activity Description, lines 11, 17 and 35.

survey. However, Verizon's task time methodology suffers from several serious flaws. First Verizon's methodology locks in embedded inefficiencies. The survey, conducted in 1999, required respondents to estimate average task times based on their experience.[1259] As a result, this survey, at best, captured only the time to carry out the then current embedded processes, not what would be expected in a forward-looking environment. The Vermont Commission rejected Verizon's survey methodology, finding that it "fails to estimate work times satisfactorily, largely because the work functions are inaccurately specified and the times needed to perform them are not well estimated. These flaws flow mainly from the fact that Verizon assumes that the work will be undertaken in the context of its historic, rather than the presumed forward-looking, network."[1260] The Verizon survey used in this proceeding also failed to measure the times needed to perform the relevant activities in a proper forward-looking network. Accordingly, the survey results are essentially useless. Similarly, Verizon's estimates of the typical occurrence factor were based on the current processes and systems in place when the cost study was performed, not on a forward looking environment.[1261]

Second, the survey process was biased. Twice on the first page of the survey instructions, employees are advised that the results will be used to establish the rates Verizon will charge its competitors.[1262] The kickoff memorandum to the management team for the surveys urged company loyalty, stating that inadequate survey data "jeopardizes our ability to recover our costs and strengthens the positions of our opponents (AT&T, MCI WorldCom, Sprint, etc.). . ."[1263] Employees understand that longer work times will translate to higher costs. Treating the development of forward-looking costs as a competitive sport in which the goal is to

[1259] Tr. 512, 1/16/02 (Goldrick); Tr. 560, 569, 1/17/02 (Goldrick); Tr. 705, 1/17/02 (Peduto).
[1260] *Vermont UNE Rates Order* at 81.
[1261] Tr. 577, 1/1702 (Peduto).
[1262] Ex. VZ-14, Meacham Direct Testimony, Ex. K.
[1263] Ex. VZ-14, Meacham Direct Testimony, Ex. L.

defeat the CLECs, is certainly not a reasonable approach for obtaining unbiased and accurate results. The New Jersey Board of Public Utilities recently found that Verizon's self-administered surveys produced biased and arbitrary results.[1264]

Third , the variation in survey results for the same task and the small sample size for many tasks seriously undermine the reliability of the mathematical average times derived from the survey. There were many tasks for which there were fewer than 10 survey responses.[1265] For example, several of the activities included in the excessive RCCC charge for hot cut loops were the subject of only 5, 6 or 7 survey responses.[1266] There were also many tasks for which the highest times reported were many multiples higher than the lowest reported time.[1267] For example, key activities included in the CO Frame charge for loops had survey time estimates ranging from 1 minute to 20 minutes or more.[1268] The survey responses for CO Frame activity 4 for two wire, two wire hot cut and two wire IDLC to copper hot cut loops ranged from two minutes to 90 minutes.[1269] In addition, Verizon failed to explain how the survey respondents were selected for those tasks performed by a large number of Verizon employees.[1270]

Finally, and most troubling, is Verizon's complete failure to explain for individual tasks the reason why a forward-looking adjustment was or was not made and, if so, what the basis for that adjustment was. All Verizon provided was an alleged forward-looking adjustment labeled as a percentage. No documentation or explanation of those adjustments was provided.[1271] It is impossible to tell whether that adjustment reflects a forward-looking reduction in the time needed to perform a task or a reduction in the occurrences of that task or some unspecified

[1264] Tr. 596, 1/17/02 (Meacham); *New Jersey UNE Rates Order* at 7.
[1265] Response to RR DTE-13.
[1266] Response to RR DTE-13. See RCCC activities 3, 4, and 5 for the IDLC to Copper Hot Cut (UNE #5).
[1267] Response to RR-DTE-13.
[1268] Response to RR DTE-13. See CO Frame Activities 2, 3, 8, 15 for loop elements.
[1269] Response to RR-DTE-13.
[1270] Tr. 647, 1/17/02 (Goldrick).
[1271] Tr. 581, 711, 1/17/02 (Peduto).

combination of both. The Department can only speculate as to what factors went into these adjustments. Therefore, even if the survey results were reliable, the unexplained adjustments render the final results arbitrary and unsupported. Accordingly, Verizon has failed to satisfy its burden of proving that the work time and occurrence factors comply with TELRIC requirements.

The process assumptions and specific basis for each of the task times and occurrence factors used in the AT&T model are set forth in the NTAB and the model documentation filed with the model.[1272] The "bottoms-up" process used by AT&T assures that its proposed NRC cost development is properly forward looking and efficient.[1273] AT&T's time estimates by experts based on fully disclosed forward looking processes are much more reliable than the unexplained adjustments by Verizon to its unreliable embedded process survey results.

4. Verizon's Repeated Downward Revisions in NRCs During the Proceeding Reveal the Inflated Nature of Verizon's Cost Submissions.

Verizon's admissions as to inaccuracies in its cost studies when challenged, and resulting downward restatements of work times and costs in this proceeding, evidence the inflated nature of Verizon's cost submission. Viewed against this backup, it is easy to identify other inflated times and costs in Verizon's study.

Verizon, when pressed at the hearing regarding the basis for the "travel to unmanned central office" component of the CO wiring cost, attempted to justify their use of the percentage of unmanned central offices, rather than the percentage of loops in such unmanned offices, by arguing that CLECs choose locations in which to market, not individual loops.[1274] This argument makes no sense and Verizon has now admitted, in its response to a Department record request, that the original 12% and 24% occurrence factors for Task No. 4, "Travel to remote/unmanned central office for the purpose of performing frame provisioning work" for new

[1272] Ex. ATT-13, Walsh Direct at 25-27 and Ex. 2.
[1273] Ex. ATT-13, Walsh Direct at 25 and Ex. 2 at 28.

two wire loops and two wire hot cut loops, respectively, were overstated by a factor of four, resulting in nearly a $4.00 inflation of CO wiring cost.[1275] Verizon finally admitted that the percentage of lines at unstaffed central offices, rather than the percentage of unstaffed offices, was the more appropriate basis for calculating how often a technician would have to travel to perform CO wiring work.[1276] As a result, Verizon proposes to reduce the CO wiring cost on a Two Wire New Initial loop from $37.24 to $33.44, with corresponding reductions for all applicable two and four wire loop NRCs.[1277]

Verizon has also conceded that its original study contained overstatements of TISOC work times. On December 17, 2001, Verizon submitted a revised NRC Model with revised TISOC work times resulting in service order cost for a loop falling from $10.62 in Verizon's original submission to $7.04. UNE-P service order costs dropped from $1.14 to $0.65.[1278] This revision was based on an Arthur Anderson study performed in March, 2000, which was designed to capture actual productivity based on observations and interviews by the consultants.[1279] Yet Verizon did not make this revision until mid-December, just weeks before these hearings were to begin.

Even then, Verizon failed to correct its submission to reflect the connection of a Verizon loop to a Verizon port, which is how UNE-P is provided. Instead, Verizon improperly continues to use the time for the connection of a Verizon loop to a CLEC port (which is a UNE-loop).[1280] Furthermore, the other CO Frame work tasks that remain in the Verizon study reflect a much higher percentage of DIP creation, which contradicts the 33% DIP percentage Verizon belatedly

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[1274] Tr. 743-749, 1/17/02 (Peduto, Goldrick and Meacham).
[1275] Response to RR-DTE-21
[1276] Response to RR-DTE-21
[1277] Response to RR-DTE 21.
[1278] Compare Ex. VZ-18, NRC Panel Surrebuttal, Ex. G with Ex. VZ-14 Meacham Direct Testimony, Ex. G.
[1279] Tr. 513, 1/16/02 (Meacham).
[1280] Ex. ATT-14, Walsh Rebuttal at 58; Tr. 809, 1/18/02 (Walsh).

used to discount UNE-P charges. As an example, the calculations used in the disconnect portion of the Verizon "Two Wire Analog-Digital Conversion UNE-P" (Initial and Additional) NRC calculation reflect no "CO Frame" or "RCCC" involvement.[1281] Accordingly all such cross-wires would remain intact upon disconnect and therefore produce a DIP percentage much higher than the 33% now used by Verizon.[1282]

Finally, at the beginning of the hearing devoted to NRCs, Verizon made another downward adjustment to its proposed NRCs. Verizon revised the CO wiring and Provisioning components of the new UNE-P elements to reflect that jumpers would be left in and no disconnection or need for reconnection would occur 33% of the time.[1283] This resulted in reducing CO wiring charges for a new UNE-P initial from $27.93 to $18.72 and the provisioning cost from $24.28 to $18.52.[1284]

Given the significant cost overstatements admitted by Verizon already in this proceeding, other overstatements and inaccuracies undoubtedly exist. One need not look far to find them. The CO wiring and provisioning processes, in which Verizon has already conceded inaccuracies, is riddled with even further inefficiencies.

The CO wiring and connection, or CO FRAME activities, represent the core activities required to place a cross-connection between a Verizon cable pair and a CLEC UNE facility.[1285] Verizon's time measurements for these processes, however, do not realistically reflect how technicians efficiently operate and perform their tasks. Verizon has calculated 17.97 minutes for the combined tasks of verifying the assignment and making the cross-connection.[1286] In practice,

[1281] Response to RR DTE-22.
[1282] Response to RR DTE-22.
[1283] Tr. 436, 1/16/02 (Peduto)
[1284] Compare Ex. VZ-18, NRC Panel Surrebuttal, December 17, 2001, Ex. H with Ex. VZ 20, revised Ex. H submitted on January 16, 2002.
[1285] Ex. ATT-15, Walsh Surrebuttal at 26.
[1286] Ex. VZ-20, Revised NRC Ex. G, C.O. Frame Activity, lines 8 and 11.

a technician will verify and make the connection as a single work activity.[1287] Mr. Walsh, who has observed thousands of connections being made on various types of frames, testified that the combined verification cross-wire placement activity takes on average less than 2-1/2 minutes.[1288]

Verizon's analysis of its CO FRAME service order retrieval process is another prime example of overstated times. Verizon begins the CO FRAME provisioning process by listing Task No. 3 "Retrieve FOMS/TIRKS output (paper copy) and verify the information."[1289] Verizon's stated time for this task is 6.08 minutes. Given that technicians typically receive a number of service orders at one time and verify their information together, Verizon fails to account for the efficiencies created by such a process.[1290] According to Verizon, a technician receiving ten service orders would require over an hour to verify the order information. As the first-hand observations of AT&T Witness Richard Walsh make clear, such a time estimate is patently unreasonable. Mr. Walsh estimated that a technician receiving eight to ten orders would require approximately twenty-five minutes to verify the information contained in all those orders.[1291] In addition, because all the RCCC coordination time is unnecessary, all of the corresponding time for the frame technician to communicate with the RCCC reflected in the CO wiring component of the NRCs should be eliminated.[1292]

Verizon's study also combines various tasks that should be separated in order to determine proper occurrence factors. For instance, CO FRAME Task No. 8 includes at least three different tasks – "Confirm the assignment by verifying that the cable and pair assignment is correct. Notify RCCC of any troubles and obtain new assignment." If the cable and pair assignment the technician encounters is correct, there is no need to notify the RCCC of any

[1287] Ex. ATT-15, Walsh Surrebuttal at 30.
[1288] Tr. 882-84, 1/18/02 (Walsh).
[1289] Ex. VZ-15, NRC Workpapers, Tab 1, CO Frame Activity, line 3.
[1290] Ex. ATT-15, Walsh Surrebuttal at 27.
[1291] Ex. ATT-15, Walsh Surrebuttal at 28.

troubles or obtain a new assignment. Yet, Verizon included all of these activities in one task, and provides a single occurrence factor for that task, even though some of these activities will occur much less frequently than others. The result is that CLECs are charged for time that is not likely to be actually incurred. Furthermore, Verizon's completion time of 9.44 minutes for Task No. 8 is also a significant overstatement. As Mr. Walsh stated in prefiled testimony, Task No. 8 would simply involve a technician "walk[ing] over to the MDF [to] compare the information on the order to the facilities on the frame."[1293] Allotting nearly ten minutes for such an activity is clearly unreasonable.

Finally, Verizon's last minute recognition that no CO wiring expense will be incurred in 33% of new UNE-P installations still fails to reflect reality. In fact, reusing inside plant for UNE-P provisioning is now the industry standard because it is both economical and efficient, as reflected in AT&T's NRC calculation.[1294] Indeed, Verizon does not include any CO wiring cost in its disconnect calculation for the conversion UNE-P, thus tacitly acknowledging that those existing connections will not be broken apart, even when service is disconnected.[1295] The Department should require that NRCs for UNE-P reflect the efficient reuse of inside plant in all circumstances, as done in the NRCs proposed by AT&T.

C. Connection and Disconnection Charges Should be Separately Assessed.

Verizon's attempt to impose an upfront charge for disconnection every time a CLEC orders a facility should be rejected by the Department. While aggregated connect and disconnect charges have a history of use in the retail environment, the CLEC market is very different.[1296] CLECs are wholesale purchasers of large quantities of unbundled network elements – and the

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[1292] Ex. VZ-15, NRC Workpapers, Tab 1, CO Frame Activity, lines 1, 5, 7, 8, 15 and 23.
[1293] Ex. ATT-15, Walsh Surrebuttal at 30.
[1294] Ex. ATT-15, Walsh Surrebuttal, p. 22.
[1295] Tr. 543-44, 1/16/02 (Peduto and Meacham)

NRCs imposed by Verizon should reflect this market reality.[1297] Verizon's insistence that CLECs pay a disconnect charge at the time of ordering simply increases the sunk cost faced by the CLEC, further raising the barrier to competitive entity. Verizon's proposal is particularly inappropriate because even if the CLEC customer discontinues service from the CLEC at some time in the future, the physical connection for that service may not actually be disconnected but instead will be reused to benefit Verizon or another CLEC.[1298] Verizon admitted that, under that circumstance, it will recover revenue under its proposed NRCs for costs it never incurs.[1299] The Department should reject Verizon's aggregated NRCs and adopt the approach used by AT&T in its proposed NRCs, and endorsed by the Rhode Island and Connecticut Commissions, of eliminating disconnection charges from the upfront NRC.[1300] Doing so makes fundamental economic sense – and will help remove yet another barrier to competitive entry in the local exchange market.[1301]

The rationale for charging individual retail customers a disconnect fee at the time of service ordering is that such retail customers may be unable or unwilling to pay Verizon for disconnect services at the time service is cancelled, particularly when service is cancelled involuntarily, and the transaction costs would be too high for Verizon to recover such costs from each such individual.[1302] This reasoning may be logical when applied to a multitude of small retail customers. It is conceivable that tracking down many small retail customers for such charges would be inefficient and at times difficult for an ILEC.

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[1296] Ex. ATT-14, Walsh Rebuttal at 36; Tr. at 855-56, 1/18/02 (Walsh).

[1297] Ex. ATT-14, Walsh Rebuttal at 36; Tr. at 855-56, 1/18/02 (Walsh).

[1298] Tr. 403-04, 1/16/02 (Stacy).

[1299] Tr. 689, 1/17/02 (Peduto).

[1300] *Rhode Island UNE Inputs Order* at 66-67; January 5, 2000 Decision by the Connecticut Department of Public Utility Control in Docket 98-09-01 requiring compliance with 2% fallout rate established in May 20, 1998 Decision in Docket 97-04-10 at 46.

[1301] Tr. 857, 1/18/02 (Walsh).

[1302] Ex. Vz-18, Verizon NRC/DSL Panel Surrebuttal, at 56.

This rationale does not apply to CLECs, however. CLECs are corporate entities making "huge volume", wholesale purchases of UNE services.[1303] They are fundamentally different from retail customers who are typically making small, isolated service orders.[1304] Unlike retail customers, Verizon should have no difficulty tracking down corporate CLECs and collecting from them in an efficient and cost-effective manner.[1305] Furthermore, CLECs are involved in a long-term continuing business relationship with Verizon.[1306] Such a relationship virtually eliminates the possibility that a CLEC would simply walk away from disconnect charges.[1307]

Verizon raises the specter of CLEC bankruptcy in an unavailing attempt to justify imposing upfront disconnect charges in the UNE market.[1308] The Verizon NRC Panel's contention in its surrebuttal testimony that CLEC bankruptcy has "happened relatively frequently" was contradicted by its own hearing testimony. Indeed, the Verizon Panel members testified at the January 17, 2002 evidentiary hearing that CLEC bankruptcy occurs "rarely" and that they could not recall any CLEC in Massachusetts going bankrupt.[1309]

Verizon's proposed inclusion of disconnection costs with connection costs also violates basic economic principles of cost causation.[1310] Simply put – disconnect charges should be imposed only if and when disconnect occurs. In fact, Verizon witness Michael Peduto admitted that upfront disconnect charges will, at times, result in Verizon recovering revenues for costs it never incurs.[1311] CLECs should not be forced to pay upfront for speculative disconnection costs that may or may not ever happen. AT&T's proposed NRCs, which include separate connection and disconnection NRCs reflect the appropriate rate structure. Verizon's effort to increase the

[1303] Tr. 855, 1/18/02 (Walsh).
[1304] Ex. ATT-14, Walsh Rebuttal at 36.
[1305] Ex. ATT-14, Walsh Rebuttal at 36.
[1306] Ex. ATT-14, Walsh Rebuttal at 36.
[1307] Ex. ATT-14, Walsh Rebuttal at 36.
[1308] Ex. Vz-18, Verizon NRC/DSL Panel Surrebuttal, at 56.
[1309] Tr. 692-93, 1/17/02 (Peduto, Meacham).
[1310] Ex. ATT-14, Walsh Rebuttal at 36; Tr. 403, 01/16/02 (Stacy)

barriers both to competitive entry by aggregating connection and disconnection costs into a single up front charge should be rejected.

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[1311] Tr. 691, 1/17/02 (Peduto).

VII. CONCLUSION.

AT&T respectfully urges the Department to adopt pro-competitive, forward-looking UNE rates consistent with the analysis and detailed recommendations provided above, and to require that Verizon's tariffs be made consistent with these conclusions including in the ways also described above.

Respectfully submitted,

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Jeffrey F. Jones
Kenneth W. Salinger
Laurie Gill
Jay E. Gruber
Kevin Prendergast
John Bennett
Katie Davenport
PALMER & DODGE LLP
111 Huntington Avenue
Boston, MA 02199-7613
(617) 239-0100

Mary E. Burgess
AT&T Communications of New England, Inc.
111 Washington Avenue
Albany, NY 12210-0000
(518) 463-3148

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Addendum.