Docket No. UT-040788
Direct Testimony of Robert Loube
Exhibit No.___ (RL-1T)

BEFORE THE WASHINGTON UTILITIES & TRANSPORTATION COMMISSION

WUTC v. VERIZON

DOCKET NO. UT-040788

DIRECT TESTIMONY

OF ROBERT LOUBE, Ph.D. (RL-1T)

ON BEHALF OF

PUBLIC COUNSEL

AND

AARP

DECEMBER 17, 2004

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ROBERT LOUBE

LOUBE EXHIBIT LIST

I. INTRODUCTION

Q: Please state your name and business address.

A: My name is Robert Loube. My business address is 10601 Cavalier Drive, Silver Spring, Maryland 20901.

Q: By whom are you employed and in what capacity?

A: I am the Director, Economic Research, Rhoads and Sinon, LLC.

Q: On whose behalf are you testifying?

A: I am testifying on behalf of Public Counsel and the AARP.

Q: Please describe your professional qualifications?

A: I received my Ph.D. in economics from Michigan State University in 1983. I previously worked for the Federal Communications Commission (FCC) where I helped to establish the criteria for choosing the universal service economic cost model, evaluated and modified telephone cost models, and determined the input values used in the FCC's Synthesis model.

While I worked at the Indiana Utility Regulatory Commission and the Public Service Commission of the District of Columbia, I testified on the validity and usefulness of a number of incremental and embedded cost studies, and on rate design issues. I have lectured on cost modeling and pricing in telecommunications at the NARUC Annual Regulatory Studies Program. My vita is attached to this testimony as Exhibit RL-2.

II. PURPOSE OF TESTIMONY

Q: What is the purpose of your testimony?

A: The purpose of my testimony is to provide the Washington Utilities and Transportation Commission (Commission) with a set of general principles for changing rates and to support rate changes for a select group of services. Because Public Counsel and AARP are supporting individual adjustments to expenses and cost of capital values and not a final revenue requirement value, I will not be presenting a rate design exhibit that will match a certain revenue requirement. Instead, because Staff is supporting a $51.2 million revenue requirement reduction, I will provide guidelines to meet a revenue requirement reduction and because Verizon is supporting a $109.8 million revenue increase, I will provide guidelines to meet a revenue requirement increase.

Q: What are the general guidelines you recommend for affecting a revenue reduction?

A: A revenue reduction should be implemented through an equal percentage reduction in basic service and special access rates. This includes not only residential services such as Premium One Party Flat service, but also business services such as Premium One Party Flat, Premium Trunk – PBX, Premium Trunk – Key, and High Capacity DS1 services.

Q: What are the general guidelines you recommend for affecting a revenue requirement increase?

A: First, rates should be increased for a select group of individual services. These include but are not limited to establishing a late payment charge and increasing rates for custom calling features. Second, the remaining revenue requirement

should be recovered through equal percentage increases in the rates for basic and special access services.

Q: How is the rest of your testimony organized?

A: The rest of my testimony is divided into six sections. In Section III, I will discuss the rates for other services. I will highlight the differences between my suggested rate increases and the rate increases sponsored by Verizon witness Fulp. In Section IV, I will illustrate how the Commission can use my rate design guidelines to reach any selected revenue requirement increase or decrease it finds to be reasonable. Section V will focus on previous Commission decisions that have established criteria for using incremental cost studies to support retail rates. I will show how the Verizon proposed incremental cost estimates are not consistent with those criteria. Therefore, I recommend that the Commission should not accept the Verizon supported cost/price relationships as guidelines for rate making in this proceeding. Section VI contains an analysis of the Verizon incremental cost model. I will demonstrate that it is not a forward-looking model, and therefore, does not provide proper incremental cost information. However, in this proceeding, the cost model is only being used to provide background information regarding the relative costs of the various services, and not to establish the rate levels. With significant modification, the Verizon model is adequate to produce background for the relative costs of the services. Section VII will develop the modifications required to use the Verizon model and provide the results of comparative model scenarios. Section VIII reviews Verizon witness Fulp's comparison of the Verizon proposed residential rate to the rates of other

carriers. I will show why his comparison is improper. Moreover, the proper comparison shows that the current Verizon rate is similar to the rates of other carriers, and that the Verizon proposed rate increase places Verizon's rate well above the national average rate for residential service. Thus, there is no logical support for Verizon's suggested residential rate increase.

III. RATES FOR OTHER SERVICES

Q: What "other services" rates does Verizon wish to increase?

A: Verizon is proposing to increase the rates for special access, remote call forwarding, custom calling, and directory assistance. In addition, Verizon proposes to establish a late payment charge and reduce the directory assistance free call allowance to zero.

Q: List the rate proposals that you disagree with Verizon on.

A: I disagree with Verizon's proposed increases in special access and remote call forwarding rates. I also disagree with the size of the late payment charge that Verizon is proposing and with Verizon's desire to eliminate the directory assistance free call allowance.

Q: How does Verizon support its special access proposal?

A: Verizon proposes to increase some of its special access rates in the same way it is proposing to increase its basic service rates. That is, it is proposing to increase two-wire and four-wire rates by $9.80 per month. This increase will move the rate closer to but still below the Verizon estimated Total Service Long Run Incremental Cost (TSLRIC) for these services.

The Verizon proposal increases the rates for the other special access services by 25 percent. It claims that these increases will either increase the rate above cost or generate a larger contribution towards the recovery of the revenue requirement.

Q: Do you disagree with Verizon's rationale for increasing special access rates?

A: Yes. Verizon rate increase is based on the relationship between its cost study and the current rates. Below I will show that the cost study significantly over-estimates the cost for all services. Given that rates are not below costs, the foundation for the rate design-based increase does not exist.

Q: Are you proposing an alternative foundation for an increase in special access rates?

A: If the Commission finds that a rate increase is necessary, the cost studies reveal that the likely cause of that increase would be the common cost associated with the recovery of loop facilities. Therefore, I recommend that the special access rates be increased in the same manner that basic services will be increased to recover any residual revenue requirement shortfall. Because I am recommending that the basic service rate increase should be based on an equal percentage basis, I also recommend that the special access rates be increased by the same percentage increase that may be applied to basic services.

Q: What is your disagreement with Verizon's remote call forwarding proposal?

A: The Verizon increase is too steep. The $7.00 remote call forwarding increase is higher than any of the increases requested for its custom calling features. Even for packages, such as Big Deal Option A, Verizon is only requesting a $3.00

increase. Therefore, to keep the increase for remote call forwarding in line with the increases for other vertical features, I recommend restricting the increase for remote call forwarding to $3.00.

Q: What is your objection to Verizon's late payment charge plan?

A: I object to Verizon's minimum charge late payment proposal. Verizon is proposing that the late payment charge should be greater of $5.00, or 1.5 percent of the unpaid balance. Therefore, a customer will paid a minimum late charge fee of $5.00 until the unpaid balance is greater than $334. The effect of the minimum $5.00 charge is to levy a thirty-eight percent charge on a residential customer whose payment of the current $13 rate for premium one party flat service is one day late. A thirty-eight percent surcharge is excessive. This excessive rate could lead individuals to start making partial payments. Of course if a partial payment is made, then an additional late payment of $5.00 could be added to the bill, leading to even more problems with customer payments in succeeding months, which in turn will eventually lead to disconnects. In addition this minimum charge plan places a relatively greater burden on individuals with small non-payments, than for those with large non-payments. For example if two customers with bills equal to $25 are late in paying their bills, then Verizon does not collect $50 that month, but has the right to collect $10 in late payment fees, the sum of two $5.00 minimum late charge fees. However, if one customer with a $500 bill is late in paying his bill, then Verizon does not collect $500 that month, but has the right to collect only $7.50 ($500 multiplied by 1.5 percent is $7.50) in late payment fees.

Q: What type of late payment plan do you recommend?

A: I recommend that the late payment charge be set at 1.5 percent for all customers, with no minimum $5.00 charge. Establishing a late payment charge will provide an incentive for customers to pay their bills on time. It will end the potential incentive under current rates to pay the telephone bill last, after all other bills that currently have a late payment charge. An equal 1.5 percent rate for all customers will place the burden of late payment fees equally across all customers who do not pay on time. It will reduce concerns regarding disconnects and the possible effect on universal service that are associated with the minimum $5.00 charge.

Q: Why do you object to Verizon's plan to eliminate the directory assistance free-call allowance?

A: There are two reasons for my recommendation to retain the free-call allowance. First is the fact that a significant number of Verizon customers purchase the non-published service. Customers cannot find the non-published numbers in the white pages listings. They must call directory assistance to obtain a non-published number. Eliminating the call allowance requires everyone to pay Verizon for finding non-published numbers. This action could cause a lot of customer frustration and aggravation. The revenue gain is not worth the customer alienation associated with the feeling that they are being taken advantage of in a matter that is outside of their control. Second, some customers have a greater reliance on directory assistance because they are unable to use the printed directories to find numbers, for example due to poor eyesight, or the

unavailability of a copy of the directory. The retention of one free call would recognize these instances of greater necessity.

Q: Do you agree with any of Verizon's rate design proposals?

A: In the event any revenue increase is authorized, I agree with the Verizon recommendation with regard to custom calling rates and directory listing services.

Q: What is the total other service revenue increase that you are recommending?

A: I am recommending that if the Commission finds it necessary to increase company revenue that the first $13,073,378 should be obtained from increasing rates for other services. These increases include rate increases for custom calling services, remote call forwarding, directory listing, and establishing a late payment charge of 1.5%. The specific increases for each service are shown in confidential Exhibit RL-3C.

IV. APPLYING RATE DESIGN GUIDELINES

Q: Describe your rate design guidelines.

A: As I have stated, if the Commission decides to increase Verizon's allowed revenue requirement, then I recommend that the first $13 million of that increase be obtained from increases in "other services" rates. The rest of the increase would be recovered through an equal percentage increase in rates for residential, business and special access services. If the Commission decides to decrease Verizon's allowed revenue requirement, then I recommend that the reduction be passed through on an equal percentage rate decrease basis to residential, business and special access services.

Q: Why do you recommend that the first $13 million of any increase come from "other services?"

A: I am recommending increases to these service rates first because these services are discretionary. That is, individuals can obtain basic service without purchasing these services. Therefore, these rate increases will not have a negative impact on universal service. Increases in the basic service rates can have a negative impact on universal service and thus basic rate increases should be authorized only after other means of obtaining the necessary revenue increase have been utilized.

Q: Please provide an example of how these guidelines would be applied to a $20 million revenue increase?

A: Revenues and rates associated with a $20 million revenue increase are shown in Exhibit RL-4C. First, $13,073,378 is collected from the selected other services. Second, $6,926,622 is recovered from residential, business and special access services. Increasing revenues by that amount requires a 4.18 percent increase for each service. The Residential Premium One Party Flat rate increases by $0.54, the Business Premium One Party Flat rate increases by $1.24, and the Key and PBX trunk rates increase by $1.45.

Q: Please provide an example of how these guidelines would be applied to a $20 million revenue decrease?

A: Revenues and rates associated with a $20 million revenue decrease are shown in Exhibit RL-5C. To implement a $20 million decrease it is necessary to decrease residential, business and special access rates by 12.08 percent. The Residential Premium One Party Flat rate decreases by $1.57, the Business Premium One

Party Flat rate decreases by $3.59, and the Key and PBX trunk rates decrease by $4.19.

Q: What is Verizon's general guideline for affecting a revenue requirement increase?

A: Verizon's general guideline is to increase the rate for every line by $9.80. This equal increase per line raises residential rates by 75 percent while the business rate increases are held to 28 to 33 percent. The higher rate increase for residential customers is based on Verizon's assertion that residential rates are below the incremental cost of service.

Q: Why is Verizon proposing to increase the residential rate by 75 percent?

A: There are two reasons for the proposed increase. First, Verizon asserts that the residential rate is below the incremental cost of service. That assertion is incorrect. As shown in Section V, the current rate is above the incremental cost of service. This is true even using Verizon's default model results. When the default results are changed, in Sections V and VI of this testimony, to more accurately reflect Verizon's forward looking costs, the residential cost of service not only remains below the residential rate it is shown to be less than the Business Flat, Key and PBX cost of service. Second, Verizon asserts that its proposed residential rate is reasonable because it is less than residential rates for some of the other Washington state carriers. This comparison is not reasonable because it ignores differences in cost of service and the availability of alternative revenue sources among the various carriers. If the cost of service between two carriers is different then it is expected that the rate levels will also be different. Without

additional information about costs, a simple comparison of rates is not sufficient to determine whether the proposed rates are reasonable. Of course there is a national policy to ensure that urban and rural rates are reasonably similar in order to maintain and enhance universal service. Thus, it is necessary to compare urban and rural rates. However, because Verizon, Public Counsel and AARP are proposing study area wide rates, a comparison of urban and rural rates is not an issue in this case. In addition, in Section VIII, below, I show, that even if a rate comparison does provide some insight into the reasonableness of residential rates, Verizon compared its rates to the wrong group of carriers.

V. INCREMENTAL COST STANDARDS

Q: Has the Commission established criteria for using incremental cost studies for determining service rates?

A: Yes. The Commission found that "the local loop is not appropriately included in the incremental cost of local exchange service. The local loop facilities are required for nearly every service provided by the Company to a customer."[1] This finding recognizes that all services, including local exchange, vertical, state and interstate toll service, rely on the loop. None of these services could be provided without the loop. After excluding the loop cost from the calculation of the service cost study, the Commission found that the service incremental cost should be based on all of the other forward-looking total incremental costs included in the

[1] Washington Utilities and Transportation Commission v. U.S. West Communications, Inc., Docket No. UT-950200, Fifteenth Supplemental Order, page 83.

cost study.[2] In addition, the Commission found that "because the cost of the loop is considered to be a shared cost for the provision of voice and advanced services, we conclude that a portion of the cost of the loop should be recovered from LECs providing advanced services and specifically digital subscriber line services."[3] Thus, the Commission again recognized that the loop is an input used by multiple services and should not be assigned as a direct cost of basic voice grade service. The Commission also noted that a flat-rate capacity charge may be a more accurate way to estimate the cost of transporting and terminating local traffic. It did not adopt a flat-rate capacity charge for reciprocal compensation because such a rate would have added to the rate uncertainty related to reciprocal compensation.[4] In this proceeding, the concern regarding rate uncertainty is not a problem because the incremental costs are used as a guideline for setting rates rather than for determining the definitive rate level. Moreover, because the Verizon switch costing models start from busy hour capacity cost, it is appropriate to use a capacity cost analysis to determine switch service costs by customer class.

Q: Does the Commission loop finding agree with the FCC's Total Element Long Run Incremental Cost (TELRIC) order?

A: Yes. The FCC noted that "the cost of the local loops and their associated line cards in local switches, for example, are common with respect to interstate access

[2] Id., page 90.
[3] In the Matter of the Continued Costing and Pricing of Unbundled Network Elements, Transport, and Termination, Docket No. UT-003013, Thirteenth Supplemental Order, ¶ 57.
[4] In the Matter of the Continued Costing and Pricing of Unbundled Network Elements, Transport and Termination, Docket No. UT-003013, Thirty-Second Supplemental Order, ¶¶ 83-92.

service and local exchange service, because once these facilities are installed to provide one service they are able to provide the other at no additional cost."[5] The order also noted that while TELRIC is similar to TSLRIC,, the fact that TELRIC is pricing elements (loops, switches and transport facilities) significantly reduces the amount of common costs that remain outside of the costing exercise.[6]

Q: Are the Verizon-filed incremental costs consistent with the Commission's loop criterion?

A: No. The incremental cost that Verizon presents include loop costs. Verizon witness Fulp states that their cost studies contain loop costs, and that Verizon does not believe that loop costs are common.[7]

Q: Is it possible to obtain a non-loop incremental cost estimate from the Verizon cost model?

A: Yes. The Verizon model generates a cost study results file that provides the investment for each cost function, such as loop, port, conversation (traffic sensitive usage), and transport. These investments can be entered separately into a spreadsheet. Then the investment for each function can be converted into monthly cost through the application of the model's annual charge factors. The results of these procedures are reported as Non-Loop TSLRIC in Exhibit RL-6C. Because TSLRIC is calculated on an unseparated basis, I developed state costs by multiplying the non-loop costs by the appropriate separations factor.

[5] In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98, First Report and Order, FCC 96-325, rel. August 8, 1996, (Local Competition Order), ¶ 678.
[6] Id.

Q: Are Verizon's Non-Loop incremental costs greater than current rates for basic services?

A: No. For each service, including Residential Premium Flat Service, the rate is above Verizon's Non-Loop incremental cost. By specifying that these are Verizon's estimates, I am stating that they are based on Verizon's default filing. For example, the estimates are based on Verizon's cost of capital and not on the cost of capital sponsored by Mr. Parcell on behalf of Public Counsel.

Q: Are the Verizon estimates based on busy hour usage?

A: No. The Verizon estimates are not based on busy hour usage. Instead they are based on annual usage. A comparison of busy hour usage and annual usage is provided in Exhibit RL-7C. On the basis of annual usage, residential usage is greater than the usage for all other classes. This usage pattern is responsible for the fact that residential non-loop cost is greater than the non-loop cost for business and key service. PBX service costs is above residential cost because of the higher port cost associated with PBX service. These conclusions are verified in Exhibit RL-8C that shows switch costs divided into port cost and conversation costs, where the conversation costs follows the usage pattern.

Q: Why is it important to base costs on busy hour usage?

A: Busy hour usage measures the maximum usage that will be placed on the switch in one instant of time. The switch must be built to provide that service. Thus, the capacity or investment in the switch must reflect busy hour usage. Annual usage

[7] Direct Testimony of Orville D. Fulp on behalf of Verizon Northwest Inc., Exhibit No. ___ (ODF-1T), p. 11, ll. 6-8.

reflects not only usage during the peak or busy hour but also usage during a non-peak period. Because non-peak usage has no impact on switch investment, non-peak use is not a cost causer of switch costs. A person can use the network for a full hour at 3:00 am and the carrier will not have to add any equipment to serve that customer. On the other hand, when there is an increase in usage during the busy hour, the carrier must increase the capacity of the switch.

Q: What is the basis for the annual usage pattern?

A: The annual usage pattern is based on Verizon's subscriber line usage study. That study provides the monthly average holding time and number of calls. The number of calls is multiplied by the average holding time and by 12 to determine annual usage. The PBX and Key annual usage patterns are averaged together to determine a single usage pattern for the two services.[8]

Q: What is the basis for the busy hour usage pattern?

A: The busy hour usage pattern is obtained from information in Verizon's WA_Specific Study Data –One Model file.[9] Because that information does not separate residential and business usage, I used the same busy usage measure for both services.[10] For PBX service, I used the average busy trunk usage. Following Verizon's convention, I adopted the PBX trunk usage as the usage pattern for the Key Trunk usage.

Q: Is it possible to alter the Verizon Vzcost model so that it estimates cost on a busy hour basis?

[8] Verizon filing, cd no. 2, WA Local msg aht stats.xls.
[9] Verizon filing cd no.2. WA Specific Data – One Model.xls.
[10] Verizon responses to Public Counsel/AARP data request no.s 739, 740, and 741.

A: Yes. To do so it is necessary to make the following changes to the model inputs. First, the busy hour to annual ratio (BHAR) must be set to 1. This adjustment assures that investment transferred from the switch model to Vzcost remains on a busy hour basis rather than being transformed into a per minute basis. Second, the number of months is set to one rather than 12 because the conversion from monthly statistics to annual statistics is no longer relevant. Finally, the average messages per month is adjusted so that the multiplication of the average messages per month times the average holding time per month equals the busy usage rather than the monthly usage.

Q: What is the result of running the Verizon model on a busy hour basis?

A: The results are shown in Exhibit RL-6C. The pattern of the results changes in three ways. First, residential becomes the lowest cost service. Second, PBX and Key trunk costs are now higher than their rates, implying that it is PBX and Key trunk services that are being subsidized. Third, PBX and Key trunk costs are five times higher than residential service.

Q: How can these new cost results be used as guidelines for pricing?

A: First, the new results show that residential service is not being subsidized and therefore, there is no economic argument on that basis for an increase in the residential rate. Second, the rate design pattern among the basic services should not be shifted to maintain or narrow the current differences between residential rates and the rates for all business services. Currently, PBX and Key rates are 2.67 times higher than residential premium flat service. Because the cost of PBX and Key services is five times higher than the residential rate, there is no reason to

impose a change in the rate structure that narrows the gap between the trunk service rates and the residential rate. However, if the Commission adopts the Verizon proposed equal absolute increase of $9.80, then the ratio of trunk rates to the residential rate decreases to 1.95. A reduction in this ratio occurs no matter what absolute increase the Commission adopts. For example if the increase is only $1.00 then the ratio decreases to 2.55. On the other hand, if the Commission adopts a 4 percent equal percentage increase then 2.67 ratio of trunk to residential rate is maintained. The 2.67 ratio is maintained even if the Commission adopts the Verizon proposed revenue increase, and imposes an equal percentage rate increase of 53.7 percent. Thus, my equal percentage rate change recommendation is more in line with the pattern of cost results than is the Verizon proposed equal absolute increase.

Q: Are your revised cost study results biased because they rely on apparent high PBX busy hour usage levels?

A: While my revised cost study results are dependent on high PBX busy hour usage level, they are not biased. I am using the exact same trunk busy hour usage estimate that Verizon used in determining its busy hour to annual ratio.[11] If my study is biased, it obtained that bias from Verizon's statistics and Verizon's study is biased because it relies on the same statistic.

VI. VZCOST AND THE DEFINITION OF TSLRIC

Q: What is TSLRIC?

[11] Verizon filing, cd 2, WA Specific Study Data – One Model\ Specific Demands.

A: TSLRIC is total service long run incremental cost. It measures the additional cost of providing a service. TSLRIC has three important components. First, the term, "total service," implies that increment of cost is the difference between providing the entire service and not providing the service at all. Thus, the increment is not a small increase such as a 2 percent increase of service demand or the increase in demand that is forecasted to occur over the next three years. For example, if the demand for a service is 1000 units annually, then a 2 percent increase, would imply that the incremental demand is 20 units, while a 2 percent increase each year over a three year period, would imply that the incremental demand is 61 units. However, if the incremental demand is the total service demand, then the incremental demand is the entire 1000 units. The term, "long run," refers to the fact that all costs are variable. Therefore, the incremental cost must include costs associated with the facilities used to provide the service as well as the wages and salaries paid to the carrier's employees. Finally, TSLRIC is measured on the basis of the forward-looking costs that an efficient competitive firm would incur, not on the basis of the embedded costs of existing carriers.

Q: What is the difference between TSLRIC and TELRIC?

A: TELRIC, the total elemental long run incremental cost, is the measure of the cost of a telecommunications network element. A network element is a facility or equipment used in the provision of a telecommunication service. Thus, the major difference between TSLRIC and TELRIC is that TSLRIC measures the cost of a service, while TELRIC measures the cost of an element.

Q: Has does Verizon define TSLRIC?

A: Verizon defines TSLRIC to be essentially the same as TELRIC. The similarities include the fact that both concepts: 1. Use the total demand for the service or element, 2. Develop long run costs that require the inclusion of capital costs, and 3. Capture the incremental costs associated with the service or element.[12]

Q: According to Verizon, how does TSLRIC differ from TELRIC?

A: TSLRIC differs from TELRIC in four essential ways. First, TSLRIC combines the TELRIC estimates to derive the costs related to the service. For example, the TSLRIC for residential service combines the loop, switch, port, and transportation UNES, while removing feature costs from the port cost. Second, within a particular UNE, the TSLRIC allocates cost associated with the service, such as allocating cable and structure costs, among residential and business services. Third, TSLRIC is based on total service demand rather than the entire demand for the element. Finally, TSLRIC uses service specific inputs, such as the service specific uncollectibles or retail costs.[13]

Q: Does Vzcost calculate TSLRIC for Verizon's services?

A: No. There are four reasons why Vzcost does not calculate TSLRIC. First, Vzcost is not a long run model because it relies on the embedded network design. Second, Vzcost is not a forward-looking model because it uses embedded expenses. Third, Vzcost is not an incremental model because it includes non-incremental portions of the network. Finally, Vzcost does not develop service specific retail costs.

[12] Direst Testimony of Kevin C. Collins, filed on behalf of Verizon Northwest Inc., Exhibit No. ___ (KCC-1T), page 5.
[13] Id. pages 6-8.

Q: How does the FCC define the term "long run" for the purpose of determining TELRIC?

A: The FCC defines the term "long run," in the context of "long run incremental cost," as a period long enough so that all of a firm's costs become variable or avoidable."[14] In addition, the FCC's Local Competition Order discusses three alternative plant designs. These include rebuilding the entire network, maintaining the existing network, and retaining the existing wire center locations while rebuilding the rest of the network. The FCC decided to use the third alternative, known as the scorched node network because it retains the wire center location as a node and rebuilds the rest of the network from scratch. Keeping the wire center location holds one variable constant and, therefore, FCC has made a modification, but just one modification, to the term, "long run."

Q: How does Vzcost design the network?

A: Vzcost begins with the geo-coded locations of the distribution terminals serving its customers and wire center locations. It also includes in its loop design algorithm the location of its SAIs (serving area interfaces) and control points.[15] Next it associates each distribution terminal with the SAI with which it is currently connected. If the terminal is not served through an SAI, then it is connected directly to the wire center through the nearest control point. The

[14] In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98, First Report and Order, FCC 96-325, rel. August 8, 1996, ¶ 677 ('Local Competition Order").

[15] A serving area interface, as known as a feeder/distribution interface, or a cross-connect box, is the facility that connects the feeder and distribution cables. "A control point is a location on a feeder route where facility quantities or types change – for example, where the cable size changes or where a cable branches." See VzLoop Cost Manual, page 13.

distances from the terminals to the SAIs are determined by a minimum spanning tree. The distance from the SAI to the wire center is measured along the linear path that connects all of the control points from the SAI to the wire center. By retaining the SAI and control point locations, Vzcost fails to construct a network according to the FCC requirement to use a scorched node approach because the retained SAIs and control points add thousands of additional nodes to the process. Therefore it retains the basic embedded design of the local network rather than using an efficient network design.

Q: How does Vzcost determine the number of DLCs (Digital Loop Carriers) that should be utilized?

A: Vzcost approach to DLC investment is to examine each existing feeder route, where a feeder route connects a distribution area with the wire center. Vzcost determines that a distribution area exists for each SAI and one additional distribution at the wire center. Therefore, the number of existing SAIs is closely linked to the number of DLCs. Along each feeder route Vzcost will place an initial DLC at nearest of:

1. The existing DLC that is closest to the wire center on that route,
2. The first SAI at which it is cheaper to place a fiber-fed DLC (including the cost of the fiber cable) than to place copper feeder cable,
3. The first SAI located more than 12,000 feet from the central office.[16]

[16] Verizon filing, CD #1, VzLoop Cost Manual, page 12.

Verizon will place additional DLCs to serve terminals that are greater than 12,000 feet from the previous DLC. Verizon will also place a DLC at specific high demand locations.

Q: What are the practical implications of Vzcost SAI and DLC design practices?

A: Vzcost will construct the number of SAIs and Digital Loop Carriers that its embedded network requires, plus it alleges that it will add DLCs such that no copper loop is longer than 12,000 feet, where it is cheaper to use fiber, and at special high demand locations. The total number of SAIs and DLCs may or may not be equal to the forward-looking number of facilities that a long run model would construct. In other words, Vzcost results in an inaccurate statement of costs of the network.

Q: Is there an independent source of information that could validate the reasonableness of the number of SAIs and DLCs included in the Vzcost results?

A: Yes. It is possible to use the FCC's Synthesis Model (SM) as an independent yardstick to measure the reasonableness of the HAI Model release 5.3 and Vzcost. The SM was adopted by the FCC to determine the cost of service for non-rural carriers in the FCC's universal service docket.[17] It is a forward-looking model based on the same principles that provide the foundation for the FCC's UNE pricing rules. Even though the SM was not developed to determine UNE rates, it has been used as a yardstick to measure the reasonableness of UNE rates in

[17] See In the Matter of Federal-State Joint Board on Universal Service, CC Docket No. 96-45, Tenth Report and Order, FCC 99-304, rel. November 2, 1999,("Inputs Order"); In the Matter of Federal-State

Section 271 proceedings.[18] Moreover, the FCC used a modified version of the SM in the Virginia Arbitration Order to determine loop UNEs. It stated that the SM is "(1) consistent with the Commission's TELRIC rules; (2) transparent and adjustable; and (3) verifiable."[19] It further noted that the SM "was designed and approved by the Commission (FCC), in part, specifically because it met these three criteria."[20]

Q: Please compare the Vzcost and SM SAI and DLC investment.

A: SM utilizes 1153 SAIs and 1096 DLCs in the GTE Washington service territory.[21] In those same GTE wire centers, Vzcost utilizes 2546 SAIs and 2074 DLCs. These results indicate that the retention of the embedded network design leads to an over-investment in SAI and DLC facilities, and overstates the incremental loop costs shared by all services.

Q: Why do you assert that Vzcost is not a forward-looking model?

A: Vzcost is not a forward-looking model because of its treatment of expenses. Through the use of its Forward-looking calibration and its algorithm for determining marketing and common expenses, Vzcost will always collect the embedded expenses rather than collect forward-looking expenses.

Joint Board on Universal Service, CC Docket No. 96-45, Fifth Report and Order, FCC 98-279, rel. October 28, 1998, ("Model Order").

[18] Inputs Order ,¶ 32; In the Matter of Review of the Commission's Rules Regarding the Pricing of Unbundled Network Elements and Resale of Service by Incumbent Local Exchange Carriers, WC Docket No. 03-173, Notice of Proposed Rulemaking, FCC 03-224, rel. September 15, ¶¶ 26-28.

[19] In the Matter of Petition of WorldCom, Inc., Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration, Memorandum Opinion and Order, DA 03-2738, rel. August 29, 2003, ¶ 49 ("Virginia Arbitration Order").

[20] Id. ¶ 50.

[21] See http://www.fcc.gov/wcb/tapd/hcpm/welcome.html, workfiles zip file. These values exclude SAIs and DLCs that are located in wire centers that do not appear in the Vzcost estimates.

Q: Please explain how the forward-looking calibration works.

A: To understand how the forward-looking calibration operates, it is necessary to examine how the model calculates direct expenses. The model calculates the direct expenses by using expense-to-investment factors times the forward looking investment. The Vzcost's expense-to-investment ratio is calculated as the ratio of the embedded expenses to adjusted embedded investments. The equation is:

(EE /AI) * FLI = FLE, Equation 1

where EE = embedded expenses,

AI= adjusted investment

FLI = forward looking investment

FLE= forward looking expenses

Adjusted investment, however, equals the embedded investment times the forward looking calibration factor.

The equation is:

AI = EI * FLC, Equation 2

where EI = the embedded investment

FLC = the forward looking calibration factor

The FLC is the ratio of the forward looking investment to the embedded investment.

The equation is:

FLC = FLI/EI Equation 3.

Substituting equation 3 into equation 2 generates the new equation 2a as follows:

AI = EI * (FLI/EI), Equation 2a.

Substituting equation 2a into equation 1 generates the new equation 1a as follows:

(EE/(EI*(FLI/EI))*FLI = FLE, Equation 1a.

Simplifying the terms in equation 1a, reduces the equation to:

EE = FLE or the embedded expenses equal forward looking expenses, the circular condition shows that Vzcost expenses are based on embedded expenses.[22]

Q: Did the FCC accept Verizon's use of the FLC to adjust expenses?

A: No. The FCC determined that the FLC introduced a circular effect into the determination of forward looking expenses. It found that expense calculations based on a FLC adjustment did not produce meaningful forward looking expenses and were inconsistent with the FCC's TELRIC pricing rules.[23]

Q: Why does the algorithm for determining marketing and common costs allow Verizon to collect its embedded marketing and common costs?

A: The marketing and common cost algorithms start from the ratios between embedded marketing and common cost to total cost of service. Using these ratios across all services allows Verizon to recover its embedded costs. If the total cost for any or all services changes, then the ratio will change in the opposite direction so that the multiplication of the service cost times the ratio arrives back at the starting position.

Q: Why is Vzcost not an incremental model?

[22] These equations demonstrate how the FLC is used in the TELRIC environment. In the TSLRIC environment, Verizon makes an additional adjustment to inflate embedded cost into a future period. Verizon, however, does not adjust its plant accounts in similar fashion. Therefore, there is an additional mismatch in the determination of the expense factor leading to factor that collects embedded costs plus an adjustment.

[23] Virginia Arbitration Order, ¶ 139-140.

A: Vzcost is not an incremental model because it includes loop cost in its incremental service costs. The loop cost is a common cost in the provision of all services. It is not an incremental cost of an individual service.

Q: Does Vzcost estimate the incremental cost of serving an entire group of customers?

A: No. The Vzcost loop estimates are not incremental loop estimates. Rather Vzcost allocates shared facilities among the customer classes. Such an allocation may be reasonable in a fully distributed embedded cost study but that allocation leads to over-estimation of customer class incremental loop costs. The incremental cost of the residential customer class will not include any shared costs with business customer classes because those costs must be incurred to provide service to the business classes even if all of the residential customers did not exist.

Q: Can you provide a more detailed explanation of the difference between an incremental cost study and Vzcost?

A: Yes. The following example illustrates how incremental customer loop costs should be developed. Assume a simplified telephone system with 700 residential customers and 300 business customers, and with the only cost of service the cost of the outside plant. The plant is installed such that there are five miles of joint plant, four miles of plant serving only residential customers and one mile of plant serving only business customers. A 20 percent annual charge factor is used to convert investment into cost. The annual charge factor allows for the recovery of profits, tax, depreciation and other expenses associated with the investment. The cost is the sum of the cost of the copper wire and the cost of digging the trench

into which the wire is placed. Table 1 calculates the investments and cost associated with the total plant. The cost per-foot for cable and wire and for trenching are from the FCC's Synthesis Model inputs. Table 1 calculates the investment by multiplying the distances in feet by the cost per foot. The total cost is $236,639 and the monthly cost per line is $19.72.

Table 1: Total Investment and Average Cost

Item	Distance	Price Per Foot	Investment/Cost
Cable			
Joint Use	26,400	$12.47	$329,208.00
Business Only	5,280	$4.60	$24,288.00
Residential Only	21,120	$9.51	$200,851.20
Cable subtotal			$554,347.20
Trench Investment	52,280	$11.91	$628,848
Total Investment			$1,183,195.20
Total Cost			$236,639.04
Monthly Cost Per Line			$19.72

The stand-alone costs include only the cost of serving one customer class. For business customers, the stand-alone costs are shown in Table 2 and for residential customers in Table 3. The stand-alone cable cost is less on a per foot basis because the carrier can purchase a smaller cable to serve the individual classes. The trenching cost per foot is the same because the same trench must be dug even though there are different sized cables placed into the trench. Note that the

distances for the trench and wire for each class include that part of the plant that is jointly used. Thus, the distances for the business customers are six miles, the five miles of jointly used plant and the one mile of dedicated plant, while the residential costs recover nine miles of investment, the sum of the five miles of the jointly used plant and the four miles of dedicated plant.

Table 2: Stand Alone Business Investment and Cost

Item	Distance	Price Per Foot	Investment/Cost
Business Only Cable	31,680	$4.60	$145,728.00
Trench	31,680	$11.91	$377,308.60
Total Investment			$523,036.80
Total Cost			$104,607.36
Monthly Cost Per Line			$29.06

Table 3: Stand Alone Residential Investment and Cost

Item	Distance	Price Per Foot	Investment/Cost
Residential Only Cable	47,520	$9.51	$51,915.20
Trench	47,520	$11.91	$565,963.20
Total Investment			$1,017,878.40
Total Cost			$203,575.68
Monthly Cost Per Line			$24.24

The stand-alone cost for business customers is $29.06, and for residential customers is $24.24. While the fact that business loop is higher than the residential loop cost may appear inconsistent with the common assertion about the relative cost of serving residential and business customers, the result is generated by the large amount of shared costs in this particular example. For business customers, the shared cost is allocated among 300 customers, while for residential customers, the shared cost is allocated among 700 customers. Because the shared cost is allocated among a larger customer group, the stand-alone residential cost is less than the stand-alone business; whether this result will be duplicated when examining Verizon's costs depends on the relative amount of shared to dedicated plant and the relative number of business to residential customers.

The incremental cost for business customers is shown in Table 4 and for residential customers in Table 5. The incremental cost is measured as the difference between the total cost and the stand-alone cost of providing service to the other customer class. The incremental cost is associated with the dedicated distance for each class and the cable investment in the joint used portion. For business customers, it is the dedicated one mile of trench and cable plus five miles of cable in the shared trench, and for residential customers, it is the four miles of dedicated trench and cable plus five miles of cable in the shared trench. The incremental loop cost for business customers is $9.18, and for residential customers, it is $15.72.

Table 4: Business Incremental Cost

Item	Cost
Total Joint Cost	$236,639.04
Residential Stand Alone Cost	$203,575.68
Business Incremental Cost	$33,063.36
Monthly Cost Per Line	$9.18

Table 5: Residential Incremental Cost

Item	Cost
Total Joint Cost	$236,639.04
Business Stand Alone Cost	$104,607.36
Residential Incremental Cost	$132,031.68
Monthly Cost Per Line	$15.72

Q: How would Vzcost estimate the incremental loop costs?

A: Vzcost would add the dedicated costs plus an allocated portion of the shared costs.[24] For business customers, its loop incremental cost equals the dedicated one mile of trench and cable plus 30 percent of the five miles of shared cable and trench cost. For residential customers, the incremental cost equals the four miles

of dedicated trench and cable plus 70 percent of the five miles of shared cable and trench cost. The 30 and 70 percent allocators are the percent of customer lines to total lines for each class. Therefore, the entire cost is allocated among the customer classes. This allocation is acceptable for fully distributed embedded cost studies. However, in an incremental study, the shared costs should not be allocated among the customer classes. The shared costs are part of the stand-alone cost of service. The stand-alone cost for both customer classes must include the cost of the shared trench. At the same time the shared cost is not part of the incremental cost for either customer class. Instead the shared costs should be identified separately as the difference between the total cost and the sum of the incremental cost estimates. The class incremental loop costs as estimated using the Vzcost method are $15.57 for the business class, and $21.50 for the residential class. The Vzcost estimates are higher than the proper incremental cost estimates of $9.18 for the business class and $15.72 for the residential class because the Verizon method includes the cost of the shared cable and trench.

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[24] See Verizon Response to Public Counsel/AARP Data Request No. 701.

Table 6: Business Incremental Cost (Verizon Method)

Item	Investment/Cost
Business Only Cable	$24,288.00
Business Share of Joint Cable	$98,762.40
Business Only Trench	$62,884.80
Business Share of Joint Trench	$94,327.20
Total Investment	$280,262.40
Total Cost	$56,052.48
Monthly Cost Per Line	$15.57

Table 7: Residential Incremental Cost (Verizon Method)

Item	Investment/Cost
Residential Only Cable	$200,851.20
Residential Share of Joint Cable	$230,445.60
Residential Only Trench	$251,539.20
Residential Share of Joint Trench	$220,096.80
Total Investment	$902,932.80
Total Cost	$180,586.56
Monthly Cost Per Line	$21.50

Q: How does Vzcost determine marketing costs?

A: Vzcost determines marketing costs through the use of expense-to-expense factors. These expense factors are developed on a total study basis. First, Verizon determines the revenue associated with all other costs, including the return on capital, depreciation, taxes, and maintenance. This revenue is the denominator of the expense factor ratio. The numerator is the marketing cost.[25] Then the same ratios (marketing and marketing other support) are applied to the cost associated with each type of investment for each service. Thus, the same ratios are used to determine marketing expenses associated with residential basic exchange services, residential features, packages, business exchange services, Centrex, etc. Therefore Vzcost does not develop service specific costs, rather it allocates total marketing costs to each service using study area specific marketing factors.[26]

Q: Is it possible to develop service specific marketing costs?

A: Service specific marketing costs can be developed for basic exchange residential and business services. These marketing costs can be developed by relying on the same Massachusetts cost study that the FCC used to develop marketing costs for its Synthesis Model.[27]Using that cost study I developed factors to allocate Vzcost's marketing costs. Applying those factors to Verizon's marketing costs generates a basic residential service marketing cost of **[BEGIN CONFIDENTIAL]**

[25] The numerator and denominators for marketing and marketing other support are defined slightly different. See Verizon filing cd #2, KCC-4, Cost Factor and Loading Manual, - Revised 200, pages 8-9.
[26] See Verizon Responses to Public Counsel/AARP Data Requests Nos. 719 and 734.
[27] In the Matter of the Federal-State Joint Board on Universal Service, CC Docket No. 96-45, Tenth Report and Order, FCC 99-304, rel. November 2, 1999, ¶¶ 406-407, and Appendix D-7.

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**********[END CONFIDENTIAL] The Vzcost values were calculated using the Vzcost study area wide factors and not service specific factors. Because it is more appropriate to use service specific factors and marketing costs, I recommend that my service specific costs be used instead of the Vzcost estimates in determining the TSLRIC for all basic residential and business services.

VII. MODIFICATIONS TO VZCOST

Q: Please summarize this section of your testimony.

A: I will further develop the modifications that must be made to Vzcost so that the model and its outputs can be used as a reasonable guide for ratemaking. In Section V above, I explained that it is necessary to change Vzcost so that it bases its switching cost on busy hour usage rather than annual usage. This change lines up the incremental cost estimates with cost causation because switch capacity is designed for busy hour usage. In this section, I will explain why other modifications to Vzcost are necessary and provide the results of these modifications.

Q: What other modifications are you proposing?

A: These modifications include changes to capital factors, loop inputs, the switch model, marketing and the removal of costs that are shared by business and residential customers.

Q: What capital factors are you changing?

A: I am changing the cost of money, asset service lives and net salvage percentages. I will use the 8.26 cost of money proposed by Public Counsel witness Parcell, and the currently authorized asset service lives and net salvage percentages. The service lives and net salvage percentages are the principal determinates of the annual depreciation charges.

Q: How do the capital factors affect model outcomes?

A: The capital factors transform the model estimated investments into monthly costs in a manner similar the way the mortgage interest rate and length of the mortgage change the purchase price of a house into a monthly payment. When you buy a house, a lower interest rate or a longer term (30 years vs. 20 year repayment) will reduce the monthly payment. In the model, a lower cost of money or a longer service life will reduce the incremental cost of service.

Q: What is the impact of your changes to the capital factors?

A: Using my proposed capital factors reduces the service incremental costs by 19 percent. For example, the Verizon default residential costs declines from **[BEGIN CONFIDENTIAL]** **********[END CONFIDENTIAL]** This result and the results for other services classes are reported in Exhibit RL-9C. The sum of the service incremental costs and customer class loop costs decrease by 22 percent. The Verizon default residential cost decreases from **[BEGIN CONFIDENTIAL]** **********[END CONFIDENTIAL]**. This result and the result for other service classes are shown in Exhibit RL-10C.

Q: What loop inputs changes are you proposing?

A: I am proposing changes to the distribution sizing factor, the percentage of lines served on Integrated DLC carriers, the structure sharing variables, and the average drop length.

Q: What is the sizing factor?

A: The sizing factor determines the required size of copper cables. The sizing factor is the ratio of the number of cable pairs used to meet current service to the number of cable pairs required to meet the ultimate demand for service. For example, if current demand for service requires 1.5 pairs per customer and the ultimate demand for service is 3 pairs per customer than the sizing factor would be 2. The current demand for service and the sizing factor are inputs to the model. The model multiplies the current demand by the sizing factor to determine the size of cables required.

Q: What sizing factor does Verizon use in its default Vzcost scenario?

A: Verizon uses a **[BEGIN CONFIDENTIAL]**

********** ********** **[END CONFIDENTIAL]**

Q: Is it reasonable to retain the Verizon sizing factor?

A: It is not reasonable to retain the Verizon sizing factor determining residential service loop costs. The number of second lines demanded by Verizon residential customers has decreased since December 2000. More importantly the percentage of customers with second lines has declined from **[BEGIN CONFIDENTIAL]**

**********[28] **[END CONFIDENTIAL]** Therefore, it is reasonable to reduce the residential customer ultimate demand for cable pairs. Using my assumption that the ultimate demand will not be greater than 2 pairs, I calculated that the sizing factor should be **[BEGIN CONFIDENTIAL]**********1.14 **END CONFIDENTIAL]**. I used my calculated sizing factor for determining residential class loop costs. However, for business customers, I retained the higher Verizon default sizing factor because business customers, in general, demand more lines.

Q: What is the difference between integrated DLCs and universal DLCs?

A: A DLC consists of a remote terminal (RT) located in the outside plant and a central office terminal (COT) located in the wire center. The major difference between the two systems lies in the functions performed by the COT. As explained in the Virginia Arbitration Order:

> Universal Digital Loop Carrier (UDLC) – With UDLC, the COT reverses the RT functions. That is the COT de-multiplexes from multiplexed fiber formats to individual DS-0s, converts these DS-0s to analog format, and transmits the analog format signals on copper pairs connecting to the switch via the Main Distribution Frame (MDF). The interface standard used in connecting the COT to the switch in an UDLC system is typically the TR-57 standard. UDLC systems are the oldest type of fiber-based DLC system, dating to the 1970's.
>
> Integrated Digital Loop Carrier (IDLC) – With IDLC, all or part of the COT function is built, or integrated, into the switch, and there is no conversion from DS-0 to analog format (as occurs in an UDLC system). Other stages of multiplexing, between DS1 and higher speed format, may

[28] See Verizon's Responses to Public Counsel and AARP Data Request Nos. 720 and 721.

either be built into the switch or provided in an external COT. IDLC systems were first developed in the 1980s.[29]

Q: What is the Verizon default percentage of integrated DLC?

A: Verzion assumes that **[BEGIN CONFIDENTIAL]**

** [END CONFIDENTIAL]**

Q: What is your alternative proposal with respect to the percent of integrated DLCs used in the model?

A: I am requiring that 100 percent of the DLCs should be integrated. This requirement matches the finding of the FCC in the Virginia Arbitration Case.[30] Verizon has argued that it still needs to install universal DLCs to provide UNE loop and special access services.[31] Even if Verizon's assertion is true, that claim is not relevant for determining the cost of loops that are used to provide basic services. These services can be provided on integrated DLCs and thus the cost of loops associated with these services should not include the higher costs of universal DLCs central office equipment.

Q: What is the drop distance?

A: The drop distance is the distance in feet from the Network Interface Device (NID) point at the customer's location to the distribution terminal that links the drop to the distribution cable.

Q: How does Vzcost estimate drop distances?

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[29] Virginia Arbitration Order, ¶ 305.
[30] Id. ¶¶ 312-318.

A: Vzcost assigns each wire center a buried drop distance and an aerial drop distance. These assignments are reported in the Master file. The assigned buried drop distances are **[BEGIN CONFIDENTIAL]** ********** **[END CONFIDENTIAL]** Using the demand reported in the Loop Demand file and the drop distances from the Master file, the weighted average distance is **[BEGIN CONFIDENTIAL] ********* [END CONFIDENTIAL]** The assigned distances were based on Verizon's engineering judgment.

Q: Is there an alternative source for drop distances?

A: Yes. The sponsors of the HAI model report that a national study found that the average drop distance was 73 feet. I prefer this estimate because it not biased towards a particular answer. A better way to develop this number would be to perform a statistically valid survey of the drops in the Verizon's service territory. Until such a survey has been completed, the national survey provides a useful guide for determining the local distances. Therefore, I changed the model drop distances so that the average distance equals 73 feet.

Q. What is structure sharing?

A. Structure sharing refers to the sharing of the investment and the cost of the structures that support cables. These structures are poles or trenches. Structure

[31] Verizon California, Inc., Panel Testimony on Recuring Costs – Supplemental Attachment Q-1, California Docket Nos. R. 93-04-003, I.93-04-002, April 2, 2004, page 52.

sharing occurs when multiple utilities share the same pole, such as the electric and the telephone companies.

Q: How does Vzcost model structure sharing among utilities?

A: In its Options File, Vzcost includes variables for the sharing of buried trenches and trenches in which conduit is placed. These variables are constant across all wire centers. For poles, the file contains two variables. The first variable determines the number of poles Verizon uses but does not own. The investment in foreign owned poles is not included in Verizon's investments. However, the number of foreign poles will affect the Verizon investments in the guy and anchor equipment used to secure poles. The second variable determines the percentage of Verizon owned poles that are shared with the electric company. This percentage determines the number of 40-foot poles and 1 minus this percentage determines the number of 30-foot poles that Verizon purchases.

Q: What level of sharing does Verizon assume?

A: Verizon assumes that there is no sharing of buried trenches, and very little sharing of conduit trenches. These assumptions determine the values of variables "SB" and "SC" in the Options file. There is a significant amount of pole sharing. However, when the model calculates pole cost, the annual capital factors are applied to all poles owned by Verizon, even though the rent collected on the shared poles should recover some of the capital costs. Pole rent payments and receipts are assigned to the pole expense factor. This factor, however, is set to zero, and therefore, there is no complete tracking of the pole rentals in the model.

Q. What reasons does Verizon provide for these sharing levels?

A. Verizon appears to rely on its current experience. Pole sharing is based on the percentage of poles it currently rents from the electric company. Trench sharing for buried cable is set to zero. Trenching for underground cable has occurred but not frequently.[32]

Q: Should a forward-looking model rely solely on historical information to determine structure sharing opportunities?

A: No. A forward-looking should consider the historical record but it should also recognize that the past will not determine the future. Concerns regarding the need to reduce cost and opportunities for sharing may be different in the future then they have been in the past.

Q: Is there an alternative basis for determining structure sharing percentages?

A: Yes. The FCC addressed this issue in two proceedings, the Inputs segment of the Universal Service docket and the Virginia arbitration docket. The Virginia arbitration docket is important because it directly involved another Verizon carrier. In the Virginia arbitration proceeding, the FCC determined that structure sharing would occur in every structure except for trenches for conduit in the lowest density zone. With regard to aerial plant, the FCC used a Verizon proposal that AT&T accepted as reasonable during the hearing. The Verizon proposal included a 50 percent allocation to the telephone company in the low density zones and a 35 percent allocation in the highest three density zones. For buried plant, the FCC used an AT&T proposal that allocated 33 percent of the plant to the telephone company. In the hearings, the Verizon witness accepted the

[32] Verizon proprietary cd #2, cost study support files\loop\options\waooshare.xls.

reasonableness of the AT&T buried sharing proposal.[33] For underground plant, the FCC adopted parts of the AT&T proposal and parts of the Verizon proposal. The selection was based on whether the input was closer to the input that the FCC adopted in its Inputs Order. The FCC choose to rely on the Inputs Order because it believes that the inputs adopted in that order were forward-looking and provide independent evidence of the best forward-looking estimate to adopt in the Virginia proceeding.[34] The underground percentages were 100, 97 and 97 percent for the lowest density zones and then 50 percent for all other density zones.

Q: What structure sharing percentages should the Commission adopt?

A: I recommend that the Commission adopt structure sharing percentages based on the two FCC proceedings. These proceedings determined a structure sharing percentage for each structure in nine density zones. Where there is a difference between the two decisions, I recommend that the Commission use the percentage that allows for the least sharing. For example, in density zone 4, the Inputs Order determined that the incumbent local exchange carrier was responsible for 65 percent of the structure, while in the Virginia Arbitration decision, the incumbent local exchange carrier was responsible for 33 percent of the structure.[35] My rule would adopt the 65 percent sharing percentage. This is a conservative rule that allows for the least amount of sharing and therefore, a higher incremental loop cost.

Q: How do you implement these density zone percentages in Vzcost?

[33] Virginia Arbitration Order, ¶ 282.
[34] Id, ¶¶283 & 287.
[35] Inputs Order, Appendix A; Virginia Arbitration Order, Appendix G.

A: Because Vzcost has one study area structure sharing variable rather than different variables for each density zone, it is necessary to determine a weighted average structure sharing percentage for each type of structure. The weighted average is based on the route distances in each wire center and the density of the wire center. Each wire center can be placed in a density zone using information from the Vzcost input files. The route distances by structure types can be calculated from information in the Verizon ARC file. Once the weighted average structure sharing values are determined, it is necessary to alter the Vzcost sharing variables so that those variables generate a Vzcost sharing activity that matches the calculated structure sharing values.

Q: What is the impact of the changes in loop inputs on the loop cost study estimates?

A: The incremental loop costs related to business services decreased by **[BEGIN CONFIDENTIAL]** ********** **[END CONFIDENTIAL]** The differential impact is due to two factors. First, because changes in conduit facilities costs have a relative greater impact on business services than residential services, increases in the sharing of these facilities reduced the business service cost by more than the reduction in residential service cost. Second, when poles are shared, Vzcost purchases a 40-foot pole rather than a 30-foot pole. The larger pole costs more than the shorter pole, and this cost increase offsets a cost reduction associated with increased pole sharing. Because changes in pole costs will have a relative greater impact on residential services than on business services, the costs associated with the larger poles reduced the

effect of increases in structure sharing for the residential services relative to the effect on business services.

Q: What modifications are you proposing to the switch model?

A: I am proposing to change the percentage of total lines served by Integrated digital loop carriers, the assignment of "line term c" to traffic sensitive rather than non-traffic sensitive cost. Further, there is a need to change the discount associated with the purchase of Lucent switches. However, at this time I do not have the information required to make that modification. Public Counsel has requested this information in data requests but it has not yet been provided.

Q: What percentages of lines are served by integrated DLC in the Verizon switch model?

A: The Verizon switch assumes that **[BEGIN CONFIDENTIAL]** ********** **[END CONFIDENTIAL]** of the lines attached to the switch are served by integrated DLCs.

Q: Is Verizon's assumption reasonable?

A: No. This assumption contradicts the output of the loop. The output of the loop model shows that **[BEGIN CONFIDENTIAL]** **[END CONFIDENTIAL]** percent of the loops are served via DLCs. Therefore, to match the loop models results I altered the switch model inputs accordingly.

Q: Why did you transfer "line term c" costs to the nontraffic sensitive part of the switch cost calculation?

A: **"**Line term c" are costs associated with the traffic sensitive parts of the switch. The Switching cost manual states:

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Therefore, including these costs with the traffic sensitive part of the switch cost calculation reflects the cost causation pattern of the costs. The Vzcost convention, treating these costs as non-traffic sensitive, transfers cost in contradiction to the manner in which these costs are generated.

Q: What is the impact of the switch modifications?

A: The switch modification causes small decreases in cost for the residential and basic business service, while increase in the incremental cost for PBX and Key trunks by 17 to 19 percent. This differential response reflects the different relative importance of non-traffic (port costs) and traffic sensitive (conversation costs) among the services. For residential and basic business service, non-traffic sensitive costs and traffic sensitive costs are similar thus, transferring "line term c" to traffic sensitive costs, increases their traffic sensitive cost by approximately the same amount as the reduction in non-traffic sensitive costs. However, with PBX and Key trunks, the traffic sensitive costs make up a relatively larger part of

[36] Verizon filing, cd #6, SCIS Manual, SCIS/MO – 5ESS, Section 3, page D9.

their switch costs. Thus, the transfer of "line term c" costs results in the 17 to 19 percent cost increase. These increases are the percentage differences in the values reported in Exhibit RL-6C, columns (d) and (e).

Q: What is the marketing modification?

A: The marketing modification reflects the difference between the service specific marketing costs derived above in Section VI, and Verizon's allocation of marketing expenses based on each services network costs. A comparison of the service specific costs to the marketing costs developed by Verizon is shown in Exhibit RL-11C. The increase in the reported PBX marketing cost from the default value of **[BEGIN CONFIDENTIAL]**

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[END CONFIDENTIAL] Marketing costs should not increase simply because investment used to provide a service increases, but in Vzcost, marketing will do just that. Instead, marketing costs should be determined by those marketing activities directly related to each service. By combining information from the Massachusetts study and Verizon's input values, I was able to directly relate marketing costs to basic service classes. I assigned those marketing costs that are reported in Exhibit RL-11C to each service.

Q: What are the costs that are shared by residential and business customers?

A: These costs include the costs of poles, conduits, trenches and the cost of installing cable on poles and in trenches, where the facilities are used to provide service to

both residential and business customers. These costs are not incremental to provision of service to either class of customers. If the cost exercise is to determine the incremental cost of residential service then these costs would not be part of that incremental cost because they would be incurred to provide service to business customers even if there were no residential customers. In Section VI above, I provided an illustration that shows the importance of excluding these shared costs. In that illustration, residential incremental cost 27 percent less than the costs reported using the Verizon costing method.

Q: Is it possible to modify the Vzcost loop costs to exclude the costs that are shared by the residential and business classes.

A: Yes. First, based on information in the Verizon ARC table,[37] I identified the structure distances where residential and business service is provided together and where only residential service or only business service is provided. Second, from the Verizon Elements table,[38] I identified the investment and installation costs associated with each cable and wire account. Third, I combined the information from the two tables to determine the percentage of investment in each account that is shared by residential and business and is incremental to each service. Fourth, I used these percentages to eliminate the shared costs from the Verizon cost estimates.

Q: What is the impact of the elimination of the shared cost on the customer class loop costs?

[37] Verizon filing, cd#4\output\looparc_wa_07_calc2_1215.csv.
[38] Verizon filing, cd#4\output\loopelmnts_wa_07calc2_1215.csv.

A: The residential customer class loop costs decreased by 22 percent from **[BEGIN CONFIDENTIAL]** ********** **[END CONFIDENTIAL]** The business flat customer class loop costs decreased by 30 percent from **[BEGIN CONFIDENTIAL]** ********** **[END CONFIDENTIAL]** These results and the results for the PBX and Key trunks are reported in Exhibit RL-12C.

Q: What is the overall result of your modifications of the Vzcost model for purposes of rate design/rate spread in this case?

A: Five important conclusions can be drawn from examining the results of these modifications.

First, residential incremental cost is below the current $13.00 rate for residential one-party flat service. Therefore, the residential customers are not receiving a subsidy under the current rate structure.

Second, the proper use of cost causation principles implies that switch costs should be assigned on the basis of busy hour usage rather than annual usage. Modifying the incremental costs so that switch costs are assigned on a busy hour basis dramatically changes the pattern of non-loop incremental costs. When using annual usage, residential service cost is greater than business flat service cost, PBX and Key service costs. After changing to busy hour usage to allocate switch cost, residential service cost is below the business service cost, and below the PBX and Key trunk costs by a multiple of five. Given that trunk service costs are substantially higher than residential costs, and greater than the relative level of current rates among these services, the relative level of rates should not be reduced. This implies that an equal absolute increase in rates, as proposed by

Verizon is wrong because such an increase will reduce the relative PBX to residential service rate. Instead, an equal percentage increase (or decrease depending on the Commission's revenue decision) in rates should be adopted because it will maintain the relative level of rates and thus, is closer to the relative cost structure than the Verizon proposal.

Third, the cost of money and the depreciation factors have a substantial impact on the incremental cost of service. Adopting Public Counsel's proposals for these variables leads to a reasonable level of incremental cost estimates.

Fourth, the Verizon method for determining service marketing cost is flawed. It mandates that marketing costs must be calculated in proportion to network costs. By doing so, Vzcost over-estimates residential marketing costs and therefore, improperly increasing residential service incremental costs.

Fifth, Verizon over-estimates incremental loop costs. This over-estimation is caused by its failure to include forward-looking structure sharing percentages, a proper residential sizing factor, and the correct proportion of integrated DLCs, and retaining significant amounts of shared costs in its incremental cost estimates. Because loop incremental costs are shared among all services, they should not have immediate an impact on class of services rates. However, because Verizon argues that loop costs are not shared costs, I have shown that its proposed loop cost estimates are too high. Moreover, even if loop costs are shared among all services, the existence of high loop costs could be considered to be a justification to increase some, if not all, of the rates for those services that use the loop. The

lower modified loop cost eliminates the requirement to increase these service rates.

VIII. RESIDENTIAL RATE COMPARISONS

Q: Describe the residential rate comparison that Verizon uses to support its proposed residential rate?

A: Verizon compared its proposed residential rate to the current residential rate of other Washington carriers. It noted that some carriers have rates that are higher than its proposed rates. That statement implies that its proposal is reasonable because other carriers have higher rates.

Q: Please comment on the survey?

A: The survey results show that rates were higher than the proposed Verizon rates in only 11 of approximately 366 Washington state wire centers. These wire centers are served by five rural carriers.

Q: Is it appropriate to compare the rates for rural Washington carriers to the rates for Verizon?

A: No. Rural carriers have different line counts and different costs than Verizon. Moreover, the rural carriers receive significant amounts of universal service funding from the federal universal service fund to support their state rates. This support varies from zero to $102.97 per month per line. The average rural carrier support is $6.69 per month per line, while Verizon does not receive any universal service support for its state rates. Support by carrier is shown in Exhibit RL-13.

Q: Can you compare Verizon's rates to other carriers' rates?

A: Yes. The FCC publishes the average residential rates for local service in Urban Areas. The carriers serving these areas have large study areas and are part of large holding companies such as Verizon. As of October 15, 2003, the average residential rate was $14.57 and the average subscriber line charge was $5.91, for a total of $20.58. These rates are similar to Verizon's current $13.00 local rate and $6.50 subscriber line charge, or a total of $19.50. Thus, Verizon's current rates appear to be reasonable when compared to the national average rate and Verizon's proposed increase would lead to its residential customers paying rates that are substantially above the national average rate.

IX. CONCLUSIONS AND RECOMMENDCATIONS

Q: Please summarize your conclusions and recommendations in this case.

A: I recommend that the Commission adopt the following guidelines and principles in determining rates and the rate design in this proceeding:

- If the Commission decides to increase Verizon's revenue, it should adopt the recommended "other services" rate increases prior to increasing the rates for any basic services or special access services.
- If the Commission's decision to increase Verizon's revenue is greater than the revenue from "other services", then it should adopt an equal percentage rate increase for basic and special access services rates
- If the Commission decides to decrease Verizon's revenue, then it should adopt an equal percentage rate decrease for basic and special access service rates.

- Incremental service costs should be determined according to the Commission's incremental cost criteria. Therefore, loop costs should be excluded from service incremental cost estimates.
- Switching costs should be determined on a cost causative basis. This principle implies that switch costs should be determined using busy hour usage patterns rather than Verizon's proposed annual usage patterns.
- The properly estimated service incremental costs for residential and business services support a retention of the current relative business and residential rate levels. Therefore, an equal percentage basic service rate increase or decrease is appropriate because such a change is in accord with the relative cost estimates.
- Verizon's proposed incremental estimates should be not used as the basis for rate design because they are not based on cost causative principles and they include the shared loop costs.
- Verizon's incremental loop costs estimates are not indicative of a need to increase rates because they are not based on forward-looking inputs and include costs shared among the business and residential services.
- Verizon's comparison of its rates to the rates of other Washington state carriers is not reasonable because those other carriers have different cost structures and receive large amounts of universal service revenue.
- Verizon's current rates are similar to the national average rates for other urban carriers. Therefore, if the Commission wishes to use a rate comparison as a

guide to designing residential rates, the proper comparison shows that the current residential rate is reasonable.

Q: Does this conclude your testimony?

A: Yes.