1 A. No. A shared cost is by definition one that can not be directly assigned to
2 a product, service or element. Although Other Support expenses are not
3 exclusively related to investments, they are also not exclusively related to
4 revenues, expenses or any other metric. As such, a fair and equitable
5 means of spreading the shared costs over the benefiting services, products
6 or elements is required. The Company generally has used investments as
7 the driver for spreading these types of shared costs.
8 Q. What about Mr. Fischer's assertion that a disproportionate assignment of
9 Other Support expenses results from the current method?
10 A. This argument misses the mark. Mr. Fischer attempts to support his
11 argument by presenting an analysis that calculates the Wholesale Other
12 Support Factor as a percentage of the ACF (including the Wholesale Other
13 Support Factor). However, this has absolutely no correlation to how much
14 Other Support Expense is actually attributed to any component. One
15 needs to know how much investment is associated with any given element,
16 product or service to be able to identify how much Other Support Expense
17 has been allocated. Mr. Fischer's contention assumes an equal amount of
18 investment in the various plant accounts. However, this is not the case.
19 For example, if Digital Switching investments amounted to $1,000,000 and
20 Buried Fiber investments amounted to $100,000, then $58,000 of other
21 support would be allocated to Digital Switching and $5,800 would be
22 allocated to Buried Fiber. It is hard to see how Mr. Fischer can claim that

1 buried fiber is being allocated a greater and unreasonable percentage of
2 Other Support costs. The Company's methodology assigns Other Support
3 costs to the UNEs on the relative basis of their total forward-looking
4 investments. Such a methodology represents a fair and equitable way of
5 attributing Other Support costs to the various UNEs.

6 **5. Wholesale Marketing Factor**

7 Q. Several of the parties' state that 100% of the Company's advertising costs
8 should be considered retail avoided. Do you agree?

9 A. This argument properly belongs in Part B of this proceeding which is
10 dealing with the appropriate level of retail avoided costs. Verizon MA
11 believes that the outcome of that part of the proceeding should ultimately
12 be reflected in the TELRIC expense factor calculation. However, since
13 many parties have addressed the issue in their testimony, we will respond
14 here. We do not agree that all advertising expenses should be considered
15 avoided retail costs. The objective of this proceeding is to estimate, on a
16 TELRIC basis, the forward-looking costs of providing UNEs; that is, the
17 forward-looking *costs* of a forward-looking *network* in the forward-looking
18 *marketplace* that the Telecommunications Act of 1996 was designed to
19 create. This last point is key. We are not simply trying to identify the costs
20 in today's marketplace. Rather, we are attempting to estimate the costs
21 that would be incurred in a forward-looking environment in which (1) the
22 marketplace is competitive, (2) Verizon is a wholesale company, and (3)

1 there are other facilities-based providers and/or providers of alternatives to
2 the various network components.
3 Q. In such a forward-looking marketplace, what kind of advertising would there
4 be by an ILEC?
5 A. In such a market structure, there are several distinct types of advertising:
6 General market stimulation advertising, brand awareness advertising and
7 facility provider (CLEC or ILEC) to CLEC advertising.
8 Q. Please comment on general market stimulation advertising?
9 A. This is an important type of advertising, pervasive throughout many
10 industries. It is advantageous for both wholesale and retail providers to
11 encourage more revenue-generating access and usage to be pumped
12 across the network. Such usage generates direct retail revenues and
13 indirect wholesale revenues. Thus, wholesale providers have a legitimate
14 interest in encouraging such demand. Famous ad campaigns such as "Got
15 Milk," "Pork -- The Other White Meat," "Diamonds are Forever," "Beef: It's
16 Real Food for Real People" and many others were all developed by
17 wholesalers, manufacturers or industry councils, not retailers, in order to
18 promote the use of their respective products.
19 Q. What about brand awareness advertising?
20 A. This is another important type of advertising that is also prevalent in
21 today's business world. Intel, with its "Intel Inside" campaign, wants people
22 to demand computers with Intel chips. Intel is not providing the chips

1 directly to end-users. Rather they are incorporated as a component in the
2 products that others offer to the end users. Having an Intel chip in one's
3 computer products becomes a competitive advantage for the computer
4 maker. Similarly "Verizon Inside" would become a competitive advantage
5 for the CLEC whose service offerings made use of Verizon's network rather
6 than that of an alternative provider.
7 Even the suppliers to telecommunications companies need to advertise.
8 For example, Lucent's advertising has stated "We make the things that
9 make communications work,"™ and Telaxis has been advertising its
10 broadband wireless access products. This is similar to the need that
11 Verizon would have in an all-wholesale environment to advertise its
12 network to the CLECs who will be using it to provide service to their end-
13 users.
14 Q. What about advertising directed towards the CLECs themselves?
15 A. In a forward-looking environment, the Company will necessarily need to
16 advertise its wholesale services, especially as other providers of facilities
17 proliferate. Alternative facilities providers will advertise in order to become
18 carriers' carriers, and the Verizon MA will need to respond. In fact, a
19 review of ads in recent issues of trade journals in the industry reveals a
20 spate of advertisements for UNEs, Transport and Alternative Network
21 Components. For example, Williams Network has been advertising its
22 network on the basis that it is "carrier-focused." CapRock, a facilities-

1 based provider, has been advertising its fiber optic network. SNET has
2 been advertising its SS7 Signaling Network, one of the unbundled network
3 elements. Net2Phone has been advertising a Voice over Internet Protocol
4 (VoIP) alternative to local network usage. Access Line has been
5 advertising a suite of hosted voice services. Pathnet has been advertising
6 Data, Voice, Video, Internet and IP PBX Connectivity while stating, "Our
7 customers aren't end users -- They're service providers like you." GTE
8 Network Services had been advertising transport over their network. Point
9 One has been advertising their digital network for voice, video and data.
10 The bottom line is that companies are targeting the CLECs for advertising.
11 Such advertising will only increase in the future as the marketplace
12 evolves, and competitive alternatives increase.

13 **IV. LOCAL LOOPS**

14 **A. General Loop Study Criticism**

15 Q. A general theme of the critics of the Verizon's study is that it employs
16 utilization factors that are "too low" and "not consistent with TELRIC
17 principles." Is this a valid criticism?

18 A. The witnesses representing AT&T, WorldCom and the CLEC Coalition
19 have attempted to portray a theoretical forward-looking network, serving
20 the State of Massachusetts, using only one criteria. The network is
21 supported by least cost, "forward-looking" technology that either does not
22 exist today or is incapable of performing the functions the CLECs require

1 from the UNEs that they actually purchase. Thus, contrary to their
2 assertions, their recommendations do not result in TELRIC compliant costs.
3 The CLEC witnesses use simplistic examples to support their claims that
4 utilization levels used in the Verizon cost studies are "too low." Almost
5 every example is based upon an isolated situation -- one distribution area,
6 one feeder route, one building, and one remote terminal -- to develop an
7 argument to support higher utilization over a complex network serving the
8 entire State of Massachusetts. Thus, the CLEC witnesses' analysis is
9 founded upon the unrealistic assumption that all of Massachusetts will grow
10 at the same rate and all plant built in the entire State will constantly be
11 subjected to identical increases and declines in demand.
12 Contrary to the overly simplistic CLEC witness assumptions, Verizon's cost
13 studies and assumptions are based on sound engineering principles and a
14 forward-looking efficient network design with currently available
15 technology. The Verizon MA cost study however attempts to model a
16 complex network serving the State of Massachusetts, recognizing in part
17 that Massachusetts has developed a substantial network consisting of
18 13,650 distribution areas. It is reasonable to assume that an equally
19 complex network of comparable size and scope would be needed in a
20 forward-looking scenario. Additionally, one can easily conclude that
21 continued changes in the economy, demographics, and other influences
22 will continue to play a large role in the forward-looking environment in

1 Massachusetts. Total network efficiency, from a cost perspective, must not
2 only examine the cost of initially constructing the plant. The cost to
3 maintain the network at acceptable service levels is a critical component
4 completely overlooked or glossed over by the witnesses for AT&T,
5 WorldCom and the CLEC Coalition. Verizon's cost studies have
6 aggressively employed the newest technology available today, reducing
7 the copper components of the network significantly. Verizon's cost studies
8 have also considered that the utilization rates achieved at a steady state
9 today will closely approximate the utilization rates in the forward-looking
10 network. That is because current utilization rates are the byproduct of the
11 application of sound engineering principles intended to effectively minimize
12 total cost while continuing to satisfy the service quality needs of our
13 wholesale and retail customers. The utilization factors proposed by the
14 witnesses for AT&T, WorldCom and the CLEC Coalition would degrade the
15 service indices from their present levels because they disregard demand
16 volatility in an actual network by failing to assume sufficient capacity to
17 promptly provide service throughout the entire network. Unlike the CLEC
18 witness utilization assumptions, the utilization factors used in Verizon's
19 cost studies represent aggregate fills over a network designed to serve a
20 very large and diverse area. Even though the steady state fill in
21 Massachusetts for feeder is 55%, approximately 13% of all feeder routes
22 exceed the 85% threshold. Similarly, while, overall the fraction of

1 distribution pairs assigned to working circuits is approximately 40%
2 Statewide, in 25% of the distribution areas, less than 10% of the inventory
3 is currently available for assignment to new orders. To this point, Verizon
4 must balance engineering, maintenance, and construction forces to
5 continually monitor the network to meet ever-changing needs. The
6 forward-looking network will not differ in this regard.

7 **B. The Engineering Survey**

8 Q. Please respond to Mr. Baranowski's argument that Verizon MA's use of the
9 engineering survey violates TELRIC principles.

10 A. Verizon designed its outside plant engineering survey process so that it
11 would identify relevant cable route characteristics (including the use of
12 aerial, underground, and buried cable) that are determined by the location
13 of existing wire centers, geographical features, homes and office buildings,
14 and the like. The information produced by such a study is valuable and
15 reliable over the long term because, even over time, these overall network
16 characteristics are not likely to change meaningfully.
17 Because of Verizon's consideration of the engineering survey data in
18 connection with its cost study designed to reconstruct the local network,
19 Mr. Baranowski wrongly seeks to portray Verizon MA's loop costs as based
20 on "embedded base information.[9]" As noted above, that data was used for

[9] Baranowski Rebuttal at 12.

1 determining items such as the length of cable routes and structure types
2 (*i.e.*, underground, buried or aerial) required to serve given areas. The
3 Verizon MA cost model reconstructs the network, without regard to what
4 Mr. Baranowski refers to as the "embedded base." For example, Verizon
5 MA's forward-looking cost studies assume the widespread deployment of
6 fiber feeder cable in place of copper feeder existing in the embedded
7 network. Thus, the engineering survey does not cause the Company's cost
8 study to become an "embedded" cost study. Rather, it provides critical
9 data concerning loop characteristics that is necessary in order to
10 accurately measure the cost of reconstructing a forward-looking network
11 capable of providing service in Massachusetts.
12 Q. Is Mr. Baranowski correct that in the forward-looking environment network
13 more efficient ways to route cables would exist?
14 A. Mr. Baranowski's only support for this contention is the speculation that
15 Verizon MA could have built a feeder route around a hypothetical tract of
16 land that was undeveloped 25 years ago. Mr. Baranowski speculates that
17 while Verizon MA "might have placed conduit around the perimeter of the
18 tract" many years ago, roadways might now lace that tract of land, so that,
19 if Verizon MA were rebuilding its network today, it might lay the feeder
20 along such roadways, which the CLECs suggest would be more efficient.[10]

[10] Baranowski Rebuttal at 12.

1 In addition to being entirely speculative, Mr. Baranowski conclusion is
2 unsound. Even under the economically incorrect "scorched-node"
3 approach, several factors would in fact make it *more* difficult and costly to
4 place feeder routes today — even assuming the existence of some shorter
5 feeder routes that Mr. Baranowski speculates might have become available
6 over time in some rare instances. For example, Verizon MA was able to
7 place a substantial number of cable facilities along railroad and other
8 private rights-of-way years ago, before rights-of-way owners began viewing
9 the placement of such cables as significant revenue-raising opportunities.
10 In many cases it would be far more costly to negotiate the necessary
11 agreements to place those cables today than it was even a few years ago.
12 Indeed, it is precisely because laying all of an ILEC's cable *today* would be
13 so prohibitively expensive that the loop is considered a "necessary"
14 element under the Act. Mr. Baranowski cannot have it both ways. If he
15 believes it is appropriate to assume all new routes, and calculate Verizon
16 MA's plant investment and expenses as if these idealized routes were in
17 place, then the significantly increased costs associated with actually laying
18 the replacement routes must likewise be taken into account.
19 Finally, because the Verizon MA route data is concrete, it is also the only
20 source of reliable, Massachusetts-specific, testable data that has been
21 submitted in these proceedings. While Mr. Baranowski charges that
22 Verizon MA has not shown that its existing loop routes (and thus lengths)

1 are the most efficient, his proposed approach, which would presumably
2 involve rerouting loops based on hypotheticals and formulas, devolves into
3 pure speculation. There is simply no way to account for all the variables so
4 that the illusory improved efficiencies could even be accurately estimated.
5 Such a purely hypothetical approach cannot possibly result in the recovery
6 of any of the forward-looking costs to provide UNEs in Massachusetts.
7 Q. Does the FCC's Local Competition Order address this?
8 A. Yes. The FCC itself has endorsed the view that ILEC cost studies may
9 appropriately consider existing wire centers and the fundamental elements
10 of "existing network design."[11] Although the CLECs would like to believe
11 that the only constant in the newly constructed network they seek to
12 hypothesize should be the location of the ILEC's wire centers, the FCC
13 itself has differentiated between wire centers and "existing network design,"
14 recognizing that *both* should be considered in TELRIC studies.[12] There is
15 no more fundamental element of network design than the routes from each
16 wire center to the customers served by that wire center.
17 Q. Please respond to Mr. Baranowski's criticism that he has not been able to
18 review the documents underlying the survey.

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[11] FCC Local Competition Order at ¶685 (TELRIC prices should be based on efficient technology that is compatible with "existing infrastructure," and should take "existing network design" into account).

[12] *Id.*

1 A. If there ever was any merit to Mr. Baranowski's criticism, there is none
2 today. First, in response to interrogatories, Verizon MA provided extensive
3 data underlying its loop studies. Second, Mr. Baranowski refers to certain
4 specific data requests in his argument.[13] Verizon MA has supplemented
5 each of these data requests since Mr. Baranowski submitted his rebuttal
6 testimony. Verizon MA's supplemental responses provide more than
7 sufficient data to allow Mr. Baranowski to analyze the survey. For example,
8 in its supplemental response to Data Request ATT14-32, Verizon MA
9 provided detailed cable records and schematics demonstrating the
10 reliability of the feeder route data utilized in the engineering survey. In
11 response to Data Requests ATT14-10 and 14-11, Verizon MA provided
12 comprehensive data underlying the development of installation factors
13 used in its studies.

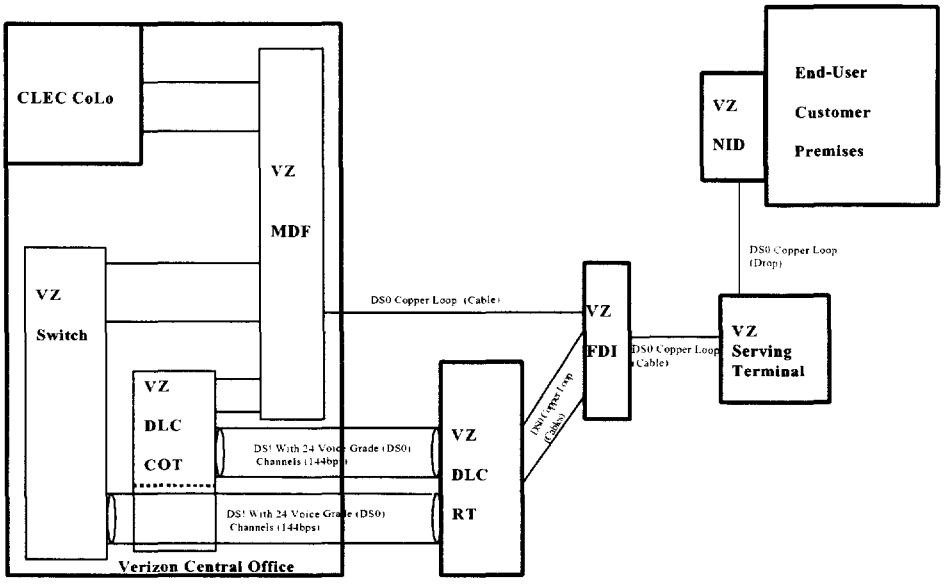
[13] Data Requests ATT14-10,14-11, and 14-32.

1 **C. IDLC/UDLC Interface**

2 **1. The conceptual "IDLC/DS1" hand-off, carrying**
3 **individual analog 2-wire UNE Loops, is not the UNE**
4 **loop that is currently provided in Massachusetts**
5 **and requested by CLECs.**

6 Q. Please explain how Verizon provisions a stand-alone analog
7 2-wire unbundled loop connected to a CLEC's collocation
8 arrangement.

9 A. As a threshold matter, it is necessary to understand how a modern DLC
10 system terminates in the Central Office. The optical transport system that
11 connects the remote terminal (RT) to the CO terminates in a Central Office
12 Terminal (COT). The channel interfaces on the COT end are used to
13 connect DS0 (2-wire analog) or DS1 loop channels to digital circuit
14 switches. These interfaces include several types of DS1 connections and
15 analog 2-wire connections. The channelized DS1 (24 multiplexed DS0s)
16 connection options are called "integrated" or IDLC because they allow
17 interconnection to a digital switch without decoding the DS0 channels. The
18 analog 2-wire options are called "universal" or UDLC because they provide
19 the reverse functionality of the RT channel units and return the customer
20 signal to its original line format. The "universal" label reflects the capability
21 to connect with any device that supports one of the standard customer line
22 interfaces. Each channel of a UDLC is then individually terminated on the
23 Main Distributing Frame.



The critical point is that, even where it uses DLC, Verizon MA must connect all stand-alone unbundled loops to CLEC collocation arrangements using copper wires in the CO. In the case of UDLC, the line is terminated on the MDF like a copper line provisioned in the same manner (*i.e.*, a jumper connects the incoming location on the MDF to a CLEC-assigned port on the MDF). In order to unbundle a loop that currently uses IDLC, Verizon MA must move the distribution pair of that loop from the IDLC feeder channel termination at SAI and reconnect it to a copper or UDLC feeder termination in the same SAI. The new UDLC or copper loop can then be connected to the CLEC's collocation facilities through the MDF at the central office.

1 Q. Why does the "IDLC/DS1" hand-off arrangement for UNE loops
2 hypothesized by Mr. Baranowski (P. 15-18) and Dr. Ankum (P. 44-50)
3 describe a wholly different UNE loop product than a stand-alone analog 2-
4 wire UNE loop?
5 A. The standard 2-wire analog UNE loop consists of a copper 2-wire handoff
6 at each end regardless of the intermediate transmission technology
7 (copper wire or fiber): a 2-wire connection to the end-user's NID and a 2-
8 wire connection to the CLEC's equipment port on the main distribution
9 frame. The technology hypothesized by witnesses Baranowski and Ankum
10 would be far different. While it would start as a pair of copper wires at the
11 customer's NID, it would connect to a circuit pack in the Verizon DLC
12 remote terminal and then travel through a time slot interchanger (TSI) to a
13 particular channel in a DS1 between the DLC RT and DLC COT. This DS1
14 could be theoretically leased by a CLEC and connected directly to its
15 collocation area without ever again becoming a pair of copper wires and
16 without ever hitting the main distribution frame. However, this conceptual
17 architecture is not feasible with present technology and does not fit the
18 technical definition of any UNE loop type currently provided by Verizon.
19 Both AT&T's interconnection agreement and Massachusetts's Tariff
20 incorporate by reference the definitions of individual UNE loops, including
21 their interfaces, contained in certain technical reference publications.
22 These technical references, as well as related references and Verizon's

1 Wholesale Website http://www.bell-atl.com/wholesale/html/handbooks/
2 clec/c3toc.htm) provide that, regardless of how Verizon MA transports
3 these loops to the Verizon MA central office, the central office connection
4 from Verizon MA to the CLEC for a 2-wire UNE loop is always one pair of
5 copper wires and one circuit handed off at the CLEC's assigned port on the
6 main distributing frame.
7 Accordingly, providing CLECs (up to) 24 individual 2-wire unbundled loops
8 on a single multiplexed channelized "IDLC/DS1," connected to the CLEC's
9 central office collocation arrangement, if it is ever technically feasible,
10 would constitute a new separate and different unbundled element, and
11 would involve different operational processes, technical standards,
12 operational support systems, test systems, and equipment in the COs and
13 RTs. These additional unbundled elements would also have different
14 recurring and non-recurring costs.

15 **2. The theoretical "IDLC/DS1"- UNE Loop hand-off**
16 **arrangement is technologically infeasible.**

17 Q. Why can't individual unbundled loops connected to a DLC Remote
18 Terminal operating with GR-303 (IDLC) interfaces be connected to a CLEC
19 collocation arrangement using a channelized "IDLC/DS1" interface to the
20 CLEC?
21 A. This is not technically feasible. It would require the creation of a GR-303
22 interface group from an individual RT to a specific CLEC. While more than
23 one GR-303 interface group can be created to an RT, the available DLC

technology was not designed to support multi-carrier operation with connection to multiple switches. The IDLC GR-303 technology uses dynamic time slot interchange functionality, which means that it provides and severs electronic connections in the remote terminal on a call-by-call basis. This functionality requires continuous communication between the switch and remote terminal to administer and control the on-going electronic activity so that, for example, an ongoing call is not cut off because the channel it is using is transferred to a new call. Furthermore, the provisioning, administration and maintenance of a GR-303 interface group involves a complex and open operations interaction among OSS, the digital switch and the RT. To allow a single RT to have GR-303 interface groups to multiple switches -- each owned and operated by a different company -- requires network reliability, network security, and operational control methods and standards to be defined and the supporting functionality developed in the digital switches, the remote terminal and OSS systems. These developments must be completed before DS1 hand-offs from GR-303 based systems become technically feasible in a multi-carrier environment. Although there have been some industry discussions about the technical developments required to support multi-carrier GR-303 interfaces, to date, a specification has not been defined. Moreover, no supplier has developed the capabilities to resolve these issues. Thus, no such technology is currently available. In fact, an AT&T engineering

1 witness that has testified in other jurisdictions on behalf of AT&T has
2 recently acknowledged that these systems are not in place and that not a
3 single LEC in the country is providing 2-wire analog loops over IDLC in a
4 multi-carrier environment.[14]
5 Dr. Ankum has provided several examples of white papers to defend his
6 position, which call for the industry to adopt new technologies, methods,
7 procedures and operational and provisioning system changes to allow for
8 next generation DLC ("NGDLC") to take advantage of the GR-303 promise.
9 Verizon too has examined the GR-303 recommendations from Bellcore
10 [now Telcordia], and has stated in many of our own documents and cost
11 studies that we are interested in driving our network toward GR-303
12 functionality because of its potential network efficiencies. However, as we
13 have stated previously in our testimony, the facts are that, certain persons
14 in the industry have anticipated prematurely when GR-303 systems
15 [including hardware, software and firmware] will be available for ubiquitous
16 deployment in the network. The simple and uncontroverted fact is that the
17 required technology has not been developed, is not commercially available
18 from any supplier and, obviously, has not been deployed by any ILEC.
19 Q. What implications does this have for the recurring cost studies?

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[14] *In the Matter of the Petition of WorldCom, Pursuant to Section 252 for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes*

1 A. Verizon MA's forward-looking recurring cost studies *aggressively* assume
2 that 25% of all loops are provided on IDLC using a GR-303 interface. The
3 forward-looking cost estimates for UNE loops both on a standalone basis
4 and as part of the UNE platform reflect this aggressive forward looking
5 technology assumption. Thus even though the reality is that all standalone
6 UNE loops provided by Verizon MA over DLC must use a UDLC interface,
7 the UNE loop costs proposed by Verizon reflect the economic advantages
8 of GR-303 IDLC operation. The Verizon MA forward looking cost study
9 reflects an ambitious, forward-looking 25% penetration of GR-303
10 compliant DLC technology despite the fact that the current Verizon MA
11 network has essentially zero GR-303 deployment and there are no current
12 plans to deploy any GR-303 technology in Verizon MA's network for the
13 foreseeable future. In fact, 25% penetration is nearly double the current
14 deployment of IDLC in Massachusetts using available IDLC technology.
15 Q. Is Dr. Ankum correct in proposing a 6:1 concentration ratio for GR-303
16 IDLC systems?
17 A Absolutely not. Dr. Ankum provides no support for his recommendation
18 beyond his own opinion and some meaningless calculations based on
19 completely fabricated data. Dr. Ankum is not an engineer and has

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with Verizon Virginia, Inc., FCC-CC Docket No. 00218, October 30, 2001, Transcript pages 4615-4616, 4619.

absolutely no experience designing or operating telephone plant. In contrast, the 3:1 concentration ratio employed in the Verizon study is based on the experience and recommendations of Verizon's engineering organization, which has designed, deployed and operated millions of lines of DLC technology. In fact, providing the most efficient and network optimized concentration ratio for IDLC systems requires the coordinated efforts of Plant and Switch Engineers along with Facility and Capacity Planners.

With Internet "always on" usage, telecommuters and remote virtual network users, daytime residential and small business line usage continues to climb. Increased data and storage networks and the explosion of corporate WAN/LAN and VPNs increases the "off-hours" usage of business connections to download and provide 24x7 operations. Past distinct calling patterns of residential versus business usage are dissolving on a going forward basis. According to a recent FCC report, the average usage per access line for local voice calls is approximately 40 minutes per day. In contrast, typical internet access connection times average approximately 40 minutes per call. Clearly, the rapid increase in usage of residential and small business access lines, combined with the longer connection times require an average concentration ratio no greater than 3:1 in the forward looking environment. Finally, Dr. Ankum seems to confuse the deployment of fiber in the network with the allowable concentration ratio for GR-303

IDLC systems. In fact, the mix of customers, their usage and traffic patterns and type of services they require is what determines the optimum concentration ratio, not the particular technology.

3. Verizon's Estimate of Distribution Lengths is Conservative.

Q. How has Verizon MA estimated average distribution lengths in its loop cost study?

A. For each distribution area ("DA"), Verizon MA made the conservative assumption that the average distribution length was equal to half the transmission design point for that DA. The transmission design point represents the longest distribution pair in the distribution area and is used to determine the necessary transmission characteristics for the feeder cable (*e.g.*, whether the feeder cable needs to be loaded).

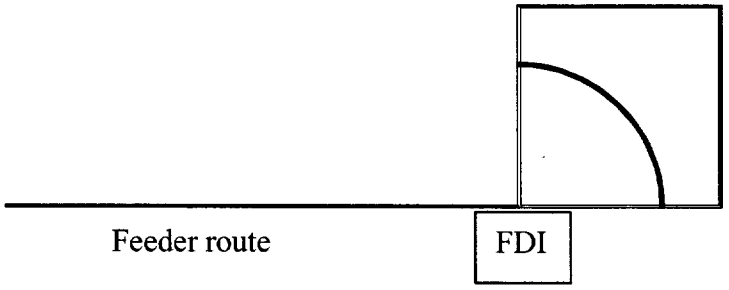
Q. Does this assumption understate the likely average distribution length?

A. Yes. Contrary to the claims of the CLECs, this assumption most likely *understates* Verizon MA's total loop lengths, thus producing an *understatement* of loop costs.

The overwhelming majority of distribution areas in Massachusetts are in urban and suburban locations. Because each DA covers a relatively small geographic area (such as a few city blocks or a housing development), the customer locations within an urban or suburban DA will generally be evenly dispersed. Basic geometry dictates that, where this is the case and the distribution area has a contiguous geographic shape, there will be

substantially more customer locations with distribution pairs that are *longer* than half of the longest distribution length. The figure below demonstrates this phenomenon for the simple example of a square-shaped housing development with the FDI (also called an "SAI") in the southwest corner. The house furthest from the FDI would be located in the northeast corner, and the area to the southeast of the arc represents the houses that are less than half as far from the FDI as the furthest house.

Figure 1



In this example, approximately 60% of the houses would be outside of the arc (*i.e.*, would be at least half as far from the FDI as the furthest house), and approximately 40% of the customer locations would be located inside of the arc (*i.e.*, less than half as far as the furthest house). Similar results would be obtained for DAs with other typical shapes.

D. Distribution Utilization

Q. Are Mr. Donovan and Mr. Baranowski correct in claiming that the appropriate forward-looking copper distribution fill is 64.1%.

A. No. While Mr. Donovan, an engineering witness, "supports" Mr. Baranowski's recommendation of 64.1%, he offers no meaningful analysis

1 or information as a basis for this "support." Rather the 64.1% is totally the
2 product of analysis by Mr. Baranowski, who has no training or experience
3 in telephone engineering. His principal adjustment to Verizon's derivation
4 of a 40% utilization factor is his ad hoc rejection of the generally accepted
5 engineering standard of the deployment of a minimum of two distribution
6 pairs per zoned living unit. AT&T witnesses have supported this practice in
7 other jurisdictions. For example, in New Jersey, Mr. Dean Fassett on
8 behalf of AT&T acknowledged that proper distribution design standards
9 require the installation of two pairs per potential unit. In actuality, Mr.
10 Baranowski appears to be not so much challenging the actual industry
11 practice as suggesting that the TELRIC methodology requires a reduction
12 in the assumed pairs per living unit used to derive the utilization factor.
13 This in turn is tied to Mr. Baranowski extreme view of the so called
14 "scorched node" premise. He appears to believe that TELRIC requires not
15 only that one assumes that the entire network is instantly and constantly
16 replaced but that one also knows instantaneously the location of every
17 required loop. Because of this perfect knowledge, he proposes that one
18 would reduce the number of pairs in areas with lower demand. The fallacy
19 of this assumption is that it ignores the economic reality that a forward-
20 looking network must be a network that can meet the current demand not
21 for an instant but in ongoing operations. Customer movement and change,
22 upward and downward demand fluctuation, are all natural components of

1 the existing demand. The industry standard minimum two-pair allocation is
2 designed to address this uncertainty and volatility. It would be entirely
3 incorrect to assume some hypothetical reduction in distribution pair
4 requirements from this level because of an imagined requirement that
5 TELRIC calls for sizing a network for one perfectly known, never changing,
6 instantaneous demand level.
7 In addition to changing the minimum two-pair allocation assumption, Mr.
8 Baranowski eliminates any consideration of vacant building lots in his
9 calculation of the distribution utilization. He postulates that somehow all
10 land will be developed at some time in the future so pairs allocated for
11 currently undeveloped parcels should be treated as essentially working
12 and revenue producing. The argument is flawed in two ways. First, it is
13 ludicrous to assume that all building parcels are always being used and
14 occupied. In fact, the proportion of unused lots stays fairly constant over
15 time. New areas are always being developed and lots previously used in
16 older areas become vacant. A visit to any inner city in Massachusetts will
17 confirm this fact. Mr. Baranowski offers no data to support an assertion
18 that the relative amount of undeveloped parcels will change in the future.
19 Second, even if it were somehow true that all land would be developed at
20 some distant future point, the utilization factor must be calculated to reflect
21 a proper allocation of current cost to current users of the network. Proper
22 engineering of the forward looking network requires that pairs be allocated