Exhibit No. _______ (KCC - 3T)
Docket No. UT – 003013 – Phase B

BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In The Matter Of The Continued	**)**	
Costing And Pricing Of Unbundled	**)**	**DOCKET NO. UT - 003013**
Network Elements, Transport,	**)**	**PHASE B**
Termination, And Resale	**)**	

PHASE B REBUTTAL TESTIMONY OF

KEVIN C. COLLINS

STAFF MANAGER – ECONOMIC ISSUES

ON BEHALF OF

VERIZON NORTHWEST INC.

SUBJECT: COSTS SUPPORTING MRCS

FEBRUARY 7, 2001

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Kevin C. Collins. My business address is 711 Van Ness, Suite 300, San Francisco, CA 94102.

Q. ARE YOU THE SAME KEVIN C. COLLINS WHO FILED PHASE B DIRECT TESTIMONY IN THIS DOCKET?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to respond to recurring cost issues raised by Mssrs. Klick, Pitkin, and Weiss (Joint Intervenors), Ms. Baker (AT&T), Mr. Spinks and Dr. Blackmon (Staff), Mr. Cabe (Rhythms/Covad), and Mr. Starkey (Focal/XO Washington).

II. RESPONSE TO KLICK/PITKIN AND WEISS

Q. DO YOU AGREE WITH MR. KLICK/PITKIN'S ASSERTION (AT PG. 13) THAT VERIZON'S STUDIES ARE INCONSISTENT WITH PRIOR COMMISSION DECISIONS ON THE NATURE OF TELRIC?

A. No. In my Phase B Direct Testimony, I explain in some detail how ICM is a company-specific model designed to model the long-run forward-looking cost of providing service in Verizon's unique service territory in Washington. I also explain how ICM assumes that the network is built all at once with all new plant and technology. Ironically, Mr. Klick/Pitkin include in their testimony cites from this Commission's Eighth Supplemental Order that serve to invalidate their criticism of ICM. For example, paragraph 10 of that order outlines the TELRIC methodology as follows:

1) **assumes the use of best available technology within the limits of existing network facilities;**

   ICM starts with existing node locations and builds a network that includes 100% digital switching, fiber-fed DLCs, and SONET rings.

2) **makes realistic assumptions about capacity utilization rates, spare capacity, field conditions, and fill factors;**

   ICM builds an entire network according to Verizon's current engineering practices and guidelines that reflect the unique demand and environmental characteristics of Verizon's serving territory in Washington.

3) **employs a forward-looking, risk-adjusted cost of capital;**

   Although Verizon advocates a forward-looking, risk-adjusted cost of capital of 12.737 percent, the cost of capital used in this filing is the one prescribed by this Commission in Docket No. UT-960369, et al. (See Tab 14, pg. 14_049)

4) uses economic depreciation rates for capital recovery;

Although Verizon advocates the use of economic depreciation rates, the depreciation rates used in Verizon's ICM study are those prescribed in Docket No. UT-960369, et al.[1] (See Tab 14, pg. 14_046)

5) properly attributes indirect expenses to network elements on a cost-causative basis.

Indirect expenses are causally attributed to network elements as described in the expense module documentation accompanying my Phase B Direct Testimony and as described in the Phase B Direct Testimony of Mr. Joe Abs.

Q. MR. KLICK/PITKIN GO ON TO ARGUE THAT VERIZON'S COST STUDIES ASSUME THAT "VERIZON'S EXISTING NETWORK AND FACILITIES ARE A GOOD ESTIMATE OF HOW AN EFFICIENT ILEC WOULD MEET CURRENT AND FUTURE DEMAND OVER THE LONG RUN"(AT PG. 13). IS THIS AN ACCURATE CHARACTERIZATION OF ICM?

A. No. While ICM does reflect certain characteristics of the current network such as node locations, terrain, and customer locations, it does not simply use the current facilities in place to construct the network. ICM models the network as if it is all built at once, using all new plant and technology. The modeled network is designed

[1]As I indicated in my Phase B direct testimony, Verizon's UNE costs should be adjusted to reflect the depreciation rates adopted in Docket No. UT-992009 prior to the Commission setting rates in this proceeding.

to meet the transmission parameters required for voice grade services as well as services requiring transmission speeds up to 6 mbps. For example, ICM constrains copper loop lengths to 12kft by placing fiber fed digital loop carriers ("DLCs") even though Verizon's existing network has long copper loops (i.e., > 12kft). ICM also constructs SONET rings to provide interoffice transport even though that technology is not in place today in all areas.

Q. MR. KLICK/PITKIN STATE THAT "VERIZON CONTINUES TO USE GTD-5 SWITCHES, EVEN THOUGH IT IS WIDELY ACKNOWLEDGED THAT THESE SWITCHES ARE NOT CONSISTENT WITH LEAST-COST FORWARD-LOOKING TECHNOLOGY" (AT PG. 13). IS THIS AN ACCURATE STATEMENT?

A. The only accurate part of the statement is that Verizon does use GTD-5 switches. However, Mr. Klick/Pitkin's characterization of the GTD-5 as not being a least-cost forward-looking technology is incorrect. Although Mr. Klick/Pitkin provide no basis for the assertion that the GTD-5 is not a least-cost forward-looking technology, I suspect that it has its origin in rumors spread in the mid 1990s that the switch vendor was no longer supporting the GTD-5. During that time the GTD-5 was not capable of supporting ISDN BRI service, which was an area of concern. However, the GTD-5 is now ISDN BRI-capable and the switch is continuing to be developed along with the 5ESS (both owned by Lucent).

Q. WOULD THE FACT THAT VERIZON IS NOT CURRENTLY PURCHASING ANY GTD-5 BASE UNITS FOR PLACEMENT IN ITS WASHINGTON NETWORK INDICATE THAT THE GTD-5 IS NOT A FORWARD-LOOKING TECHNOLOGY?

A. Absolutely not. Verizon is not buying any new base units in Washington (e.g. DMS-100, 5ESS, GTD-5) because its network is already 100% digital.

Q. DO YOU AGREE THAT THE INCLUSION OF SPARE CAPACITY IN VERIZON'S COST STUDIES CONSTITUTES AN INEFFICIENCY THAT IS BUILT INTO ITS TELRIC CALCULATIONS?

A. No. Mr. Klick/Pitkin are trying to argue that inclusion of spare capacity required to serve future demand forces today's customers to subsidize customers who will enter the market in the future. This same flawed argument has already been rejected by the California Commission in D.96-08-021 (R.93-04-003, I.93-04-002) and was twice rejected by this Commission. In Docket No. UT-960369 et al. The Commission rejected the argument made by Dr. Cornell, on behalf of AT&T, that spare capacity placed to serve future demand is not appropriately part of TELRIC. In the Eighth Supplemental Order, in Docket No. UT-960369 et al, this Commission clearly stated that "it is not appropriate to use the objective fill rate in TELRIC studies….Whereas the objective fill is greater than the actual and projected fill rate, the use of an objective fill is contrary to the concept of deriving TELRIC" (at ¶171).

In Docket No. UT-980311(a), Dr. Zepp, on behalf of TRACER, put forth the same argument, which was rejected. After considering the evidence, the Commission ruled as follows:

> We do not accept TRACER's proposed adjustment for growth. This matter was litigated in the generic cost docket. TRACER's proposal is essentially identical to the proposal made by ATT/MCI witness Cornell in the generic docket. See, Docket No. UT-960369, ex. 1, pp. 33-35. We see no reason to change our position regarding fill rates that we adopted in the Eighth Supplemental Order at Pars. 172-73. Tenth Supplemental Order – Docket No. UT-980311(a).

Q. MR. KLICK/PITKIN DISAGREE WITH THE STATEMENT ON PAGE 23 OF YOUR DIRECT TESTIMONY THAT "VERIZON'S NETWORK AND ANY REAL-WORLD NETWORK EVOLVE THROUGH TIME AND REFLECT A MIX OF TECHNOLOGIES, SOME OF WHICH ARE NO LONGER FORWARD-LOOKING. NEITHER VERIZON NOR ANY OTHER BUSINESS IMMEDIATELY REPLACES ITS PLANT OR TECHNOLOGY WHENEVER A NEW PRODUCT OR TECHNOLOGY ENTERS THE MARKET." DOES THEIR DISAGREEMENT WITH THIS STATEMENT HAVE ANY BEARING ON THE VALIDITY OF VERIZON'S TELRIC STUDIES?

A. No. Mr. Klick/Pitkin entirely miss the point here. They characterize the discussion in my Phase B Direct Testimony as being evidence of an inefficiency that is included in Verizon's TELRIC studies. A careful reading of my Phase B Direct Testimony (at pg. 23) reveals that I was simply pointing out an area where Verizon's calculation of a TELRIC, in accordance with existing TELRIC principles, fails to account for all of its actual costs by failing to reflect some of the realities that all companies face.

Q. MR. KLICK/PITKIN EXPRESS THEIR CONCERN THAT VERIZON IS "LAYING THE GROUNDWORK FOR A FUTURE PROCESS THAT WILL BUILD INTO VERIZON'S TELRIC CALCULATIONS A DOUBLE-COUNT OF INFLATION" (AT PG. 20). IS THIS A VALID CONCERN?

A. No. Not at all. First, the basis upon which Mr. Klick/Pitkin attempt to build their flawed double-counting argument is false. Mr. Klick/Pitkin give the impression that they are citing my Phase B Direct Testimony when they state, "Verizon witness Collins explains, at length, how the ICM indexes 1998 investment using the telephone plant indexes in order to develop what he calls "forward-looking" investment" (at pg. 20). However, I do not make any such statements in my Phase B Direct Testimony. ICM does not perform any indexing when determining the investment levels for network plant used in the model to calculate TELRIC. I state clearly on page 8 of my Phase B Direct Testimony that "material cost inputs to ICM are based on actual contracts with vendors, and the labor costs are based on GTE's experience of what labor activities actually cost in Washington." The material and labor cost inputs in ICM simply reflect the cost that Verizon would pay today if it were to build a network.

The second flaw in Mr. Klick/Pitkin's argument is that in order for their numerical examples to work, Mr. Klick/Pitkin must violate basic TELRIC principles. This violation becomes evident on page 25, which states "if the nominal cost of capital is used and ILECs are nevertheless allowed to submit "updated" material and labor prices before year 10 (in year 5, for example), they will have over-recovered the total investment made to construct the network being used to develop TELRIC." Implicit in this statement is the assumption that somehow the network "built" in today's TELRIC studies should be held constant until the end of its useful life. This is a clear violation of the "long-run" costing principle of TELRIC. Long-run studies require that the firm in question not be constrained in terms of the size and type of plant. However, Mr. Klick/Pitkin would have us believe that the long-run forward-looking network constructed for today's TELRIC study will still be the long-run forward-looking network five or ten years from now. For example, a TELRIC study three years from today (assuming TELRIC is ruled to be a valid costing methodology at that time) would require all new inputs for material, labor, depreciation, rate of return, etc. The hypothetical network would be constructed using technologies that are forward-looking at that time. A TELRIC would not keep the same network that was conceptually built three years prior and it would not assume that the plant in place is three years old with seven years of life remaining. This violation of TELRIC principles is inconsistent with earlier parts of Mr. Klick/Pitkin's testimony that support TELRIC principles.

Q. MR. KLICK/PITKIN CRITICIZE VERIZON'S USE OF ICM TO DEVELOP SUBLOOP UNBUNDLING PERCENTAGES BY CLAIMING THAT ICM IS NOT CONSISTENT WITH THE THREE MODELS RELIED UPON BY THE

COMMISSION TO ESTABLISH THE INITIAL LOOP RATE (AT PG .33). IS THIS A VALID CRITICISM?

A. No. ICM provides a sound basis upon which to determine subloop percentages. From a modeling perspective Mr. Klick/Pitkin are essentially correct that ICM is different from the models considered in the general cost docket. ICM's different design and characteristics provide it with an advantage over the other models, each of which had shortcomings that led this Commission to choose not to endorse any one of them. In the Eighth Supplemental order (at Par. 35) the Commission stated that "we conclude that none of the current versions of the models should be adopted for use in future proceedings." In the 36th and 37th paragraphs of that order the Commission indicates a desire to have models that are open to review with inputs that can be validated. As I discuss at some length in my Phase B Direct Testimony, ICM is completely open to inspection, including the model code and all preprocessing functions (at pg.10). I also describe ICM's superior testing capabilities, which allow model reviewers to test both intermediate and final outputs (at pgs. 11-13). In addition, the sources (e.g. contracts, engineering guidelines, etc.) are included with the filing package accompanying my Phase B Direct Testimony. Had ICM been constructed to be no better than the other three models, then Mr. Klick/Pitkin might have a valid point. However, this is clearly not the case. ICM's vast superiority in the areas of openness, flexibility, testability, and network design provide this Commission with the type of model it can endorse, which was not available to it in the previous generic cost docket (UT-960369, et al). In addition, the

Commission contemplated that it would receive new and updated studies in future dockets (Eighth Supplemental Order at par. 35).

Q. MR. KLICK/PITKIN CLAIM THAT ICM'S GENERATION OF A DS-0 LOOP COST OF (CONFIDENTIAL) (WHICH IS 25% HIGHER THAN THE $20.30 DEVELOPED BY THE COMMISSION) "SUGGESTS THAT, AS A GENERAL PROPOSITION, THE ICM DEPARTS SIGNIFICANTLY FROM THE LOOP COSTING METHODOLOGIES AND INPUTS THE COMMISSION HAS PREVIOUSLY ADOPTED" (AT PG. 38). IS THIS A VALID CRITICISM?

A. No. Not at all. First, ICM does not generate a DS-0 loop cost of **(Confidential)**. It simply presents the separate costs of the subloop components of a 2-wire loop. Mr. Klick/Pitkin incorrectly add the separate costs for feeder, distribution, drop, and NID to get to the **(Confidential)** figure. However, the separate distribution cost already includes the cost of the drop and NID. As a result, the cost for these items has been double-counted by Mr. Klick/Pitkin. The ICM cost for a complete loop was not presented in this case since the cost has already been determined by the Commission in the previous generic cost docket. ICM was used to simply identify the share of the total loop cost for each of the subloop components. Consequently, the loop cost difference between ICM and the loop costs adopted in the previous generic cost docket provides no basis whatsoever for the claim made by Mr. Klick/Pitkin.

Q. MR. KLICK/PITKIN ARGUE (AT PGS. 19 & 34) THAT THE COMMISSION SHOULD PROHIBIT THE ILECS FROM ASSESSING ADDITIONAL CHARGES FOR VERTICAL SERVICES. DOES THIS ARGUMENT MAKE SENSE FROM A COSTING PERSPECTIVE?

A. No. Ignoring the cost of vertical services would constitute a violation of the principle of cost causality. Vertical features do indeed utilize switching resources in order to function. Although Mr. Klick/Pitkin cite the Eighth Supplemental order in support of their argument to ignore these costs, they do not recognize that the Commission has not ruled out the "possibility that in some future proceeding, a separate charge for vertical features could be established" (at ¶282). Perhaps the most obvious example of where vertical features have separate identifiable costs is where investment in separate pieces of equipment is necessary in order to allow the feature to function. The following are several examples of features that require Verizon to separately purchase equipment from the switch vendor :

1. Three-Way Calling;
2. Distinctive Ringing/Call Waiting;
3. Selective Call Rejection;
4. Selective Call Forwarding;
5. Selective Call Acceptance;
6. Direct Inward Dialing;
7. Call Transfer Individual All Calls;
8. Add-on-Consultation Hold Incoming Only;
9. Directed Call Pick-Up with Barge-In;
10. Special Intercept Announcements;
11. Conference Calling-6-Way Station;
12. Fixed Night Service-Key;
13. Attendant Conference;
14. Stop Hunt Key;
15. Make Busy Key;
16. Tie Facility Access;

17. Foreign Exchange Facilities;
18. Loudspeaker Paging;
19. Recorded Telephone Dictation;
20. Code Calling;
21. Attendant Recall from Satellite; and
22. Attendant Position Busy.

In addition to the special equipment that Verizon must purchase for the above features, the vendor contracts are structured such that Verizon must pay separately for hardware and software. That is, Verizon pays for switch hardware out of one contract and for feature software out of another contract. Thus, the principle of cost causality requires that costs that arise from the existence of switch features (i.e., software and feature-specific hardware) be associated with switch features. These feature-related costs are in addition to costs that arise from a feature's use of the switch processor.

Q. MR. KLICK/PITKIN ARGUE THAT IT IS INAPPROPRIATE TO PROPOSE COST BASED DS-1 AND DS-3 RATES BASED UPON NEW STUDIES BECAUSE THE "COST MODEL RUNS RELIED UPON BY THIS COMMISSION IN THE PREVIOUS GENERIC COST DOCKET ALREADY INCLUDED DS-1 AND DS-3 LOOPS" (AT PG. 35). DO YOU AGREE?

A. No. I am not aware of any DS-1 or DS-3 loop costs being established in the previous generic cost docket. While the demand for such loops may have been included in the various loop models, they were likely included for the purpose of reflecting the appropriate economies of scale in calculating UNE loop costs. Mr. Klick/Pitkin refer to the issue of derived circuits in their argument (Eighth Supplemental Order at par.

205), but this issue dealt with a flaw in the Hatfield Model. Embedded in that model's structure is an inappropriate calculation of the per line loop cost. That is, the model sums the total investment and cost for all loops and divides by a total loop count that includes derived channels in the denominator. In essence, this flaw spreads the cost of the appropriate amount of copper facilities over a loop count that includes "phantom" loops (i.e., derived channels).

This can be illustrated by the following simple example. Assume that there are only two loops, a copper voice grade loop and a copper DS-1 loop, each of which costs $25 for the outside plant portion (i.e., DS-1 circuit equipment is ignored for simplicity). With a total loop cost of $50, the Hatfield model would calculate a UNE loop cost by dividing the $50 by 25 (1 voice grade loop plus a DS-1 loop with 24 voice grade channels) to yield a UNE loop cost of $2. Following the Hatfield methodology to its logically absurd conclusion, the DS-1 cost from the Hatfield model would have to be $48 (24 x $2). Similarly, if the Hatfield model were to generate a UNE loop cost of $15 for Verizon, then the DS-1 loop cost from that model would have to be $360 ($15 x 24). The Commission was correct in pointing out this failure of the Hatfield model to properly reflect the underlying cost drivers for loops.

ICM, on the other hand, does not have this problem. In ICM, the copper portions of voice grade and DS-1 loops are costed in the manner in which the costs are incurred. That is, if a voice grade UNE loop and a DS-1 loop require the same type and amount of copper plant, then they will both have the same cable and structure cost. In the case where a voice grade UNE loop and a DS-1 loop are provided via fiber fed DLC, the costs will differ in accordance with the primary cost driver (i.e., the amount of capacity required over the fiber facility). A voice grade UNE loop requires only one channel over the fiber facility while the DS-1 loop requires 24 channels of the fiber circuit capacity.

Q. HAS MR. KLICK/PITKIN PROVIDED ANY EVIDENCE TO SUGGEST THAT VERIZON'S DS-1 LOOP COST IS OVERSTATED?

A. No. Mr. Klick/Pitkin attempt to criticize Verizon's DS-1 loop cost study using three flawed arguments. First, as I discussed previously, Mr. Klick/Pitkin attempt to question the use of ICM through the incorrect claim that ICM produces a loop cost that is 28% higher than that adopted by the Commission in the previous generic cost docket. ICM does not produce a 2-wire loop cost that is 28% higher than the $20.30 cost adopted by the Commission. As I stated above, Mr. Klick/Pitkin double-counted NID and drop costs in order to arrive at the **(Confidential)** loop cost figure they claim that ICM produces.

The second flawed argument centers around the way in which DS-1 costs are developed within ICM. As I previously discussed, ICM is designed to calculate loop costs in accordance with the underlying loop cost drivers. Mr. Klick/Pitkin argue that ICM should not assign "24 times the fiber feeder and structure investment than the ICM assigns to 2-wire DS-0 loops." They claim that this violates the Commission's earlier findings that structure should not be allocated to DS-1 and DS-3 lines on the basis of DS-0 equivalents. What Mr. Klick/Pitkin fail to consider here is that the Commission's prior findings in this area dealt specifically with the flaw found in the Hatfield model. ICM does not have this flaw. It appropriately assigns loop cost in accordance with the underlying loop cost drivers. When voice grade UNE loops and DS-1 loops use the same type and amount of copper facilities, they are both assigned the same cost. When voice grade UNE loops and DS-1 loops use fiber feeder facilities, they are assigned cost in a manner that reflect the amount of the fiber circuit capacity required. In addition, Mr. Klick/Pitkin complain that the version of ICM provided by Verizon does not allow them to revise the inputs for fiber feeder and re-run the model (footnote 18, pg. 39). On the contrary, Verizon provided the Joint Intervenors with an electronic version of ICM that has all the openness, testability, and flexibility discussed in my Phase B Direct Testimony. If Mr. Klick/Pitkin did not like the fact that ICM multiplies certain fiber feeder costs by 24 in the case of a DS-1 loop, then all they had to do was go to the mapping module of ICM and delete the number 24 each time it occurs. This can be done by simply going to the main pull-down menu and clicking on "Table," "Product Mapping," "Basic Network Functions," and choosing "DS-1 NAC" from the list. The mapping for this item can then be viewed and easily edited.

The third flawed argument raised against the Verizon ICM DS-1 cost study is related to the type of technology used to provide DS-1 loops. Basically, Mr. Klick/Pitkin argue that the **(Confidential)** TELRIC for a UNE DS-1 loop is based on copper technology, and that there are other less expensive technologies that should have been used, such as "OC-3 equipped with 84 DS-1s or OC-12 equipped with 12 DS-3s and 336 DS1 MUX" (at pg. 39). The study in question is that of a UNE DS-1 loop (i.e., the type of facility a CLEC would lease from Verizon to provide a DS-1 to an individual end user). Mr. Klick/Pitkin do not appear to comprehend the purpose for which these UNEs are intended. It makes no sense to expect that an end user customer with a demand for a single DS-1 loop would be more economically served by a facility with 84 or 336 times the capacity demanded. The monthly cost for a copper DS-1 loop is **(Confidential)** while the monthly cost for an OC-3 (w/84 DS-1s) is **(Confidential) ((Confidential)** facility + **(Confidential**) circuit equipment). It is clearly more costly to provide a single DS-1 to an end user using an OC-3 than it is using copper facilities.

To illustrate, assume that a typical passenger car costs $20,000 and a 100-seat double-decker touring bus costs $200,000. On a per-seat basis, the car costs $5,000 ($20,000/4 seats) and the bus costs only $2,000 ($200,000/100 seats). According to Mr. Klick/Pitkin's logic, individual families ought to all go out and buy a bus because a bus is cheaper on a per-seat basis. We do not see this phenomenon occurring because the average family requires four or fewer seats for its transportation needs. It would not make much economic sense for a family to go out and spend an additional $180,000 ($200,000 - $20,000) when a $20,000 expenditure is all that is required.

Q. MR. KLICK/PITKIN PROPOSE DS-1 AND DS-3 COSTS THAT ARE 22.4% AND 229.8% HIGHER THAN THE COST OF A 2-WIRE LOOP, RESPECTIVELY (AT P.36). SHOULD THE COMMISSION GIVE ANY WEIGHT TO THIS PROPOSAL?

A. No. This proposal is flawed in a number of ways. First, on its face, a proposal asserting that the cost of a DS-1 loop is only a few dollars higher than the cost of a 2-wire loop is seriously lacking in the area of credibility. Second, in order to obtain their desired results, Mr. Klick/Pitkin manipulate the HAI model that was previously found to be flawed by this Commission. Unfortunately, I was not able to conduct a thorough review of the modifications made to the HAI model in order to arrive at these absurd results. However, even a cursory review uncovered some basic flaws in the proposal put forth by Mr. Klick/Pitkin. For instance, in HAI, the basic DLC line cards were replaced by line cards that will purportedly provide a loop with DS-1 and DS-3 capability. The result of this replacement is that lines served via DLC will generate a higher cost when the model is re-run. The problem is that the majority of lines, which are not served by a DLC, were left untouched. So, when Mr. Klick/Pitkin ran HAI with the new line cards, the result they received for comparison purposes was a weighted average of DLC and Non-DLC lines. In other words, the majority of the loops included in Mr. Klick/Pitkin's calculation of DS-1/DS-3 loop costs are not DS-1/DS-3 capable. Another problem with the proposal by Mr. Klick/Pitkin is that the proposed loop rate (Table 3 at p.37) for a DS-1 loop is several dollars lower than that of a 4-wire loop. This makes no sense, especially in light of the statement on page 36, which reads, "we have increased the Commission's 4-wire loop rate by 22.4% to reflect the cost of DS-1 services." I have no doubt that a more detailed review of the procedure used by Mr. Klick/Pitkin will uncover more flaws that will help explain why their results fall so far outside the range of reasonableness.

Q. ARE THERE INSTANCES WHERE AN OC-3 (w/84 DS-1s) WOULD BE THE MOST ECONOMICAL WAY TO PROVIDE DS-1 CONNECTIONS TO A CUSTOMER?

A. Yes. While it is not economical to provide DS-1 via an OC-3 architecture to a residential or small business customer, there are customer sets for which this is the proper technology to use. Specifically, in the case of CLEC dedicated transport ("CDT") Verizon has provided a cost study that uses a mix of technologies to serve CLEC demand for facilities that connect the Verizon and CLEC networks. In contrast to the DS-1 loop intended for use by individual end-users, the CDT DS-1 study contemplates the CLECs' larger capacity requirements resulting from the aggregation of CLEC end user traffic over these facilities. Although Verizon has yet to receive a CDT order from any CLEC in Washington, the CDT DS-1 study anticipates CLEC demand by weighting the different technologies based on the current demand for all DS-1s in Washington.

Q. WHY IS USING CURRENT DS-1 DEMAND FOR CDT DS-1 WEIGHTING PURPOSES APPROPRIATE?

A. Current demand for DS-1s reflects the demand characteristics of both end users and interexchange carriers. CLEC demand for CDT DS-1s at each specific CLEC location is expected to start on a small scale, similar to end user demand, and to grow in some locations to a scale that is larger than individual end users, but smaller than the interexchange carriers. Current demand covers the entire spectrum of purchases for these facilities and represents the best information available to Verizon at this time. An alternative to using current demand would be to provide a forecast of how CLEC demand might materialize. However, in the absence of any CLEC demand data, such a forecast would amount to nothing more than speculation, which does not provide a sound basis upon which to construct a cost study.

Q. MR. KLICK/PITKIN ARGUE THAT A <u>(CONFIDENTIAL)</u> TELRIC IS A MORE APPROPRIATE MEASURE OF DS-1 LOOP COST THAN THE <u>(CONFIDENTIAL)</u> TELRIC PROVIDED BY VERIZON. DO YOU AGREE?

A. No. Mr. Klick/Pitkin, who depend upon the advice of Mr. Weiss, argue that DS-1 loops are more appropriately provisioned over fiber facilities and that the proper fill factor should be 85% (at pg. 40). Mr. Klick/Pitkin commit two errors in this regard. First, they do not appear to comprehend the nature of UNE DS-1 loops. These are facilities that run from Verizon's wire centers to individual end user locations. Today, Verizon provides the vast majority of its DS-1 loops over copper facilities, not fiber. As I explained previously, it does not make economic sense to utilize fiber technology (e.g. OC-3 w/84 DS-1s) for a customer who is only purchasing one DS-1 loop. Although I agree with Mr. Klick/Pitkin and Mr. Weiss that fiber technology is newer than copper technology, this does not mean that fiber technology is the most economical. Fiber does not become the most economical choice until the individual end user demand exceeds 18 DS-1s. This can be demonstrated by taking the monthly cost of **(Confidential)** for OC-3 w/84 DS-1s and dividing by the monthly cost of **(Confidential)** for copper DS-1, which yields a crossover DS-1 demand of approximately 18. It just does not make economic sense to provide facilities that cost **(Confidential)** for a customer that demands perhaps only one or two DS-1s.

The second error in Mr. Klick/Pitkin's argument relates to their use of an 85% fill factor. By implication, the use of an 85% fill factor coupled with the use of an OC-3 technology choice (w/84 DS-1s) leads to the absurd conclusion that the average end user DS-1 customer has a demand for 71 DS-1s (84 DS-1 capacity x 85% = 71.4). Verizon's individual end user customers do not have anywhere near that average level of demand. Customers with demand for one or two DS-1s, if served uneconomically by OC-3 w/84 DS-1s, would have fill factors on those facilities of 1.2% and 2.4% respectively. Application of Mr. Klick/Pitkin's flawed logic simply represents an attempt to understate the UNE DS-1 cost by utilizing the economies of scale of larger capacity technology while at the same time ignoring the underlying demand for which the UNE is intended.

Q. DO MR. KLICK/PITKIN MAKE THE SAME FUNDAMENTAL ERRORS IN THEIR CRITICISM OF VERIZON'S DS-3 LOOP COST STUDY?

A. Yes. Mr. Klick/Pitkin argue that Verizon should have used "less expensive" OC-12 and OC-48 technology instead of OC-3. Once again, Mr. Klick/Pitkin fail to consider the customer set for which the DS-3 loop UNE is intended. They cite the technology distribution (i.e., %OC-3, %OC-12, % OC-48) in Verizon's high capacity digital facility study as evidence that the incorrect technology was used in the DS-3 loop study. The high capacity digital facility study provides the cost for CLEC dedicated transport and its technology distribution is reflective of customers with significant bandwidth demand (i.e., interexchange carriers). The DS-3 loop study, on the other hand, is intended for facilities that serve end user customers, not carriers that can aggregate traffic from numerous end users. Mr. Klick/Pitkin also err in their advocacy of an 85% fill factor, which is unreasonable for the reasons cited above.

III. RESPONSE TO BAKER

Q. MS. BAKER ARGUES THAT INCLUSION OF INTRABUILDING NETWORK CABLE INVESTMENT IN VERIZON'S LOOP COST STUDIES WILL LEAD TO AN OVERSTATEMENT OF LOOP COST (AT PG. 16). WOULD YOU PLEASE COMMENT?

A. My understanding of the FCC UNE Remand Order is that the FCC adopted a demarcation point standard "because, in some cases, the NID does not mark the end of the incumbent's control of the loop facility" (UNE Remand at par. 168). Verizon's loop cost studies identify the NID as the endpoint of the loop. Any facilities that may continue beyond that point are not included in any Verizon studies.[2] Therefore, identification of separate costs for intrabuilding cable will not give rise to a conflict with Verizon's UNE loop studies filed in this proceeding.

Q. DO YOU AGREE WITH MS. BAKER'S PROPOSAL TO USE THE MONTHLY RECURRING RATE FOR THE NID AS A PROXY FOR INTRABUILDING CABLE?

A. No. From a costing perspective this proposal makes no sense whatsoever. The only thing that makes a NID even remotely related to intrabuilding cable is that it is located next to any intrabuilding cable that may exist. A reasonable proxy should at least display the same or similar cost characteristics (i.e., cost drivers) of the item for which it being used. For example, the cost of intrabuilding cable, or any cable for that matter, varies in direct proportion to its length, whereas the NID cost does not. Ms. Baker's proposal is in direct violation of the principle of cost causality and simply represents an attempt to avoid paying for the item provided.

IV. RESPONSE TO SPINKS

Q. MR. SPINKS SAYS ONE OF THE REASONS PREVENTING STAFF FROM REVIEWING ICM IS THAT THE "PROGRAMMING IS COMPILED, WHICH PREVENTS ANYONE FROM EXAMINING THE MODEL ITSELF

[2]This statement is true for both the Loop Technology Module ("LTM") used in Docket UT-060369, et al to compute the adopted loop costs for Verizon and the ICM study presented in this proceeding.

FOR PROGRAMMING ERRORS" (RESPONSIVE TESTIMONY AT PG. 5). DO YOU AGREE WITH THIS ASSESSMENT?

A. No. ICM was specifically designed so that potential model reviewers could not legitimately make this claim. First, the filing package accompanying my Phase B Direct Testimony included both a hard copy (Tab 4 of the filing package) and an electronic copy of the ICM source code. This code is set up in a modular format so that the reviewer can easily find the desired area for review and testing. In fact, the ICM does more than simply making the code open to review, which appears to be Mr. Spinks' criterion for distinguishing between open and closed models. The model documentation provides the reviewer with four levels of information on how the ICM operates. At the very highest level, the Conceptual Framework (tab 2, Book I of VII) provides an overview of ICM, its modules and the process flow.

The next level of detail is found in books II through VII in tab 2 of the filing package. These are separately bound booklets for each of the ICM modules: loop, switch, transport, SS7, expense, and mapping. They each provide a description of the module inputs, operation, and output, along with reference materials. Descriptions of the module operation explain in words the general operation of ICM algorithms. For example, here is an excerpt from the loop module documentation (Book II) description of how ICM places ducts:

> ICM places a minimum of two ducts for underground facilities using a trencher to provide 30" cover. If the cable demand and sharing require that more than two ducts be placed, a backhoe is used. The initial depth setting for a backhoe is for a 36" deep trench, which would provide the necessary 30" cover for 2 ducts. However, when 3-12 ducts are required, ICM applies

the required additional 12" of trench depth, and if more than 12 ducts are placed, a second 12" of trench depth is added. (Tab 2, Book II, p 2_22)

These descriptions allow the model reviewer to gain a high-level understanding of how ICM operates.

If the model reviewer wishes to go more in depth, then a third level of detail is available in the form of annotated versions of the actual ICM algorithms. These algorithms can be found by looking at the table of contents in the front of the filing package. Under the section entitled "ICM MODULE SUPPORT DOCUMENTATION," each of the ICM modules is listed along with the location of the respective inputs, sources, and algorithms. In keeping with the conduit placement example above, the model reviewer would turn to tab 10 to see that algorithm. The table of contents at the beginning of tab 10 identifies a 13-page section covering the ICM conduit placement algorithm. Turning to that 13-page section, the model reviewer would first see a description of what is to be covered, and an identification of this conduit subroutine as being a part of "OSPInvest.pas", which is the outside plant (OSP) section of the actual ICM code. Also on this page is a list of user inputs, labor rates, and material costs, all with associated "test" values to be used for explanatory purposes. What follows are lines of the ICM code interspersed with actual calculations using the "test" inputs from the first page of the section. Also included throughout are comments, which allow the reviewer to follow along with the logic of the particular operations.

Finally, a fourth level of detail is available in the form of the actual model code. A hard copy of the model code is Book II of Tab 4.

In addition to offering four levels of detailed documentation, culminating in the production of the actual code, ICM provides the model reviewer with a wealth of other testing capabilities that I discussed in some detail in my Phase B Direct Testimony. These capabilities include easy sensitivity analysis, access to extensive intermediate outputs, an integrated table query function, a database export function, a visual interface output, and numerical output integrated with the visual interface (Direct Testimony at pgs.11-13). In addition, the mapping module, which provides the user the capability to define UNEs and services, can also be used as a testing tool.

Q. IN HIS SUPPLEMENTAL RESPONSE TESTIMONY, MR. SPINKS INDICATES THAT "STAFF REVIEWED THE ICM MODEL AND DISCOVERED THAT THE MODEL PROGRAMMING IS NOT OPEN TO INSPECTION" (AT PG. 4). IS THIS AN ACCURATE STATEMENT?

A. No. The ICM model programming code IS open to inspection. The code was included in the filing package in two forms; hard copy (Tab 4, Book II) and electronically (CD). It appears that Mr. Spinks arrived at his tentative conclusion based on a limited Staff review of the ICM model itself and not on a review of the supporting documentation or the files on the CD accompanying my Phase B Direct Testimony. I believe Mr. Spinks would agree that the programming code is open to inspection once the scope of Staff's review is broadened to include the model documentation. As I explained in some detail above, Verizon provided much more than simply the programming code in this filing, which was specifically designed to facilitate review of ICM. The fact that this material has not yet been reviewed has apparently led to the conclusion that "Staff cannot provide any information to the Commission as to whether the model engineers plant and determines cost in an acceptable manner" (Supp. Response at pg. 4). However, as I have shown in the conduit example above, the filing package is replete with tables of contents, model methodology descriptions, algorithm descriptions, calculation examples, actual algorithms, precisely the type of information that a model reviewer would need to evaluate the validity of the model's operation. ICM and its associated filing package were specifically designed with this objective in mind. Therefore, I must respectfully disagree with Mr. Spinks' conclusion about Staff's ability to review ICM.

Q. MR. SPINKS CITES THAT FACT THAT ICM 4.1b HAS NOT YET BEEN ACCEPTED BY ANY STATE COMMISSION (RESPONSE AT PG. 5). SHOULD THIS GIVE RISE TO CONCERN ABOUT THE ACCEPTABILITY OF ICM IN THIS DOCKET?

A. No. As clearly delineated in Verizon's response to Staff Data Request 2, this version of ICM, version 4.1b, has only been filed in two states, Washington and Ohio. Both of these UNE cases are still pending. In fact, ICM has been accepted by the two states, that have concluded their UNE dockets: North Carolina and Michigan. ICM 2.12 was approved by the North Carolina Commission, and ICM 3.1 was approved by the Michigan Commission. The remaining states in which ICM was filed have not yet concluded their UNE dockets. The approval of earlier versions of ICM should give a strong indication to this Commission that a review of ICM 4.1b in this case will lead to the same positive conclusion. The fact that ICM 4.1b is a later version, which includes further improvements over the 2.12 and 3.1 versions, provides further reason why ICM should be accepted by this Commission.

Q. SHOULD THE FACT THAT VERIZON PROVIDED "DOCUMENTATION THAT FILLS SOME NINE BINDERS, COMPRISING THREE TO FOUR FEET OF PAPER DOCUMENTATION" (RESPONSE AT PG. 5) HINDER STAFF'S ABILITY TO REVIEW ICM?

A. No. One of the strengths of ICM is that it is fully documented and open to inspection. The documentation is specifically designed in a layered format, which gives the model reviewer the ability to go into as much detail as desired. For example, Tab 9 includes hundreds of pages of source documents for ICM's material cost inputs. It is not absolutely necessary to review every single page to ensure that Verizon correctly input these unit costs into ICM, but the option is available. Similarly, Tab 21 contains a few hundred pages of Verizon's outside plant engineering guidelines in support of the engineering parameter inputs used in ICM. Elsewhere in the documentation there are numerous pages of vendor quotes, contracts, and Verizon engineering guidelines. These many pages of documentation represent the finest level of detail available for review (the bottom layer of the documentation). The higher layers of the documentation are not voluminous. They provide the model reviewer with a quick and easy way to become familiar with the model methodology. At the highest level, the "Conceptual Framework"(Tab 2, Book I) provides a seven-page overview of ICM. At the next level, the books that describe the operation of each ICM module range from 3 pages for the mapping module to 29 pages for the loop module.

Q. DO YOU AGREE WITH MR. SPINKS' CONTENTION THAT IF VERIZON WISHES TO ESTABLISH A SEPARATE SUBLOOP ELEMENT FOR A DROP, IT SHOULD BE "ESTABLISHED BY DETERMINING THE PORTION OF THE DROP COST THAT WAS INCLUDED IN THE COMMISSION'S EARLIER DETERMINATION OF THE STATEWIDE LOOP COST?"(AT PG. 6)

A. No. The Commission declined to endorse any of the models in the previous generic cost docket. In addition, the Commission expressed serious concerns over the validity of each of the models' drop estimates, as is evidenced by the number of paragraphs dedicated to the subject in the Eighth Supplemental Order (par 111 through 136). Finally, the fact that the Commission "averaged" the results of three disparate models to yield a loop cost estimate should not make anyone comfortable with the average cost of a small sub-element.

Q. MR. SPINKS INDICATES THAT THE DEPRECIATION RATES USED BY VERIZON "DO NOT MATCH UP WITH THE CURRENT COMMISSION AUTHORIZED DEPRECIATION RATES" (AT PG. 6). DO YOU AGREE?

A. Yes. Mr. Spinks' observation is correct. As I stated in my Phase B Direct Testimony, the depreciation rates used in ICM are those used by the Commission in Docket No. UT-960369, et al. I also recognized that the Commission has recently reset the Verizon depreciation rates in Docket No. UT-992009, and I suggested that before the Commission sets rates in this proceeding that costs need to be adjusted for that change (at pg. 29).

Q. OTHER THAN THE UPDATE TO THE DEPRECIATION RATES AS INDICATED ABOVE, DO MR. SPINKS' CONCERNS OVER THE VERIZON CAPITAL RECOVERY RATES GIVE CAUSE FOR ALARM?

A. No. Mr. Spinks cites a Verizon circuit equipment capital recovery rate that exceeds 14 percent while the authorized depreciation rate is 8.3 percent. At first glance, this gives the appearance of being a significant deviation from the authorized capital recovery rate. However, upon closer inspection, it appears that a slight difference in terminology has given rise to an unnecessary concern. In my Phase B Direct Testimony I define capital costs as including both the return *on* and return *of* capital. That is, the return on capital is more commonly referred to as a rate of return while the return of capital is more commonly referred to as depreciation. Together, the two make up the capital cost factors found in ICM (at pg. 29). As a result, the capital recovery rate cited by Mr. Spinks as being in excess of 14% is actually made up of the two components of capital costs, namely rate of return and depreciation. The calculation of the figure is as follows:

Account = 2232

Life = 12 years

Net Salvage = .04

Rate of Return (ROR) = .097588563

Straight Line Depreciation (SLDEPR) = (1-Net Salvage)/Life

= (1-.04)/12 = .08

Equated Cost of Money (EQCM) = ROR + SFDEPR – SLDEPR

= .097588563 + .045547697 - .08

= .06313626, where SFDEPR = Sinking Fund Depreciation

Capital Recovery Factor = SLDEPR + EQCOM

= .08 + .06313626= .14313626

The only valid concern over the numbers expressed above is that the latest Commission-authorized depreciation rate is 8.3%, whereas the previous Commission-authorized number of 8.0% was used above. Once Verizon's costs are adjusted to reflect the most recent depreciation rates adopted by the Commission in Docket No. UT-992009, this issue will be moot.

Q. MR. SPINKS EXPRESSES CONCERN OVER VERIZON'S USE OF STRUCTURE SHARING INPUTS TO ITS COST MODELS (AT PG. 7). WOULD YOU PLEASE COMMENT?

A. Mr. Spinks claims that Verizon did not use the structure sharing percentages that were decided in Docket Nos. UT-960369, et al. First, it must be noted that in those dockets, the structure sharing percentages were not applied to Verizon's cost model.

Instead, they were determined in accordance with the input structures of the other models considered by the Commission. In this case, Verizon has utilized structure sharing inputs that reflect not only Verizon's actual structure sharing experience, but also match the input structure of the models proposed herein. For example, in the dark fiber model cited by Mr. Spinks, the use of specific sharing percentages is not appropriate since the model identifies cost on a cable foot basis. That is, the model does not calculate the total cost of a particular route and then apply sharing percentages to the resulting investment. Instead, the model only captures the portion of facilities required. For instance, the per foot cost for subduct includes the cost of six subducts. This input is divided by six in order to express the investment on a per cable foot basis. As a result, the potential sharing of the other subducts is not relevant to the cost calculation.

Q. MR. SPINKS OFFERS HIS OPINION ON THE EXPECTED FEEDER/DISTRIBUTION INVESTMENT SPLITS FOR BOTH RURAL AND URBAN AREAS (AT PG. 8). DO YOU AGREE?

A. Mr. Spinks indicates that he expects to see an approximate 50/50 feeder/distribution split in urban areas and for the amount of distribution investment to increase relative to feeder investment in less dense areas. Since this is an empirical matter, I cannot say whether I agree or disagree with Mr. Spinks' statement. When one thinks of the feeder/distribution split on a conceptual level, things get complicated in a hurry. For example, Mr. Spinks' notion of the relative share of distribution costs increasing relative to feeder in the less dense areas can easily be countered by the following conceptual argument. If loops are getting longer in the rural areas, then the increase in length is more likely reflected in longer feeder lengths. Recall that copper has a length limit of approximately 12kft. When longer loops are required in rural areas, they are provided through fiber-fed DLC facilities since it is these facilities that can be increased in length without running into transmission problems. So, in moving from an urban environment, with relatively short feeder facilities, to a rural environment with relatively long feeder facilities, one could expect to see feeder investment increasing relative to distribution investment in light of the copper loop length limitation that applies equally in urban and rural environments. This tells me that a number of offsetting cost drivers (e.g. copper vs. fiber costs, customer dispersion, density, etc.) are at work here, which make conceptual arguments very questionable.

Q. MR. SPINKS STATES THAT "NO DOCUMENTATION WAS PROVIDED TO SUPPORT THE COST" OF POLES (SUPP. RESPONSE AT PG. 3). IS THIS CORRECT?

A. No. Verizon provided significant documentation in support of the pole cost and all other material cost inputs used in ICM. Following is a step-by-step example of how one could review the documentation supporting the ICM pole cost inputs.

1. On the first page of the filing package is a table of contents, which includes a section entitled "ICM MODULE SUPPORT DOCUMENTATION." The loop module portion of that section indicates that the material cost

inputs/sources are located in tab 9 of the filing package.

2. Tab 9 has a table of contents, which identifies a 49-page section entitled "Loop Material Cost."

3. On page 43 of that section is a worksheet that provides the cost components of both a 30 foot and 40 foot pole. These components, which include base cost, material loading, and engineering cost, are summed together to yield the total material cost of the two sizes of poles.

4. The source for the base cost of poles (raw material cost) on this sheet can be found by turning once again to the table of contents in tab 9, which has a section entitled "GTEAMS DOCUMENTATION."

5. The first page of the GTEAMS Documentation section is a narrative, which describes GTEAMS and identifies it as being the source for material costs. The second page of the section is an actual printout from GTEAMS showing the raw material cost to Verizon for a 30' pole. The third sheet shows the same for a 40' pole.

6. Detail underlying the material loading factor for poles is provided on page 46. The individual components of this factor are identified as freight, sales tax, provisioning expense, supply, and minor materials.

7. The engineering factor underlying the engineering cost is identified on page 48 of the same section.

8. Further detail behind the material loading factor can be obtained by looking on page 2 of the table of contents at the front of the filing package, which includes a section entitled "MISCELLANEOUS DOCUMENTATION."

Material loading factors are listed in this section, which identifies tab 23 as the appropriate place to turn.

9. The first page of tab 23 has a table of contents, which indicates that material loading factors can be found on the second page of the tab. This sheet details the calculation of the material loading factor and identifies the source as being Verizon's 1998 Fact-Finder database.

This same procedure can be followed for the other material cost inputs to ICM.

Q. MR. SPINKS EXPRESSES HIS CONCERN OVER THE INPUT COST FOR A 12-PAIR NID RELATIVE TO THE COST FOR 6-PAIR AND 25-PAIR NIDS (SUPP. RESPONSE AT PG. 4). DOES THE INPUT PRICE FOR A 12-PAIR NID HAVE AN IMPACT ON THE COSTS PRODUCED BY ICM?

A. No. ICM does not use a 12-pair NID, which renders this issue moot.

Q. WOULD YOU PLEASE COMMENT ON MR. SPINKS' CONCERN WITH ICM'S AVERAGE LOOP LENGTH ESTIMATES AS COMPARED TO ACTUAL DATA? (SUPP. RESPONSE AT PG. 2)

A. Yes. Attempts to compare modeled vs. actual average loop lengths generally run into difficulty for two basic reasons. First, modeled loop lengths should not be expected to equal actual loop lengths because modeled networks that adhere to TELRIC principles do not replicate the current network in place. As a result, one should not expect the modeled loop lengths to be either shorter or longer than actual loop lengths. Second, and most importantly, it is very difficult to obtain accurate data on actual loop lengths. This difficulty is evidenced by the significant differences in "actual" loop lengths in two separate studies conducted in an attempt to obtain this data. The results from the first study, used by Mr. Spinks in his Exhibit TLS-C4 (Supp. Response) are based on outdated 1997 data and have been replaced by 1998 study (set forth in response to Bench Request #19 in Docket No UT-980311(a)). Table 1 below illustrates the existence of significant differences in average loop length measurements between the two studies and underscores the difficulty in accurately measuring loops:

Table 1

Average Residential Loop Lengths (in feet)

Wire Center	Spinks Exhibit (1997 Study)	Updated Data (1998 Study)	Difference
Republic	**(Confidential)**	**(Confidential)**	**(Confidential)**
Bothell	**(Confidential)**	**(Confidential)**	**(Confidential)**
Arlington	**(Confidential)**	**(Confidential)**	**(Confidential)**
Concrete	**(Confidential)**	**(Confidential)**	**(Confidential)**
Bridgeport	**(Confidential)**	**(Confidential)**	**(Confidential)**
Coupeville	**(Confidential)**	**(Confidential)**	**(Confidential)**
Westport	**(Confidential)**	**(Confidential)**	**(Confidential)**
Rosalia	**(Confidential)**	**(Confidential)**	**(Confidential)**
Burlington	**(Confidential)**	**(Confidential)**	**(Confidential)**

While the 1998 study does represent the most accurate actual loop length data available to Verizon at this time, it still does not provide a meaningful basis from which to draw conclusions about the validity of ICM. Average customer loop length data is not used by Verizon in conducting its everyday business, i.e., it is not routinely measured. Construction of this data requires the extraction of relevant data from disparate databases to be combined in a manner to allow measurement of loop lengths. The combination of separate database extracts leads inevitably to mismatches, causing the sample size to fall relative to the total number of loops that need to be measured. Mismatches can cause errors to occur in two ways. First, if mismatches occur in any systematic way, then the resulting loop sample will be biased. Second, mismatches that occur during processing can disturb the synchronization of the two databases, causing erroneous results to be produced. Verizon is working to improve the process and to correct errors that have occurred during this learning process.

V. RESPONSE TO CABE

Q. MR. CABE CLAIMS THAT "THE COST BASIS FOR PRICING DARK FIBER SHOULD BE THE SAME AS THE COST BASIS FOR PRICING ANY UNBUNDLED ELEMENT, NAMELY, LONG-RUN FORWARD-LOOKING ECONOMIC COST" (AT PG. 2). DO YOU AGREE?

A. Ignoring for the moment the possible impact of the 8th Circuit Ruling, I would have to agree with Mr. Cabe.

Q. DO YOU AGREE WITH MR. CABE'S NOTION THAT THE RESTRICTIVE NATURE UNDER WHICH DARK FIBER WILL BE PROVIDED CHANGES THE NATURE OF COST OF THIS ELEMENT?

A. No. Mr. Cabe is attempting to argue that somehow the cost characteristics change if the ILEC is not obligated to install dark fiber capacity at the request of CLECs. If ILECs will only offer dark fiber when there is spare capacity, then Mr. Cabe is arguing that the ILECs should have only studied the operations and maintenance cost of the fiber (at pg. 4). This is a classic case of trying to apply a short-run cost approach to something, that requires, as stated by Mr. Cabe himself, a long-run cost approach. Mr. Cabe appears to be ignoring the fact that a long-run cost study assumes that the firm does not face any capital constraints (i.e., it can change its technology mix and size of plant). This same principle applies to UNE loops, the vast majority of which are already in place today. It makes no difference from a long-run forward-looking cost perspective whether the customer request for service causes the ILEC to purchase new capacity or to offer some of its existing capacity. Further, Mr. Cabe's recommendation that the "Commission require Washington ILECs to provide dark fiber at some discount from the full capacity cost" (at pg. 6) is equivalent to arguing for a fill factor in excess of 100%. This notion has no place in a long-run incremental cost study and should be rejected.

VI. <u>RESPONSE TO STARKEY</u>

Q. MR. STARKEY CONTENDS THAT THE ILECS' ARGUMENTS ABOUT

THE DIFFERENT COST NATURE OF ISP-BOUND TRAFFIC IS NOT CONSISTENT WITH THE FCC'S TELRIC METHODOLOGY (AT PG. 8). IS HE CORRECT?

A. No. Mr. Starkey argues that the ILECs ignore the underpinnings of the FCC's TELRIC methodology when attempting to argue that switching costs differ between different types of traffic. The "one size fits all" approach focuses too narrowly on the notion of TELRIC and fails to recognize the FCC's position on the proper identification of costs. In its First Report and Order, the FCC establishes the TELRIC principles, but then goes on to recognize that cost variations do exist and that "deaveraged rates more closely reflect the actual costs of providing interconnection and unbundled elements" (at par. 764). Mr. Starkey is, in essence, arguing against the concept of deaveraging, which is clearly at odds with the FCC's position.

Q. IN RECOGNIZING THE PROBLEM POSED BY THE LONGER CALL HOLDING TIMES ASSOCIATED WITH ISP-BOUND TRAFFIC, MR. STARKEY RECOMMENDS SIMPLY UPDATING THE HOLD TIME DATA (AT PG. 15). IS THIS A REASONABLE APPROACH?

A. No. Mr. Starkey's recommended solution would serve to perpetuate the windfall received by CLECs for terminating ISP-bound traffic. He even admits that "altering the rates based upon updated information would have very little impact on the existing rates" (at pg.14).

The costs underlying the existing reciprocal compensation rates are expressed on an average per minute basis.[3] The fixed cost component (i.e., call set-up cost) would obviously diminish, as that cost is averaged over an increasing number of minutes.

[3]The full per-minute cost of the "average" call is the sum of the variable cost of that minute plus the fixed cost (call set-up) averaged over the total length of the call.

Thus, because the average ISP-bound call is significantly longer than the average voice call, the average fixed cost component for ISP-bound calls is considerably smaller than that for POTS traffic. Even if the variable cost component of both types of calls were the same, the per-minute cost of the average ISP-bound call would still be considerably less than that of the average voice call.

A simple numerical example illustrates this fact. Suppose the variable cost for each minute is $.003. Then, a three-minute call would have a total variable cost of 3 x $.003 = $.009, while a 20-minute call would have a total variable cost of 20 x $.003 = $.06. Suppose the fixed cost of call setup—which does not vary with the length of the call—is $.01. Then the total cost of the three-minute call (inclusive of call setup) would be $.009 + $.01 = $.019, and that for the 20-minute call would be $.06 + $.01 = $.070. To determine the cost of each call on a per-minute basis, simply divide the total cost of each call by the respective number of minutes. Thus, the three-minute call would cost $.019/3 = $.00633 per minute, and the 20-minute call would cost $.070/20 = $.00350 per minute. That is, as the call duration increases, the cost per minute falls. In other words, if the cost per minute is calculated using a three-minute holding time, the fixed cost component time is effectively averaged over the three-minute duration of the call. If that cost per-minute were charged to a carrier and the holding time averaged three minutes, the charging carrier would recover only its variable and (fixed) call setup costs. However, if that $.00633 were charged on a call of 20 minutes in duration, the charging carrier would effectively recover its variable cost plus about six times its call set-up cost. Because CLECs recover set up costs from Verizon on a per-minute basis, and the cost per minute was established based on the shorter holding times for voice traffic, Verizon is overcompensating CLECs for their set-up costs under the existing reciprocal compensation structure. Mr. Starkey's proposal to update the holding time, which is admittedly dominated by POTS calling, would do almost nothing to alleviate this overcompensation problem.

Q. MR. STARKEY ARGUES THAT THE USE OF ISDN-PRI TO CARRY ISP-BOUND TRAFFIC DOES NOT ALTER THE USAGE SENSITIVE NATURE OF THE COSTS INCURRED FOR CARRYING ISP TRAFFIC (AT PG. 15). IS HE CORRECT?

A. Absolutely not. Mr. Starkey is clearly mistaken here. For traditional voice traffic, busy hour line centum call second ("CCS") costs[4] are traffic sensitive because they arise from a shared facility, namely the sharing of one circuit path among approximately six customer lines (i.e., a 6:1 concentration ratio). Because the path is shared among various lines, the use of the facility during the peak hour imposes congestion costs on other users in the form of rationing or call blocking as the result of the path being in use. Consequently, the line CCS costs are considered to be

[4]CCS costs are due to the type of concentration ratio required to achieve an acceptable quality standard.

traffic sensitive and are appropriately included in the per-minute cost of handling traditional voice traffic.

The situation is very different for ISP-bound calls because the typical ISP employs ISDN PRI trunks to deliver incoming ISP-bound traffic. The line CCS type costs for ISP-bound traffic delivered on ISDN PRI trunks are non-traffic sensitive because ISDN PRI trunks do not utilize any concentration at all. In other words, each PRI line serving an ISP has dedicated capacity through the switch associated with it, so that increased usage from other lines does not impact the use of the line serving the ISP. Regardless of the demand from the other lines, the path serving the ISP will always be available to customers calling the ISP. Because the circuit is virtually dedicated to the ISP line, the use of the facility does not impose congestion costs on other users, and no rationing or call blocking is imposed on the network as a result of the ISP line being in use. Unlike a traditional voice call—where the need for additional paths is a function of usage—the number of paths in a PRI unit is not usage sensitive, but, instead, is determined by the number of PRIs connected to it. While the costs for these paths represent a very real cost to the carrier purchasing the switch, proper economic theory demands that these costs be recovered—along with all of the other non-traffic sensitive switch costs—through the fixed monthly port charge. These line CCS type costs are <u>not</u> properly included in the per-minute costs of delivering such traffic.

Q. MR. STARKEY ARGUES THAT "CLECS WHO PROVIDE A HIGHER QUALITY OF SERVICE VIA LOWER CONCENTRATION WILL HAVE HIGHER SWITCHING COSTS PER CUSTOMER (AND PER MINUTE) THAN WILL AN ILEC WITH LOWER LEVELS OF CONCENTRATION" (AT PG. 19). WOULD YOU PLEASE COMMENT?

A. If Mr. Starkey is referring to the case where the CLEC is using ISDN PRI for ISP-bound traffic (i.e., with a 1:1 concentration ratio), then he is confusing the concepts of traffic sensitive and non-traffic sensitive costs. The CCS costs that are identified as being traffic sensitive in a POTS configuration (i.e., with concentration ratios in excess of 1:1) are non traffic sensitive in an ISDN PRI configuration. As a result, Mr. Starkey is mistaken when he states that the cost per minute is higher. These costs do not just go away. Rather, they are just identified as being non traffic sensitive and are appropriately included in the cost of the port (i.e., should be included as part of the monthly port charge). To recover these costs on a per minute basis as Mr. Starkey suggests would result in the type of over compensation that I explained above.

Q. MR. STARKEY CLAIMS THAT THE TELCORDIA SCIS MODEL IDENTIFIES TRAFFIC TO/FROM AN ISDN CIRCUIT AS TRAFFIC SENSITIVE COSTS (AT PG. 19). IS THIS CORRECT?

A. No. Mr. Starkey has apparently confused ISDN PRI with ISDN BRI. An ISDN BRI line is provided via a line-side connection in the switch and shares paths through the switch with other lines by virtue of a concentration ratio in excess of 1:1(e.g. 6:1).

Consequently, there are line CCS costs (i.e., traffic sensitive) associated with this service. However, CLECs do not use ISDN BRI service for ISP-bound traffic. ISDN PRI, on the other hand, is a service provided via a trunk side connection, which has a 1:1 concentration ratio. Costs associated with paths through the switch for this service are non-traffic sensitive. The SCIS model documentation identifies how switching costs are categorized (i.e., traffic sensitive vs non-traffic sensitive) through a partitioning matrix. The partitioning matrix lists all the switch resources used to provide ISDN BRI and PRI service and identifies them as being associated with the line termination (non-traffic sensitive) or with line CCS (traffic sensitive). The matrix shows line CCS costs for ISDN BRI service but no line CCS costs for ISDN PRI service. Therefore, the SCIS Model does not identify ISDN PRI costs as traffic sensitive as claimed by Mr. Starkey.

Ironically, Mr. Starkey provides the means to refute his own claim when he states that "model builders ask: If traffic were to increase beyond a certain level, would the need for this particular resource and/or piece of equipment increase accordingly? Simplistically, if the answer to that question is "Yes," then that piece of equipment is assumed to be a traffic sensitive component of the switch. If the answer is "No," this piece of equipment is considered to be non-traffic sensitive" (at pg. 19). In the case of ISDN PRI, which has a concentration ratio of 1:1, the answer to his question is clearly "No" because investment associated with the number of paths through the switch varies in direct proportion to the number of PRI trunks ordered by the customer. The number of switch paths does not change in any way that depends on the usage over those trunks. That is, it does not matter whether PRI trunks are used 24-hours a day or if they are not used at all; the number of switch paths remains the same.

Mr. Starkey confuses matters further by making reference to call set-up costs right in the middle of his discussion related to call duration costs (at pg. 20). The argument at hand is one over call duration costs and not the costs incurred to set up a call. Verizon has not taken the position that costs associated with setting up a call are non-traffic sensitive costs that should be included in the PRI port cost.

Q. MR. STARKEY INDICATES THAT VERIZON HAS MADE ELSEWHERE THE SAME "ARGUMENT REGARDING THE NON-TRAFFIC SENSITIVE NATURE OF ISDN PRI LINES ENGINEERED AT 1:1 CONCENTRATION" (AT PG. 20). IS THIS CORRECT?

A. Yes. Essentially the same arguments were made in a Verizon/Focal arbitration in New Jersey where Mr. Starkey appeared on behalf of Focal. The arbitrator in this case agreed with Verizon. The arbitrator concluded the following:

> Without going into an extensive analysis of BA-NJ's cost study and the criticisms leveled at it by Focal, the arbitrator concludes that it constitutes a not unreasonable approach to determining Focal's costs of terminating ISP-bound traffic, and it does demonstrate that the cost to deliver ISP-bound traffic is substantially lower than the cost of delivering normal two-way local traffic. (NJ BPU Docket No. T000030163, pg. 9)

Q. IN REFERRING TO VERIZON ARBITRATIONS, SUCH AS THE ONE IN NEW JERSEY, MR. STARKEY CLAIMS THAT VERIZON "HAS GONE SO

FAR AS TO REMOVE FROM ITS TELCORDIA SCIS OUTPUT, THE MAJORITY OF TRAFFIC SENSITIVE COSTS ASSOCIATED WITH AN ISDN-PRI LINE" (AT PG 20). IS THIS CORRECT?

A. No. Mr. Starkey is mistaken. Verizon did not remove traffic sensitive costs from its SCIS output for ISDN PRI, because SCIS does not have ISDN PRI output for line CCS (traffic sensitive cost associated with call duration). This output does not exist in SCIS, because SCIS categorizes costs associated with switch paths as being non-traffic sensitive. For ISDN PRI, SCIS includes these non-traffic sensitive costs where they belong -- with the PRI port.

Q. MR. STARKEY ALSO CLAIMS THAT "VERIZON, IN AN EFFORT TO IMPLEMENT THIS COMPLETELY UNSUBSTANTIATED THEORY, HAD TO MAKE A MANUAL INTERVENTION IN THE SCIS SOFTWARE FOR PURPOSES OF REMOVING A LARGE COMPONENT OF TRAFFIC SENSITIVE COST ASSOCIATED WITH ISDN-PRI USAGE" (AT PG. 21). IS THIS CORRECT?

A. Once again, Mr. Starkey is badly mistaken. Verizon made no such intervention. The only unsubstantiated theory is the one put forth by Mr. Starkey in an attempt to maintain the ability of the CLECs to charge ILECs reciprocal compensation rates well in excess of cost. Mr. Starkey goes on to state that "the SCIS model, when left to function as designed, allocated the vast majority of ISDN-PRI costs as traffic sensitive…" (at pg. 21). This statement is also incorrect. As I mentioned above, SCIS does not even provide output for line CCS cost in the case of ISDN PRI, because costs associated with switch paths are non-traffic sensitive in a PRI configuration.

Q. MR. STARKEY POINTS OUT THAT "VERIZON EVENTUALLY HAD TO ADMIT THAT ISDN-PRI SERVICES ACTUALLY USE MORE RESOURCES OF THE SWITCH'S PROCESSOR (A USAGE SENSITIVE COST OF THE SWITCH) THAN OTHER TYPES OF MORE TRADITIONAL LINES/TRUNKS" (AT PG. 21). IS HE CORRECT?

A. Technically, Mr. Starkey is correct that ISDN PRI service uses slightly more of the switch's resources in order to perform the <u>call set-up</u> function. However, Mr. Starkey is now confusing call set-up costs with call duration costs. The whole argument surrounding the traffic sensitive vs non-traffic sensitive costs for ISDN PRI relates to <u>call duration costs</u> and not to call set-up costs.

VII. <u>RESPONSE TO BLACKMON</u>

Q. DR. BLACKMON STATES THAT "THE ACTUAL COST [OF TERMINATING TRAFFIC SUBJECT TO RECIPROCAL COMPENSATION] CAN VARY SIGNIFICANTLY AND SYSTEMATICALLY BASED ON SEVERAL FACTORS, ONE OF WHICH IS THE LENGTH OF THE CALL" (RESPONSIVE TESTIMONY AT PG. 7). DO YOU AGREE?

A. Yes. Dr. Blackmon is correct in recognizing the existence of factors that can cause the actual cost of terminating traffic subject to reciprocal compensation to diverge significantly from the average cost of terminating traffic. In my response to Mr. Starkey, I have identified two factors that cause the cost of terminating ISP-bound calls to be much lower than the cost of terminating POTS traffic. The first factor is that of holding time, which Dr. Blackmon identifies in his testimony. It is widely recognized that the average holding time for ISP-bound calls is much longer than that of POTS calls (i.e., approximately 7 to 10 times longer). This becomes a significant overcompensation issue when the reciprocal compensation rate is expressed on an average per minute of use, which is based largely on the average call duration of POTS calls. This situation can be remedied by either setting up a lower rate for ISP-bound calls or by setting up separate call set-up and duration charges.

The second major factor that distinguishes the cost of POTS calling from that of ISP-bound calls is to the network configuration specific to ISP-bound calling. As I discussed in my response to Mr. Starkey, the use of ISDN PRI connections changes the traffic sensitive cost characteristics of ISP-bound calls. An ISDN PRI connection, by virtue of its 1:1 concentration ratio, does not have any line CCS costs associated with call duration, whereas a line side POTS connection does. The existence of this traffic sensitive cost difference lends support to the option of establishing a separate set of charges specific to ISP-bound calling.

Q. CAN YOU QUANTIFY THE IMPACT OF THESE TWO FACTORS AND SHOW THAT THE COST OF ISP-BOUND CALLS IS LOWER THAN POTS CALLS?

A. Yes. I set up and ran two scenarios in ICM to demonstrate the impact. The first scenario, used as a base case, identifies the TELRIC of the local switching UNE, which is based on a POTS network configuration with a 4 minute average holding time. The costs presented in this scenario reflect a weighted average of line-to-trunk, trunk-to-line, and line-to-line calling costs, in addition to the cost of host-to-remote links that are required to accommodate POTS traffic. Table 2 below identifies the call set-up, duration, and average per minute costs for this scenario. The second scenario reflects the type of network configuration that either Verizon or a CLEC would use to terminate ISP-bound calls. This configuration differs from the POTS configuration in that it does not provide line-to-trunk, trunk-to-line, or line-to-line calling. Because the ISP is served via a trunk side connection (i.e., ISDN PRI), cost components reflecting line side connections are not used. Instead, one half of a trunk-to-trunk call duration cost is utilized. Removing one half of the trunk-to-trunk cost for call duration is required to reflect the fact that the ISP is served via ISDN PRI (i.e., there are no CCS (traffic sensitive) costs on the PRI side of the switch). In addition, a 30 minute holding time is used to calculate the average per minute cost as shown in Table 2.

Table 2

Comparison of POTS and ISP-Bound Switching Costs

	POTS	ISP-Bound
Call set-up	**(Confidential)**	**(Confidential)**
MOU	**(Confidential)**	**(Confidential)**
Average MOU	**(Confidential)**	**(Confidential)**

As clearly indicated by the results above, the average per minute cost of terminating ISP-bound traffic is significantly lower than the cost of originating and terminating POTS-type traffic.

VIII. CONCLUSION

Q. WOULD YOU PLEASE SUMMARIZE YOUR TESTIMONY?

A. Yes. In my Phase B Direct Testimony I describe ICM 4.1b along with the special studies (based on ICM) performed for dark fiber and high-capacity facilities. Accompanying that testimony is a filing package which includes not only model output, but also the documentation that allows a complete review of Verizon's cost submission. A number of parties raise cost issues in their Phase B Responsive Testimony, which I address in this Phase B Rebuttal Testimony. My responses to these issues can be summarized in the following manner:

1) **Criticisms of the ICM methodology –** the few criticisms leveled against the ICM methodology are either completely erroneous, are based on a misunderstanding of basic costing principles, or are based on a mischaracterization of my direct testimony**.**

2) **Criticisms of Verizon's filing package –** arguments that ICM is not open to inspection and that input costs are not documented appear to arise from an incomplete review of Verizon's filing package. ICM is an open model. The source code is included in the filing package in two formats and is available for complete review. Inputs are documented and can be traced back to their sources. A more comprehensive review of Verizon's filing package will reveal these facts.

3) **Attempts to artificially understate costs** – I explain how witnesses Klick/Pitkin and Weiss abandon the basic principles of logic, economics, and engineering in their attempt to propose artificially low cost levels for DS-1 and DS-3 loops.

4) **Arguments regarding reciprocal compensation –** I describe how Mr. Starkey's arguments about the traffic sensitive nature of ISP-bound traffic are completely erroneous and that his claims about the operation of the SCIS model are false. I also quantify the difference in cost between ISP-bound calling and POTS calling.

Generally, the arguments I respond to in my Phase B Rebuttal Testimony fail to withstand scrutiny and should therefore be rejected by this Commission.

Consequently, Verizon recommends that this Commission approve the cost studies filed in conjunction with my Phase B Direct Testimony.

Q. DOES THIS CONCLUDE YOUR PHASE B REBUTTAL TESTIMONY?

A. Yes.