Exhibit No. ___ (RRP-1T)
Docket No. UT-023003

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Review of Unbundled Loop and Switching Rates; the Deaveraged Zone Rate Structure; and Unbundled Network Elements, Transport, and Termination	))))))	**DOCKET NO. UT-023003**

REBUTTAL PANEL TESTIMONY OF VERIZON NORTHWEST INC. ON VzCOST

Witnesses:
Gerald Harris
John Hinton
William Jones
Thomas Mazziotti
Willett Richter
David Tucek

May 12, 2004

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Q. WHO ARE THE MEMBERS OF THE RECURRING COST WITNESS PANEL SPONSORING THIS TESTIMONY?

A. The members of this Panel are: Gerald Harris, John Hinton, William Jones,Thomas Mazziotti, Willett Richter, and David Tucek. The relevant details of our relevant professional backgrounds, except for that of Mr. Harris, are included in the direct panel testimony, filed June 26, 2003, and the supplemental panel testimony, filed January 26, 2004. Mr. Harris has reviewed and supports the panel testimony filed by Verizon NW on June 26, 2003 and the supplemental panel testimony filed by Verizon NW on January 26, 2004. He has assumed primary responsibility for the testimony concerning loop pre-processing previously discussed by Randall Patton.

Q. MR. HARRIS, PLEASE DESCRIBE THOSE ASPECTS OF YOUR PROFESSIONAL BACKGROUND MOST PERTINENT TO YOUR TESTIMONY.

A. I am currently the General Partner for CosTex Consulting and I am employed as a consultant for Verizon in this cost proceeding. I recently retired from Verizon Services Corp. in November, 2003 with 26 years of service at Verizon and its predecessor companies Contel Service Corp. and GTE. Before my retirement I was responsible for the development of the VzCost system, which included the development of the VzLoop preprocessing database. I graduated with a Bachelor's degree in History

and Sociology and with a Master's Degree in Business Administration from the University of Kansas in May 1971, and May 1977, respectively.

Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. The purpose of this testimony is to respond to the testimony by AT&T's and Staff's witnesses in the reply round of this proceeding, addressing the VzCost model as described in our prior panel testimony. Part I of this testimony responds to Mr. Turner's criticisms of the transparency and ease of use of the VzCost model. Part II responds to Mr. Turner's criticisms of the VzLoop model; part III, to his restatement of that model using different inputs and assumptions. Part IV addresses Mr. Denny's loop deaveraging methodology. Part V responds to Mr. Turner's single criticism of Verizon NW's IOF studies, relating to fill factors. Part VI responds to testimony of Mr. Gillan and Mr. Chandler regarding switching costs and the appropriate switch rate structure. Part VII responds to Mr. Lundquist's criticism of Verizon NW's expense factors, and Part VIII responds to Mr. Turner's testimony on applying an EF&I factor for DLC installation costs. Our prior testimony addresses the respective roles of each of the panel members and their various subject areas, except for Mr. Harris who will address loop pre-processing and issues related to the transparency and ease of use of VzCost.

I. VZCOST AND VZLOOP ARE OPEN AND TRANSPARENT TO THE USER

Q. HOW DO YOU RESPOND TO MR. TURNER'S CLAIM THAT VZCOST AND VZLOOP OPERATE IN "COMPLEX PROGRAMMING CODE"

THAT "MAKES IT VIRTUALLY IMPOSSIBLE TO TRACE THE LOGIC OF THE MODEL"?[1]

A. For any person knowledgeable about TELRIC cost models, this claim is astounding. It mixes up VzCost and VzLoop. It characterizes as a "black box" a programming language well known to AT&T cost experts and in which the FCC's synthesis model was written. And it confuses the tool Verizon used to develop VzLoop (Delphi) with the programming language in which it is written (Pascal), which is all one needs to know to understand how VzLoop operates.[2]

Q. DOES ONE NEED TO UNDERSTAND COMPUTER CODE TO TRACE THE LOGIC OF VZCOST'S CALCULATIONS?

A. No. VzCost is written in ".Net" and "Visual Basic," computer programming languages that are extremely common in Internet database applications. Moreover, algorithms in VzCost are viewable as "formulas" and "objects" – equations that make their logic clear even to users who do not understand computer programming languages. For example, the formula for a Residential 2 Wire Copper Distribution Cable – Direct Investment appears as "Loop_Elements.R_DISTCOPAER +

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[1] Turner Rebuttal at 12.

[2] While some programmers refer to certain recent versions of the Pascal language as the "Delphi" language, it remains important for purposes of this discussion to distinguish the Pascal or Delphi *language* — which one needs in order to understand a program written in that language — from the Delphi *set of tools* (or programming environment) that programmers use to *create* programs, but are *not* needed to understand or analyze them.

Loop_Elements.R_DISTCOPBLDG + Loop_Elements.R_DISTCOPBUR + Loop_Elements.R_DISTCOPUG) / RES_DEMAND." This formula makes it clear that the Residential Distribution Cable investment is the sum of Distribution Copper Aerial, Distribution Copper Building, Distribution Copper Buried and Distribution Copper Underground divided by the total residence demand. The algorithms in VzCost (as opposed to VzLoop, which is described below) are developed by those who use it to build a cost study, not by specialized computer programmers. Verizon NW has provided all of the algorithms that it used in VzCost, a fact which Mr. Turner never acknowledges.[3]

Q. IS UNDERSTANDING THE OPERATION OF NEW COST MODELS A DIFFICULT TASK?

A. Yes. In its TELRIC NPRM, the FCC has recognized that due to the complexity of the local exchange network, any process of calculating the total long run incremental cost associated with each of its unbundled elements is "extremely complicated," involving competing cost models with

[3] *See* CD entitled "VzCost Formulas & Results," filed with Verizon Supplemental Panel Testimony, January 26, 2004. *See also* Supplemental Panel Testimony at 15 (noting that such formulas were both included in this CD and available online in VzCost).

"hundreds of inputs."[4] This Commission has agreed that the task of a model is to depict a "network [that] is exceedingly involved and complex."[5]

Q. IS VZCOST MORE DIFFICULT TO UNDERSTAND THAN HM 5.3?

A. No. As Mr. Dippon noted in his Reply Testimony, the pre-processing to HM 5.3 "is extremely difficult."[6] Moreover, as Dr. Tardiff demonstrates in his Rebuttal Testimony, not only is HM 5.3's preprocessing extremely convoluted and complex, but tracing model calculations in HM 5.3 is similarly complex. Furthermore, one of AT&T's own cost model experts has conceded, a "substantial amount of software and experience" is necessary to analyze or run sensitivity tests on a cost model and this is "commonplace in modeling."[7]

The relevant question, as other Commissions have noted, is whether the model is understandable for an experienced professional.[8] There are, of course, two obvious differences between these two models

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[4] Notice of Proposed Rulemaking, *Review of the Commission's Rules Regarding the Pricing of Unbundled Network Elements and the Resale of Service by Incumbent Local Exchange Carriers*, 18 FCC Rcd 18945 ¶ 6 (2003). ("TELRIC NPRM").

[5] Eighth Supplemental Order in WUTC Docket No. UT-960369 et al. ¶ 22 (April 16, 1998).

[6] Dippon Reply at p. 51.

[7] *Pennsylvania Public Utility Commission v. Verizon Pennsylvania, Inc. Generic investigation of Verizon Pennsylvania, Inc.'s, Unbundled Network Element Rates*, Docket No. R-00016683, Hearing Tr. at 448 (Feb. 20, 2002).

[8] *See, e.g.*, California Commission Rule 74.3, noting that the relevant question is whether "an experienced professional can understand the model."

that are relevant to their comparative ease of use. First, HM 5.3 is a new version of a model that the parties have already spent time analyzing. Second, unlike AT&T, Verizon NW has chosen to address seriously the Commission's concerns about the flaws of prior cost models, and in order to do so it has developed a more sophisticated model that is unprecedented in its ability to use vast quantities of data concerning routing, structure, and other real world information. As noted below, the average loop length validation analysis required by the Commission starkly reveals the differences between the two models in their ability to model this aspect of the network. VzCost does not afford the simplicity that Mr. Turner and Mr. Spinks appear to demand, but unlike HM 5.3, it does not ignore the real world constraints needed to determine accurate forward-looking costs. As this Commission has recognized in the Eighth Supplemental Order, it is the function of a model to depict "the real world."[9]

Q. CAN YOU PROVIDE EXAMPLES OF THESE DIFFERENCES?

A. Yes. As Mr. Richter explains in his reply testimony, instead of making wholly simplistic and unreliable assumptions about the kind of aerial, buried, or underground structure that is appropriate for use in various "density zones" in Verizon NW's network, VzCost contains data about the *actual* structure type available for each segment of the distribution and feeder routes in every area served by Verizon NW today. It also makes

[9] *Eighth Supplemental Order* at 14.

use of information concerning the real locations actually available for the placement of the necessary distribution terminals, SAIs, and DLCs in its modeled network, in contrast to HM 5.3 – which simply disregards the inconveniences of the real world and places these in locations that may be in the middle of a river, a parking lot, or in some other location for which it is either unlawful, impracticable or exorbitantly costly to acquire the necessary rights of way.[10]

Q. YOU HAVE EXPLAINED THAT VZCOST FORMULAS ARE NOT WRITTEN IN COMPUTER CODE. WHAT ABOUT VZLOOP?

A. The VzLoop code is written in the Pascal programming language. This language has been in existence for approximately 30 years, and it is a widely-used programming languages. Indeed, Pascal was the programming language in which the FCC's synthesis model was written, as well as AT&T's modified version of this model. Mr. Turner presents no basis for his claim that code written in such a familiar and established programming language, which was used in prior cost models, should be "impossible to understand" for an experienced cost model expert who has devoted any significant time to learning it. AT&T is perfectly capable of hiring experts well-versed in this programming language. One such

[10] As Mr. Richter noted in his Reply Testimony, AT&T's engineering guidelines acknowledge the importance of real world constraints. Mr. Richter's citations to the page numbers of AT&T guidelines should be corrected as follows: page 6 should refer to page 10-1 (not pages 9-17 and 10-39) and to page 6-1 (not 3-4 to 3-5). Page 37 should refer to Section 18.1.2.11 (rather than 18.1.5.1) and page 60 to page 3-8 (rather than 3-9). Additionally, the reference to the "West Richland" wire center on page 19 should be to "Woodland."

example is Mr. Brian Pitkin who is currently retained by AT&T to analyze this same model in a case now pending before the California Commission.

Q. DOES AN EXPERT ALSO NEED DELPHI TO READ AND UNDERSTAND THE VZLOOP CODE?

A. No. Delphi is a package of tools that programmers use to develop application programs in Pascal. Its role in creating the VzLoop code is analogous to the role that publishing software might play in creating a document: it provides tools that someone can use to create the document, but it is not necessary for someone to read and understand that document. In short, this "programming environment," as Mr. Turner calls it, is not necessary to understand the Pascal written code. Any expert who understands Pascal should be able to analyze VzLoop without viewing or running it in Delphi.

Q. COULD AT&T OBTAIN ACCESS TO THIS DELPHI TOOL KIT IF IT WISHED TO DO SO?

A. Yes, and in footnote 6 of his testimony Mr. Turner appears to acknowledge this capacity. Delphi is a widely used software package that is publicly available. While as noted above, it is not needed to read the VzLoop code, AT&T could easily acquire it if it wished to do so. A well-known Internet encyclopedia describes it as "a very discrete, internally consistent, and recognizable package."[11] That site and many other web sites also provide information about Delphi's features, which are no more

[11] *See* **http://en.wikipedia.org/wiki/Delphi_programming_language**.

complicated than the analogous tools available in other software development packages, such as Microsoft's Visual Studio. Indeed, Mr. Turner acknowledges that, while he has not used Delphi, he is familiar with certain features of Delphi because of his familiarity with "the nature of what programming environments provide."[12]

Q. DO YOU AGREE WITH MR. TURNER'S STATEMENT THAT IT IS DIFFICULT TO SEE HOW THE FORMULAS OPERATE IN DELPHI?

A. No. As stated above, there is nothing "difficult" or "complex" about Delphi, to any cost model expert with the requisite programming skills. Its commercial success and widespread availability demonstrate as much, and that is precisely why Verizon uses it. Delphi has a feature that allows users to view each line of the code step-by-step. It also allows a user to set "breakpoints," which will stop a program such as VzLoop from running at a particular step that the user desires to study further. It includes an "object inspector," which displays the fields in the code and the values for those fields; a "watchlist," which tracks the values of selected objects or variables as the program is run; an "object tree view," showing the hierarchical relationship between different objects; and a "component palette" window with tool bars and menus (file, edit, search, view, project, run).

Q. MR. TURNER ALSO CLAIMS THAT MODIFYING INPUTS TO VZCOST REQUIRES THE USE OF MS ACCESS. IS THIS CORRECT?

[12] *See* AT&T Response to Verizon Data Request No. 10-8.

A. As Verizon NW's direct testimony noted, no additional software is necessary to run VzCost or understand its operation. That is one of the benefits of Internet access to the model. If a user desires to *change* inputs or assumptions in VzCost, the user will at times need some database management tool such as Oracle or MS Access. But MS Access is a widely-available program that comes with the basic Microsoft Office package – indeed, it is required to run HM 5.3. For a cost model expert to say that a cost model is difficult to use and understand because it requires MS Access is equivalent to a lawyer's saying that LEXIS or other Internet-based legal services are difficult to use because they require access to a Web browser.

Q. ARE MR. TURNER AND MR. SPINKS CORRECT THAT VZCOST AND VZLOOP PREVENT USERS FROM MODIFYING KEY INPUTS AND ASSUMPTIONS?

A. No. For example, in VzCost, one can change:

- Algorithms in any of the templates (Basic Components, Cost, Expense)
- Any or all of the values in all of the tables used by these templates (e.g., RTU, booked expense, booked investments, cost pool allocation, cost of money, demand, expense adjustment MACRS rate, property tax, service life, tax rate)
- Any or all of the values in the EF&I table
- Any or all of the values in the Loop Constants Table

Similarly, in VzLoop, one can change any or all of the values in the tables it used to create the outside plant network: the demand table, the master table, the material file, the network file, the options table, and the placement table. One can also change all of the formulas in the IOF and switching "Element Development Tools" (i.e., the IOF and switching equivalents of VzLoop). All of these functions are described in the various cost manuals included with Verizon NW's filing.

Q. WHAT DOES THIS MEAN IN PRACTICAL TERMS?

A. It means that the user can change virtually any of the inputs or formulas in Verizon NW's cost model. With respect to VzLoop, for example, which seems to be Mr. Turner's primary focus, a user can change any material prices or placement rates simply by entering new values into the Materials or Placement table. Cable-sizing factors, and assumptions about IDLC/UDLC mix can also be changed. Users can change the way that the network is laid out by changing or replacing any or all of the records in the Network table. That table contains information about every terminal in the modeled network, and all of the linkages between them, and one can entirely redesign this modeling by changing the values in the table without making any modifications to VzLoop. Indeed, Verizon demonstrated to Mr. Turner how to make such changes in a full day meeting held in Irving, Texas, on February 5, 2004. As one example, it demonstrated three different ways to move SAI locations in the model. Until now, Mr. Turner has not professed any misunderstanding about his ability to master these

techniques, or to change what he now refers to as the "upstream" inputs and assumptions in VzLoop.[13]

Q. ARE THERE SOME ASPECTS OF VZCOST THAT CANNOT BE CHANGED?

A. As with every model, there are certain aspects of VzCost that are a part of its basic structure or "skeleton" that cannot be changed without effectively making it into a different model. Without knowing what Mr. Turner would like to change, it is difficult to address the nature of what he would characterize as unchangeable features. But one principal feature that is at issue in this case can perhaps serve as an example. The HM 5.3 model provides no way for Verizon NW to fit its "clusters" to the natural barriers and topographical features that, as Verizon NW notes in its reply testimony, normally define distribution area boundaries in the real world. Conversely, VzLoop does not easily lend itself to the creation of distribution areas based on the arbitrary clustering process used by HM 5.3. Such a capability is quite different from the ability to permit changes in the basic inputs and assumptions that are the regular items of interest in UNE cost dockets.

Q. IS MR. TURNER CORRECT THAT "VERIZON'S PROGRAMMERS HAVE MADE DETERMINATIONS REGARDING HOW INVESTMENTS ARE COMBINED TOGETHER OR WHERE INVESTMENT

[13] Turner Rebuttal at 22.

COMPONENTS (SHOULD AS DIGITAL LOOP CARRIER) WILL BE PLACED" THAT ARE "VIRTUALLY IMPOSSIBLE" TO CHANGE?[14]

A. No. How investments are combined together is determined in VzCost's BC mapping and cost templates, which can be changed by any user. VzLoop has user-changeable inputs – such as the copper-loop length restriction – that determine the placement of DLCs. Moreover, as noted above, it is possible to change both existing and potential DLC sites by modifying the Network table. Contrary to Mr. Turner's suggestion, nothing about the fact that VzCost is available over the Internet has anything to do with this issue.

Q. PLEASE ADDRESS MR. TURNER'S ASSERTION THAT VERIZON DOES NOT PERMIT USERS TO "MODIFY THE CALCULATIONS" IN VZLOOP.

A. As noted above, this is simply wrong with respect to the inputs and assumptions in VzLoop -- including all the inputs in the Network table that tell VzLoop how the network is designed. The statement of Mr. Harris, quoted extensively by Mr. Turner, relates to changes in the model *code*.

Q. DID MR. HARRIS SAY IN THIS STATEMENT THAT CHANGES TO THE VZLOOP CODE CANNOT BE MADE?

A. No. In this colloquy, Mr. Turner asked whether *other parties* can change the source code. Mr. Harris said they could not, "unless you wanted to

[14] Turner Rebuttal at 19.

redo the model yourself." But he made clear that "[y]ou can ask us to change the code."

Q. HAS AT&T EVER ASKED VERIZON NW TO IMPLEMENT SUCH A CHANGE IN THIS PROCEEDING?

A. No.

Q. HOW COULD SUCH A CHANGE BE MADE?

A. Verizon NW has provided AT&T with the VzLoop source code, and as explained previously, AT&T has access to all of the tools needed to determine on its own any source code changes required to restate Verizon NW's investments, by running sensitivities on that source code. Changes that result from these sensitivity runs could be made by Verizon's database administrators through the normal procedures applicable to Verizon-initiated changes, to ensure that the changes would not disrupt operation of the model or jeopardize the security of Verizon computer networks.

Q. MR. TURNER ALSO SUGGESTS THAT CHANGES TO VZCOST AND VZLOOP, IF NOT IMPOSSIBLE, ARE AT LEAST VERY DIFFICULT TO MAKE. IS THIS CORRECT?

A. No. Mr. Turner's claims in this regard are wholly generalized, so it is difficult to respond to them. But changes to values in tables can be made simply by copying the original table and changing those values, using the Data Management function in VzCost as explained in the user's manual supplied with the filing, and then uploading the revised table back into

VzCost. Changes to algorithms can be made online by copying the template for the algorithm, and then making and saving changes to this new version of the templates. As noted above, the entire Network table used in VzLoop can be changed, through the process described to Mr. Turner in the February 2004 meeting in Irving.

Q. PLEASE COMMENT ON MR. TURNER'S EXAMPLE REQUIRING MULTIPLE STEPS TO MODIFY A MATERIAL PRICE INPUT.

A. Mr. Turner's example only appears to be complicated. Except for steps 13, 25, and 29 (the actual computer runs), every step on Mr. Turner's list takes from a few seconds to a matter of minutes. Uploading and downloading a file, for example, or "approving" results is a simple step requiring almost no work. These are analogous to clicking the button on your computer screen asking if you are certain you really want to make a change. Removing a header, importing a file, or electronically copying and pasting a matrix of values or repeating a pre-determined query are equally short steps, and are basic functions that can be performed by a novice Microsoft Excel user. While the actual computer runs can take 1.5 hours, as Mr. Turner notes, that is a function of the extensive real world data made available for the first time in VzCost. Indeed, even the HAI model's oversimplified clustering routines can also take significant time to run. Moreover, while these VzCost runs are being made, the user's PC is not tied up, so that the user can simultaneously perform other operations (e.g., adjustments to BC formulas or changes to tables) or work on

something outside of the VzCost system. In contrast, as Mr. Dippon described, a single run of HM 5.3's clustering algorithm can take up to 32 hours of computer processing time alone.[15] In these 32 hours, the computer cannot be used for other purposes as all computing capacity is used by the TNS preprocessing procedure.

As Mr. Turner's example also illustrates, the multiple (though largely ministerial) button presses required to make input or assumption changes in VzCost derive from its building block approach, i.e., the use of "Basic Components," or BCs. Since before the first generic UNE cost proceeding in Washington, Verizon NW has filed studies based on the basic network function ("BNF") construct, which is very similar. BCs are simply aggregations of investment elements ("IEs"). The BCs are then mapped into costs that correspond to the rate elements. This building block approach to cost studies provides numerous advantages. It allows the user to change cost calculations without going back to the beginning each time. For example, to increase the value of only one IE by 10%, the user need not rerun the entire VzLoop model. He can simply increase the value by 10% in the BC formula area. These three layers of IEs, BCs, and cost studies also provide a convenient framework to audit the results.

Q. IS VERIZON DEVELOPING SHORTCUTS FOR THESE STEPS?

A. Yes. As with all cost models, VzCost is constantly being refined to make it more convenient to use. On April 5, 2004, for example, Verizon notified all

[15] Dippon Reply at 52 n.60.

users of VzCost of a number of improvements it planned to make in the model. One of these was to add a "revise and run" function that can simplify a process that involves multiple steps. If a user makes changes to a BC data version, the "revise and run" function will automatically perform steps that follow from that change.

Q. DOES MR. TURNER REFER TO THIS NOTICE?

A. Yes. He criticizes Verizon for "t[aking] the tool out of service for a weekend" over the Easter holiday,[16] even though this was the only time in the nearly three months between the January 2004 supplemental filings and the April 2004 reply filing date that VzCost was unavailable to users. As AT&T has conceded in discovery,[17] Verizon had sent advance notice of this update to all users of VzCost (including Mr. Turner) on April 5 (and again on April 9). Moreover, as AT&T also recognized, AT&T of California (which has also retained Mr. Turner) was informed about the expected timing of this update on February 24 and again on March 16, because it included another enhancement scheduled specifically at the request of that AT&T affiliate.[18] AT&T in any event easily secured Verizon NW's consent to a four-day extension for this filing.

Q. ARE SUCH SOFTWARE ENHANCEMENT RELEASES UNUSUAL?

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16 Turner Rebuttal at 19.

17 *See* AT&T Response to Verizon Data Request No. 10-13.

18 *Id.*

A. No, not at all. Many Internet-based services (including this Commission's web site and that of many other agencies and businesses) provide enhancements in this fashion, which is far more efficient and quicker than by mail. They all manage to function effectively, even though system administrators must inevitably limit access for brief periods of time in order to make these enhancements or perform system maintenance. For example, the FCC web site shuts down for routine maintenance overnight once every two weeks.

Q. PLEASE RESPOND TO MR. TURNER'S ARGUMENT THAT INTERNET ACCESS TO VZCOST LEADS TO UNUSUALLY LONG UPLOAD AND DOWNLOAD TIMES AND LIMITATIONS.

A. As to downloads, the only example Mr. Turner cites was a 65,000 line limit.[19] He concedes, however, that "ultimately" Verizon modified that limit.[20] In fact, Verizon did so within 3 hours of AT&T's request. As to uploads, Mr. Turner has claimed that it is difficult to upload large files to produce a run of VzLoop, citing the large loop demand file as an example that required three attempts to upload.[21] In most cases, Verizon NW has found that even a table as large as this one will take no more than 15 minutes to upload. While it may in some cases require the assistance of a database administrator, Mr. Turner is incorrect that this process will

[19] Turner Rebuttal at 19.

[20] *Id.*

[21] *Id.* at 20.

require him to overnight a CD: as Verizon has told AT&T's affiliate in California (where Mr. Turner is also an expert), users can also deliver "zip" large files and send them to the database administrator via e-mail.

Q. WHAT ARE THE BENEFITS OF AN INTERNET-BASED COST MODEL?

A. Contrary to Mr. Turner's suggestion, providing access in this way provides very useful enhancements. First, Verizon could not have designed a model sophisticated enough to process real world data about its modeled network in a user-friendly manner except by placing the necessary data on a server; in order to design a PC-based platform, such a model would require substantially more software and processing time. Second, Verizon's Internet-based system allows parties to share work instantaneously and distribute information from different parts of the country. Third, because the data that users draw upon is saved to a central location, it is easy to re-use source data and easily retrieve historical information, and also to coordinate the work of multiple people working simultaneously on many different portions of a filing. The system also reduces mismatches and other errors that arise when users are drawing on data from numerous different sources. Finally, as noted above, an Internet-based system, provides easy access to user and model enhancements.

II. LOOP MODELING ISSUES

A. Introduction

Q. PLEASE ADDRESS MR. TURNER'S STATEMENT THAT VZLOOP DOES NOT CONFORM TO TELRIC PRINCIPLES BECAUSE IT IS "BASED ON THE EMBEDDED PLANT CONSTRUCT."

A. Mr. Turner does not really elaborate on this point. He simply argues that VzCost "rel[ies] on existing feeder and distribution routes" and that it uses "existing distribution areas," quotes Mr. Tucek's statement that VzLoop "*starts* with the physical characteristics of the real network," and then asserts that this approach is inefficient.[22] Mr. Turner devotes most of his testimony instead to claims that the extensive outside plant data used by VzLoop to address the real world constraints in routing a network do not include complete information with respect to a very small number of Verizon NW's over one million lines and its almost 3,000 serving area interface ("SAI") sites. But those criticisms are unrelated to his TELRIC argument, and we address those separately below. In any event, Mr. Turner's repeated criticisms of VzLoop's use of an "embedded" network are neither factually correct, consistent with the FCC's TELRIC principles, nor economically rational.

Q. HOW ARE THESE CRITICISMS FACTUALLY INCORRECT?

A. In three respects. First, VzLoop does not use existing distribution routes. It relies on existing locations for distribution terminals, SAIs, DLCs, and

[22] Turner Rebuttal at 35 (emphasis added).

control points as a way of reflecting real world constraints on placement of outside network plant in its modeled network. While the modeled feeder routes will generally follow the routes in Verizon NW's existing network, VzLoop employs a minimum spanning tree algorithm to model distribution routes through the distribution terminal locations. Consequently, the degree to which the modeled distribution plant follows the existing right-of-way will depend on the spacing between the distribution terminals. Second, as Mr. Tucek made clear, VzLoop only *starts* with these data points. It makes forward-looking adjustments to the modeled network that include the use of the latest technology, such as all-fiber feeder routes, the addition of DLCs necessary to comply with the generally accepted 12,000 foot restriction on copper loop length, and the elimination of copper for service to all premises with greater than 160 lines. Finally, cables are sized for total demand (so that a 400-pair cable is modeled when, for example, the existing network might have one 300-pair and one 100-pair), because demand developed incrementally.

Q. HOW IS MR. TURNER'S ARGUMENT INCONSISTENT WITH THE FCC'S TELRIC PRINCIPLES?

A. In its *Local Competition Order*, the FCC defined embedded costs as those "incurred in the past for providing a good or service and . . . recorded as

past operating expenses and depreciation."[23] The cost estimates produced by VzLoop do not fit this definition, for the reasons stated above. That order also makes clear that TELRIC-based rates are designed to promote economic efficiency and to reflect the costs that incumbents expect to incur in making elements available to new entrants.[24] VzLoop's use of existing locations for critical points in its modeled network produces economically efficient rates because it recognizes the value of those locations. That value reflects the real world constraints that would be applicable to any network required to serve all of Verizon NW's customers, such as rights-of-way, space restrictions, security considerations, zoning requirements, and geographical limitations like lakes and rivers.

TELRIC certainly does not bar a cost study from using information about these existing locations as a starting point. Indeed, the FCC has assumed that wire centers will be placed at the incumbent LEC's current wire center locations.[25] Nowhere has the FCC said that ILECs may not use their existing locations in forward-looking cost studies; indeed, it has found a loop study in which "cable routes . . . follow existing rights-of-way"

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[23] First Report and Order, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, 11 FCC Rcd 15499, 15845 ¶ 675 (1996) ("*Local Competition Order*").

[24] *Id.* at 15558, 15849 ¶¶ 113, 685.

[25] *Id.* at 15849 ¶ 685.

to be TELRIC compliant.[26] Nor has the FCC required that everything between the wire centers and the existing locations *must* change. Indeed, in its recent TELRIC NPRM, the FCC has tentatively concluded that "our TELRIC rules should more closely account for the real-world attributes of the routing and topography of an incumbent's network in the development of forward-looking costs."[27] And in her recent recommended decision in the California SBC UNE case, the ALJ agreed "that the use of [the ILEC's] actual right-of-way and plant routes would be a superior modeling technique."[28]

This Commission has also long recognized the real-world constraints applicable to a TELRIC study. It has noted that an analytical model is designed to serve as a simplified representation of some aspect of "the real world."[29] It has also repeatedly required *validation* of cost models based on a comparison of their average loop lengths to those in the incumbent's actual network, accepting Verizon NW's goal of "building

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[26] Memorandum Opinion and Order, *Joint Application of BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Long Distance for Provision of In-Region, InterLATA Services in Georgia and Louisiana*, 17 FCC Rcd 9018, 9048 ¶ 36 (2002).

[27] *TELRIC NPRM* at 18965 ¶ 52.

[28] Proposed Decision of ALJ Duda, *Joint Application of AT&T Communications of California, Inc. (U 5002 C) and WorldCom, Inc. for the Commission to Reexamine the Recurring Costs and Prices of Unbundled Network Element Costs Pursuant to Ordering Paragraph 11 of D.99-11-050*, Docket Nos. 01-02-024, 01-02-035, 02-02-031, at 64 (CA PUC May 3, 2004) ("*Duda Proposed Decision*").

[29] *Eighth Supplemental Order*, Docket No. UT-960369, ¶ 21.

a cost model that reflects actual operating characteristics."[30] As noted below, when Staff's erroneous data are corrected, VzLoop passes that validation test superbly, while HM 5.3's failure to adhere to real world constraints leads to average loop lengths that bear no relation to reality.

Q. HOW IS MR. TURNER'S ARGUMENT INCONSISTENT WITH ECONOMIC EFFICIENCY?

A. As Dr. Shelanski explains in his direct testimony, it generally would not be efficient or realistic for the firm to assume that all inputs change even in a long-run study.[31] Thus, while a firm's long run model should allow for the *possibility* that all inputs are variable, where an existing location is efficient to use on a forward-looking basis, it need not vary, and in the real world will not likely be varied. Mr. Turner's argument simply rejects the possibility that the real-world attributes underlying VzLoop can produce more accurate and more efficient cost estimates than those produced by the sort of hypothetical, fantasy network espoused by AT&T. In fact, as Dr. Shelanski notes in his rebuttal testimony, there is significant value in the rights of way reflected in the existing locations in a network, which are often likely to be far less costly than those that a carrier using a "scorched node" network design would have to pay for today.[32] That is particularly

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[30] Thirty-second Supplemental Order in WUTC Docket No. UT-003013 ¶ 346 (June 21, 2002). *See also Eighth Supplemental Order*, Docket No. UT-960369, ¶ 227.

[31] Shelanski Direct at 4.

[32] Shelanski Rebuttal at 3-4.

true given the absence of alternative sites for network plant arising from the restrictions of rivers, lakes, and other physical obstacles and from increased development in many areas of the network today.

Q. HOW DO YOU RESPOND TO MR. SPINKS'S CLAIM THAT USE OF REAL WORLD DATA IS BACKWARD-LOOKING BECAUSE VZLOOP REPLICATES THE EXISTING NETWORK AND BECAUSE "THE EXISTING VERIZON NETWORK WAS CONSTRUCTED INCREMENTALLY"?[33]

A. First, as a threshold matter, VzLoop does not replicate the existing network. As explained above, it starts with information about the existing network and then makes forward-looking adjustments to it. The resulting modeled network does not replicate the existing network; nor are the resulting cost estimates embedded costs. Second, as the FCC has recognized, "[i]n the real world . . . firms do not instantaneously replace all of their facilities." [34] Neither Mr. Spinks nor AT&T has presented any reason to believe that the existing feeder routing or distribution terminals sites would be radically different from those that exist today: the only alternative they present to using VzLoop's information concerning the existing network is to endorse a model which completely ignores that network and its real-world constraints, and instead constructs hypothetical customer layouts and routes that often cut right through lakes, buildings,

[33] Spinks Response at 6.

[34] *TELRIC NPRM* at 18964 ¶ 50.

and other barriers that would constrain engineers in the real world.[35] Such a network is not even feasible, much less economically efficient. Again, it simply is not correct, nor is it a TELRIC requirement, to ignore everything between the customer locations and the wire centers. Finally, Mr. Spinks's claim is nonsensical: an incumbent's forward-looking costs are largely determined by its existing network routing and a model that starts with information about that routing cannot be characterized as "backward looking."

Q. BUT DOESN'T THE INCREMENTAL CONSTRUCTION OF VERIZON NW'S NETWORK LEAD TO INEFFICIENT ROUTING OF ITS OUTSIDE PLANT?

A. No. Mr. Turner points to the possibility that Verizon NW may have placed feeder 25 years ago around undeveloped tracts of land that are now developed (with new roads) as evidence that Verizon NW has not proven the efficiency of its feeder network. Other than this example, which AT&T has acknowledged is nothing more than a "hypothetical illustration,"[36] Mr. Turner offers nothing that demonstrates any actual inefficiencies in the routing of Verizon NW's network — or that the costs of acquiring new rights of way in today's marketplace would be less than those Verizon NW originally acquired. In fact, Mr. Turner's claim is quite ironic, because Mr. Dippon's Exhibit CMD-6 makes graphically clear that VzLoop does a far

[35] *See* Dippon Reply at 24-28 and Exhibit CMD-6.

[36] AT&T Response to Verizon NW Data Request No. 10-36.

superior job in reflecting *today's* roads and other rights-of-way constraints on network routing — not the "embedded" constraints of 25 years ago — while HM 5.3 fails this test miserably. Exhibit CMD-6 to the Dippon Reply Testimony also shows that in several wire centers, such as ANCRWAXX and CPVLWAXX, AT&T's proposed cable routing crosses a significant amount of water.

B. Average Loop Lengths

Q. HAS THE COMMISSION EVALUATED COST MODELS BY COMPARING THEIR AVERAGE MODELED LOOP LENGTHS TO AVERAGE LENGTHS FOUND IN THE INCUMBENT'S EXISTING NETWORK?

A. Yes. The Commission has relied on such a comparison as "a sensible method for validating the reasonableness of the customer location data in the models."[37] Subsequently, the Commission has also rejected a challenge to this comparison as inconsistent with Verizon NW's goal of using a cost model "that reflects actual operating characteristics."[38]

Q. PLEASE SUMMARIZE VERIZON NW'S AVERAGE LOOP LENGTH ANALYSIS.

A. Notwithstanding Mr. Spinks's assertion to the contrary, the modeled loop lengths produced by VzLoop closely track the actual loop lengths Verizon

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[37] *Eighth Supplemental Order*, Docket No. UT-960369, ¶ 222.

[38] *Thirty-second Supplemental Order*, Docket No. UT-003013, ¶ 346.

NW provided Staff in response to Staff Data Request No. 5.[39] As explained below, Mr. Spinks's Exhibit TLS-14 is based on erroneous data. In fact, VzLoop's modeled loop lengths track the actual averages much more closely than any model presented in this or prior dockets. This is the direct result of VzLoop's unprecedented capacity to reflect the lakes, rivers, rights of way, zoning, and other real world constraints on the routing of a local exchange network in Verizon NW's service area. In contrast, because of the wildly unrealistic clustering methodology employed by HM 5.3, which ignores all such constraints, that model produces loop lengths with significant disparity from Verizon NW's actual average loop lengths. This should disqualify it from consideration in this proceeding, under the application of Mr. Spinks's standard.

Q. PLEASE DISCUSS STAFF'S EXHIBIT TLS-14.

A. On the basis of this exhibit, Mr. Spinks claims that the average loop length modeled by VzLoop is 54% longer than that found in Verizon NW's existing network. Exhibit TLS-14 purports to show that the simple average of the ratio of VzLoop's modeled average loop length to the actual average loop length in each wire center is 1.5455. However, Exhibit TLS-14 contains three errors. First, it excludes the following five wire centers from Mr. Spinks's analysis entirely: (1) Everett Main, (2) Kennewick Main, (3) Kennewick - Meadow Springs, (4) Molson, and (5) Richland. Second,

[39] This data request response was provided to Staff on May 30, 2003, and updated on September 16, 2003.

Mr. Spinks used the wrong actual average loop lengths for the following nine wire centers: (1) Fairfield, (2) Farmington, (3) Latah, (4) Malden, (5) Oaksdale, (6) Rockford, (7) Rosalia, (8) Tekoa, and (9) Thorton. Finally, and most serious, the modeled loop lengths underlying this exhibit simply do not correspond to those produced by VzLoop, as reported in the loop document set found on CD No. 2, in the file "WA Whsl Loop Rev. 01082004.pdf", of Verizon NW's January 2004 filing.[40] Consequently, any conclusion concerning VzLoop that Staff or the Commission might make on the basis of this exhibit would be unfounded.

Q. HOW DO THE DATA RELIED ON BY MR. SPINKS COMPARE TO THE ACTUAL DATA PRODUCED BY VZLOOP AND PROVIDED BY VERIZON NW TO THIS COMMISSION?

A. If Mr. Spinks had used the correct data for the modeled and actual average loop lengths for all of Verizon NW's wire centers, he would have found that the average ratio of modeled to actual loop length is 0.9922, substantially less than the 1.5455 value he relied on. Similarly, the reported standard deviation would have been 0.2511, much smaller than the value shown in Exhibit TLS-14. A comparison of the results based on the actual data and the erroneous data used in Exhibit TLS-14 appears in the following table. To show how much greater the reliability of the actual VzLoop data is compared to that generated by HM 5.3, and the significant

[40] The Loop Length Workpapers accompanying this testimony contain a file that replicates the average loop length data shown in the document set on the CD. *See* Exhibit No. __ (RRP-5C).

improvements of VzLoop over the prior ICM model criticized by the Commission in Docket No. UT-003013, this table provides results based on all four sets of data:

Ratio of Modeled Loop Length to Actual
Mean and Standard Deviation

Data Source	Mean	Standard Deviation	Coefficient of Variation
Correct Actual and Modeled Loop Length Data (VzLoop)	0.9922	0.2511	25%
Staff's Erroneous Actual and Modeled Loop Length Data	1.5455	1.3340	86%
Actual and HM 5.3 Modeled Loop Length Data	1.4422	0.9234	64%
Modeled and Actual Loop Length Data from UT-003013 (ICM)	1.0260	0.3613	35%

This table shows that, based on the standard proffered by Mr. Spinks, VzLoop is far superior to HM 5.3. The table also shows that VzLoop shows significant improvement over ICM on this score, which was also clearly superior to HM 5.3.[41] Not only is VzLoop's overall mean for this ratio close to one, the dispersion of the individual wire center ratios about this mean is substantially lower for VzLoop than for the other data sources.[42] This is evidenced by examining the coefficient of variation,

[41] Even though HM 5.3 generates average loop lengths that generally *exceed* that of the existing network, varying wildly from reality, Verizon NW's prior testimony has demonstrated that other aspects of HM 5.3's modeling methodology are so flawed that the model drastically understates Verizon NW's costs in spite of its excessively long modeled loop lengths.

[42] Note that the means reported in this table are the simple averages of the individual wire center ratios — the measure reported by Mr. Spinks. The overall average modeled loop length produced by VzLoop is 18,102 feet, and the overall

which expresses the standard deviation as a percent of the mean, and by examining the graphs in Exhibit No. __ (RRP-2). All three pages of this exhibit show in the top graph how many of Verizon NW's 99 wire centers are within one, two, three, or more standard deviations from that mean ratio, using VzLoop's average modeled loop lengths. The bottom graphs on each page present the same information for the other three sets of data. The dashed line in each graph locates the mean of each distribution. Note that this exhibit compares the variance of each data set about its respective mean, and that this mean is not the same in each case, as shown in the table above.

These graphs demonstrate three points. First, the results from VzLoop are more symmetrical and more tightly grouped about the mean ratio than are the ratios from any of the other data sources. Second, HM 5.3's dispersion about its mean ratio bears a remarkable similarity to the dispersion of the (erroneous) data that Mr. Spinks relied upon in criticizing VzLoop. Third, VzLoop's results show that the shortcomings identified by the Commission with ICM in Docket No. UT-003013 have been overcome.

Q. DOES A LINE-WEIGHTED ANALYSIS OF LOOP LENGTHS CHANGE THESE CONCLUSIONS?

A. No. If the ratios are calculated on a line-weighted basis, VzLoop is still superior to HM 5.3 and to the data relied on by Staff. This can be seen by

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average actual loop length for Verizon NW is 17,907 feet. This produces an overall ratio of modeled to actual equal to 1.0109.

examining the following table, which uses Verizon NW's analog business and residence voice grade lines to weight the average loop length in each wire center:

Data Source	Weighted Average Loop Length	Ratio of Weighted Average Actual
Actual	17,583	1.0000
VzLoop	18,133	1.0313
Staff	26,010	1.4792
HM 5.3	18,646	1.0604
UT-003013*	16,619	0.9452

* Ratio is 1.0533 based on 10/98 "Actuals"

Note that the average modeled loop length reported in Docket No. UT-003013 is below the current actual average loop length, but that it was 5 percent higher than the then-reported actual wire center averages, using the same line counts to compute the overall line-weighted average.

Q. WHAT ACCOUNTS FOR THE DIFFERENCES DESCRIBED ABOVE?

A. These differences stem directly from the manner in which each model locates customers, and designs its distribution and feeder plant. As explained in Verizon NW's reply testimony, HM 5.3 arranges its purported customer locations into large rectangular clusters that represent modeled distribution areas in which the customer locations are assumed to be uniformly distributed.[43] Because these clusters are so unusually large, in more than a quarter of the wire centers the cluster area exceeds the wire

[43] Dippon Reply at 4.

center area.[44] HM 5.3 utilizes only 1,018 of these clusters to model the entire distribution area in Verizon NW's network. This is in marked contrast to ICM, which relied on 30,742 grids that were less than one-tenth of a square mile in area to model the same network. ICM's distribution areas were made up of groups of these grids and, as a result, customers were not assumed to be uniformly distributed within ICM's distribution areas. Because of ICM's more granular approach, the populated grids accounted for only 16 percent of the total Verizon NW wire center area, and the area of the populated grids never exceeded the area of an individual wire center. By comparison, HM 5.3's clusters represented 42 percent of Verizon NW's wire center area and, as just noted, exceed that area in many instances.

By comparison, VzLoop does not rely on any such cluster or grid construct to represent customer locations and to design distribution plant. As explained in Verizon's direct panel testimony, VzLoop's customer locations correspond to the locations of distribution terminals, and the length of distribution plant is based on the minimum distance needed to connect these terminals.[45] Additionally, both HM 5.3 and ICM used right-angle routing to determine feeder distance, whereas VzLoop's modeled feeder routes recognize the real world constraints that a network planner

[44] See, for example, the maps for the BLANWAXB CLLI in Mr. Dippon's reply exhibit CMD-6. VzLoop models an average loop length of 10,526 feet for this wire center, compared to an actual average of 10,534 feet.

[45] Verizon NW Panel Direct at 36.

must face, as described above. These differences in modeling customer locations, distribution plant, and feeder routes explain VzLoop's superior performance in modeling average loop lengths.

Q. IS IT POSSIBLE TO ADJUST VZLOOP'S COST ESTIMATES TO REFLECT THE VARIANCE BETWEEN THE ACTUAL AND MODELED AVERAGE LOOP LENGTHS?

A. Yes. It is possible to adjust VzCost's cost study template to multiply the distance-sensitive costs by the ratio of the reported actual average loop length to the modeled average loop length for each wire center.

Q. WHAT IS THE IMPACT OF APPLYING THIS LOOP-LENGTH ADJUSTMENT TO VZCOST'S LOOP COST ESTIMATES?

A. Making this adjustment has only a minor effect on the statewide average costs because VzLoop's loop lengths vary only minimally from the actual lengths: the statewide 2-wire unbundled loop rate would decrease by less than fifty cents, or 1.4 percent. The impact on the deaveraged zone rates is shown in the table below:

5-Zone Configuration Based on Unconstrained RMSE Criterion and Filed Costs

	Average Cost per Line			
	Filed Costs	Adj Costs	Change	Pct Chng
Zone 1	$ 24.54	$ 23.70	$ (0.84)	-3.4%
Zone 2	$ 41.62	$ 42.00	$ 0.38	0.9%
Zone 3	$ 88.93	$ 88.65	$ (0.29)	-0.3%
Zone 4	$ 181.31	$ 180.33	$ (0.99)	-0.5%
Zone 5	$ 294.15	$ 322.82	$ 28.67	9.7%
State Average	$ 33.73	$ 33.28	$ (0.46)	-1.4%

Q. WOULD THE LOOP-LENGTH ADJUSTMENT HAVE AN IMPACT ON THE MAKEUP OF THE DEAVERAGED ZONES?

A. The answer depends on how the zones are determined, and on the number of zones. If the unconstrained root mean square error criterion proposed by Staff is adopted, and the number of zones is set to five, the zone assignments for 10 wire centers will change, and the rates in the table below will result:

5-Zone Configuration Based on Unconstrained RMSE Criterion and Adjusted Costs

	Average Cost per Line			
	Filed Costs	Adj Costs	Change	Pct Chng
Zone 1	$ 24.80	$ 23.94	$ (0.86)	-3.5%
Zone 2	$ 43.56	$ 43.69	$ 0.13	0.3%
Zone 3	$ 101.79	$ 101.80	$ 0.01	0.0%
Zone 4	$ 185.47	$ 191.70	$ 6.23	3.4%
Zone 5	$ 296.30	$ 343.15	$ 46.85	15.8%
State Average	$ 33.73	$ 33.28	$ (0.46)	-1.4%

Note that the combined effect of both the changed zone makeup and the lower costs is a decrease of 60 cents in Zone 1 ($24.54 minus $23.94). If the number of zones is set to three, there are 13 changes in the zone assignments, but the impact on the Zone 1 rate is smaller:

3-Zone Configuration Based on Unconstrained RMSE Criterion and Adjusted Costs

	Average Cost per Line			
	Filed Costs	Adj Costs	Change	Pct Chng
Zone 1	$ 29.42	$ 28.79	$ (0.63)	-2.2%
Zone 2	$ 101.34	$ 101.39	$ 0.05	0.1%
Zone 3	$ 215.54	$ 234.96	$ 19.42	9.0%
State Average	$ 33.73	$ 33.28	$ (0.46)	-1.4%

If the filed costs are used with the 3-zone configuration, the Zone 1 rate is $28.76 per line. Consequently, the combined effect of both the changed zone makeup and the lower costs is an *increase* of 3 cents in the Zone 1 rate ($28.79 minus $28.76).

Q. SHOULD THE COMMISSION REQUIRE VERIZON NW TO APPLY A LOOP-LENGTH ADJUSTMENT TO VZCOST'S LOOP COST ESTIMATES?

A. No. As shown by the evidence presented above, VzLoop's modeled loop lengths track the reported actual averages very closely. Additionally, the correlation coefficient between the two data sets is 0.92 and the average modeled loop length exceeds the actual in only 43 of the 99 Verizon NW wire centers. Moreover, application of the adjustment has only a minor impact on the statewide average cost and on the resulting makeup and rates of the deaveraged zones. Importantly, VzLoop's superior modeling of average loop length stems from its technique of locating customers more accurately and its use of information concerning real world constraints on network routing. It is not necessary to adjust VzLoop's results to reflect a minor variation between modeled and actual average loop lengths.

Q. PLEASE ADDRESS STAFF'S CLAIM THAT VZLOOP DOES NOT COMPLY WITH THE REQUIREMENTS OF THE EIGHTH SUPPLEMENTAL ORDER WITH RESPECT TO AVERAGE LOOP LENGTH.

A. Staff's testimony misreads the Commission's decision. In that order, the Commission determined that both the Hatfield Model and BCPM had generated loop lengths that varied widely from actual loop lengths. It noted that in future proceedings the sponsors of models would be required to "address the relationship" between their average loop length estimates and "the ILEC's actual average loop length."[46] As noted above, here Verizon NW has done so, and demonstrated that there is a very close correlation between these two, that this correlation is directly attributable to the recognition of real world constraints reflected in VzLoop, and that in contrast HM 5.3's reliance upon a very different clustering methodology continues to generate loop lengths that vary widely from reality.

Q. PLEASE ADDRESS STAFF'S SIMILAR CLAIM CONCERNING THE COMMISSION'S THIRTY-SECOND SUPPLEMENTAL ORDER.

A. That order involved a similar claim (by Staff) that "the loop length estimates developed by ICM vary greatly from Verizon's actual loop lengths."[47] The Commission agreed. The Commission specifically criticized ICM's "method for identifying customer locations," described above, as "likely to lead to an overstatement of the average length of the loop."[48] It therefore ordered Verizon NW to modify ICM's results to reflect

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46 *Eighth Supplemental Order*, Docket No. UT-960369, ¶ 227.

47 *Thirty-second Supplemental Order*, Docket No. UT-003013, ¶ 346.

48 *Id.* ¶ 347.

loop lengths that corresponded to actual loop length data.[49] Here, in contrast, there is no such overstatement. Additionally, VzCost's method of locating customers is based on information concerning the location of distribution terminals instead of assigning customers to a small grid based on its share of road feet. Thus, while as noted above, VzCost is capable of performing loop length adjustments, there is no need to require them in the way that the Commission found necessary in the case of ICM or other models it has reviewed. In contrast, the use of actual loop lengths as a validation tool in accordance with prior Commission decisions confirms the unrealistic and unreliable nature of the results generated by HM 5.3.

C. VzLOOP Placement of SAIs

Q. PLEASE DESCRIBE MR. TURNER'S CRITICISM OF VERIZON NW'S PLACEMENT OF SAIS.

A. Mr. Turner claims that Verizon NW's modeled loop network "[p]robably [does] not . . . capture the costs" of its actual network in Washington, based on his analysis of the Bothell (BOTHWAXB) wire center.[50] As discussed below and in Dr. Tardiff's rebuttal testimony, this assertion is without merit, either with respect to the specific wire center or with respect to the modeled network as a whole.

Q. IN EXHIBIT SET-4 OF HIS REBUTTAL TESTIMONY, MR. TURNER HAS IDENTIFIED FIVE SAIS IN BOTHELL THAT ARE SHOWN TO BE IN

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[49] *Id.*

[50] Turner Rebuttal at 35.

EXACTLY THE SAME LOCATION. IS IT TRUE THAT THESE FIVE ARE ACTUALLY LOCATED AT THE SAME LOCATION IN THE REAL WORLD?

A. No. As Verizon advised Mr. Turner at the February 5 meeting in Irving, the ICAPS planning data source that Verizon uses to collect this data, which also contains the primary feeder routing information, will sometimes reflect planner locations of SAIs as physically in the same location when they are very close together and warrant monitoring at the same location for planning purposes — even where there is a distinct need for each of the SAIs in the real-world network. The planner may choose to do this because it is more efficient to monitor feeder cable that serves more than one SAI, as opposed to placing a control point at each SAI. As noted below, such close-together SAIs are relatively infrequent, and they often occur only as the route moves toward the periphery of the wire center, where they have a minimal effect on cable routing.

Q. WHAT DID VERIZON FIND WHEN FURTHER INVESTIGATION WAS DONE ON THE EXACT LOCATION OF THESE FIVE SAIS?

A. Exhibit No. __ (RRP-3) shows a map that depicts the exact, real-world physical location of these SAIs, which in fact are reasonably close together. When Verizon pulled the data for this wire center in Bothell for its cost study, Verizon NW was in the process of a major reconfiguration of the DDW and DEI service areas, thus leading to the establishment of three new SAIs. The reconfiguration of these SAIs in the actual network

reflects the fact that there are real world constraints that sometimes require the placement of SAIs very close together. For example, two of the SAIs cited by Mr. Turner, DKJ and DKK, must be placed close together because they serve customer areas that are bisected by railroad tracks. Similarly, the SAI labeled DKQ is placed relatively close to the SAI labeled DEI because — in the real world — it serves a gated community, and its placement at the south end of the community reflects the optimal access point for feeder cables. These sorts of considerations are legitimate, real-world explanations for why SAIs are located where they are. They are also the sorts of considerations that are entirely lacking from the modeled loop network that AT&T has proposed in this proceeding.

Q. WHAT IS THE IMPACT OF SAIS MODELED AT THE SAME LOCATION IN VZLOOP?

A. When Verizon NW performed a re-run of the cost study for this wire center at the BC level, in which Verizon NW made changes to the NETWORK table that relocated SAIs to their actual, real-world locations, the two-wire loop investment changed by only 0.82% (and in fact increased).[51] That this change did not cause investments to go down is not surprising, since, as here, such instances generally occur at the periphery of the wire center and thus involve relatively small differences in cable length and structure

[51] *See* Exhibit No. __ (RRP-5C), NAL_2W_VZ_BIC_V7_BOTHELL_MOVESAI.xls.

investment. Moreover, the number of these instances is actually quite small. Based on a review of VzLoop's ARC table, Verizon NW has found that only 323 SAIs in VzLoop's modeled network — or roughly 10% — are in the same location.[52] These SAIs in the same location correspond to only 149 out of 2,983 sites, or less than 5%. There is no reason to believe that the existence of such instances has any more impact on investment elsewhere than it does in Bothell.

Q. PLEASE COMMENT ON MR. TURNER'S ALLEGATION THAT VERIZON NW "READILY KNOWS" THERE ARE SITUATIONS "WHERE THE ACTUAL PLACEMENT OF THE EQUIPMENT IN THE ACTUAL NETWORK IS NOT WHERE IT IS SHOWN IN THE PLANNING SYSTEMS."[53]

A. As noted above, Verizon NW used SAI and other location data from its ICAPS database to develop the modeled network that was part of the direct testimony filed in June 2003. The ICAPS database is the only comprehensive source of data that is already capable of geocoding as required for cost study purposes.

Verizon NW's loop model has assimilated an unprecedented amount of information, drawn directly from Verizon NW's real-world network in Washington, to model a network that identifies the real-world constraints equally applicable to any network, real or modeled. As noted

[52] *See* Exhibit No. __ (RRP-5C), WaCoincidentSAIs_dgt.xls.

[53] Turner Rebuttal at 36.

above, the differences from real-world SAI locations are immaterial for purposes of modeling a network that is able to reflect such constraints. To disregard these real-world constraints because they cannot always be mapped with precision in the course of preparing a cost study makes no sense. As the Commission noted in its *Eighth Supplemental Order*, "[m]odels are, by definition, simplifications or abstractions which omit some information."[54] However, unlike HM 5.3, VzLoop captures the relevant data to model Verizon's actual, forward-looking network and any omitted information does not significantly affect the investment levels.

Q. IS MR. TURNER CORRECT THAT HE IS UNABLE TO CHANGE THE LOCATIONS OF SAIS AND DLCS IN VZLOOP IF HE DESIRES TO RESTATE THE MODEL?

A. No. Mr. Turner repeatedly asserts that "I have not yet found a way" to do so.[55] This statement is either false, or carefully crafted simply to state that AT&T has decided not to retain Mr. Turner to do so for this particular proceeding. As noted earlier, Mr. Turner attended an all-day meeting on February 5, 2004, with Verizon's preprocessing experts in Irving, Texas, a principal purpose of which was to walk him step by step through the process that changes VzLoop's pre-network file so as to move SAIs (or DLCs) to different locations of his choice, and to provide him with software and mapping tools developed by Verizon that would facilitate this process.

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54 *Eighth Supplemental Order*, Docket No. UT-960369, ¶ 21.

55 Turner Rebuttal at 37, 38, 44, 46.

Mr. Turner never expressed any confusion about how to perform these restatements, and neither he nor anyone else working for AT&T has ever contacted Verizon in the three months since that meeting to raise any questions about how to do so.

D. Verizon NW's Use of Existing Distribution Areas

Q. WHAT IS MR. TURNER'S COMPLAINT ABOUT VERIZON NW'S USE OF EXISTING DISTRIBUTION AREAS IN ITS MODELED LOOP NETWORK?

A. Relying on a map of the Bothell wire center, Mr. Turner argues that these distribution areas should be combined to generate "scale economies."[56]

Q. WHAT ARE THE PROBLEMS WITH MR. TURNER'S ANALYSIS OF VERIZON NW'S RELIANCE ON EXISTING DISTRIBUTION AREAS?

A. While this analysis purports to be a criticism of Verizon NW's implementation of its own modeling techniques, its is really an argument about Verizon NW's failure to follow AT&T's highly unorthodox methodology of relying on oversized distribution areas. Noting that there is not a complete separation of the different colored distribution areas in Exhibit SET-4, representing the Bothell wire center, Mr. Turner criticizes Verizon NW for assigning separate SAIs to each of the distribution areas.[57] Mr. Turner argues these distribution areas should instead be combined; in his view, this would result in a single SAI that "could easily

[56] Turner Rebuttal at 39-40.

[57] *Id.* at 39.

serve both distribution areas (effectively combining them into one distribution area) much more efficiently than using two less utilized SAIs."[58]

Mr. Turner is entirely incorrect in suggesting that such an adjustment would "greatly improv[e] the efficiency of the SAI usage."[59] It would replace Verizon NW's modeled network, which is grounded in the immutable characteristics of the real world and which models distribution areas to account for those characteristics, with the inefficiencies caused by the unprecedented size of the clusters manufactured out of whole cloth by HM 5.3. As Verizon NW has noted in its reply testimony, using these large distribution area clusters lead to an underestimation of SAIs, distribution areas, and feeder cable.[60] Yet it also results in an overinvestment in distribution cable, since reducing the number of distribution areas means that more customers will be located further from the nearest SAI.[61] Moreover, Mr. Turner acknowledges, distribution cable "typically has a higher unit cost" than feeder cable.[62] Consequently, HM 5.3's distribution area design ultimately is more costly, and less efficient,

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58 *Id.* at 39-40.

59 *Id.* at 40.

60 Dippon Reply at 73.

61 Murphy Reply at 56-62; *see also* Richter Reply at 12. This, of course, should mean that HM 5.3 has much higher distribution costs. But because HM 5.3 makes unreasonable structure sharing and other assumptions, the costs are actually lower. *See* Richter Reply at 22-32.

62 Turner Rebuttal at 37.

than that employed by VzLoop. For these reasons, the ALJ in the recent SBC California proceeding noted that HM 5.3 "relie[s] on too many large DA configurations, more than it is reasonable to assume would happen in the real-world network."[63]

Moreover, the effect of "correcting" the issue Mr. Turner has identified would be nil. After Verizon NW relocated the five Bothell SAIs as described above and reassigned terminals to their current serving SAIs, there was an 0.43% additional loop investment modeled.[64]

Q. IS MR. TURNER CORRECT THAT DISTRIBUTION AREAS SHOULD BE REGROUPED BASED ON "ACTUAL CUSTOMER LOCATIONS"?[65]

A. No. This question goes to the heart of the difference between Verizon NW's proposed approach and that of AT&T. To regroup the customer locations would eliminate all real world constraints. As we can see from the Bothell example identified by Mr. Turner, this approach would create distribution areas that cross major highways, ignore the entrance requirements for a gated community, cross railroad tracks, and go through private property that may well not grant a right of way, except at a much higher cost. Moreover, as Mr. Dippon's reply testimony makes clear, HM

63 *Duda Proposed Decision* at 78.

64 *See* Exhibit No. __ (RRP-5C), NAL_2W_VZ_BIC_V7_BOTHELL_MOVESAI_REHOMETERM.xls.

65 Turner Rebuttal at 41.

5.3 does not use actual customer locations, but instead relies on rectangular shaped clusters.[66]

E. Verizon NW's DLC Placement

Q. PLEASE DESCRIBE HOW VERIZON NW MODELS THE LOCATION OF DIGITAL LOOP CARRIER (DLC) FACILITIES.

A. As described in its direct testimony, VzLoop models the first DLC on each feeder route at the nearest of (1) the existing DLC that is closest to the wire center on that route, (2) the first SAI at which the model calculates that it is cheaper to place a fiber-fed DLC (including the cost of fiber cable) than copper feeder cable, or (3) the first SAI location beyond the 12,000-foot threshold for the first DLC.[67] Compliance with this copper loop length restriction is determined by the distance from the most distant terminal served by an existing cross connect to the DLC that serves the cross connect. If the restriction is exceeded, an additional DLC is placed at the cross connect location.

VzLoop also recognizes that, for loops with a large number of customers at a single location, it is more efficient to use fiber-fed DLC instead of copper feeder facilities, with the RT located in the same building as the customer. Consistent with forward-looking economics, Verizon NW has assumed a fiber-to-the-building loop architecture for all locations having a demand greater than 160 lines. In the fiber-to-the-building

[66] Dippon Reply at 4.

[67] Verizon NW Panel Direct at 43-44.

application, VzLoop models a building terminal in lieu of a NID and does not model a drop cable for the customer.

Q. PLEASE DESCRIBE MR. TURNER'S CRITICISMS OF THIS APPROACH.

A. Mr. Turner does not mount any general criticisms of this approach. Instead, he identifies two alleged flaws arising from its application in the map of the Acme wire center (ACMEWAXA) in Verizon NW's Washington network. First, Mr. Turner points to an instance where a DLC remote terminal, 5379I, is placed 213 feet from a wire center, a result he deems "troublesome."[68] Second, he criticizes the placement of three DLCs within 2,500 feet of one another.[69]

Q. HOW DO YOU RESPOND TO MR. TURNER'S CLAIM THAT DLC REMOTE TERMINAL 5739I IS INAPPROPRIATELY CLOSE TO ITS SERVING WIRE CENTER?

A. The placement of remote terminal 5739I in close proximity to the Acme wire center in the modeled network results from a feature of the SpanNet program that, in a rare number of instances, incorrectly converts certain locations to potential DLC facilities. An additional step has been inserted into the validation process to address the effects of this feature.

Based on a review of VzLoop's ARC table, Verizon NW has determined that 2,592 of 2,673 of the DLC sites in the modeled network —

[68] Turner Rebuttal at 43-44.

[69] *Id.* at 45-46.

or 97% — are more than 2,500 feet from the central office that they serve.[70] And only five sites are less than 200 feet from the closest wire center.[71] Moreover, when the feature causing the incorrect conversion of certain locations to DLC facilities is corrected, the result is a decrease in overall loop investment of only 2.3%.[72] The small impact of the SpanNet feature on overall investment reflects both the small number of these instances and the need to replace such DLC facilities with copper.

Q. IS MR. TURNER CORRECT THAT THE CLOSE PROXIMITY TO EACH OTHER OF THREE DLC TERMINALS IN THE ACME WIRE CENTER DEMONSTRATES A DEFICIENCY IN VERIZON NW'S PLACEMENT OF DLC FACILITIES?

A. No. First, the total number of close-together DLCs is very small. Only 112 of 2,673 DLC sites in the model — or 4.2% — are within 200 feet of the nearest other site.[73] When that distance is extended to encompass DLC sites within 500 feet of the nearest other site, moreover, the number rises to only 223, or 8.3% of all that are modeled.[74] Second, many of these instances are closely related to the need to adhere to a 12 kft maximum

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70 *See* Exhibit No. __ (RRP-5C), WA DLC Dist from CO_dgt.xls.

71 *Id.*

72 *See* Exhibit No. __ (RRP-5C), NAL_2W_VZ_BIC_V7_WA_TPOI_12KFT_SENS_RUN.xls.

73 *See* Exhibit No. __ (RRP-5C), WaARCDLCDists_dgt.xls.

74 *Id.*

copper loop length constraint. As Verizon NW has previously noted, many commissions, including this one[75] and others,[76] have recognized a 12,000-foot maximum copper loop length for UNE costing purposes, based on the need to provide advanced services.[77] For example, when that 12 kft limit is changed to the inappropriate 18 kft standard AT&T uses in its studies, the number of DLC sites within 200 feet of another DLC site drops by almost half, from 112 to 57, and the number of sites within 500 feet drops by more than half, from 227 to 103.[78] And with respect to Mr. Turner's Acme example, when the 12 kft limit is changed to 18 kft (contrary to the requirements for TELRIC studies), two of the three DLCs — in fact, the two additional modeled DLCs — cease to appear in the modeled network, and much, if not all, of the added DLC investment ceases to exist. Thus, Mr. Turner's statement that Verizon NW's network leads to an avoidable 62 percent overinvestment in DLC facilities simply does not withstand scrutiny.

Q. PLEASE COMMENT ON MR. TURNER'S ASSERTION THAT HE HAS NOT BEEN ABLE TO MAKE CHANGES TO VERIZON NW'S DLC PLACEMENT.

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75 *Eighth Supplemental Order*, Docket No. UT-960369, ¶ 198 (adopting 12,000-foot crossover point).

76 *Duda Proposed Decision* at 184.

77 Richter Reply at 15-17.

78 *See* Exhibit No. __ (RRP-5C), WaARCDLCDists18K_dgt.xls.

A. As noted above, Verizon provided Mr. Turner with all the information he needs to make such changes at the February 5, 2004 meeting in Irving, and he has not contacted anyone at Verizon since then to indicate problems with the instructions he was given.

F. Verizon NW's Modeling of Network Demand

Q. PLEASE DESCRIBE MR. TURNER'S CRITICISM OF VERIZON NW'S TREATMENT OF CERTAIN DISTRIBUTION TERMINALS.

A. Mr. Turner's complaint concerns an adjustment that Verizon NW makes to reflect the investment required to serve the lines associated with certain distribution terminals that cannot be geocoded.[79] As Mr. Turner correctly notes, this adjustment preserves the modeled investment per line for the distribution terminals that could be located. The problem with this approach, according to Mr. Turner, is that it "assume[s] that there are no scale economies associated with the additional lines."[80]

Q. IS THERE MERIT TO MR. TURNER'S CRITICISM?

A. No. Mr. Turner's assertion that VzLoop assumes there are no scale economies associated with additional lines is both unfounded and irrelevant. It is unfounded because VzLoop does capture the effect of scale economies — for example, the per-pair installation and material costs of copper cables decline as demand and cable size increase along a given route. Mr. Turner's assertion is irrelevant because the presence or

[79] Turner Rebuttal at 48.

[80] *Id.* at 48.

absence of scale economies overall is not what is at issue here. What is at issue is whether or not anyone can say what would happen to the resulting cost estimates if these terminals could be located. AT&T certainly cannot, as evidenced by its acknowledgment in discovery that it has no factual basis for its assumption that non-geocoded distribution terminals in Verizon NW's network in Washington serve a higher percentage of business lines than geocoded distribution terminals.[81] While it is possible that the lines served by these terminals would not require additional plant, it is also possible that the lines would trigger the placement of additional (or larger) cables and remote terminals causing the resulting cost estimates to increase. Indeed, because the inability to locate a distribution terminal is often due to lack of a geocodable address, it is likely that these terminals would in fact be found in the less dense, and higher cost, areas of the wire centers. By basing total modeled investment for all lines — including those that could not be located — on the modeled per-line investment for a network serving the lines that *could* be located, VzLoop makes no assumption about their location or about their unknown cost impact. In contrast, Mr. Turner would simply assume that the effect will always be to decrease cost.

G. Verizon NW's Treatment of Non-switched Private Lines

Q. PLEASE EXPLAIN MR. TURNER'S CRITICISMS OF VERIZON NW'S MODELING APPROACH FOR NON-SWITCHED PRIVATE LINES.

[81] *See* AT&T Response to Verizon NW Data Request No. 10-37.

A. Mr. Turner criticizes the way Verizon NW handles the lack of information in its databases for certain "Living Unit IDs," which he correctly attributes to non-switched private lines. Specifically, he asserts that there should not be a NID and a drop assigned to every one of the relatively small number of non-switched private lines in the database to which he refers.[82] Because he assumes that all of these lines are business lines, he claims that the assignment of a drop and a NID to each line is unreasonable because most businesses purchase more than one line per location.[83] Mr. Turner also notes that 31,717 of these same non-switched lines, for which Verizon NW was unable to locate a distribution terminal name, are inappropriately assigned their own distribution terminal.[84]

Q. ARE THESE VALID CONCERNS?

A. Mr. Turner correctly notes that the absence of data for these non-switched private lines requires use of some assumptions in modeling investment for them. But this is an unknown with virtually no impact on costs. Using Mr. Turner's alternative approach of assuming 4 such lines per location (*i.e.*, a 75% reduction), the combined overall cost impact of both these unknowns is only 1.16% of the cost of a two-wire loop.[85]

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82 Turner Rebuttal at 50.

83 *Id.* at 52.

84 *Id.* at 53.

85 *See* Exhibit No. __ (RRP-5C), NAL_2W_VZ_BIC_V7_TURNER_LOOP_DEMAND_SENS.xls.

III. MR. TURNER'S RESTATEMENT OF VZLOOP

Q. DOES MR. TURNER RESTATE VERIZON'S COSTS?

A. Yes. Mr. Turner's restatement is based on a "pick-and-choose" approach that replaces the prices that Verizon NW based on actual contracts with wholly unsubstantiated prices, generating unrealistic costs.

Q. WERE YOU ABLE TO ANALYZE MR. TURNER'S RESTATEMENT OF VERIZON'S COST?

A. Only to a certain extent because Mr. Turner did not provide all the necessary capital and expense input files. We were, however, able to verify his investments.

Q. DID MR. TURNER MAKE USE OF THE PLACEMENT RATES BASED ON VERIZON'S ACTUAL CONTRACTS?

A. No. Without providing any explanation for doing so, he ignored the competitive contract rates for Verizon NW provided to AT&T in Verizon's June 2003 filing and instead relied on wholly unsupported inputs from HM 5.3.

Q. IN WHAT CIRCUMSTANCES DOES MR. TURNER USE VERIZON NW PRICING INFORMATION?

A. He generally does so only when such prices are lower than HM 5.3's inputs. For example, while he normally uses HM 5.3's placement inputs, he uses Verizon NW's $191 price for pole placements instead of HM 5.3's rate of $205 (and then omits Verizon's additional costs for anchors and guys even though these costs are not covered by Verizon NW's contract price). He likewise chose to use Verizon NW's price of $2.60 for straight

splices of 1-50 pairs at $2.60 per pair, which is much lower than the $6.25 (for aerial and buried) and $11.26 (underground) that HM 5.3 assumes for the average of this range (25 pairs).[86] However, as the splice sizes increase, and HM 5.3's prices become lower than Verizon NW's, Mr. Turner reverts to his use of HM 5.3. This "pick-and-choose" approach is not an acceptable method of determining inputs for a cost study and he provides no explanation for it anywhere in the testimony.

Q. DOES MR. TURNER PROVIDE ANY MORE EXPLANATION FOR REJECTING VZCOST'S INPUTS IN THE MATERIAL TABLE?

A. No. He simply asserts that Verizon's material costs are "generally . . . significantly overstated." But except for his challenge to the use of 24-gauge copper cable, he provides no reason to explain why he is rejecting materials prices that Verizon NW derived from its actual costs. Instead, he uses copper cable prices from 5 years ago, without addressing the steady increase in copper cable prices during this time or providing support for AT&T's claim that these are installed costs.[87] Mr. Turner also follows the same "pick-and-choose" approach described above for placement costs: for example, he uses Verizon NW's SAI prices, which are up to 57.2% lower than those of HM 5.3. He also zeroes out Verizon NW's costs for central office terminals. While may be have spread some

[86] Even if one instead assumed the 50 pairs at the upper end of this range, HM 5.3's price would still be 125% higher (at $3.50) for aerial and buried splices, and 225% higher (at $5.85) for underground splices.

[87] See AT&T's response to Verizon Data Request No. 7-21 (Sept. 24, 2003).

of the cost to the remote terminals, this does not explain why his proposed remote terminal costs remain lower than Verizon NW's (which do not include these central office terminal costs).

Q. WHAT PROBLEMS WOULD ARISE IF VERIZON NW INSTEAD FOLLOWED MR. TURNER'S RECOMMENDATION THAT "ALL OF THE COPPER CABLE IN THE LOOP PLANT COULD BE INSTALLED AS 26-GAUGE CABLE"?

A. This statement is entirely at odds with accepted engineering practice, which recognizes that the thinner 26-gauge cable is plagued by numerous maintenance problems.[88] While Verizon NW's existing network does include cable of this gauge, engineers today try to minimize its use and it is appropriate to assume that a forward-looking network would make ubiquitous use of 24-gauge cable, which is significantly less vulnerable to environmental damage and damage from handling. Mr. Turner cites no example of any local exchange network that reflects his assumption.

Contrary to what Mr. Turner asserts, such maintenance problems in 26-gauge cable would not be limited only to "cable sizes of 200-pairs and less . . . near the end of distribution runs [that] will have more manual work performed on them in distribution terminals and pedestals."[89] Such thinner cable is vulnerable to the environment everywhere it exists, not just at the end of the cable runs. Mr. Turner' statement that "there is no engineering

[88] See Exhibit No. __ (RRP-4).

[89] Turner Rebuttal at 23.

basis for 24-gauge cable with a maximum copper loop length" also makes no sense. If 26-gauge cable were to be used, loop length would have to be reduced from Mr. Turner's 18,000 feet to 7,700 feet in order to be used for high capacity DS1 over copper.

Q. WHAT IMPACT WOULD MR. TURNER'S SUGGESTION OF SUBSTITUTING 26-GAUGE CABLE HAVE ON VERIZON'S PROPOSED COSTS?

A. Virtually none at all. Verizon NW performed a sensitivity run using exclusively 26-gauge cable. Contrary to Mr. Turner's expectation that this would make a significant difference in costs,[90] Verizon NW's loop investment decreased by only .09%.[91]

Q. IS THE EFFECTIVE FILL RESULTING FROM VERIZON'S DISTRIBUTION CABLE SIZING FACTORS "INCREDIBLY LOW," AS MR. TURNER CLAIMS?

A. No. Such fills result from efficient sizing in part because of the need (described in Mr. Richter's testimony) to build enough cable to absorb unpredictable spikes in demand, but also because of "breakage" that results from the fact that cable only comes in fixed sizes. For example, even if demand required is only 401 pairs, engineers would have to use the next largest available size, which is 600 pairs. Thus, it should not be surprising that even though AT&T provides an insufficient cushion for

[90] Turner Rebuttal at 23.

[91] See Exhibit No. __ (RRP-4).

unpredictable rises in demand ultimately has an effective distribution fill rate of only 48%.

Q. CONCEDING THAT "BREAKAGE" MAY LEAD TO SUCH FILL RATES REGARDLESS OF THE SIZING FACTOR, WHY ARE VERIZON'S SIZING FACTORS MORE SENSIBLE THAN THOSE PROPOSED BY AT&T?

A. As Mr. Richter explained in his reply testimony of April 20, 2004, it is an established engineering practice to assume 2 to 3 pairs per residence.[92] As Mr. Richter noted in his testimony, AT&T's own engineering guidelines are in agreement and one of AT&T's witnesses presented two pairs per residence as a minimum (and suggested that five to six pairs would not be unreasonable) when testifying for the Data ALEC in a recent Florida proceeding that Mr. Turner cites in his reply testimony.[93]

Q. WHY THEN DID THE FCC'S WIRELINE COMPETITION BUREAU INSIST UPON SMALLER SIZING FACTORS IN ITS VIRGINIA DECISION?

A. As Verizon VA has noted in its application for review,[94] the Bureau ignored the only evidence in the record concerning the utilization levels at which a

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92 Richter Reply at 61.

93 *See* Turner Exh. 3, FL BST May 25 2001 UNE Cost Order.

94 *See* Verizon VA, Application for Review, *In the Matter of Petition of WorldCom, Pursuant to Section 252(e)(2) of the Communications Act for Preemption of the Jurisdiction of Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc. and for Expedited Arbitration*, DA 03-2738, CC Docket Nos. 00-218 and 00-251 (Sept. 29, 2003).

functional network can operate efficiently. It accepted AT&T's proposed fills, even though AT&T did not base its proposed fills on any experience with an operational network, and did not show how a network could operate at those levels, and even though one of its witnesses acknowledged that he was not aware of any network that has achieved the network-wide average that AT&T proposed.[95] It also disregarded the need to be able to serve unexpected spikes and fluctuations in demand (e.g., that occur when a business suddenly has a need for additional lines) without having repeatedly to dig up the streets to place new cable.[96] Finally, the Bureau relied on the Universal Synthesis Model's fill factors even though the FCC has made clear that "we continue to discourage states from using the [USF] nationwide inputs for the purpose of developing UNE prices."[97]

Q. WHAT WOULD VERIZON NW'S COSTS BE IF IT USED A SIZING FACTOR ENDORSED BY AT&T?

A. Even if Verizon NW used Mr. Turner's sizing factors, the total loop investment would decrease by only 1.48%, and total loop cost would decrease by only 1.45%. The decrease produced by using the 2 pairs per living unit minimum endorsed by Mr. Riolo would be even smaller.[98]

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95 Virginia Tr. at 4513-4515 (Riolo).

96 *See, e.g.*, VZ-VA Ex. 122 at 119-22.

97 *TELRIC NPRM* ¶ 46

98 *See* Exhibit No. __ (RRP-4).

Q. IS MR. TURNER CORRECT IN PROPOSING AN 18,000 FOOT CUT-OFF ON COPPER DISTRIBUTION LENGTH?[99]

A. No. As Mr. Richter pointed out in his reply testimony, this assertion puts him at odds with widely-accepted engineering practice. It is also inconsistent with the decisions of this and other commissions. See Richter Testimony at 15-17. In its Eighth Supplemental Order, this Commission agreed with GTE's proposed 12,000 foot maximum copper loop length.[100] The California ALJ, in her recent proposed SBC decision, adopted 12,000 feet as the maximum cooper loop length.[101] As noted above, Mr. Turner's insistence that copper loop lengths should be greater than 12,000 feet is even more absurd in light of his suggestion that engineers use 26-gauge cable, which can provide HDSL service only up to a maximum copper loop length of 7,700 feet.[102]

Q. IS IT "LUDICROUS" FOR VERIZON TO USE A 90%-10% IDLC-UDLC MIX?

A. No. It is certainly no less reasonable than the 75%-25% mix recently adopted by the California ALJ in her recommended decision in the SBC UNE case.[103] Nothing in Mr. Turner's testimony undercuts these

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99 Turner Rebuttal at 58.

100 *Eighth Supplemental Order* ¶ 198.

101 *Duda Proposed Decision* at 184.

103 *Id.* at 145.

arguments.[104] Indeed, in the recent SBC proceedings in California, Mr. Donovan "admitted that he does not know of a stand-alone loop provisioned over IDLC by any carrier in the entire country,"[105] and the ALJ found that "[t]he evidence shows that no carriers today provide unbundled loops over IDLC, due apparently to operational issues that remain unresolved."[106]

Q. IS THE LANGUAGE MR. TURNER QUOTES FROM TELCORDIA'S NOTES ON THE NETWORK INCONSISTENT WITH THESE FINDINGS?

A. No. This exhibit, and the claims that Mr. Turner purports to support with it, were also included in Mr. Donovan's Direct Testimony and are addressed in Mr. Richter's reply testimony.[107] As Mr. Richter explained, it is not practicable to connect different carriers' switches to the same DLC system through the GR-303 IDLC interface until numerous security, error-protection, and operational issues are resolved by DLC suppliers.[108] As Mr. Richter also noted, the Telcordia document that Mr. Turner and Mr. Donovan cites highlights that such problems have not yet been fully resolved: it notes that "there are a variety of issues (provisioning, alarm

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104 *See generally* Richter Reply Testimony at 44-48.

105 *Duda Proposed Decision* at 144.

106 *Id.*

107 Richter Reply at 44-48.

108 *Id.* at 44.

reporting, sharing of test resources, etc.) that are currently being addressed by the industry."[109]

Q. WAS THE WIRELINE COMPETITION BUREAU CORRECT IN CONCLUDING THAT IT WAS FEASIBLE TO UNBUNDLE STANDALONE LOOPS THROUGH THE GR-303 IDLC INTERFACE?

A. No. As Verizon has explained in its Application for Review of that Order, the Bureau's decision is incorrect for several reasons.[110] Most significantly, it relies heavily on a misunderstanding of the testimony of a Verizon witness. The Bureau wrongly concluded that this witness "admitted that Verizon has had the technical ability to provide unbundled NGDLC loops for *four to five years* but chose not to implement a standard offering because competitive carriers had not sufficiently pursued such an offering."[111] In the portion of the transcript cited by the Bureau, Verizon's witness actually was discussing how Verizon deals with the inability to unbundle IDLC loops. Verizon witness Mr White was discussing Verizon's bona fide request ("BFR") procedure could be used by a CLEC seeking a standalone UNE loop to serve a customer currently served by IDLC where Verizon did not have any available UDLC or all-copper loops to serve that

[109] Turner Rebuttal. Exh. Set_7, at 12-55. The Telcordia document also lists other "IDLC unbundling options," such as "transfer[ing] the loop to a UDLC system" or to "utiliz[ing] the UDLC capability of the IDLC system." *Id.* at 12-54.

[110] *See* Verizon VA, Application for Review, *supra*, at 21-27.

[111] VA Arbitration Order ¶ 315 (citing the live testimony of Verizon's witness Mr. White).

customer.[112] Mr. White explained that Verizon could provide a standalone UNE loop to serve that customer by installing a new central office terminal ("COT") and "unintegrat[ing]" all of the customers served by the DLC system.[113] In other words, Verizon would be able to provide a standalone UNE loop to serve such a customer *only by installing new DLC equipment that included UDLC*. The Bureau's decision thus relies on a complete misunderstanding of Verizon's testimony and should not be accorded any weight in this proceeding. As Mr. Richter's reply testimony points out in his reply testimony,[114] and as the California ALJ's Proposed Decision has recently recognized[115] the FCC's TRO Order makes this point clear, as does the D.C. Circuit decision upholding that determination.

Q. WHAT EVIDENCE HAS MR. TURNER OFFERED THAT AT&T's PROPOSED STRUCTURE SHARING PERCENTAGES ARE ACHIEVABLE?

A. Mr. Turner's cursory examination of this issue does not offer any evidence beyond the unsupported assertions offered by Mr. Donovan. In contrast, Mr. Richter's reply testimony contains a detailed analysis of the reasons for Verizon NW's sharing percentages and shows why cost studies that assume extensive sharing of such structure without supporting evidence

112 VA Tr. at 276-278.

113 VA Tr. at 277.

114 Richter Reply at 61-62.

115 Proposed Decision, supra, at 145.

are, as the Florida Commission stated, "severed from reality."[116] In fact, Verizon NW's records of every segment of all 22.5 million duct feet of conduit in its Washington network and show that less than 80,000 feet are shared with other utilities.[117] Thus, its actual underground sharing is less than 1%.[118]

Q. PLEASE ADDRESS STAFF'S CLAIM THAT VZCOST'S APPROACH TO STRUCTURE SHARING DOES NOT COMPLY WITH PRIOR COMMISSION ORDERS.

A. Staff's testimony is not clear on this point, but it appears to be taking the position that (as with other inputs and assumptions) the parties are bound in this proceeding to adopt the structure sharing inputs arrived at on the basis of a completely different record, in a completely different proceeding, with respect to a completely different time period. The flawed logic of this approach is obvious: there would be no purpose in expending the enormous time and resources in revisiting UNE costs in an extensive

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116 Final Order, *Investigation into Pricing of Unbundled Network Elements, Docket No. 990649A-TP*, Order No. PSC-02-1311-FOF-TP, (Fla. P.S.C. 2002), at 39 (emphasis added) ("Florida 2002 Decision").

117 See Exhibit ___ (RRP-4T). As Verizon NW indicated in a data request response to AT&T, dated November 10, 2003, the 9.22% underground sharing estimate, submitted in June 26, 2003 filing, was based on erroneous information. The new study shows that the Verizon's total duct feet (22.5 million) are larger than the 5.7 million erroneously reported, and thus that the amount shared is a smaller portion of the total.

118 Id.

generic cost docket if costs and inputs established several years ago on another record were intended to be binding for all time.

Q. IS VERIZON NW'S APPROACH TO SHARING OF UNDERGROUND AND BURIED STRUCTURE THE SAME AS THAT CRITICIZED BY THE COMMISSION IN THE EIGHTH SUPPLEMENTAL ORDER?

A. No. First, GTE's sharing inputs were not premised on the kind of actual and reliable data set forth above. Instead of assuming sharing of conduit systems, those studies instead assumed placing of a single duct whenever underground was modeled.[119] Second, GTE "d[id] not provide the user with the flexibility to alter" its sharing assumptions.[120] In contrast, VzCost's sharing inputs may be changed by the user, by modifying VzLoop's Option table.

IV. LOOP DEAVERAGING

Q. PLEASE COMMENT ON MR. DENNEY'S REBUTTAL TESTIMONY.

A. Mr. Denney's rebuttal testimony addresses the similarities and differences between AT&T's, Staff's and Verizon NW's deaveraging proposals. The major difference between these proposals is that Mr. Denney and AT&T favor a methodology based on minimizing an error measure based on the sum of relative absolute deviations, while Staff and Verizon NW propose a methodology based on minimizing the sum of squared deviations, or errors. Mr. Denney avoids addressing the impact on the rates each

[119] Eighth Supplemental Order, Para. 64.

[120] *Id*. at para. 68.

methodology would produce given the three sets of costs presented before this Commission. Instead, he has tried to distract the Commission by rebutting an argument that no party has raised, and has simply asserted that a relative absolute error measure will result in deaveraged zone rates that more closely reflect the underlying wire center costs. Additionally, Mr. Denney has wrongly accused Dr. Blackmon of circular reasoning. Finally, Mr. Denney's arguments concerning the variation among cost models as cost per line increases are ill-founded and inconsistent with his criticism of Dr. Blackmon's statistical efficiency criteria.

Q. HOW HAS MR. DENNEY ATTEMPTED TO DISTRACT THE COMMISSION?

A. Mr. Denney suggests that "the popularity of the squared error approach is due, at least in part, to its mathematical ease."[121] While that is certainly true with respect to regression analysis, it is not true in the instant case and neither Staff nor Verizon NW has proffered ease of use as a reason for using the sum of squared error measure. In point of fact, there is no analytical approach or formula that can be derived to determine the deaveraged zone configuration that minimizes either the relative absolute deviation or the sum of squared error measure. The configuration that minimizes either measure can only be identified by examining each and every possible configuration. Regardless of which error measure is

[121] Denney Rebuttal at 7.

chosen, this means that the measure must be calculated for each of the 3,612,280 possible 5-zone configurations. For Mr. Denney to suggest that the appeal of the sum of squared errors approach is diminished because a benefit that no party claimed does not apply is disingenuous.

Q. IS MR. DENNEY CORRECT THAT THE RELATIVE ABSOLUTE DEVIATION MEASURE WILL PRODUCE RATES THAT MORE CLOSELY REFLECT THE UNDERLYING WIRE CENTER COSTS?

A. No. In making this assertion, Mr. Denney has completely ignored any consideration of the impact this approach will have on the deaveraged rates in Washington. This impact was made clear by the graphs in Mr. Tucek's Reply Exhibit DGT-3, which accompanied his April 2004 reply testimony. Regardless of which set of costs are used, this exhibit shows that (as Dr. Blackmon has pointed out) Mr. Denney's error measure is biased towards minimizing the dispersion in Zone 1 at the expense of greatly increased variation in the other zones.

Additionally, because of this bias and as shown in Mr. Tucek's reply exhibit, Mr. Denney's methodology will always result in relatively fewer wire centers being assigned to Zone 1. The reason for this is that the zone average increases as wire centers with increasingly greater cost are added to Zone 1, which in turn causes the relative error for wire centers below the average to decrease and have a smaller impact on the total error for the zone than the recently added wire centers. Consequently, the number of wire centers in Zone 1 has a downward bias. For example,

using Mr. Denney's methodology (together with HM 5.3's costs and a 5-zone deaveraging configuration) results in the assignment of only two wire centers to Zone 1. By comparison, the sum of squared errors approach places 25 wire centers in Zone 1. The number of wire centers assigned to Zone 1 by each deaveraging methodology under a 5-zone configuration for each set of cost estimates is shown in the table below:[122]

Number of Zone 1 Wire Centers

Source of Cost Estimates	Deaveraging Methodology: Relative Absolute Deviation	Deaveraging Methodology: Sum of Squared Errors
AT&T	2	25
Staff	11	21
Verizon NW	8	24

Q. WHY IS THE NUMBER OF ZONE 1 WIRE CENTERS IMPORTANT?

A. The deaveraged rates are the weighted averages of the average loop costs for each wire center assigned to a given zone. But as Mr. Denney himself recognizes on page 9 of his testimony, the average loop cost in a wire center is not a known quantity — all we have is an estimate based on some process called a model. Given a different set of inputs, say relating to customer location, this process would produce a different estimate for

[122] *See* Exhibit No. __ (RRP-5C). This analysis is based upon Mr. Spinks's data included with Staff's January 2004 filing. On May 10, 2004, Staff filed a substantial change to this data, without explanation or request for leave to do so. Verizon NW reserves the right to address that untimely change in a subsequent filing.

the wire center's average loop cost. Consequently, the estimated loop cost produced by the model can be viewed as a random variable, albeit on with an unknown distribution and variance. This means that the zone average is also a random variable, and the greater the number of wire centers assigned to a zone, the smaller will be the variance associated with the zone average, and vice versa. Because Mr. Denney's relative absolute error approach is biased towards a small number of wire centers in Zone 1, the zone averages it produces for Zone 1 will have a greater variance than that produced by a measure that is not biased in this way. That is, Mr. Denney's proposed deaveraging methodology not only ignores wire centers in the higher cost zones, but it also is relatively inefficient as Dr. Blackmon correctly concluded in his direct testimony.

Q. WHY IS THE EFFICIENCY, OR RELATIVE VARIANCE, ASSOCIATED WITH A DEAVERAGING METHODOLOGY IMPORTANT?

A. As Mr. Denney notes, "it is important to be mindful of the goal."[123] The goal in this proceeding is to set deaveraged loop rates that will be economically efficient — in other words, to set rates that will reflect the value of the resources society sacrifices to produce a loop. It clearly is not possible to do this on a loop-by-loop basis. Likewise, given that forwarding-looking loop costs cannot be directly observed but must be estimated via a model, it would be ill-advised to set one rate for each wire center: doing so runs the risk that a given wire center's average loop cost

[123] Denney Rebuttal at 6.

is either too high or too low due, for example, to some random error in the input data. This risk is decreased by averaging the costs across wire centers, since doing so decreases the likelihood that a bad estimate for a given wire center will be used to set rates. Because Mr. Denney's methodology places relatively few wire centers in the lowest cost zones, the methodology actually increases the likelihood of economically inefficient rates being ordered.

Q. IS MR. DENNEY CORRECT IN HIS CLAIM THAT SQUARING THE DEVIATION IS INFERIOR TO TAKING THE ABSOLUTE VALUE?

A. No. Mr. Denney purports to demonstrate the validity of this claim by way of a simple example,[124] pointing out that squaring a deviation increases its weight. What this example fails to consider is that his deaveraging methodology does not assign equal weight to his two hypothetical wire centers: the weight will depend both on the zone average and on each wire center's relative share of the lines assigned to the given zone. More important, his statement that there is no value gained by "distorting" — *i.e.*, squaring — deviations is simply wrong. Squaring the deviations helps assure that large deviations between the zone average and the loop costs in a given wire center will be avoided if possible. In other words, squaring the deviations helps assure that the resulting rates, taking the cost model as given, are as accurate a representation of the value of the underlying resources as is possible.

[124] *Id.* at 8-9.

Q. HOW HAS MR. DENNEY WRONGLY ACCUSED DR. BLACKMON OF USING CIRCULAR LOGIC?

A. Mr. Denney wrongly assumes that Dr. Blackmon's claim of efficiency (*i.e.*, relatively lower variance) for the sum of squared errors deaveraging methodology is necessarily true because the error measure is based on the sum of the squared deviations from the zone means. This is not the case. As was just discussed, the relative variance between the two deaveraging methodologies is determined by the number of wire centers assigned to each zone. Because Mr. Denney's methodology assigns relatively fewer wire centers to the lower cost zones, the resulting zone averages have a higher variance and are therefore inefficient. And because this phenomenon occurs in the lower cost zones, the resulting rates are also more likely to send the wrong economic signals concerning the resources society sacrifices to produce a loop.

Q. PLEASE COMMENT ON MR. DENNEY'S TESTIMONY CONCERNING THE VARIATION AMONG COST MODELS AS COST-PER-LINE INCREASES.

A. Mr. Denney attempts to bolster his case for the relative absolute deviation methodology by looking at the deviations in costs among cost models, and by claiming that considering a relative error measure somehow mitigates the alleged problem this variation causes.[125] As a threshold matter, it is worth noting that Mr. Denney's argument is inconsistent with his criticism

[125] *Id.* at 9-13.

of Dr. Blackmon where he states, "Variance is one measure of deviation but, in and of itself, tells nothing of the virtue of these two estimators for the purpose of assigning wire centers to deaveraged zones."[126] Only one page later he attempts to justify his proposed deaveraging methodology by arguing that, unless the magnitude of a wire center's costs are considered, the efficiency of the estimator, or deaveraging methodology, will be undermined.[127] In this context, "efficiency" relates to the relative variance of an estimator.[128]

More important, Mr. Denney has looked at the wrong information in presenting his argument on this issue.[129] He bases his case on an examination of the variance in the estimated costs from four different sources for each wire center — yet it is not this variation that either deaveraging methodology seeks to account for. It is the variation in costs among wire centers in each zone for a given cost model that the

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126 *Id.* at 8-9.

127 *Id.* at 9.

128 *Id.* n.9.

129 With respect to Mr. Denney's Chart 2 on page 12 of his testimony, it is worth noting that it does not support his claim "that the average deviation divided by the mean is fairly constant across wire center…." To the contrary, at the far left of the chart it is clear that most of the observations fall within a wide range, from 30 to 50 percent of the average loop costs. The spread in the deviations fans out as loop costs increase but narrows considerably for the last three data points. In short, Chart 2 clearly contradicts Mr. Denney's statement. This is not surprising, since the variation among the cost estimates for each wire center is more likely to be determined by differences among the cost models rather than the relationship that Mr. Denney is trying to establish.

deaveraging methodologies must consider. This variation can be seen by examining Exhibit No. ___ (RRP-4).

Q. PLEASE EXPLAIN THIS EXHIBIT.

A. This exhibit shows the three sets of costs presented in this docket ordered by wire center size.[130] Clearly the variation in the cost per line decreases as the office size increases. Both deaveraging methodologies account for this variation already, by minimizing a line-weighted sum of their respective error measure. Rather than correcting for any problems caused by the variation shown in this exhibit, Mr. Denney's use of a relative error measure overcompensates for it — once by weighting by lines, and again by dividing the absolute deviation by the zone average.[131] As a result, his deaveraging methodology assigns little weight to the small, relatively high-cost, wire centers, resulting in the poor fits shown in the top half of Mr. Tucek's Reply Exhibit DGT-3. And, as also noted above, his approach also assigns very few wire centers to the lower cost zones, creating zone averages with higher variance and therefore less statistical efficiency — even though he attempts to justify this second weighting on statistical efficiency grounds.

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[130] For purposes of this exhibit, the lines used to deaverage VzCost's wire center costs were used. The ordering of the three sets of costs is the same regardless of which model's line counts are used.

[131] In any event, Mr. Denney's proposed remedy is ill-founded. Correcting for heteroskedastic variances generally involves weighting by a variable, such as lines, related to the size or scale of the underlying observational units — in this case, the wire centers. Mr. Denney is incorrectly proposing an adjustment based on the magnitude of the measure being estimated, the zone average.

Q. PLEASE SUMMARIZE YOUR CRITIQUE OF MR. DENNEY'S REBUTTAL TESTIMONY.

A. Setting aside the choice of a cost model, Mr. Denney is correct that the underlying error measure used in establishing deaveraged zones is the most important difference among the deaveraging proposals presented to this Commission. However, he is clearly wrong when he claims that a methodology based on the sum of the squared deviations is inferior to the relative absolute deviation he proposes. Mr. Denney's methodology overcompensates for the size of the wire center by weighting both by lines and by costs and, as established in Mr. Tucek's reply testimony, virtually ignores the higher cost wire centers. His approach also assigns relatively fewer wire centers to lower cost zones, and thereby establishes zone averages with a relatively higher variance. This is the efficient estimator issue first raised by Dr. Blackmon that is both discounted and then embraced by Mr. Denney in his reply testimony. The consequence of the relatively higher variances for the lower cost zones is that the likelihood of setting rates that send the wrong economic signal is increased. By comparison, the sum of squared errors approach does not ignore the high cost wire centers. It also helps ensure that large deviations from the zone average do not occur. Compared to Mr. Denney's methodology, the sum of squared errors approach assigns relatively more wire centers to the lower cost zones. Consequently this deaveraging methodology can be said to be more efficient — *i.e.*, it has a relatively lower variance than does

Mr. Denney's proposed methodology. It therefore decreases the likelihood of setting rates that send the wrong economic signal.

V. VERIZON NW'S IOF FIBER UTILIZATION FACTOR

Q. WHAT UTILIZATION DOES MR. TURNER PROPOSE FOR INTEROFFICE TRANSPORT FACILITIES?

A. Mr. Turner proposes a fill factor of 75 percent. He arrives at this figure by assuming a 100 percent factor for fiber utilization, and multiplying it by a 75 percent SONET terminal equipment fill factor.[132] Neither component of this proposed fill factor is appropriate, as discussed below.

Q. IS A 100 PERCENT UTILIZATION FOR FIBER STRAND REASONABLE FOR A FORWARD-LOOKING NETWORK?

A. Absolutely not. It is patently absurd to believe that it is efficient, even possible, to operate a network with absolutely no margin of spare capacity for cable facilities. As Mr. Richter has noted in his reply testimony, spare fiber ribbons are necessary for administrative and maintenance purposes.[133] These purposes include guarding against the possibility of ribbon failures and staging of the necessary splicing for movements and rearrangements. For example, when a new segment of cable is laid to intersect with old cable, spare ribbons from the old cable can be spliced to the new working fibers and tested before the whole system is moved over. And without such spare facilities, outages can last for many hours or even

[132] Turner Rebuttal at 78.

[133] Richter Reply at 60.

days. With such spare facilities, where a strand fails, service can be restored much more quickly using spare capacity. Moreover, the phenomenon of breakage has a particularly significant impact on fiber strand utilization — a fact that even Mr. Donovan has conceded.[134]

Q. DOES THE FCC'S INPUTS ORDER BOLSTER MR. TURNER'S PROPOSED 100% FIBER UTILIZATION FACTOR IN THIS PROCEEDING?

A. No, not at all. The FCC has repeatedly warned parties against making any claims in UNE proceedings based on the inputs adopted in the universal service setting. The FCC noted in its *TELRIC NPRM* that "we continue to discourage states from using the nationwide inputs for the purpose of developing UNE prices."[135]

Q. PLEASE COMMENT ON WHETHER MR. TURNER IS CORRECT THAT VERIZON NW'S PROPOSED FIBER FILL FACTOR REFLECTS THE

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134 Donovan Direct at 55; *see also* Richter Reply at 60-61.

135 *TELRIC NPRM* at 18963 ¶ 46; *see also* Memorandum Opinion and Order, *Application by Bell Atlantic New York for Authorization under Section 271 of the Communications Act to Provide In-Region, InterLATA Service in the State of New York*, 15 FCC Red 3953 ¶ 245 (1999); *see also* Memorandum Opinion and Order, *Application of Verizon New Jersey 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 New Jersey*, 12 FCC Red 12275 ¶ 44 (2002) ("[I]nputs used in our Synthesis Model are not binding on states for determining prices for UNEs.").

INCLUSION OF "A GREAT DEAL MORE FIBER THAN IS NEEDED" TO OPERATE THE IOF NETWORK.[136]

A. Mr. Turner's claim is not correct. Verizon NW's studies account for the number of revenue producing units (*i.e.*, transport circuits) that are making use of the facilities, accounting for such variables as the number of lit fibers to unlit fibers and the number of units sharing a lit fiber. The costs of these fiber facilities, including those used for spare, can only be recovered from the revenue-producing transport circuits, and Verizon NW's fiber-utilization factor reflects these demand levels. Use of the higher utilization factor that Mr. Turner proposes is simply an unfounded assumption that additional demand will suddenly materialize. In any event, if a higher utilization level were to be used, then the amount of fiber strands modeled must necessarily be reduced since the demand would not change. However, because placement costs would not change significantly, the underlying cost per fiber-foot would likely increase.

Q. DOES MR. TURNER'S INAPPROPRIATELY HIGH IOF FIBER FILL FACTOR HAVE A SIGNIFICANT IMPACT ON HIS PROPOSED TRANSPORT RATES?

A. Yes. Almost all of the difference between Verizon NW's IOF rates and Mr. Turner's proposed rates results from Mr. Turner's inappropriately inflated fiber utilization input. On the fiber portion alone (*i.e.*, not including the

136 Turner Rebuttal at 76.

equipment component), Mr. Turner's proposed fill factor results in a cost that is about 40% of what Verizon NW has proposed.

VI. LOCAL SWITCHING

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of this testimony is to respond to the reply testimony of AT&T and MCI witnesses Joseph Gillan and Richard Chandler regarding the appropriate rate structure, cost models and costing methodology to apply to switching costs. We also present a correction to the Verizon NW cost switching cost study. In summary, AT&T and MCI have failed to demonstrate why the Commission should not adopt Verizon NW's switching cost studies and rate structure, as amended.

A. Switching Rate Structure

Q. IS AT&T AND MCI'S PROPOSED FLAT SWITCHING RATE STRUCTURE REASONABLE?[137]

A. No. The Commission should reject AT&T and MCI's proposed flat rate switching structure. Unbundled switching rates "must recover costs in a manner that reflects the way they are incurred."[138] As explained in detail in the reply testimony of Willett Richter, Thomas Mazziotti, and Harold West III, on behalf of Verizon NW, recovery of usage-sensitive costs on a flat-rate basis would send inefficient economic signals and create subsidies for CLECs who target high-volume users. In addition, and as

[137] Gillan/Chandler Reply at 10.

[138] *Local Competition Order* ¶ 743.

explained in the reply testimony of Frank Murphy on behalf of Verizon NW, AT&T's proposed rate is based on central office investments that are outdated, skewed towards "new" switch purchases, and do not account for all of the switch functions required in a forward-looking network.

Q. MR. GILLAN AND MR. CHANDLER PRESENT A COMPARISON OF THEIR PROPOSED FLAT LOCAL SWITCHING RATE TO THE FLAT LOCAL SWITCHING RATES ADOPTED BY A HANDFUL OF OTHER STATE COMMISSIONS. IS THIS RELEVANT TO THIS PROCEEDING?

A. No. The comparison of AT&T/MCI's proposed flat rate for switching to the rates from a few states is not relevant to this proceeding. First, other than the Wireline Competition Bureau's recent decision in the Virginia arbitration, every other jurisdiction where Verizon provides unbundled network elements has set end office switching rates according to the traditional combination of a MOU switch usage and flat-rate line port charges for Verizon. Second, the comparison is misleading because it does not show the other associated UNE rate elements (such as loop rates and non-recurring rates), the costs for all the rate elements, the costing methodology supporting the rate elements, and the cost model inputs/assumptions such as the cost of money, the depreciation lives, and the technology mix used to determine those rates.

Q. DO YOU AGREE WITH AT&T AND MCI WITNESSES GILLAN AND CHANDLER THAT A USAGE BASED RATE IS NOT FORWARD-LOOKING?[139]

A. No. As explained in the Richter/Mazziotti/West reply testimony, significant switching costs do vary based on anticipated and actual levels of customer usage. AT&T and MCI's flat rate proposal appears to be designed to implement a rate structure that subsidizes them rather than to properly align costs and rates. Because CLECs, particularly AT&T and MCI, typically target high-usage business customers, a flat switching rate is generally much more desirable to CLECs than a combined MOU and flat rate structure. Under a combined MOU and flat rate structure, all carriers must pay based on their customers' usage. A flat rate structure, however, averages out usage costs among all customers. Thus, because many switching resources are traffic sensitive, a flat rate structure for switching would create artificial subsidies in which low-usage customers would pay more than they should, and high-usage customers would pay less. Those subsidies would advantage AT&T and MCI because they would pay Verizon NW less than the cost incurred by their primarily high-usage customers.

Q. ARE MR. GILLAN AND MR. CHANDLER CORRECT THAT VERIZON'S MODEL CANNOT PRODUCE A FLAT RATE SWITCHING STRUCTURE?[140]

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139 Gillan/Chandler Reply at 4-5.

A. No, Mr. Gillan and Mr. Chandler are mistaken. The SCIS model generates investments for switching equipment, and those investments are then loaded into the VzCost tool. Though Verizon NW believes that AT&T/MCI's proposed flat rate is not the proper rate structure for switching, the outputs of SCIS and VzCost can easily be restated to produce a zero rate for switch usage by reallocating the investments generated by SCIS between the port and MOU switching rates.

B. Verizon NW's Proposed Rates

Q. MR. GILLAN AND MR. CHANDLER PRESENTED A COMPARISON OF VERIZON NW'S CENTRAL OFFICE INVESTMENT COSTS WITH CERTAIN NEW SWITCH PURCHASES THAT VERIZON MADE IN THE PAST. IS THIS COMPARISON VALID?[141]

A. No. The comparison is flawed because it unrealistically assumes that *all* existing switch equipment could somehow be purchased at an extraordinary "new switch" discount that Verizon has received for only a few isolated new switch purchases. First, developing switching costs by assuming that all switches could be purchased at the "new" switch discount is inconsistent with TELRIC, as the FCC has repeatedly found and Dr. Shelanski and Dr. Tardiff have explained in their testimony. To the extent that switch manufacturers offer Verizon extraordinarily high discounts on the few new switches purchased today, they do so because

140 *Id*. at 5-6.

141 *Id*. at 9.

they earn most of their revenues from upgrade components and "growth" additions. If a carrier attempted to purchase all, or most, of its switching capacity at new switch prices, vendors would have no choice but to reduce the discount levels for new switches from those they offer today. Thus, forward-looking switching investment should be measured based on the actual prices Verizon NW pays for the mix of switching equipment that it intends to deploy going forward, taking into account the effective discount Verizon NW expects to receive on those purchases.

Second, Mr. Gillan and Mr. Chandler's comparison of Verizon NW's proposed costs to isolated recent switch purchases is inappropriate, because it fails to consider the unique circumstances of those purchases. Although Mr. Gillan and Mr. Chandler do not identify the purchase(s) they examined as a basis for their comparison, they likely looked to a selective "new" switch purchase that in no way represents the overall discount Verizon is likely to receive going forward. The principle underlying today's discounts and prices, in contrast to Mr. Gillan and Mr. Chandler's claims, is that they are designed by the switch manufacturers to ensure that they recover their costs given the mix of switching equipment that carriers are expected to purchase. Thus, the most realistic measure of forward-looking switching investment is the price that Verizon NW actually pays today for the full range of equipment it expects to purchase going forward.

Q. DO VERIZON NW'S SWITCHING COST STUDIES ASSUME AN APPROPRIATE NUMBER OF MINUTES PER LINE?

A. Yes, Verizon NW's assumption of approximately 2,000 annual minutes per line is reasonable. According to Mr. Gillan and Mr. Chandler, Verizon NW has understated the total number of annual minutes that should be assumed in its studies, and point to Verizon's 2003 ARMIS filing to support this claim.[142] But Mr. Gillan and Mr. Chandler are apparently unaware that the FCC, as part of the Part 36 Separations "Freeze", removed the obligation that ILECs measure Dialed Equipment Minutes (DEMS) as part of their annual ARMIS filing. As a result of this change, the DEMS on subsequent ARMIS reports have been "frozen" at the levels reported in 2000, yet Verizon has continued to file updated switched access line counts in its annual ARMIS reports, as it is required to do. Therefore, Mr. Gillan and Mr. Chandler's calculation of 2,900 annual minutes per line overstates demand because it is based on a division of year 2000 DEMs by year 2003 switched access lines, which have been steadily declining.[143]

C. Trunking Assumptions

Q. PLEASE RESPOND TO MR. GILLAN AND MR. CHANDLER'S CLAIM THAT VERIZON'S NW'S SWITCHING STUDIES ASSUME TOO MANY TRUNKS.[144]

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142 *Id*. at 12.

143 *Id*. at 12, n.7.

144 *Id*. at 8.

A. Mr. Gillan and Mr. Chandler claim that Verizon NW's assumption of 18 Centum Call Seconds ("CCS") per 5ESS and DMS trunks somehow forces the model to assume too many trunks, therefore increasing both switching and transport costs. This is simply not true. This statement shows a lack of understanding of the competitive market in which all carriers now operate and how it relates to the engineering of the trunk network.

Specifically, Mr. Gillan and Mr. Chandler claim that Verizon NW should have assumed more busy hour traffic per trunk, which would in turn lower the number of required trunks. This relationship would only be valid if Verizon NW had complete control over the placement of trunks in its network. Verizon NW, however, does not design and build trunks only for its own use. In this current competitive environment and for the foreseeable future, a significant number of Verizon NW's trunks are ordered and used by other carriers as interconnection trunks (both for local and long distance traffic). The number of trunks placed in service for these other carriers is determined by the ordering carrier and not traffic engineered by Verizon NW. Because Verizon NW is obligated to satisfy CLEC, IXC, and Wireless demand for trunks on its network, it is impossible for Verizon NW to maintain the level of efficiency that it could if it were in complete control of its network trunking fields.

Q. IS THERE ANY OTHER REASON FOR THE RECENT TREND OF CARRYING LESS TRAFFIC PER TRUNK?

A. The nature of competition leads to leads to lower trunk usage, because instead of having large trunk groups, Verizon's network now has small trunk groups. For example, a group of 100 trunks can handle 2816 CCS at a blocking rate of 1%. This equates to a traffic average of a little over 28 CCS per trunk. However, the number of trunks required to carry 1/10th of that traffic (281.6 CCS) at the same 1% blocking rate is not 10, but 16 trunks. Dividing the 16 trunks into the 281.6 CCS load yields a per trunk load of 17.6 CCS. It is therefore reasonable to assume that as more competitive carriers enter the market and the same amount of traffic gets spread across more and more smaller trunk groups, the amount of traffic per trunk in these smaller groups will go down. This example also assumes that the smaller trunk groups are efficiently sized. The trend of smaller trunk groups has resulted in average traffic per trunk trending downward as competition has increased. It is also worth noting that the number of trunks in the Verizon NW network and the amount of traffic carried by each trunk is not an output of any of the Verizon cost or investment models. They are actually both inputs to the models that are based on the actual trunks and traffic loads experienced by the company.

Q. WHAT IS THE BASIS FOR THE LEVEL OF TRUNKS THAT VERIZON NW HAS PROPOSED IN THE PROCEEDING?

A. As demonstrated in Verizon NW cost documentation, the SCIS model offices do assume a CCS of 18 per trunk. This value is a reasonable CCS per trunk for modeling purposes in SCIS. In fact, the average CCS per

trunk in Verizon NW's Washington switching network is 18.39. That fact notwithstanding, Verizon NW's study bases the investment on the actual number of trunks and actual trunk CCS in Verizon NW's Washington switching network, not on the SCIS model office parameters.

D. Host-Remote Umbilical Costs

Q. ARE MR. GILLAN AND MR. CHANDLER CORRECT THAT UMBILICALS SHOULD NOT BE RECOVERED THROUGH SWITCHING RATES?[145]

A. No, the costs for "umbilicals," which link together a host and remote switch, are properly recovered through switching rates. Remote switch modules operate only as part of a "complex" with their associated host switches. The purpose of a remote switch module is to expand the geographic area that can be served by a host switch and eliminate the "getting started costs" associated with a stand-alone end office switch. A remote switch module contains only line equipment. The key distinction is that a remote switch module has no central processor and depends on the host switch for all processing functions of calls that travel through the remote. It also lacks the ability to provide billing and recording function, it cannot provide OA&M (Operations, Administration and Maintenance) support nor can it process and provide vertical features/services. Thus, contrary to AT&T's claims, the umbilicals are not transport facilities, but are simply intra-switch links, that provide functions no different than the

[145] *Id*. at 7.

links that connect switch peripherals and central control units that are located in the same physical building. For this reason, for the purpose of UNE rates, umbilical costs have traditionally been recovered through UNE switching rates.

Q. MR. GILLAN AND MR. CHANDLER CLAIM THAT NOT ALL CALLS PLACED IN A REMOTE ARE SWITCHED BY THE HOST. IS THIS TRUE?

A. While this is technically a true statement, it is totally irrelevant to the issue at hand. In the processing of any call in which the originating and terminating party are located within the same line peripheral, there is no need to set up a talk path that leaves that peripheral. This is equally true wherever the customers' line peripherals are located and therefore does not shed any light on the differences between processing calls in hosts and remotes.

Q. MR. GILLAN AND MR. CHANDLER CONSISTENTLY REFER TO TRAFFIC ACROSS THE UMBILICALS AS TRUNK TRAFFIC. IS THIS A PROPER CLASSIFICATION?

A. Absolutely not. By definition, trunks are communication lines between two switching systems.[146] However, since the host and remote units are architecturally two parts of the same switch, traffic between the two is intra-switch, not inter-switch and therefore cannot be considered trunk traffic. As previously stated, the only difference between the umbilical

[146] Newton's Telecom Dictionary (CPM Books,16th Ed.) at 745.

links and the intra-switch links connecting switch frames located in the same building as one another is the physical distance that the signal must travel. The two types of links perform the same function in the switch and their cost should be recovered in the same manner.

E. SS7 Signaling Costs

Q. ARE MR. GILLAN AND MR. CHANDLER CORRECT THAT SIGNALING COSTS SHOULD NOT BE RECOVERED THROUGH SWITCHING RATES?[147]

A. No. In the development of network calling investments, there are typically two major cost elements. Set-up costs capture the costs associated with functions occurring on the network prior to the final disposition of the call, while minute of use costs represent the costs incurred per minute during the length of a typical local call. Signaling System 7 ("SS7") signaling is required to handle the call set-up for all interoffice calls on Verizon NW's network. This "out-of-band" signaling checks ahead to ensure that the called party is available before setting up the circuit switched path through the network, and is therefore an integral part of switching services. Without SS7 out-of-band signaling, this call setup functionality would conceivably revert back in-band signaling, the precursor to SS7 technology. In-band signaling required significant additional trunks, because call setup and control messages were sent over the interoffice trunking network.

147 Gillan/Chandler Reply at 7.

In addition, the amount of Verizon's investment in SS7 equipment is not a function of the number of active line ports in the network, but is instead driven by the number of call attempts for which SS7 must be used. It is natural, therefore, for SS7 costs to be recovered through the traffic sensitive rate rather than the monthly port rate.

F. Switch Features

Q. ARE GILLAN AND CHANDLER CORRECT THAT FEATURE COSTS ARE NOT USAGE BASED?[148]

A. No. As we explained in our direct testimony, processor-based feature costs are recovered in the UNE Local Switching rate element, along with all other usage related investments. This is appropriate because, as further explained in the Richter/Mazziotti/West reply testimony, costs for switch processor facilities — including processor-based features — do vary based on anticipated and actual usage. For those features that require service specific hardware and whose costs generally do not vary based on usage (e.g., three port conference circuit for the Three Way Calling feature), Verizon NW identified separate monthly port additive costs and properly proposed to recover those costs through a flat monthly rate.

Q. IS MR. GILLAN AND MR. CHANDLER'S DISCUSSION OF RECIPROCAL COMPENSATION RELEVANT IN DETERMINING THE COST OF FEATURES?

148 *Id*. at 10.

A. No. The costs for reciprocal compensation are based on different costing rules than unbundled switching and features. The 1996 Act, section 252(d)(2)(A) provides that a state commission cannot consider reciprocal compensation rates to be just and reasonable unless:

> Such terms and conditions provide for the mutual and reciprocal recovery by each carrier of costs associated with the transport and termination on each carrier's network facilities of calls that originate on the network facilities of the other carrier; and
> Such terms and conditions determine such costs on the basis of a reasonable approximation of the *additional costs* of terminating such calls. (emphasis added).

G. Cost Modeling Issues

Q. PLEASE RESPOND TO MR. GILLAN AND MR. CHANDLER'S CLAIM THAT VERIZON'S COST MODELS ARE NEITHER OPEN NOR TRANSPARENT AND, THEREFORE, CAN NOT BE VALIDATED AS TO THE LEVEL OF INVESTMENT THEY PRODUCE?[149]

A. This statement is simply false. First, regarding VzCost, it is important to note that VzCost is not a model, it is a cost calculator. VzCost, Verizon's new on-line costing system, is a modular, template-driven system that contains investment, expense, and cost study modules. Data common to the development of costs for all applicable network elements can be modified, so that costs may simultaneously be recalculated for all applicable network elements through the BC and Coster templates. This facilitates any sensitivity analyses that may be required. The Commission and any parties with Internet Explorer and Adobe Acrobat and a VzCost

[149] *Id*. at 2.

identification code and password may examine the cost studies by accessing Verizon's website, http://www.verizon.com/vzcost. Verizon NW has also provided user guides that explain how to operate VzCost.

Second, with respect to the SCIS cost model, when Verizon NW filed its cost studies, it provided all of the programs needed to run the SCIS model (the Mouser program, etc.). Verizon NW also provided extensive user guides that explain in detail how to operate the SCIS model. With these programs and documentation, parties have everything they need to re-run the model, change inputs, and perform sensitivity runs. Furthermore, if parties want to make changes to the rate structure proposed in Verizon's switching cost studies, they can reallocate the investments generated by SCIS between the port and MOU switching rates as they so choose without needing to change the SCIS program.

Q. HAS VERIZON PROVIDED ADEQUATE DOCUMENTATION FOR SCIS?

A. Yes. Mr. Gillan and Mr. Chandler's statement that "Verizon has not provided any documentation on SCIS"[150] is simply false. Along with Verizon NW's direct testimony filing on June 26, 2003, Verizon NW provided parties with the SCIS model, all programs needed to run the model, and extensive documentation of the model. This documentation included detailed user guides, which explain the construction of the model and walk the user through the process of running the model.

150 *Id*. at 4.

This proceeding, and the concurrent proceeding in California, is the first in our experience in which AT&T and MCI have requested the SCIS source code. Verizon does not possess the source code, as it is highly proprietary to Telcordia and not typically given to SCIS licensees. Verizon has requested that Telcordia provide the source code and has engaged in lengthy negotiations with Telcordia to this end. At this point, Telcordia has agreed to give the source code to AT&T/MCI upon their execution of a required non-disclosure agreement, and Verizon NW has offered this agreement to AT&T/MCI.

H. Correction to Verizon NW's Switching Study

Q. ARE YOU PROPOSING A REVISION TO VERIZON NW'S SWITCHING COST STUDIES?

A. Yes, Mr. Gillan and Mr. Chandler pointed out that Verizon NW's switching studies overstate the number of DS1 umbilicals.[151] The number of Washington DS1 level umbilicals was converted to DS0 level umbilicals for use in the Excel models (by multiplying by 24). The quantity of DS0 umbilicals should have been converted back to DS1s before being entered into the VzCost Switch Demand table. Verizon NW will make this correction in the compliance phase of this proceeding, when it resubmits its cost studies.

[151] *Id*. at 8.

VII. EXPENSES

A. Forward-Looking Expense Factors

Q. MR. LUNDQUIST ARGUES THAT VERIZON NW'S EXPENSE FACTORS ARE NOT FORWARD-LOOKING. IS THIS TRUE?

A. Verizon NW's Annual Cost Factors ("ACFs") reflect all efficiencies that Verizon NW can reasonably be expected to achieve in the foreseeable future. Verizon NW is currently operating under competitive pressures from wireless, cable telephony, and facilities-based CLEC providers. In this market, Verizon NW must implement the most efficient forward-looking technologies that are available. Verizon NW has put into operation these forward-looking technologies, and a TELRIC-compliant network will simply use greater or lesser amounts of the same forward-looking technologies that Verizon NW already uses. Therefore, the expenses associated with the technologies in today's network represent an excellent starting place for Verizon NW to assess its forward-looking expenses. Further, Verizon NW makes adjustments to its expenses for both inflation and productivity; to account for cost savings due to the Bell Atlantic-GTE merger; and to remove one-time costs from its current period expenses (*i.e.*, one-time merger costs). In addition, Verizon NW reduces copper wire maintenance expense by 5% to reflect expected reductions in future repair expenses.

Q. DOES MR. LUNDQUIST CORRECTLY DESCRIBE THE PROCESS BY WHICH VERIZON DEVELOPS ITS ACFS?

A. No. Mr. Lundquist states that "Verizon develops Annual Cost Factors [] based on the ratio of its embedded level of expense (from its year-end 2001 financial statement), subject to certain adjustments, divided by its 2001 booked investments (also adjusted)."[152] This is incorrect. In fact, as just explained, Verizon NW creates and uses TELRIC-compliant, *forward-looking* ACFs (*i.e.*, ratios of *forward-looking* — not embedded — expenses to forward-looking investments) for its filing in this Washington UNE proceeding. Although Verizon NW *starts* its analysis with current expenses, it then identifies (and makes) the expense adjustments that are appropriate for the forward-looking TELRIC network; in those cases where no adjustment is made to a current expense, this reflects the fact that the current expense is the best prediction of TELRIC-compliant, forward-looking expenses. Thus, all of the expenses used in Verizon NW's factors study are analyzed and, if necessary, adjusted, to ensure that they are forward-looking. This distinction is important, because many of Mr. Lundquist's criticisms flow from his misguided assertion that Verizon NW's ACFs are not forward-looking or TELRIC-compliant. But this is at best a misstatement or a misunderstanding of Verizon NW's entire approach, which has as its fundamental purpose the identification and production of forward-looking expenses.

[152] Lundquist Rebuttal at 5.

Q. MR. LUNDQUIST STATES THAT THE EXPENSES PRODUCED BY VERIZON NW'S FACTORS DO NOT REFLECT FORWARD-LOOKING TECHNOLOGY. IS THAT ACCURATE?

A. No. Mr. Lundquist's argument completely misunderstands the way factors are applied to produce the expenses in Verizon NW's studies. His argument is that because the ACFs are developed as a relationship that involves embedded investment, the *expenses* produced by the application of the ACFs in Verizon NW's studies cannot reflect the forward-looking technology and plant that are assumed to be in the forward-looking, TELRIC network. But this is entirely wrong: since the ACFs are only applied to *forward-looking* investment, they only produce expenses for the forward-looking plant and technology included in the study. And there is nothing inappropriate about starting with embedded plant in assessing what the expenses of that forward-looking network construct will be, because *all* the plant and technology used in the forward-looking network must actually exist and thus can be studied. In fact, FCC rules expressly *require* that *all* technology assumed for the forward-looking network must be "currently available." 47 C.F.R. § 51.505(b)(1).[153] The forward-looking network will have more of certain technologies that exist today (those that are most efficient, for example) and less of others, and might have more efficiently sized facilities, but all of these exist today to some degree, and

[153] The Supreme Court has also quoted approvingly from a Michigan PUC decision that the technology be "currently available for purchase." *Verizon Communications Inc. v. FCC*, 535 U.S. 467, 506 n.22 (2002).

their expenses can be analyzed. By using an ACF process, Verizon NW can capture and recover the expenses that would be specifically associated with the forward-looking plant that actually will be used in the study, and *exclude* any expenses associated with embedded plant that is not used (or reduce expenses to reflect the fact that less of such plant will be used).

In fact, the examples Mr. Lundquist gives to support his argument actually show why his argument makes no sense. Mr. Lundquist states that Verizon NW's factors will fail to reflect the fact that the embedded plant mix may change in the forward-looking network, which, he contends, will reduce expenses. He provides the following examples: (1) copper feeder will be increasingly replaced by fiber-fed DLC systems; (2) the modeled mix of cable placements (*i.e.*, aerial, buried, underground) will vary from the embedded mix; and (3) multiple, smaller-sized cables will be replaced by fewer, larger-sized cables.[154] He argues that Verizon NW's development of expenses based on the current network would not reflect the reduced expenses associated with such forward-looking developments. But this is fundamentally wrong. Verizon NW's outside plant studies recognize every single one of the forward-looking modifications that Mr. Lundquist envisions: in point of fact, VzLoop models all DLCs as being fiber-fed. Similarly, in VzLoop's modeled network, cables are sized for total demand so that a 400-pair cable may

[154] Lundquist Rebuttal at 7.

be modeled even though the existing network uses one 300-pair cable and one 100-pair cable due to the manner in which demand evolved through time.

And Verizon NW's studies are specifically designed to produce the reduced expenses that will be associated with such forward-looking plant. For example, Verizon NW develops separate ACFs for various types of fiber cable plant (*i.e.*, underground, buried, and aerial fiber cable), as well as for various types of copper cable. Those ACFs are ratios of the expenses associated respectively with the particular plant and material type. Verizon NW then applies the relevant ACFs to the units of the relevant investment type if, and only to the extent that, such investment is actually included in the forward-looking network. Thus, when fewer units of copper feeder are assumed in the forward-looking network (so that there is less copper investment than in the embedded network), the result will be less copper-feeder-related expense. By contrast, if *more* fiber-feeder is used, as Mr. Lundquist and Verizon NW agree will be the case, (and therefore more fiber-related investment is reflected in the study), the study will reflect more of the lower, forward-looking fiber-related expense. In other words, the model is specifically designed to produce reduced total expenses if the forward-looking network includes technologies that are less expensive to maintain — exactly the result Mr. Lundquist advocates.

B. Forward-Looking Calibration Factor

Q. WHAT IS THE FLC FACTOR AND WHY IS IT APPROPRIATE?

A. As explained in Verizon NW's initial Recurring Cost Panel Testimony, filed June 26, 2003, the Forward-Looking Calibration ("FLC") factor is an adjustment specific to Verizon NW's studies and is designed to ensure that Verizon NW's expense-to-investment ACFs produce forward-looking expenses when applied in Verizon NW's studies to forward-looking investment.

Because Mr. Lundquist has so dramatically misrepresented the FLC in his effort to discredit it, we reiterate here the basic explanation for the FLC, which simply does not have the nefarious purpose or effect that Mr. Lundquist alleges. The FLC is necessary because, as explained, Verizon NW uses forward-looking expenses (*not* embedded or current expenses, as Mr. Lundquist maintains) in the numerator for its ACF calculations. However, for practical reasons relating to the way in which Verizon NW performs its TELRIC studies, Verizon NW starts by using *booked* investment in the denominator of its ACF development. The resulting factors, if not adjusted, would express the relationship between forward-looking expense and embedded investment, which is not a useful or meaningful relationship. Further, and most critically, such factors, if not adjusted, would seriously understate expenses when applied to *forward-looking* investment in the studies.

This can be simply illustrated as follows: Assume that Verizon NW purchased a switch in 2001 for $40,000, and that Verizon NW determines that, after making various adjustments, the forward-looking, efficient

maintenance and repair expense for such a switch should be $1,000 a year. The resulting ACF would be .025 — $1,000 divided by $40,000. Further assume that in a forward-looking model with aggressive estimates of switch discounts that the same switch is forecast to cost only $10,000. If the switch ACF of .025 were simply applied, without adjustment, to the $10,000 modeled investment, it would only produce $250 in maintenance and repair expenses — thus producing a reduction in *expenses* of $750 annually (or 75%) simply because the *price* of the switch has dropped. Table A, below, demonstrates this result:

TABLE A

Expense Shortfall Prior to Application of a Forward-Looking Calibration (FLC) Factor

Line	Item	Source	Amount	Comments
1	Forward-Looking Expense for Switch Maintenance		$1,000	Estimate of True Forward-Looking Expense
2	Booked Investment in Switch		$40,000	Investment Denominator of ACF Ratio
3	Annual Cost Factor (ACF)	L1 / L2	.025	Calculated ACF
4	Forecast TELRIC Investment in Switch		$10,000	Forward-Looking Investment
5	Purported TELRIC Expense Based on Unadjusted ACF	L4 x L3	$250	Pseudo “Forward-Looking” Expense
6	Shortfall	L1 – L5	$750	Unrecovered True Forward-Looking Expense

As Table A shows, applying the ACF developed as the ratio of forward-looking expenses to booked investments for this switch to the reduced, forward-looking investment price for that switch automatically reduces expenses by the same percentage by which the price for the switch has been reduced. But this is a purely mathematical, reflexive result, not a logical one. The mere fact that a switch might cost less in the future, and that as a result the "TELRIC" investment in that switch is 75% lower than today's investment figure, would not reduce the cost to *repair* that switch by 75%. In reality, the investments and expenses are simply not causally linked in this way: it costs the *same* amount, for example, to dry clean a cheap suit as it does to dry clean an expensive one. And it certainly costs the same to dry clean a suit that one has purchased on sale as it does to dry clean the same suit, bought at the top dollar retail price. The difference in the *cost* of the suit does not change the expense associated with maintaining it.

This mathematical quirk is only an issue if Verizon NW's ACFs are used without the FLC adjustment. But they are not designed to be used in this way. The FLC is a critical feature of Verizon NW's factor development. It adjusts the denominator of the ACF (*i.e.*, the booked investment levels) by an amount designed to offset, without overcompensating for, the magnitude of the expected TELRIC discount applied to Verizon NW's investment levels. In the above example, the correct ACF should be .10, to produce the $1,000 of forward-looking

switch maintenance expense; the FLC would be .250, and would adjust the ACF to produce precisely this result.

Q. HOW WAS THE FLC FACTOR DEVELOPED?

A. The FLC factor compares TELRIC investment levels to currently booked investment levels. Verizon NW calculates the FLC ratio by comparing the forward-looking TELRIC plant investments in Verizon NW's studies to the booked plant investment contained in Verizon NW's accounting records.

Q. IS MR. LUNDQUIST CORRECT THAT THE FLC IS DESIGNED TO RECOVER EMBEDDED EXPENSES?

A. No, not at all. The FLC is designed to ensure that Verizon NW's ACFs operate correctly to produce forward-looking expenses. While Mr. Lundquist is correct that the FLC ensures that expenses Verizon NW uses in developing its ACFs are produced by the studies, this is as it should be, because those expenses are forward-looking and already have been adjusted to be TELRIC-complaint — a fact Mr. Lundquist repeatedly ignores. The application of the FLC factor simply ensures that these forward-looking network expenses are not artificially reduced as a result of applying non-adjusted network expense factors to forward-looking TELRIC plant investments in the cost studies. Table B below, which is an extension of Table A above, shows how the FLC factor makes this adjustment so that the forward-looking network expenses are properly reflected in the cost studies:

TABLE B				
Application of a Forward-Looking Calibration (FLC) Factor				
(Example Correcting for a Shortfall)				
Line	Item	Source	Amount	Comments
1	Forward-Looking Expense for Switch Maintenance		$1,000	Estimate of True Forward-Looking Expense
2	Booked Investment in the Switch		$40,000	Investment Denominator of ACF Ratio
3	Annual Cost Factor (ACF)	L1 / L2	.025	Calculated ACF
4	Forecast TELRIC Investment in Switch		$10,000	Forward-Looking Investment
5	Purported TELRIC Expense based on ACF	L4 x L3	$250	Pseudo "Forward-Looking" Expense
6	Shortfall	L1 – L5	$750	Unrecovered True Forward-Looking Expense
7	FLC Adjustment Factor	L4 / L2	.250	Forward-Looking Calibration Factor
8	Adjusted ACF	L3 / L7	.100	Identifies Appropriate Amount of Expense
9	TELRIC Expense	L4 x L8	$1,000	Appropriate Level of Forward-Looking Expense
10	Shortfall	L1 – L9	$0	Shortfall Eliminated

Q. MR. LUNDQUIST PROPOSES REPLACING THE FLC WITH CC/BC RATIOS. DOES THIS MAKE SENSE?

A. Using CC/BC ratios in Verizon NW's factor development also makes no sense. The effect would be to produce factors that represent the ratio of

forward-looking expenses to current, not forward-looking, investment. The expenses produced by the application of those factors would have no reference to a TELRIC study. Indeed, Mr. Lundquist even admits that CC/BC ratios are not intended to be forward-looking.[155] At minimum, another adjustment would have to be made to make these expenses (or the underlying ACFs) forward-looking. The FLC eliminates the completely unnecessary middle step and ensures that the factors express the right relationship (forward-looking expenses / forward-looking investments) from the start.

Q. IS MR. LUNDQUIST'S RELIANCE ON THE VIRGINIA ARBITRATION ORDER A VALID BASIS TO REJECT THE FLC?

A. No. This is so for several reasons. First, the Virginia Order is not binding on this Commission, because, despite Mr. Lundquist's effort to make it seem like an authoritative decision by the FCC, it is simply a bureau-level decision made by the Wireline Competition Bureau, not the full FCC. As the Bureau itself made clear, it was not speaking for the FCC; it merely "st[ood] in the stead of the Virginia State Corporation Commission . . . for the limited purpose of [that] arbitration."[156] Indeed, the FCC considers

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155 *See* AT&T's response to Verizon NW's Data Request No. 10-61.

156 Memorandum Opinion and Order, *In the Matter of Petition of WorldCom, Pursuant to Section 252(e)(2) of the Communications Act for Preemption of the Jurisdiction of Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc. and for Expedited Arbitration*, DA 03-2738, CC Docket Nos. 00-218 and 00-251, ¶ 2 (Aug. 29, 2003) ("*Virginia Arbitration Order")*.

arbitration decisions issued by the Bureau to be nothing more than non-binding "interlocutory staff ruling[s]," which do not reflect "agency policy."[157] And at least one court has concurred with this understanding, by finding that the Bureau's non-cost order in the Virginia proceeding did not constitute "a clear ruling from the FCC" entitled to deference; for that reason, the court felt free to depart from a ruling in the Order that appeared to be an "aberration" from other precedent adopted by the full FCC.[158/]

Second, the Order is not final and is under review by the full FCC. In fact, Verizon has specifically sought reconsideration of the Bureau's decision with respect to the FLC. In its application for review, Verizon explained that the Bureau's reasoning for rejecting the FLC was confused and reflected a fundamental misunderstanding of the FLC. The Bureau believed that Verizon used the FLC to "'calculate' forward-looking expenses,"[159] which of course is wrong. The FLC is not used to calculate or estimate anything. The FLC is applied to the ACFs only *after* Verizon has calculated its forward-looking expenses, and its sole purpose is to ensure that when Verizon's ACFs are applied to forward-looking

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157 Brief for Respondent Federal Communications Commission at 30, *Mountain Communications, Inc. v. FCC*, No. 02-1255 (D.C. Cir., filed June 19, 2003).

158/ *MCIMetro Access Transmission Servs. v. BellSouth*, 2003 U.S. Dist. Lexis 2473, at *16 (E.D.N.C. 2003).

159 *Virginia Arbitration Order* ¶ 139.

investment in Verizon's studies, the identified level of forward-looking expense is produced. The FLC thus is not used to *calculate* the appropriate level of recovery, but to ensure that once the appropriate level of expense recovery has *been* calculated, it is actually produced. In fact, the Bureau noted that Verizon's approach "starts with forward-looking expenses."[160]

C. Forward-Looking Wholesale Marketing Expenses

Q. MR. LUNDQUIST ARGUES THAT VERIZON NW'S WHOLESALE MARKETING LOADING DOES NOT COMPLY WITH TELRIC BECAUSE IT INCLUDES AVOIDED RETAIL COSTS. PLEASE RESPOND.

A. Mr. Lundquist's criticism is erroneous. Verizon NW's development of the loading is fully consistent with FCC Rule 51.505 and includes only the costs that would be incurred in providing wholesale services to telecommunications carrier customers; all costs associated with offering retail telecommunications services to subscribers who are not telecommunications carriers are excluded.[161]

Verizon NW's marketing expense loading is a ratio of *wholesale* marketing expenses to total company recurring expenses, less marketing and other overheads. This percentage is then loaded onto the forward-looking network expenses. Wholesale marketing includes expenses for

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160 *Id.*

161 47 C.F.R. § 51.505(d)(2).

advertising, product management, sales, and customer service that a *wholesale-only* company of Verizon NW's size would incur.

Because Verizon NW is not a wholesale-only company today, it must make a reasoned projection of the marketing expenses such a company would incur. Verizon NW determined that its current retail marketing expenses, less any that would be avoided in a wholesale-only environment, represent the best proxy for the marketing expense that the company would incur in a pure wholesale environment. Not all retail marketing expenses are included in the loading development: Verizon NW adjusts current retail marketing expenses to remove the percentage of marketing-related activity that should in fact be avoided. Verizon NW conducted an extensive survey of the employees at workcenters whose costs were booked to marketing-related USOA accounts: product management, sales, and customer service, producing the following avoided cost percentages:

Account 6611 (Product Management):	15.6%
Account 6612 (Sales):	66.1%
Account 6623 (Customer Services):	44.8%

Verizon NW also reviewed its advertising account (USOA Account 6613); and determined that the relatively small amount of expense in this account was a fair proxy for the advertising budget of a wholesale-only company, as discussed below. To produce the marketing expense loading, Verizon NW applied these percentages to the relevant 2001 expense accounts.

Q. IS THERE ANY MERIT TO MR. LUNDQUIST'S ALLEGATION THAT VERIZON NW DID NOT EXCLUDE ENOUGH RETAIL AVOIDED COSTS?

A. There is no basis for Mr. Lundquist's assertion. He suggests that a wholesale-only company could avoid almost all (85%) product management costs, for example. But many of the expenses within Product Management - Account 6611 are associated with activities that clearly would be (and are) necessary to support wholesale products, such as product planning, product development, and product rollout. Verizon NW already has employees that manage wholesale products; if Verizon NW became a wholesale-only company, it would supply many more UNEs and would convert retail product managers over to wholesale product managers to handle the higher volumes of UNEs. Product management costs are *not* generally avoided in a wholesale-only environment. Another example of this is service ordering expenses, which are in Account 6623. Such costs are currently incurred for both retail and wholesale customers: if all services were provided at wholesale, the retail personnel would become unnecessary, but at the same time, Verizon NW would require more employees to manage wholesale service ordering. That process at times can be very complex. These expenses thus are a fair proxy for wholesale-only expenses.

Q. MR. LUNDQUIST STATES THAT IN THE VIRGINIA ARBITRATION ORDER THE BUREAU "COMPLETELY REMOVED VERIZON'S

CLAIMED ADVERTISING AND MARKETING EXPENSES." IS THAT AN ACCURATE READING OF THE ORDER?

A. No. The Bureau explicitly allowed Verizon to include customer services expenses, which are a wholesale marketing expense, in its study. The Bureau only adjusted for advertising expenses, which are a small fraction of the marketing costs. Even there, the Bureau did not find that advertising expenses should be entirely excluded as retail-avoided as a matter of law or principle; the Bureau simply found that Verizon had not supported the amount of advertising expenses included in its Virginia study.

Of course, in any event, the Bureau's determinations are not those of the FCC and are not binding. While Mr. Lundquist relies on the Virginia Order to support the allegations that Verizon's overall approach to retail avoided costs is incorrect, the Virginia Order actually raised no questions with respect to any retail- avoided cost determination used in Verizon's factors *except* as to advertising,[162] notwithstanding that Verizon used the same approach in developing its Virginia factors as it does here.

[162] And the Massachusetts Department of Telecommunications and Energy explicitly allowed Verizon to recover wholesale advertising expenses. *See* Order, *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*, 01-20, at 123 (MA DTE July 11, 2002).

Q. MR. LUNDQUIST ARGUES THAT VERIZON NW SHOULD HAVE STARTED WITH THE RETAIL-AVOIDED COST PERCENTAGES THAT THE COMMISSION APPROVED IN THE EIGHTH SUPPLEMENTAL ORDER IN DOCKET UT-960369 ET AL., RATHER THAN PROPOSING DIFFERENT PERCENTAGES. DO YOU AGREE?

A. In that Order, the Commission stated that it is "appropriate to use company specific, including proprietary, information as a means of developing the proper level of avoided costs."[163] Consistent with this instruction, Verizon NW based its retail-avoided percentages on its most recent retail-avoided study using Verizon company data.

Q. MR. LUNDQUIST ASSERTS THAT THE VERIZON NW'S RETAIL-AVOIDED COST STUDY IS NOT RELIABLE BECAUSE IT WAS CONDUCTED IN 1997. IS THAT A VALID CRITICISM?

A. No. Verizon's retail-avoided cost study was detailed and comprehensive, and its conclusions are still valid because the same or similar work activities are still being performed. Moreover, if anything, the wholesale business has grown since 1997; Verizon NW is incurring more wholesale-related costs than it was seven years ago; and therefore the percentage of retail-avoided costs is likely lower now than it was in 1997, not higher — and will be even lower as UNE volume grows. In addition, even though the retail- avoided percentages by USOA Accounts were based on 1997

163 *Eighth Supplemental Order*, Docket No. UT-960369, at 73.

data, they are applied to adjusted 2001 expense levels, reflecting the current level of activity in these accounts.

Q. PLEASE EXPLAIN MR. LUNDQUIST'S EXTENDED DISCUSSION OF THE EIGHTH CIRCUIT'S IOWA UTILITIES BOARD DECISION CONCERNING RETAIL-AVOIDED COSTS.

A. Mr. Lundquist is reacting to the statement in Verizon NW's direct Recurring Cost Panel Testimony that Verizon NW complied with the Eighth Circuit's retail-avoided cost standard in conducting its avoided cost study. The Eighth Circuit held that for a retail-avoided cost study, the ILEC is only required to treat as "avoided" those costs that it actually will avoid by providing a service or facility at wholesale rather than retail, and that this analysis does *not* require assuming the company is 100% wholesale. As Mr. Lundquist notes, the Eighth Circuit test is specifically applicable to calculation of the resale discount under section 251(c)(4) of the Act. Verizon NW's study complies with the Eighth Circuit's analysis and thus is appropriate for use in determining Verizon NW's costs in providing wholesale services at resale; the study also serves as a basis for determining UNE-related expenses because it illustrates, for example, where costs may be split between wholesale and retail today, but would be entirely wholesale in a UNE company. The study thus is an appropriate basis for determining UNE costs.

1. Advertising Expenses

Q. MR. LUNDQUIST STATES THAT THE ADVERTISING EXPENSES SHOULD BE TREATED AS 100% RETAIL- AVOIDED. IS HE CORRECT?

A. No. Advertising expenses are a necessary part of the forward-looking expenses for a UNE-only business. Advertising is necessary for almost every business, and there is no reason to assume that Verizon NW would not engage in advertising. Today, when the bulk of Verizon NW's income is retail-related, the company's advertising is primarily retail-related. But if the company were entirely dependent on wholesale revenues, it would rationally focus its advertising dollars on attracting wholesale customers — something that is increasingly important as more and more facilities-based alternatives develop that make it possible for CLECs to bypass Verizon NW's network entirely. CLECs can self-supply switches, use their own or competitive access providers' transport, or use wireless alternatives, to name just a few examples. Such network bypass would deprive Verizon NW of wholesale revenues. Indeed, in today's competitive marketplace, Verizon is actively promoting a rational wholesale offering to CLECs.[164] In any event, the distinction between retail and wholesale advertising is somewhat artificial. Wholesalers commonly engage in "product advertising" that is designed to stimulate more consumer use of a product

[164] Verizon offers a wholesale voice service to CLECs along with voice mail and DSL packages. *See* "Verizon Announces New Framework for Commercial Agreements with Wholesale Customers, Wholesale Advantage Offers High-Value Services, Reasonable Rates and Marketplace Stability," Verizon News Release (April 21, 2004).

and thus more demand: the dairy industry's "Got Milk" campaign is a perfect example of this. Therefore, Verizon NW does not, as Mr. Lundquist suggests, seek to recover advertising expenses relating to retail advertising, but only for advertising that would be associated with a wholesale business.

Q. WHAT PERCENTAGE OF THE MARKETING EXPENSES DO ADVERTISING EXPENSES COMPRISE?

A. Despite Mr. Lundquist's extended discussion of advertising expenses, advertising expenses make up only 8.8% of the adjusted forward-looking marketing expenses that Verizon NW uses in developing its marketing loading.[165] That is an entirely reasonable amount of advertising expense to assume that a wholesale-only network provider would spend to promote its products.

2. Product Management, Sales, and Customer Service

Q. MR. LUNDQUIST ALSO SUGGESTS THAT VERIZON NW INCLUDES RETAIL PRODUCT MANAGEMENT AND CONSUMER PROGRAMS IN ITS WHOLESALE MARKETING FACTOR. IS HE CORRECT?

A. No. Verizon NW only includes product management, sales, and customer services that would be used in providing wholesale services to customers that are telecommunications carriers.

[165] *See* Workpaper 1, Column M in Verizon NW's Supplemental Filing on January 26, 2004.

Q. MR. LUNDQUIST STATES THAT VERIZON NW IMPROPERLY INCLUDED EXPENSES FROM A WORKCENTER THAT PROVIDES PRODUCT MANAGEMENT FOR VOICE MAIL, CALLER I.D., CALL WAITING, 3 WAY CALLING, AND CALL WAITING I.D. IS HE CORRECT?

A. No. The "functionalities" of Voice Mail, Caller I.D., Call Waiting, 3 Way Calling, and Call Waiting I.D. require program development, pricing, and provisioning, regardless of whether provided to retail customers or wholesale customers. Since these features are offered to CLECs as UNEs, product managers are still needed to perform these tasks on a wholesale basis. The related costs therefore must be loaded onto the switching network costs in order to determine the *total* costs of providing these switching features to CLECs.

While some product managers might currently be managing these features for the benefit of retail customers, in a wholesale-only environment, their efforts would focus on the UNE offerings. And product managers already focus on the wholesale aspects of such feature offerings today, even where the percentage of UNEs is smaller than the 100% TELRIC assumption: Mr. Lundquist selectively quoted from the survey for this workcenter to suggest otherwise. He omitted the fact that the survey notes that: "Functions provided to wholesale customers include product management for Caller I.D., Call Waiting, 3 Way Calling, and Call Waiting I.D."

Q. MR. LUNDQUIST ALSO STATES THAT A WORKCENTER FOR END USER BILLING SHOULD BE CONSIDERED RETAIL- AVOIDED. IS HE CORRECT?

A. No. Bill distribution functions are required for wholesale and retail customers. Mr. Lundquist correctly states that e-billing of retail and wholesale customers has increased since the study was performed. However, the retail-avoided percentages by USOA Account are applied to adjusted 2001 expense levels; thus, any efficiencies realized between 1997 - 2001 in providing bills in electronic format would already be reflected in the 2001 USOA account balances.

3. Mr. Lundquist's Headcount Study

Q. MR. LUNDQUIST PROPOSES USING VERIZON NW'S LAND AND BUILDING STUDY AND ITS RELATED ADMINISTRATIVE HEADCOUNT STUDY TO DETERMINE THE PORTION OF COSTS THAT ARE RETAIL-AVOIDED. IS THAT A VALID MEANS OF DETERMINING WHOLESALE-ONLY COSTS?

A. Certainly not. Mr. Lundquist's method of using administrative headcounts to determine retail-avoided costs is fundamentally flawed. The mere fact that employees are assigned for headcount purposes to the retail versus the wholesale category does not indicate that the work they perform is 100% retail-related or would be avoided in a wholesale-only company. First, regardless of this macro-categorization, an individual employee's various activities might be split among a variety of tasks, not all of which are within that category. A gross headcount categorization therefore

would be likely to seriously overstate avoided costs by failing to account for the fact that some work in the "wholesale" category is performed by "retail" employees. Second, some work that is purely or primarily retail-related today would still be performed — albeit with a different target market — in a wholesale-only company.

Another reason Mr. Lundquist's reliance on headcount as a proxy for avoided costs does not work is that not all expenses are labor or personnel related. Some costs associated with customer services and billing, for example, are systems costs, not labor costs. It makes no sense to determine the percentage of these costs that would be avoided (if any) in a wholesale company by applying a ratio based on employee headcounts.

Q. MR. LUNDQUIST DECIDED TO RE-BASE THE HEADCOUNT STUDY TO EXCLUDE OPERATOR SERVICES AND MARKETING OTHER. WAS THIS APPROPRIATE?

A. No. Mr. Lundquist's already fundamentally flawed method of using administrative headcounts to determine retail avoided costs (see discussion above), also incorrectly describes how the marketing loading is actually calculated and applied within VzCOST. Mr. Lundquist states in his testimony:

> "Since Verizon's study already performs assignments of marketing expenses to Operator Services and Marketing Other, the headcount-based allocation percentages were re-based to exclude those two categories."

This statement is incorrect. VzCost actually calculates one wholesale marketing loading factor which *includes* the wholesale marketing costs in the Operator Services and Marketing Other cost pools. By excluding all of the employees that work in these areas, Mr. Lundquist implicitly assumes that in a wholesale-only company, none of the employees working in those areas would perform wholesale marketing work. This cannot be the case, because, for example, the marketing support functions in the Marketing Other category would still need to be performed. Although Verizon certainly does not advocate Mr. Lundquist's methodology as a valid way to develop *any* type of retail avoided percentage, the referenced percentages shown in his calculations should not have been re-based to exclude the two referenced categories. Correcting for this error, Consumer and Business would represent 62% of the total marketing expenses, not 85.5%.

Q. HAVE YOU REVIEWED THE CALCULATIONS IN MR. LUNDQUIST'S TESTIMONY AND DO YOU HAVE AN OPINION ABOUT THEIR ACCURACY?

A. Yes, a review of his calculations revealed one further computational error. On page 15 of his testimony, Mr. Lundquist states that the sales expense account (Account 6612) is adjusted by multiplying it by a formula of 1 minus the retail-avoided percentage of 66.1% (*i.e.*, 1 -.661). However, he says the result of this formula is a wholesale percentage of 43.9%, when the correct mathematical result is 33.9%. Thus, the true wholesale

percentage for this account is 30% less than what Mr. Lundquist asserts in his testimony.

D. Verizon NW's Inflation and Productivity Adjustments

Q. MR. LUNDQUIST CRITICIZES VERIZON NW'S LABOR AND PRODUCTIVITY ADJUSTMENTS AS INACCURATE BECAUSE THEY ARE BEING BASED ON THE WRONG INDICES. IS THERE ANY MERIT TO HIS ARGUMENTS?

A. No, the indices that Verizon NW applies are appropriate and reliable for use in its UNE cost studies. Verizon NW adjusts all of its operating expenses in its year 2001 USOA accounts for inflation and productivity, first to bring them to current 2003 levels, and then applies trend factors for inflation and productivity for the planning period of 2004-2006. For all but five accounts, which Verizon NW determined not to be primarily driven by labor costs, Verizon NW applies inflation expense trends forecast by Economy.com, an independent forecasting and consulting firm. To the other five accounts, which are non-labor-driven, 6113 - Aircraft, 6124 - General Purpose Computers, 6531 - Power, 6613 - Advertising, and 6724 - Information Management, Verizon NW applies an inflation trend based on the Consumer Price Index ("CPI"). The productivity trend that Verizon NW applies is a productivity factor developed by Economy.com that is based on non-farm business productivity data published by the Bureau of Labor Statistics.

Q. IS THERE ANY MERIT TO MR. LUNDQUIST'S ARGUMENT THAT THE GROSS DOMESTIC PRODUCT ("GDP") PRICE INDEX SHOULD BE APPLIED TO NON-LABOR-DRIVEN ACCOUNTS INSTEAD OF THE CONSUMER PRICE INDEX ("CPI")?

A. No. The GDP Price Index is not more representative than the CPI of the price changes for the goods and services that Verizon NW purchases and books to these accounts. In fact, the GDP Price Index is less appropriate than the CPI. The GDP Price Index captures price changes for many goods and services that are produced domestically but exported to other countries. By definition, these items are not purchased by Verizon NW. The GDP Price Index also captures price changes for residential and non-residential structures as well as producers' plant and equipment. Verizon NW does not buy residential structures and thus does not record the purchases in its expense accounts. And while Verizon NW does purchase both non-residential structures and plant and equipment, these items are recorded in Verizon NW's *investment* accounts, not in its expense accounts. Adjusting Verizon NW's *expenses* based on the GDP Price Index would thus be a mismatch, as the adjustment would reflect the lower inflation expected of investments, not merely expense-related inflation, which could produce false expense reductions.[166] The GDP Price Index

[166] Report and Order, *In the Matter of Policy and Rules Concerning Rates for Dominant Carriers*, 4 FCC Rcd 2873 ¶ 186 (1989) ("*Price Cap Order*").

even includes a component for depreciation, which also is appropriate for an index that is applied to investments, not expenses.

Q. WHY IS THE CPI A BETTER MEASURE OF INFLATION?

A. The CPI has the advantage of being by far the most widely used measure of changes in the general level of prices in the economy. It is closely watched and analyzed, the reasons for its movements are well understood, and it is widely forecasted. Since price indexes for the specific items booked to the five expense accounts to which Verizon NW applies CPI are not available, application of the CPI represents a sensible approximation to the price changes that will likely occur in the items recorded in these accounts. Moreover, expenses associated with the types of products in these five accounts — electricity, airline fares, computers, and computer information processing services and equipment — are included in the CPI.

Q. HAS THE FCC APPLIED CPI BEFORE?

A. Yes, for many years the FCC has applied the CPI as a measure of inflation.[167] Although the FCC has adopted the GDP Price Index for the Price Cap Index, it did not discredit the CPI: it explained that the primary reason for not choosing the CPI was that the GDP included a broad index

[167] *See, e.g.*, Seventh Report and Order, *Procedures for Implementing the Detariffing of Customer Premises Equipment and Enhanced Service*, 59 Rad. Reg. 2d 949 ¶ 10 (1986).

of sectors of the economy.[168] The relevant expenses to which Verizon NW applies the CPI are included in the CPI index.

It appears that Mr. Lundquist recommends using the GDP Price Index simply because its recent growth is lower than that of the CPI. Mr. Lundquist takes an average of the last five years of the GDP Price Index where the CPI has exceeded the GDP Price Index, but over the period 1990 to 2002 both the GDP Price Index and the CPI reflect almost the same amount of inflation, 27%.

Q. MR. LUNDQUIST CRITICIZES VERIZON NW'S APPLICATION OF THE BUREAU OF LABOR STATISTICS ("BLS") NON-FARM PRODUCTIVITY INDEX AND ARGUES THAT VERIZON NW SHOULD INSTEAD HAVE USED THE BLS WIRED TELECOMMUNICATIONS CARRIER PRODUCTIVITY INDEX. DO YOU AGREE?

A. No. For the purposes of forecasting a labor productivity factor over the ratemaking period, the Wired Telecommunications Productivity Index is not appropriate, especially in the manner applied by Mr. Lundquist. The historical productivity growth of 27.5% between 1996 and 2001 in the telecommunications industry is not indicative of the productivity gains that will be achieved over the ratemaking period (2004-2006).

As Mr. Lundquist himself acknowledges, the market-opening obligations unleashed by the Telecommunications Act of 1996 in general gave all wired telecommunications providers (ILECs, IXCs, and others)

168 *Price Cap Order* ¶ 186.

unprecedented incentives to increase productivity. Mr. Lundquist correctly notes on page 32 of his testimony that, "ILECs have invested millions of dollars in modernizing their operations support systems ("OSS") infrastructure, which has introduced greater automation into … activities that have traditionally been labor-intensive." However, the adjustments that occurred in the years immediately following the Act's passage and early FCC (and state) implementation are one-time events or phases unlikely to be repeated any time soon. For instance, contrary to Mr. Lundquist's assertion that Verizon NW could increase automation by implementing electronic billing with ExpressTRAK, Verizon NW already has electronic ordering and billing systems in Washington, and has no plans to implement this system or any other system to increase OSS efficiency. It therefore makes no sense to project productivity forward based on his unsupported and incorrect assertion.

For example, Verizon NW now has modernized its OSS infrastructure, and the associated cost savings are already reflected in Verizon NW's 2001 adjusted expenses. Contrary to Mr. Lundquist's assertion, no new major OSS innovation is expected, and thus the productivity adjustment experienced over earlier years is unlikely to be repeated. Notably, even the trend in the Wired Telecommunications Productivity Index peaked following the 1996 Act and then began to slow down. After reaching a peak of 7.2% in 1999, labor productivity growth fell

to 6.7% in 2000 and to only 1.6% in 2001, the last year for which data is available.

Mr. Lundquist ignores the slowdown trend reflected in the index he himself advocates, and with these blinders on, develops a forward-looking forecast that is based on an un-weighted average of the short-lived labor productivity gains experienced in the Wired Telecommunications Productivity Index from 1996-2001. As a result, Mr. Lundquist's forecasting approach contains internal contradiction, and overstates the labor productivity gains that Verizon NW can expect to achieve in the 2004-2006 period.

E. Wholesale Uncollectibles

Q. IS THERE ANY MERIT TO MR. LUNDQUIST'S PROPOSAL TO USE THE 2001 UNCOLLECTIBLES PERCENTAGE INSTEAD OF THE 2002 PERCENTAGE?

A. No. Verizon NW used 2002 UNE/Resale-specific uncollectibles and related revenue data obtained from Verizon's Financial Planning and Analysis group to calculate its uncollectibles, and used the 2001 data to calculate expenses, because the revenue-related data was fully analyzed sooner than the expense-related data. Thus, Verizon NW's uncollectibles calculation simply utilizes the most up-to-date data.

Mr. Lundquist criticizes Verizon NW's use of 2002 data for uncollectibles because, as he points out, the level of uncollectibles for Verizon NW increased significantly in 2002 compared with prior years.

The increase to which Mr. Lindquist points was mainly due to the bankruptcies of WorldCom and Genuity in 2002; but Verizon NW was able to identify and remove the significant, one-time impacts of these bankruptcies from the 2002 book amounts prior to calculating its forward-looking UNE/Resale uncollectible percentage. Thus, the uncollectible rates of 4.86%, 9.08%, and 11.46% for total revenues, network access revenues, and basic local service revenues, respectively, that Mr. Lundquist cites were never used in Verizon NW's studies; instead, because of the WorldCom/Genuity normalizations, Verizon NW's UNE/wholesale uncollectibles percentage for 2002 was 1.997%.

Q. WHAT EXPLAINS THE NEGATIVE UNCOLLECTIBLES IN 2003 SHOWN IN MR. LUNDQUIST'S CHART?

A. The ARMIS data that Mr. Lundquist used in his chart contains the non-normalized effects of large, one-time events, such as the bankruptcies of WorldCom and Genuity in 2002. The subsequent recovery of some of the 2002 WorldCom accrual write-offs in 2003 resulted in nominal negative uncollectible rates for that year. Verizon NW has already excluded the one time effects of these bankruptcy charges (and subsequent year's recoveries) in the calculation of its 2002 UNE/wholesale uncollectibles percentage.

Q. IS REVENUE DATA OBTAINED FROM VERIZON'S FINANCIAL PLANNING AND ANALYSIS GROUP MORE ACCURATE THAN ARMIS DATA FOR CALCULATING UNCOLLECTIBLES?

A. Yes. The uncollectibles and related revenue data obtained from Verizon's Financial Planning and Analysis group can be identified as retail, UNE/resale, and access. Therefore, separate uncollectible percentages can be developed for each product and service type. This allowed Verizon NW to produce a UNE/wholesale-only uncollectibles factor. In addition, significant one-time events were identified and removed from the calculations of the forward-looking uncollectibles percentage, as described above. ARMIS data cannot be broken down or analyzed in this manner.

VIII. EF&I FACTOR FOR DLC INSTALLATIONS

Q. MR. TURNER CRITICIZES VERIZON NW'S USE OF EF&I FACTORS FOR DLC INSTALLATION COSTS. IS THERE ANY MERIT TO HIS ARGUMENT?

A. No. It is a well-established procedure to use EF&I factors to model engineering and installation costs in a cost study.[169] Indeed, in the Virginia Arbitration AT&T proposed EF&I factors.[170] As explained below, Verizon NW's approach is designed to eliminate aberrations that are specific to a particular point in time or geographic area. The level of the

[169] *See, e.g., Virginia Arbitration Order* ¶¶ 444, 526; Tentative Order, *Generic Investigation Re Verizon Pennsylvania, Inc.'s Unbundled Network Element Rates*, R-00016683 at 52-53 (PA PUC Oct. 24, 2002); Order, *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*, 01-20, at 29-33 (MA DTE Jan. 14, 2003).

[170] *See Virginia Arbitration Order* ¶¶ 443, 523.

EF&I factor used is consistent with Verizon NW's actual experience and with the level advocated by the FCC's Wireline Bureau. Finally, both Verizon NW's methodology and the specific EF&I factor used are validated by the sample of DLC work orders produced to AT&T in response to data requests.

Q. HOW DID VERIZON NW CALCULATE ITS EF&I FACTORS?

A. The EF&I Loading Factors are designed to account for the applicable costs of engineering, transportation, warehousing, installation (including acceptance testing or other plant labor), and sales tax, among others. The EF&I Loading Factors represent the relationship between these costs and material-only investment for each plant account.

The EF&I Loading Factors are developed using data from the company's Detailed Continuing Property Record ("DCPR") database (for former Bell Atlantic ("BA") jurisdictions) and the Central Office Equipment Property ("COEP") database (for former GTE jurisdictions). System-wide data from 1999 and 2000 are used to calculate the factors. To calculate the factor for each plant account, the total investment, including EF&I-related costs for equipment placed during this time period, is divided by the value of the total material-only investment for the same equipment. Verizon system-wide data from the two-year period is used for each plant account in order to minimize anomalies that might be present in a specific market or in a specific year with respect to a particular type of equipment.

Q. DO YOU AGREE WITH MR. TURNER'S CRITICISM OF VERIZON NW'S USE OF A TOP-DOWN MODEL FOR DLC EF&I COSTS?

A. No. We disagree completely with him. Verizon NW's EF&I factors are based on a large universe of actual experience over a reasonable period of time, which minimizes the influence of unique conditions, specific to a particular point in time or geographic area. This is particularly true for DLC installations. As Mr. Richter has noted in his reply testimony, DLC installation costs may vary depending on the particular circumstances.[171] In addition, it would be unduly burdensome and expensive to develop EF&I factors for every piece of equipment in the network — as would be required by the bottom-up approach advocated by Mr. Turner.

Moreover, such a bottom-up methodology would require estimates from many subject matter experts and would therefore be prone to endless speculation concerning their validity, leading to significantly more disputes over installation costs, instead of using objective costs as recorded on the books.

Q. MR. TURNER ASSERTS THAT EF&I FACTORS ARE A "BLACK BOX" AND ARE NOT OPEN AND VERIFIABLE. IS HE CORRECT?

A. No. Verizon NW has provided the underlying data used to calculate its EF&I factors. Moreover, in response to Data Request No. 8-052, Verizon NW provided all of the detailed EF&I source data for the year 2000 on a

[171] *See* Richter Reply at 48-52.

CD. Mr. Turner does not even acknowledge this data request response in his testimony or otherwise provide a basis for his claims.

Q. PLEASE ADDRESS MR. TURNER'S CLAIM THAT VERIZON NW'S EF&I FACTORS RELY ON VERIZON NW'S EMBEDDED NETWORK AND ACTIVITIES.

A. Verizon NW's EF&I factors are based on the booked costs of engineering, furnishing, and installing equipment in particular accounts. Those costs are deemed to be forward-looking because no significant changes are expected in EF&I practices; the same EF&I practices that are used now will be followed during the period in which the ordered TELRIC rates will be in effect. Notably, Mr. Turner has cited no new practices that are being adopted for Verizon NW or any other carrier in installing DLC, and Verizon NW is aware of no anticipated change.

Moreover, the EF&I factors used in Verizon NW's studies produce a conservative estimate of future EF&I costs for DLCs because of historically declining material prices and increasing labor costs. Additionally, the assumptions underlying Verizon NW's modeled network assume economies of scope and scale that cannot always be achieved in the real network. As a consequence, the modeled investment — including that for DLCs — will be understated.

Q. MR. TURNER STATES THAT VERIZON NW'S EF&I FACTORS REFLECT PIECE-MEAL EXPANSIONS OF THE NETWORK RATHER

THAN LARGER PROJECTS THAT ARE CONSISTENT WITH TELRIC. IS HE CORRECT?

A. Mr. Turner's criticism is based on the false assertion that all inputs should be developed as if the network were rebuilt in its entirety just because costs are modeled that way. If this were true, then the input prices for all material and labor inputs would have to be increased dramatically, due to constraints on vendors' production capacity. Consistent with TELRIC requirements, Verizon NW's EF&I factor reflects the real-world costs that it would incur to provision plant assets, including DLCs in its network, and accordingly include the costs of jobs associated with both large and small capacity equipment.

Q. MR. TURNER STATES THAT EF&I FACTORS ARE BASED ON REPLACEMENTS AND AUGMENTS, WHICH SHOULD BE EXCLUDED FOR TELRIC PURPOSES. PLEASE COMMENT.

A. Again, Mr. Turner's criticism is based on the fallacy noted above. The FCC intended TELRIC estimates to reflect the costs that incumbent carriers expect to incur in making unbundled elements available to new entrants. These costs will include, as do Verizon NW's EF&I factors, both replacements and augments to equipment. These are actual costs that a LEC will incur to provision unbundled network elements.

Q. MR. TURNER ARGUES THAT THE EF&I FACTORS ARE DISTORTED BECAUSE THERE IS A MISMATCH IN TIMING BETWEEN WHEN

LABOR HOURS ARE INCURRED AND WHEN THE EQUIPMENT IS PURCHASED. IS THIS ACCURATE?

A. As explained above, Verizon NW's EF&I factors represent the ratio of EF&I costs to material costs over a recent two-year period, and in a broad geographic area. This is not simply the ratio in a particular month, but a longer term average over 24 months. The likelihood of a mismatch distorting overall results is extremely small. Notably, Mr. Turner has not provided even one example of such a mismatch,[172] and his testimony on this issue is nothing more than unfounded speculation.

Q. MR. TURNER STATES THAT VERIZON NW'S EF&I FACTORS ONLY REPRESENT A SHORT-TERM RELATIONSHIP AND THEREFORE ARE NOT ACCURATE. DO YOU AGREE?

A. No. Again, Mr. Turner has provided no evidence that these ratios are only "short-term relationships" or that they are not accurate representations of forward-looking installation costs. As explained above, Verizon NW does not anticipate that any new EF&I practices will be implemented over the relevant period, so the relationship between material price and installation cost will likely remain constant.

Q. MR. TURNER STATES THAT THE COSTS OF INSTALLING A 2016-LINE DLC AND A 672-LINE DLC ARE APPROXIMATELY EQUAL. DO YOU AGREE?

[172] AT&T admits in its response to Verizon NW's Data Request No. 10-57 that AT&T "possesses insufficient information to provide any empirical examples of where this mismatch arises."

A. No, absolutely not. This is an absurd statement that Mr. Turner does not back up with any facts. A 2016-line DLC is more complicated to engineer and install: for example, it requires additional site preparation and more internal wiring. Application of Verizon NW's EF&I factor to both a 672-line DLC and a more expensive 2016-line DLC would appropriately load more installation costs onto the 2016-line DLC.

Q. MR. TURNER CLAIMS THAT VERIZON NW INCORRECTLY DESIGNATES SOME OF ITS MAJOR MATERIAL COSTS AS MINOR MATERIALS. PLEASE COMMENT.

A. Verizon NW does not designate any major material investment as minor material. Mr. Turner states that some unidentified equipment has a "macro" part number, which contains sub-part numbers, and that when this part is entered into the DCPR database a portion of the "macro" part's cost is not "mapped to CPR codes" and is instead designated as "minor" material. Mr. Turner does not provide any specific examples of this. Nor can he, because this is not how Verizon's DCPR database operates.

When Verizon purchases equipment or plant from a vendor, such as a DLC, it may include minor materials such as nuts, bolts, and brackets in the purchase price. The material investment recorded in the DCPR database, however, does not reflect those minor materials; it includes only the value of the major material. The total installed investment includes the minor materials, engineering, and installation costs along with that major material investment. The minor materials that appear in the

total installed investment are only those needed to complete the installation of the major material, and are not part of the cost of the major material. Thus, Verizon does not redesignate any part of the value of the major material as minor material as Mr. Turner alleges.

Q. MR. TURNER FURTHER CONTENDS THAT VERIZON NW IMPROPERLY APPLIES ITS EF&I FACTOR TO MINOR MATERIAL COMPONENTS. IS THIS CORRECT?

A. No. The EF&I factors are only applied to major materials such as DLCs.

Q. MR. TURNER STATES THAT THE FLORIDA AND GEORGIA COMMISSIONS DECIDED TO USE BOTTOM-UP APPROACHES TO DETERMINING INSTALLATION COSTS. DO THEY RAISE ANY REASONS OTHER THAN THOSE ALREADY IDENTIFIED BY MR. TURNER?

A. No. Notably, both of these commissions focused their criticism on the use of an EF&I factor for cable placement or for loop cost in general.[173] Verizon NW does not apply an EF&I factor for cable placement. And there was no specific finding by either commission that an EF&I factor for DLCs was not accurate.

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[173] *See* Order, *Investigation into pricing of unbundled network elements*, Docket No. 990649-TP, Order No. PSC-01-1181-FOF-TP, at 237 (FL PSC May 25, 2001); Order, *Review of Cost Studies, Methodologies, Pricing Policies, and Cost Based Rates for Interconnection and Unbundling of BellSouth Telecommunications, Inc.'s Services*, Docket No. 14361-U, at 12 (GA PSC Mar. 18, 2003).

Q. MR. TURNER RELIES ON THE FACT THAT THE BUREAU IN THE VIRGINIA ARBITRATION MADE SOME CRITICISM OF THE EF&I FACTORS TO SUPPORT A BOTTOM-UP APPROACH. PLEASE COMMENT.

A. While the Bureau did make some criticisms, it ultimately adopted an EF&I factor approach for those aspects of the case in which it accepted Verizon's model (and thus for which such factors were relevant).[174] As noted below, AT&T at that time was also proposing EF&I factors rather than a bottom-up approach.

In any event, the bottom-up approach is subject to the same criticism that the Bureau made of EF&I factors. For any given installation project, unique geographic and environmental conditions will affect the actual installation costs. Those costs can vary dramatically from project to project. Thus, when AT&T proposes a single installation cost for a type of DLC, the actual costs of installing that equipment in the network is likely to be more or less than that stated amount. Therefore, it is no more likely to pinpoint the actual costs of a specific installation than an EF&I factor.

Q. MR. TURNER IS TROUBLED BY THE FACT THAT EF&I FACTORS PRODUCE INSTALLATION COSTS THAT ARE HALF THE COST OF THE MATERIAL. IS THAT CONSISTENT WITH VERIZON NW'S EXPERIENCE?

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174 *See Virginia Arbitration Order* ¶ 526.

A. Yes. In response to AT&T Data Request No. 8-028, Verizon NW produced work orders from its seven most recent DLC installations. Based on the information provided in this data request response, Verizon NW found that costs for minor material, provisioning, sales tax and installation amounted to 52 percent of the DLC material cost — *higher* than Verizon NW's proposed EF&I factor for DLCs of 46 percent.[175] Moreover, even the *Virginia Arbitration Order* on which AT&T itself repeatedly seeks to rely approved an EF&I factor for IOF of 53.2% and an EF&I for switching of 40%.[176]

Q. MR. TURNER PROPOSES REDUCING VERIZON NW'S EF&I FACTORS BY 80% BECAUSE SBC CONCEDED THAT ITS EF&I FACTORS WERE INFLATED. IS THIS PROPOSAL CREDIBLE?

A. No. First, Mr. Turner has shown no logical connection between any problems with the data used for SBC's EF&I factors and the data in Verizon's databases. He merely assumes that any errors would be the same, even though SBC and Verizon have different continuing property records databases and there is no reason to think that an overstatement of installation costs in SBC's database would also occur in Verizon's.

Second, Mr. Turner's assertion that SBC's EF&I factor was reduced by 80% has never been tested. In the Illinois proceeding to which Mr. Turner cites, the CLECs had asserted that problems existed with SBC's

[175] *See* Exhibit No. __ (RRP-5C).

[176] *See Virginia Arbitration Order* ¶¶ 444, 526.

continuing property records data. To avoid debate on that issue and reduce the number of contested issues in the proceeding, SBC developed new EF&I factors based instead on its general ledger data.[177] When SBC's witness was asked on cross-examination whether this change resulted in a reduction to the loading factor, he answered yes, but also stated that he had not calculated the percentage of the reduction.[178] Thus, there is no documented evidence of an 80% reduction of SBC's EF&I factor other than AT&T attorney's statement at the hearing. This Commission cannot be asked to rely on such speculation.

Third, one of the problems mentioned at the SBC-Illinois hearing was that some equipment in SBC's continuing property records databases should have had a property record number assigned to it but it did not. As a result, that equipment was included in the total installed investment, but it was not identified in the material investment, where it should have been. Mr. Turner has shown no similar example of a failure to identify material investment in Verizon's continuing property records databases.

Q. WHAT CRITICISMS DO YOU HAVE OF THE CALCULATION OF MR. TURNER'S PROPOSED EF&I FACTOR PRESENTED IN EXHIBIT SET-3?

A. In the spreadsheet that Mr. Turner used to compute the 1.1144 EF&I factor in his testimony, he applies an 80% reduction to the total Installed

[177] Illinois Commission Hearing Tr., AT&T Exhibit SET-3, at 718.

[178] *Id.* at 717-18.

Investment, amounting to over $260 million for the Verizon East DCPR data, as if those engineering and installation costs were never incurred. But this is not the proper correction, even if AT&T's representation of the problem was with SBC's DCPR database in Illinois were accurate. AT&T did not contend that equipment or installation costs did not exist; it was AT&T's assertion that some equipment was not provided a part number and was not identified in the material investment portion of the database — the assertion was that it only was included in the total installed investment portion of the database. If that equipment had been properly identified, the amount of material investment would have been larger, but the total installed investment would have been unchanged. Thus, according to AT&T's logic, Mr. Turner erroneously reduces the total installed investment by 80% rather than adjusting only the material investment component. In addition, Mr. Turner only applies this incorrect adjustment to Verizon East data and inexplicably excludes the Verizon West (former GTE) COEP data to which he takes no exception.

Solely for the purpose of argument, if we adjust (increase) the material investment component by 80% for the Verizon East DCPR data and recalculate the factor, including the Verizon West COEP data, the result would be 1.373, not 1.114 as he states in his testimony. Moreover, If a serious problem existed with DCPR data, it would make sense to base the EF&I factor only on the Verizon West COEP data. Using the Verizon West data only would produce a factor of 1.397. Thus, not only does Mr.

Turner rely on unfounded assertions about unrelated SBC data from another jurisdiction, he also does not even apply this speculative adjustment in a manner consistent with its alleged justification.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.