BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

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In the Matter of the Review of Unbundled Loop and Switching Rates and Review of the Deaveraged Zone Rate Structure	))))	Docket No. UT-023003

REPLY TESTIMONY OF

DEAN R. FASSETT

ON BEHALF OF

AT&T COMMUNICATIONS OF THE PACIFIC NORTHWEST, INC.

May 12, 2004

***** PUBLIC VERSION *****

TABLE OF CONTENTS

CONTENTS PAGE

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Dean R. Fassett and my business address is 141 Juniper Drive, Ballston Spa, New York, 12020.

Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?

A. I am the owner of Adirondack Telecom Associates. Currently, I am providing telecommunications consulting services to, and testifying on behalf of, AT&T Communications of the Pacific Northwest ("AT&T") concerning outside plant infrastructure design, construction and engineering and the costing aspects of the local loop.

Q. PLEASE SUMMARIZE YOUR BACKGROUND IN OUTSIDE PLANT ENGINEERING AND CONSTRUCTION.

A. I have over 33 years of telecommunications experience in outside plant engineering and construction. Prior to my retirement from NYNEX in May 1996, I had outside plant engineering and construction responsibilities for the Adirondack District as the Area Operations Manager. This work included both the actual performance of outside plant engineering work and the supervision of construction personnel performing those tasks. Before that assignment, I was the Engineering Manager for the Capital South District. In this capacity, I was responsible for all engineering operations for the design and construction of the local network within an area that encompassed metropolitan, suburban and rural environments. During these assignments I personally participated in and was responsible for numerous projects that included:

- The planning/design and construction of a $10.7 million 117 mile interoffice SONET project;
- Design and deployment of numerous fiber fed DLC systems within 69 central offices;
- Design and construction of feeder and distribution facilities to meet the service requirements for a customer base of approximately 400,000 residential customers;
- OSP rehabilitation projects to upgrade distribution plant to engineering design standards for the 69 central offices under my responsibility;
- Designing and provisioning of numerous digital services to meet the requirements of business customers within city and rural environments including the first HDSL application within region and first PG Flex installation within NYNEX;
- Implementation and conversion and utilization of OSP assignment records to mechanized databases; and
- Preparation and administration of contracts with vendors and labor contractors.

Since my retirement from NYNEX, I have continued to work in the outside plant engineering and construction arena working as a contract engineer and operations manager on various projects, including interoffice fiber networks. In summary, I have had a wide range of hands-on experience that includes urban, suburban and rural network design and construction. From late

1998 through April, 2000 I was responsible for company operations and engineering at Frontier Communications of AuSable Valley in upstate New York, a small incumbent local exchange company ("ILEC") that until recently was an independent company and is currently owned by Citizen's Telephone Company. In that capacity, I was responsible for the planning, engineering design and construction of all interoffice and OSP projects, including coordination with other utilities and service providers, preparation and awarding of outside contracts and acquisition of material and test equipment. During that assignment I was also responsible for the planning/designing, constructing and operation of facilities used during the first Winter Goodwill Games at Whiteface Mountain in February 2000. In August 2000 I resumed providing consulting services to various clients as an outside plant engineering and construction expert.

Thus, I have experience with both large and small ILECs and have actually designed the interoffice and local loop networks and performed the outside plant tasks that I will discuss in my testimony. My Curriculum Vitae is included as Exhibit DRF-2 to this testimony.

Q. HAVE YOU RECEIVED ANY TRAINING IN OUTSIDE PLANT ENGINEERING AND CONSTRUCTION?

A. Yes. I have attended many outside plant training courses for engineering and construction at the Bell System and Bellcore Training Centers including, among others, Principles of Digital Technology, Applied Transmission, Advanced Distribution Design, Underground Conduit Systems, SONET, FACS, COSMOS-RCMAC/engineering, Engineering Economy, Loop Technology Planning, along with private training available through various vendors including

Nortel, NEC, Alcatel, 3M, and Siecor. The training centers attended also included Mountain Bell's Training Center in Colorado.

Q. HAVE YOU TESTIFIED BEFORE THIS COMMISSION AND OTHER PUBLIC UTILITY COMMISSIONS?

A. Yes. Since 1996, I have testified before this Commission and several other State Public Service or Utility Commissions or Boards. Attached Exhibit DRF-3, (docket data) identifies the various proceedings in which I have participated.

II. PURPOSE

Q. WHAT IS THE PURPOSE OF YOUR REPLY TESTIMONY?

A. The purpose of my reply testimony is to provide support for the default input values and engineering assumptions used in the HAI Model, Release 5.3 ("HM 5.3") as presented to this Commission by AT&T. I will address criticisms of the HAI 5.3 model that Verizon witnesses have made in their testimony filed on April 20, 2004 and April 26, 2004. Specifically, I will address testimony filed by Verizon witnesses Richter, Tardiff, and Murphy. In addition, I am adopting the Direct Testimony of John C. Donovan and provide a list of errata to that testimony. My reply testimony clarifies for the Commission why the engineering assumptions and default values of the HAI 5.3 model as filed by AT&T are reasonable, supportable and should be relied upon to determine appropriate UNE costs. My testimony is based upon the design, construction and operation of an efficient, forward looking network utilizing currently available technologies, network designs or configurations and operational systems and my 33 years of personnel engineering, construction and network operations experience.

III. RESPONSE TO VERIZON WITNESSES

A. OUTSIDE PLANT ENGINEERING GUIDELINES

Q. IN HIS REPLY TESTIMONY FILED ON APRIL 20, 2004, MR. RICHTER CLAIMS THAT HAI 5.3 DOES NOT FOLLOW THE "STEP BY STEP" PROCEDURES THAT AN ENGINEER WOULD UTILIZE IN DESIGNING AN ACTUAL NETWORK. PLEASE COMMENT ON HIS ACCUSATION.

A. Mr. Richter has misinterpreted the purpose and goal of developing a cost model to determine appropriate UNE pricing. Cost models are not intended to be engineering models, but are utilized to calculate the investment necessary to design and build or construct an efficient forward looking network. The engineering assumptions and input values within HM 5.3 take into consideration the overall time requirements that an efficient engineer would need to complete the necessary engineering tasks. Throughout his testimony Mr. Richter has tried to dramatize engineering of the outside plant network as a very tedious and labor intensive process. While the process may be extensive, it is in no way the cumbersome and involved process that he portrays. Qualified, experienced engineers are able to efficiently determine the appropriate placement location, structure type and how to most efficiently serve each customer location. In addition experienced OSP engineers are usually familiar with local conditions and any ordinances that may be applicable to the area. They are aware of existing utility easements along streets and highways, where typically most plant would be installed. The numerous and detailed engineering tasks that Mr. Richter cites are functions that any experienced OSP engineer considers and applies to his engineering design with far more ease and less time than Mr. Richter would have the Commission believe. HM 5.3 has appropriately assumed that engineers will be familiar their turf areas, have knowledge of the geographic area for which the design is being performed, and undertake necessary tasks efficiently.

Q. AS AN OSP ENGINEER WITH OVER 33 YEARS EXPERIENCE WOULD YOU AGREE THAT THE ENGINEERING COST INCORPORATED IN THE HM 5.3 ENGINEERING ASSUMPTIONS ARE REASONABLE?

A. Yes. Throughout my career I have either personally performed most of the OSP engineering tasks or supervised other engineers in the performance of these engineering tasks for the design of the local network. As I stated above, experienced OSP engineers can accomplish the necessary plant design in considerably less time than Mr. Richter is advocating.

Q. WITH THE CURRENT COMPETITIVE ENVIRONMENT IN THE INDUSTRY TODAY HOW ARE OUTSIDE PLANT NETWORKS ENGINEERED BY MOST EFFICIENT SERVICE PROVIDERS?

A. In today's competitive marketplace, most ILECs – probably including Verizon – competitively contract bid or out-source the majority of outside plant engineering design. These competitively bid contracts result in substantial savings and enable companies to efficiently meet commitments without incurring unnecessary costs or delays. In other cost dockets or comparable proceedings, whenever ILECs have produced their actual competitively bid contracts for engineering design work, those contracts have validated the reasonableness of the OSP engineering cost estimates in the HM 5.3 model.

Q. IN THIS DOCKET HAS VERIZON PRODUCED ANY OF ITS OUTSIDE PLANT ENGINEERING CONTRACTS?

A. No, to my knowledge Verizon has not produced its current competitively bid engineering contracts for the region that encompasses the State of Washington. However in response to AT&T Data Request No. 3-007, Verizon produced its "Proprietary" Engineering Guidelines on April 7, 2004, including a file labeled as "DAPD 10". This document dated 10/18/99 was used by Bell Atlantic, now Verizon, as a "cost example of upsizing the # of pairs/LU in a Distribution Area". The "Source of dollars: Costing Tool" and "Eng $" in this document indicates that engineering accounted for between *****Begin Confidential** *** *****End Confidential***** of the total installed cost depending upon the pairs/LU. While details of this simple internal analysis are not available, on the surface it would indicate an approximate relationship of engineering cost to the total cost of installing plant in a distribution area. These engineering cost percentages are less than the engineering cost to total cost assumed in HM 5.3.

Q. DOES THAT DOCUMENT ALSO INDICATE THE APPROXIMATE RELATIONSHIP BETWEEN MATERIAL, PLACING AND SPLICING IN COMPARISON TO TOTAL COST?

A. Yes, proprietary document DAPD10 also indicates the approximate relationship of material cost, placing cost and splicing cost to the total install cost in their simple analysis. *****Begin Confidential *****

*****End Confidential*****. Again, the values in HM 5.3 compare favorably with Verizon's own engineering documentation.

Q. ON PAGE 23 OF HIS REBUTTAL TESTIMONY MR. MURPHY STATES THAT A COST MODEL SHOULD DESIGN PLANT TO "ULTIMATE" REQUIREMENTS. PLEASE COMMENT ON WHETHER THAT IS A CORRECT ASSUMPTION FOR COST MODELING.

A. To determine the appropriate UNE pricing, a cost model should provide enough capacity to meet the existing demand, a reasonable amount of capacity for anticipated near term growth, defectives and administrative spare. A cost model that was based on ultimate demand would grossly over design the network and would result in overstated cost.

In actual practice, Verizon and other ILECs no longer design plant to meet the "ultimate" demand. ILECs have modified their engineering guidelines and practices to maximize the utilization of cable facilities and greatly shortened the planning period for cable sizing. An efficient service provider would certainly not design cable facilities for an ultimate unknown demand. The utilization of DSL and other technologies has greatly reduced cable-sizing requirements. Proprietary ILEC Engineering Guidelines produced in this docket and other proceedings strongly indicate the need to maximize the utilization of existing plant and avoid over building the network. Verizon's "Proprietary" Engineering Guidelines include the following statements:

*****Begin Confidential *****

*****End Confidential*****

These guidelines or directives clearly do not indicate that Verizon direct its engineers to design its network for "ultimate" demand as Mr. Murphy has advocated.

Q. VERIZON WITNESSES HAVE TESTIFIED THAT AN EFFICIENT FORWARD LOOKING NETWORK WOULD FOLLOW THE EXISTING ROUTES OF THE EXISTING NETWORK. WOULD A FORWARD LOOKING NETWORK ACTUALLY FOLLOW THESE SAME ROUTES?

A. Probably not. At a minimum, it would be inappropriate to assume, without analysis, that a new efficient forward-looking network would follow the same routes as Verizon's existing network. The existing network has been designed and constructed over a long period of years as the network was expanded to meet new growth and other requirements and very likely no longer reflects how the network would be designed and constructed today.

Q. WOULD THE SAME APPLY TO DISTRIBUTION AREAS AS WELL?

A. Yes, efficient, forward-looking network distribution areas may likewise be structured substantially differently than those in the existing or embedded network. As growth occurs it may now be more efficient to modify distribution area boundaries or combine smaller distribution areas into one large area to more efficiently serve customers. Local zoning or land use may have been modified or amended since the original LROPP (Long Range Outside Plant Plan) was developed. Larger SAIs and or DLC cabinets may result in a more efficient feeder-distribution strategy than was originally planned years ago for the service area. Mr. Tardiff's and other Verizon witnesses statements and belief that an efficient service provider would design a new network following the existing feeder routes, maintain existing distribution areas and terminal locations lacks any support. There is no doubt that if an engineer were to redesign a network today they would not mirror the existing network. Rather, an engineer's design approach would be very similar to the design methodology used in HM 5.3, in sharp contrast to the assumptions of Mr. Tardiff, Mr. Murphy and other Verizon witnesses.

Q. IN THEIR TESTIMONY MR. RICHTER AND MR. MURPHY HAVE STATED THAT HM 5.3 VIOLATES ENGINEERING GUIDELINES WITH DISTRIBUTION AREAS OR CLUSTERS THAT ARE TOO LARGE. PLEASE COMMENT ON THE MAXIMUM CLUSTER SIZE UTILIZED IN HM 5.3.

A. Contrary to statements made by Verizon witnesses, the maximum cluster size utilized in HM 5.3 complies with accepted engineering practices or guidelines that apply to densely populated areas. Verizon witnesses have failed to recognize that those distribution areas in core or high-density areas have "no maximum ultimate unit restriction."[1]

Q. IS THERE ANY OTHER DOCUMENTATION THAT SUPPORTS HM 5.3 ENGINEERING ASSUMPTION FOR INCREASING THE MAXIMUM SIZE OF CLUSTERS?

A. Yes. In addition to the above information regarding distribution areas in urban or high-density areas, documentation is available in AT&T practices 901-350-250 & 915-251-300, -301 Copper Cable –Secondary (Distribution) Design – Urban and Suburban- Paired Cable, which provides, "Each secondary system must have the following characteristics:

- Has defined boundaries, usually corresponding with streets, property lines, railroads, river and creeks, or fence lines.
- Contains a definite number of ultimate living unit (or business lines) based on the proposed land usage (not necessarily what exists today). A typical size is from 1000 to 3000 living units."
- Much of the existing, domestic secondary (distribution) system design is based on Distribution Areas (DAs) of 200 to 600 living units.[2]

[1] Design Center Engineering (DECEN) 11/83 course materials Section 03 Page 12

[2] AT&T Outside Plant Engineering Handbook, August 1994, Section Exchange Network Design 3-9

Q. IS THERE ANY DOCUMENTATION THAT INDICATES IT IS ADVANTAGEOUS TO COMBINE ADJOINING DISTRIBUTION AREAS IN CERTAIN CIRCUMSTANCES?

A. Yes. Bell System Practice 901-350-201 Long Range Outside Plant Planning states, "Ultimate Allocation Areas represent the ideal grouping of DAs when feeder transmission characteristics have been perfectly configured and boundary violations have been eliminated."[3] In other words it would be appropriate to combine adjoining DAs that are adjacent to each other and could be economically fed with a large IDLC remote terminal or CEV. In these situations it should be more efficient to feed the area with a single large RT instead of several small RTs in close proximity to each other. Planning parameters permit from 3 to 5 DA's to be considered as a CSA or Carrier Serving Area.

This practice also states, "your job is to balance distribution cable costs and feeder interface efficiency to form optimally sized DA's. Initially CEVs and large DLC cabinets were not available, and SAIs did not have the large pair capacities or configurations that are currently available and utilized in forward-looking networks. High-density environments that justify the placement of IDLC in a CEV configuration typically utilize large outdoor and indoor SAIs with minimal sub-feeder required. Mr. Murphy and the other Verizon witnesses have failed to properly interpret the application of engineering guidelines as they should be applied with current technologies and capacities.

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[3] Bell System Practice Section 901-350-201 Long Range Outside Plant Planning, Issue 3, September 1983.

(continued)

Q. ON PAGE 45 OF HIS TESTIMONY MR. MURPHY CLAIMS THAT HM 5.3 LOOP DESIGN CRITERIA VIOLATES TRANSMISSION DESIGN RULES. DOE HM 5.3 ACTUALLY VIOLATE TRANSMISSION DESIGN RULES?

A. No, HM 5.3 does not violate loop design criteria. Mr. Murphy is incorrect for two reasons. First, revised resistance design rules clearly state that copper loops up to 18,000 feet should be non-loaded, which is the maximum copper loop in HM 5.3. In addition, currently available "standard" DLC channel units or plug-in have resistance limitations of 1800 to 2100 Ohms. When CSA guidelines were initially introduced, the resistance limitations of standard DLC channel units was only 900 Ohms, which limited the copper plant to 12,000 feet beyond the Remote Terminal. Currently there is no engineering restraint that limits copper loops from extending up to 18,000 feet from the central office or remote terminal.

Q. DOES HM 5.3 ACTUALLY MODEL COPPER LOOPS THAT ARE IN EXCESS OF 18,000 FEET AS MR. MURPHY HAS CLAIMED?

A. No, again Mr. Murphy has apparently misinterpreted how HM 5.3 actually works. His confusion is related to how the strand distance multiplier functions, as explained by Dr. Mercer in his testimony. The model limits the maximum copper loop lengths to 18,000 feet.

Q. ON PAGES 20-21 OF HIS TESTIMONY MR. MURPHY HAS STATED THAT HM 5.3 PLACES 2700 PAIR OR LARGER CABLES ON AERIAL POLE LINE STRUCTURE. PLEASE COMMENT.

A. Mr. Murphy's statement is incorrect. HM 5.3 does not place 2700 pair and larger cables on pole line structure. Any aerial distribution cables for these sizes of cable would either be laterals, block or riser cable. These cables are technically classified as aerial plant, but are not being placed on pole structure. Laterals from the underground or buried structure to buildings would typically be placed in conduits that have been provided by the building owner from the property line. Riser cables are placed between floors in buildings in either customer provided conduits or plenums (air-vent system duct work).

B. STRUCTURE MIX

Q. ON PAGE 18 OF HIS TESTIMONY, MR. RICHTER STATES THAT THE APPROPRIATE METHOD TO DETERMINE STRUCTURE MIX IS WITH VERIZON'S EXISTING PLANT RECORDS AND NOT USING ARMIS DATA OR ENGINEERING EXPERIENCE. WHY WOULD THAT METHOD BE INAPPROPRIATE?

A. Mr. Richter's suggested method of determining structure mix by utilizing Verizon's existing plant records would be very inappropriate. As I have previously stated, Verizon's existing network has been built over a period of years and would not reflect how an efficient looking network would be designed. The existing network has basically been constructed on a piece meal basis and not always followed the most efficient path or route or efficient structure type. With respect to Mr. Richter's examples, it is unclear whether the percentages of underground placement he identifies in the three exchanges that he cites are a combination of feeder and distribution, or just distribution, rendering his observations meaningless. His statement on increasing the percentage of underground structure, moreover, is at odds with Verizon's own engineering guidelines that state, "always look for alternative to placing conduit."

C. STRUCTURE SHARING

Q. ON PAGE 31 OF HIS TESTIMONY MR. MURPHY STATES THAT THE STRUCTURE SHARING ASSUMPTIONS IN HM 5.3 ARE UNREALISTIC. PLEASE COMMENT ON WHY THE STRUCTURE SHARING ASSUMPTIONS IN HM 5.3 ARE APPROPRIATE IN A FORWARD LOOKING NETWORK.

A. The structure sharing assumptions in HM 5.3 are very appropriate for a forward looking network. Structure sharing occurs when multiple utilities or providers are able to place their facilities jointly on either pole structures, in buried trenches or direct plow applications or in underground conduit trenches.

In aerial plant, where generally poles are utilized as support structures, utilities are able to share the cost of the pole and associated structures such as anchors, etc. ILECs have joint pole agreements or attachment agreements with electric companies, cable television companies and other service providers, including municipal utilities in most locations. Attachment space on pole structures is divided between high voltage users, such as the electric company, and low voltage or communications providers due to separation requirements of the National Electric Code. Generally joint pole agreements allocate between 40 to 50 percent of the structure cost to the low voltage users and 60 to 50 percent for the electric company or high voltage users. The low voltage space or pole structure cost is then shared between the multiple users including the

ILEC, Cable Television Company, CLECs and other providers of low voltage facilities. In some instances this sharing is accomplished with the application of attachment fees or a proportionate share of the pole structure cost is allocated to the various parties. In almost any case, the communications or low voltage users pole structure cost should be divided between the ILEC and at least one other user. This results in the Telephone Company actually being responsible for 25% or less of the pole structure cost. The higher aerial structure sharing default values in HM 5.3 are actually very conservative and should be adopted by this Commission.

Structure sharing also occurs and continues to be expanding in the placement of buried and underground facilities. It is important to realize that in underground sharing the cost of trenching is shared and not the individual conduits that are placed within those trenches. However there are also situations where ILECs may place conduits for other providers. Modern buried placement equipment and materials permit the placement of multiple facilities at the same time. Cable plows are equipped with multiple cable chutes that allow the placement of as many as 12 or more cables in direct plowing operations. Specialized equipment, such a "spider plows" have been developed for these placing operations. In the competitive environment that now exists and the cost savings that can be realized by sharing the cost of burying facilities and need for utilities to work cooperatively due to limited rights of way, etc., the opportunities for sharing buried structure costs continue to expand. HM 5.3 applies a 33% sharing factor to distribution plant and a 40% sharing factor to feeder plant. These buried structure sharing default values are reasonable and should be adopted by the Commission.

HM 5.3 appropriately allocates varying percentages of structure sharing by density zone for distribution and feeder plant. The sharing percentages take into account that the opportunities for sharing underground conduit facilities are much greater in high density zones than low density zones. Again these default values are reasonable and should be applicable for Washington.

Q. HAVE YOU EVER REVIEWED ANY JOINT POLE AGREEMENTS FOR THE STATE OF WASHINGTON?

A. Yes, I have reviewed proprietary joint pole agreements that GTE Northwest had with Public Utility District No.1 of Snohomish County and some joint pole agreements that US West had executed in the State of Washington. These agreements were produced in a previous docket. These agreements support my conclusions.

Q. MR. MURPHY HAS ALSO CRITICIZED HM 5.3'S STRUCTURE SHARING BETWEEN FEEDER AND DISTRIBUTION PLANT AND STRUCTURE SHARING BETWEEN DISTRIBUTION AND INTEROFFICE FACILITIES. PLEASE EXPLAIN HOW STRUCTURE SHARING OCCURS WITH THESE FACILITIES AND WHY MR. MURPHY'S CRITICISM IS INVALID.

A. Any OSP engineer who has actually designed the local network would be well aware of how structure sharing occurs between these types of plant. Feeder routes typically extend from the central office in four directions. Usually the north route is considered Route #1. Generally an SAI will be located a quarter to half way within the distribution area being served, and feeder cables will occupy the same structure, pole line or buried trench with the distribution cables that are extending to the customer locations for a portion of the route. In addition, any feeder cables extending to distribution areas beyond would also typically be placed on structure with distribution cable. HM 5.3 appropriately assumes that feeder plant will be able to share structure with distribution 55% of the time.

Interoffice fiber is typically placed along the same routes extending from the central office as feeder cable. This structure sharing is appropriately assumed to occur for 75 % of the interoffice structure. The remaining 25% is assumed to require its own structure. This would be the portion of the interoffice route where central office boundaries meet.

Q. HAS VERIZON PRODUCED ANY EVIDENCE IN THIS DOCKET THAT INDICATES INTEROFFICE AND FEEDER PLANT SHARING STRUCTURE?

A. Yes. Verizon's "Proprietary" Engineering Guidelines include the following guideline or directive concerning interoffice and feeder facilities being with the same structure: *****Begin Confidential*****

*****End Confidential*****. Obviously, Verizon recognizes that its interoffice facilities and feeder facilities are in the same routes and on the same structure. Mr. Murphy's structure sharing criticisms contradict Verizon's own engineering guidelines.

Q. ON PAGE 22 OF HIS TESTIMONY MR. RICHTER CRITICIZES THE AERIAL STRUCTURE SHARING ASSUMPTIONS IN HM 5.3 ON THE BASIS THAT CABLE OPERATORS ARE FRANCHISED TO OFFER RESIDENTIAL SERVICE AND WOULD NOT WANT TO PLACE THEIR CABLE ON POLES THAT PASS BUSINESSES. PLEASE COMMENT ON HIS CRITICISM.

A. Mr. Richter fails to recognize that cable operators typically would have to attach their cables to the pole structures whether their service was for a residence or a business. The same poles are utilized for both because in most instances, residential cable service passes through commercial or business areas to reach the residential customer locations. In addition, Mr. Richter has misinterpreted HM 5.3 aerial structure sharing assumptions in the second least density zone. The model assumes that the Telephone Company will be responsible for 33% of the cost. This means that the Telephone Company would share low voltage space with another provider on a percentage of the poles in this density zone.

Q. HAS MR. RICHTER CORRECTLY STATED HOW JOINT POLE AGREEMENTS ARE ADMINISTERED AND THE COST OF STRUCTURE SHARING IS ACCOMPLISHED?

A. No. As demonstrated by my description above, Mr. Richter has not correctly described how joint pole agreements are administered and costs are shared.

Q. MR. MURPHY HAS CLAIMED THAT BURIED STRUCTURE SHARING WOULD RESULT IN WIDER AND DEEPER TRENCHES. PLEASE COMMENT.

A. Mr. Murphy incorrectly claims that it would be necessary to provide wider and deeper trenches if buried and underground structure sharing takes place. Typically, whenever buried or underground structure sharing takes place it is not necessary to provide wider and deeper trenches in most applications. Even if a trench should need to be wider or deeper, the additional contractor cost is very minimal and sharing would still be desirable and cost effective.

Q. IF JOINT BURIED TRENCHING IS NOT BEING UTILIZED, WHAT PLACEMENT METHOD IS GENERALLY USED AND WHAT AFFECT DOES THAT HAVE ON COST?

A. If for some reason joint buried trenches are not being utilized, the typical placement method in many density zones, especially the least dense zones, would be direct plowing placement. In the more dense zones, placement may involve trenching, plowing or boring or a combination of those placement methods. If the direct plow method is utilized, the cost is usually considerably less than trenching and would off set structure sharing saving in the lower density zones.

Q. VERIZON WITNESSES HAVE CLAIMED THAT THERE HAVE BEEN NO RECENT PLACING METHODS OR TECHNIQUES DEVELOPED THAT HAVE IMPROVED INSTALLATION PERFORMANCE. IS THAT A TRUE STATEMENT?

A. No. There have been various technological improvements that have increased the efficiency of placing and installation work. For example the "jetting" or blowing of fiber has greatly improved the efficiency for placing fiber cables. Verizon's own Engineering Guidelines recognize the efficiency that can be achieved by blowing fiber cable.

D. INPUT VALUES & ASSUMPTIONS

Q. VERIZON WITNESSES HAVE CRITICIZED THE INPUT VALUES AND ASSUMPTIONS IN HM 5.3 AS UNSUBSTANTIATED AND INSUPPORTABLE AND ONLY BASED UPON EXPERT OPINION. PLEASE COMMENT ON THOSE CRITICISMS.

A. The HM 5.3 input values and assumptions are supported by documented evidence and expert opinions from a team of very experienced outside plant engineers and network administrators. Documented evidence has included numerous Proprietary and non-proprietary ILEC contracts that have been produced in several dockets, contractor surveys, extensive personnel experience by various HAI engineering team members in the actual awarding and administering contracts for many of these inputs. Proprietary contracts and documents provided by GTE in previous dockets have also validated the reasonableness of the HM 5.3 input values. The HM 5.3

Inputs Portfolio provides in-depth support for every default input value and engineering assumption used in the model.

Q. PLEASE EXPLAIN WHY NO SEPARATE MANHOLES ARE REQUIRED FOR THE PLACEMENT OF UNDERGROUND DISTRIBUTION PLANT THAT MR. MURPHY CRITICIZES IN HIS TESTIMONY.

A. It would be inappropriate to calculate separate manholes in underground distribution plant because distribution plant in these typically densely populated areas would be placed through manholes provided for feeder plant. Also in these environments, building owners generally are responsible for providing conduit into their buildings from the curb or property line. The need for separate distribution manholes would be very rare in an efficiently designed forward looking network.

Q. PLEASE COMMENT ON MR. MURPHY'S CRITICISM OF POLE INSTALLATION COST IN HM 5.3 OF $216 PER POLE.

A. In his criticism of Mr. Murphy has neglected to research what pole cost data GTE and Sprint filed with the FCC concerning pole cost in the State of Washington. GTE's pole material cost was $134 and labor cost was $266.99 for a total pole investment of $400.99. Sprint's pole material cost was $217, with $100 for labor, equaling a total pole investment of $317. These pole investments compare to HM 5.3 pole material cost of $210, labor of $216 for a total pole investment of $417. HM 5.3's pole investment is $100 higher than Sprint's and $17 higher than GTE. The following table illustrates these values and the reasonableness of HM 5.3 pole costs:

State of Washington Pole Investment Comparison			
Company	**Material**	**Labor**	**Total Pole Investment**
Sprint	**$217.00**	**$100.00**	**$317.00**
GTE	**$134.00**	**$266.99**	**$400.99**
HAI 5.3	**$201.00**	**$216.00**	**$417.00**
Average Cost	**$184.00**	**$194.33**	**$378.33**
Source: Data filed with FCC for Universal Service Fund			

Q. ON PAGE 76 OF HIS TESTIMONY MR. MURPHY CLAIMS THAT THE AERIAL CABLES IN THE HIGHEST DENSITY ZONE SHOULD INCLUDE POLE INVESTMENT. PLEASE EXPLAIN WHY THE HAI 5.3 CALCULATIONS ARE CORRECT.

A. Mr. Murphy's claim is incorrect. Aerial cables in the highest density zone would be comprised of service laterals in conduit to buildings, block cable attached to buildings or riser cables placed within buildings. HM 5.3 has correctly calculated the investment for aerial cables in the highest density zone.

Q. MR. MURPHY ON PAGE 83 HAS CLAIMED THAT HM 5.3 DOES NOT CALCULATE COSTS FOR DOWN GUYS AND ANCHORS CORRECTLY. ARE HIS CRITICISMS VALID?

A. Definitely not, for two reasons. First, anchors and guys are not classified as capital items of plant, but as exempt materials and therefore are correctly not capitalized within the model. Second, anchors are typically shared with other utilities for cost savings and more importantly to minimize the number of anchor rods being placed.

Q. MR. MURPHY HAS CRITICIZED HM 5.3 DROP LENGTHS AND CLAIMS THAT AVERAGE NATIONAL DROP LENGTHS ARE NOT RELEVANT. PLEASE EXPLAIN WHY NATIONAL DROP LENGTHS AVERAGES ARE APPROPRIATE.

A. Comparisons to the national average drop lengths are very relevant in determining the appropriate drop length. Residential areas and developments across the country have been designed very similarly and the average drop length required to reach those residences are likewise very similar. In fact in Anchorage, Alaska, General Communications Inc. (GCI) had an independent drop length study performed on a random sampling of drops, and in that study the average drop length was 61.3 feet. The drop lengths used in the HM 5.3 model are very reasonable.

Q. EARLIER IN YOUR TESTIMONY YOU MENTIONED THAT MR. MURPHY AND OTHER VERIZON WITNESSES SHOULD HAVE REVIEWED VERIZON'S OWN PROPRIETARY PRICING AND LABOR CONTRACTS PRIOR TO CRITICIZING THE HM 5.3 COST INPUTS. HAS VERIZON PROVIDED ANY PUBLIC OR PROPRIETARY DOCUMENTATION THAT SUBSTANTIATES THE REASONABLENESS OF THE HM 5.3 INPUT VALUES?

A. Yes, Verizon has provided limited proprietary documentation that strongly supports the reasonableness of the HM 5.3 Inputs, again in the form of Verizon's "Proprietary" Engineering Guidelines. Included with those guidelines was NETWORK PLANNING GUIDELINE NPG-99-001, Issue 3, September 2001, 00625-OSP. On page 13 of those guidelines Verizon's actual cost for 12, 24, 216 and 432 fiber cable is stated. *****Begin Confidential*****

*****End Confidential*****. Verizon's cable costs were developed from existing Verizon Corporate Sourcing contracts. This information clearly demonstrates that HM 5.3 input values are extremely reasonable and actually overstate the cost that Verizon and other ILEC are paying for materials.

Q. HAVE YOU FOUND THAT THIS SAME OVERSTATEMENT OF MATERIAL COST IN OTHER PROCEEDINGS OR REGIONS OF THE COUNTRY?

A. Yes. Whenever ILECs have produced their actual vendor and contractor contracts, which are usually classified as Confidential, the costs or prices used in HM 5.3 have been very reasonable in comparison. For example last year while working in Alaska I had the opportunity to review fiber cable costs for Alaska Communications Systems, (ACS), and found their actual fiber prices to be lower than the fiber cost used in HM 5.3, despite the expectation that prices in

Anchorage, Alaska, would be higher than elsewhere in the country due to increased shipping costs and other factors.

Q. IN ADDITION TO CABLE COSTS, WHAT OTHER MATERIALS ARE GENERALLY OVERSTATED IN HM 5.3?

A. Some of the other plant material cost that are overstated in HM 5.3 include drop material, NIDs, SAIs, DLC hardware and DLC channel units to name a few. If this Commission has the opportunity to compare HM 5.3 material prices to confidential Verizon's Corporate Sourcing contracts or any other proprietary ILEC contract that has been competitively bid, they will realize the reasonableness of HM 5.3's cost inputs. Not surprisingly, the material that Verizon has filed with the Commission in this proceeding includes no such information.

Q. HAVE VERIZON'S OWN WITNESSES EVER DISCUSSED VERIZON'S ACTUAL CONTRACTS IN THEIR TESTIMONY?

A. No they have never discussed the actual costs or prices that Verizon has negotiated with vendors, suppliers or contractors in their testimony. Either they are not aware of these existing contracts or have conveniently avoided researching the costs that Verizon currently is incurring.

Q. EARLIER IN YOUR TESTIMONY YOU DISCUSSED THE INFORMATION IN VERIZON'S PROPRIETARY ENGINEERING GUIDELINES THAT INDICATED VERIZON'S ENGINEERING, MATERIAL AND INSTALLATION RELATIONSHIP FOR COPPER CABLE COST. HAVE YOU COMPARED THAT

INFORMATION TO THE DATA THAT MR. MURPHY AND MR. TARDIFF HAVE PRESENTED IN TABLES 7 & 8 IN THEIR TESTIMONY?

A. Yes, I have compared the HM 5.2a and HM 5.3 engineering, material and installation relationships that Mr. Murphy and Mr. Tardiff have presented in their testimony. The following table indicates the material, installation and engineering relationships (percentages) of their tables with the information that was presented in Verizon's "Proprietary" Engineering Guidelines. The table provides a comparison between HM 5.3 and the information Verizon is actually providing to their engineers and supports the HM assumptions**. ***Begin Confidential *****

*****End Confidential*****

E. UNBUNDLING IDLC

Q. ON PAGE 19 OF HIS TESTIMONY MR. MURPHY CLAIMS THAT AN EFFICIENT FORWARD LOOKING NETWORK WOULD NOT UTILIZE 100%

IDLC. PLEASE COMMENT ON WHY IT IS APPROPRIATE TO ASSUME 100% IDLC IN A FORWARD LOOKING NETWORK.

A. Contrary to Mr. Murphy's belief, an efficient forward looking network would place integrated digital loop carrier, IDLC. The cost savings are substantial and his argument concerning the unbundling of IDLC, which I will address next, is invalid. In other dockets with Verizon where I have participated and had the opportunity to review Verizon's proprietary engineering guidelines and directives, it was very apparent that they stress the substantial savings achieved with IDLC deployment.

Q. ON PAGE 47 OF HIS TESTIMONY MR. MURPHY CLAIMS THAT UNBUNDLING GR-303 DLC WILL REQUIRE THE USE OF UNIVERSAL DLC. IS THAT CORRECT?

A. Definitely not. The most efficient method to unbundle GR-303 IDLC loops is on a DS-1 level by utilizing the multiple interface group feature that is exists in NGDLC systems. His statement that it cannot be accomplished is incorrect. The technology is available and is being utilized by other carriers to unbundle GR-303 IDLC. In Alaska, ACS and GCI have successfully unbundled IDLC with multiple interface groups using Advance Fibre Communications DLC equipment. Other vendor IDLC equipment similarly has the same capabilities. Furthermore, while it would be extremely inefficient and unrealistic for a CLEC to want to unbundle a single UNE loop provisioned over DLC, it is very efficient to unbundle loops fed via IDLC as DS-1. This method also improves service quality by eliminating the unnecessary "A" to "D" conversion that Mr. Murphy advocates. His argument that limited multiple interface groups would prohibit this type of unbundling is unfounded. There is the capability for CLECs to share an interface group should that rare situation arise. It appears much easier for Mr. Murphy to say it cannot be done than to understand the technology that enables it to occur efficiently.

IV. CONCLUSION

Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A. My rebuttal testimony has been based upon my extensive 33 years of experience in the design, construction and operational management of outside plant networks. The engineering assumptions and input values used in HM 5.3 are very reasonable and realistic, as I have described in this testimony. Verizon's criticisms of the engineering assumptions and input values in the model are unjustified and invalid. It is apparent in their criticisms that they have failed to review Verizon's own engineering guidelines and other documentation that I have referenced throughout this rebuttal testimony. Verizon's own competitively bid contracts substantiate the reasonableness of HM 5.3's input values. In addition, some of Verizon's witnesses have testified concerning the design and engineering of a forward looking network without ever having the responsibility of being an outside plant engineer or supervising those engineering personnel.

I would highly recommend that this Commission accept the engineering assumptions and input values as presented in HM 5.3.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.