CONFIDENTIAL

DECLASSIFIED See DN 01219-03 MR 2.5.03

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Investigation into Pricing Unbundled Network Elements	) DOCKET NO. 990649B-TP

REBUTTAL TESTIMONY OF

DR. AUGUST H. ANKUM

QSI CONSULTING, INC.

(Addressing Cost Methodologies for Recurring and Non-recurring Charges, Loops, EELs, Switching, Geographic De-averaging, Cost of Capital and Depreciation)

On Behalf of

AT&T Communications of the Southern States, Inc.
MCImetro Access Transmission Services, LLC &
MCI WorldCom Communications, Inc.
Florida Digital Network, Inc.
(collectively called the "ALEC Coalition")

January 30, 2002

THIS TESTIMONY AND THE ATTACHED EXHIBITS CONTAIN CONFIDENTIAL AND PROPRIETARY INFORMATION DENOTED BY ** **

CONTENTS

AT&T COMMUNICATIONS OF THE SOUTHERN STATES, INC.

MCImetro ACCESS TRANSMISSION SERVICES, LLC

MCI WORLDCOM COMMUNICATIONS, INC.

Florida Digital Network, Inc.

(collectively called the "ALEC Coalition")

REBUTTAL TESTIMON OF DR. AUGUST H. ANKUM

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 990649B-TP

JANUARY 30, 2002

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Dr. August H. Ankum. I am a Senior Vice President at QSI Consulting, Inc., a consulting firm specializing in economics and telecommunications issues. My business address is 1261 North Paulina, Suite #8, Chicago, IL 60622.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A. I received a Ph.D. in Economics from the University of Texas at Austin in 1992, an M.A. in Economics from the University of Texas at Austin in 1987, and a B.A. in Economics from Quincy College, Illinois, in 1982.

My professional background covers work experiences in private industry

and at state regulatory agencies. As a consultant, I have worked with large companies, such as AT&T, AT&T Wireless and MCI WorldCom ("MCIW"), as well as with smaller carriers, including a variety of competitive local exchange carriers ("CLECs") and wireless carriers. I have worked on many of the arbitration proceedings between new entrants and incumbent local exchange carriers ("ILECs"). Specifically, I have been involved in arbitrations between new entrants and NYNEX, Bell Atlantic, US West, BellSouth, Ameritech, SBC, GTE and Puerto Rico Telephone. Prior to practicing as a telecommunications consultant, I worked for MCI Telecommunications Corporation ("MCI") as a senior economist. At MCI, I provided expert witness testimony and conducted economic analyses for internal purposes. Before I joined MCI in early 1995, I worked for Teleport Communications Group, Inc. ("TCG"), as a Manager in the Regulatory and External Affairs Division. In this capacity, I testified on behalf of TCG in proceedings concerning local exchange competition issues, such as Ameritech's Customer First proceeding in Illinois. From 1986 until early 1994, I was employed as an economist by the Public Utility Commission of Texas ("PUCT") where I worked on a variety of electric power and telecommunications issues. During my last year at the PUCT I held the position of chief economist. Prior to joining the PUCT, I taught undergraduate courses in economics as an Assistant Instructor at the University of Texas from 1984 to 1986.

A list of proceedings in which I have filed testimony is attached hereto as Exhibit AHA-1.

I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of this testimony is to evaluate the merit of a number of Verizon, Inc.'s ("Verizon's") cost studies. In general, I will discuss cost studies for loops, switching, and Enhanced Extended Links (EELs), cost of capital, depreciation, as well as methodological issues related to TELRIC and non-recurring costs.

The cost standard by which I judge these studies is the TELRIC methodology, as established and explained in the FCC's Local Competition Order (*First Report and Order*, CC Docket No. 96-98, released August 8, 1996) and the previous TELRIC Orders of the Florida Public Service Commission.

Further, I believe that it is important to place this TELRIC proceeding in the larger context of the troubled state of the competitive telecommunications industry in general. To this purpose, I present the results of a financial analysis of the major CLECs, including the larger IXCs. This analysis shows that the CLEC industry is at a critical juncture and underscores how important it is that the Commission approve appropriate, TELRIC based rates.

Specifically, I have calculated the change in market value of the CLEC industry over the period of December 31, 1999 through April 23, 2001, based on the value of the common shares held by investors. For the IXC and CLEC industries the total decline in market capitalization over this period is a staggering *$405 billion, or 64%(see Exhibit 2).* The data for just CLECs, excluding IXCs, is $122 billion, or 69%. By contrast, the RBOCs experienced declines in market capitalization over the same period of only 16%, a percentage roughly comparable to the decline in the S&P 500 Index. While this analysis is not specific to Florida, the Commission should consider that many of the carriers operating in Florida are affected by these national trends.

Clearly, there are a large number of reasons for why the CLECs have experienced such a dramatic decline in market value. One of the more important reasons, however, is the fact that CLECs continue to pay too much to the ILECs -- their main competitors – for network elements and collocation services, facilities and services without which they simply cannot enter local markets efficiently and viably. It is against the backdrop of this analysis that I urge the Commission to rigorously apply the TELRIC principles delineated in the FCC's First Report and Order and *reject* all attempts on the part of Verizon to pad its rates with inefficiently incurred costs or otherwise increase rates in order to erect barriers to entry. As my financial analysis shows, the CLEC industry simply can no longer afford to shoulder the burden of anti-competitive proposals.

Q. ARE THERE OTHER WITNESSES FILING ON BEHALF OF THE COALITION?

A. Yes. Also filing testimony for the CLEC Coalition are the following witnesses: Mr. Warren R. Fischer and Mr. Sidney L. Morrison. Mr. Warren Fischer discusses Verizon's shared and common costs and annual charge factors. Mr. Sidney L. Morrison discusses issues related to Verizon's proposed non-recurring charges.

II. SUMMARY OF FINDINGS AND RECOMMENDATIONS

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND STATE YOUR RECOMMENDATIONS.

A. From my evaluation of Verizon's studies, I have concluded that Verizon's ICM as filed in this proceeding, is not auditable, is not reliable, does not model the least cost most efficient network design and cannot be used to produce UNE rates that are compliant with FCC TELRIC pricing rules. In addition, I found a large number of errors. While some of those errors may be the result of disagreements on how to apply TELRIC principles appropriately, others seems to point to more deliberate efforts on the part of Verizon to obstruct this Commission's and intervenors' efforts to review its cost model and in an effort to create unreasonably high UNE rates and protect its customer base against competitive entry.

In general, it should be noted that Verizon rates proposed here in Florida are many times higher than Verizon rates in other jurisdictions. This is inappropriate. Verizon is the nation's largest incumbent LEC and should be able to capitalize on all the efficiencies of scale and scope afforded by the size of its operations. This is particularly true for switching studies (since switches are purchased on a serving area wide vendor contracts that reflect the purchasing power of all of Verizon's operations) and operational support systems, but it is also true for other parts of Verizon's operations. In view of this, the Commission should not treat the presented cost studies as GTE studies – based on the costs of a much smaller company – but as Verizon studies. Such treatment is essential under TELRIC because the foundation of TELRIC is that it is forward looking. The Commission must look forward in its assessment of Verizon-FL as part of the larger Verizon and not back to the old GTE Florida, Inc.'s past.

My findings and recommendations are the following:

Loop Cost Studies:

- Verizon's ICM does not model the forward-looking least cost network architecture.

  - ICM fails to place the RT as close to the customer as possible to capitalize on the efficiencies of the relatively inexpensive fiber

facilities. As a result, the model assumes too much copper in the feeder and the distribution links. Often, the use of a secondary SAI (serving area interface) increases the use of copper facilities. This flaw is hard-coded in ICM and cannot be changed by the Commission or intervenors.

- ICM fails to consider that for larger buildings, it is less expensive to place the RT on the customer premises, thus avoiding the use of expensive copper feeder and distribution facilities. The efficiency of this practice is recognized by Verizon in other jurisdictions. This flaw is hard-coded in ICM and cannot be changed by the Commission or intervenors.

- The length of drop and entrance cables modeled by ICM is not accurate and is too long. Further, drop and entrance cables lengths should be de-averaged. For zones 1 through 3, the lengths should be selected as *user defined inputs* (an option is ICM) at 75, 100, and 150 feet, respectively. This flaw is hard-coded in ICM and cannot be changed by the Commission or intervenors

- Verizon's ICM fails to determine the actual location of any customer. Unlike the HAI model or BellSouth's BSTLM, Verizon's ICM does not identify were customers are located. Verizon's ICM

make an erroneous assumption that customers are equally distributed throughout a fixed arbitrary grid. This erroneous assumption results in excessive amounts of plant being modeled and plant being placed to locations where no customers exist.

- Verizon's fill factors are generally too low and do not reflect a forward-looking, least cost network built for "a reasonable projection of actual demand." Verizon includes excessive amounts of spare to serve future customers. Since current customers – the CLECs – are not the cost causers of costs for facilities to serve anticipated future demand, this spare is inappropriate in a TELRIC study.

- Cost studies for Digital Loop Carrier ("DLC") based loops should be assumed to be Integrated DLC technologies. No universal service interfaces (channel units) should be used in the studies.

- Verizon fails to address the concentration ratio on the IDLC. The concentration ratio should be 6:1. (This flaw is hard-coded in ICM and cannot be changed by the Commission or intervenors.)

DS-1 Unbundled Loops:

- Verizon's proposed charges for DS-1 Loops are a multiple of the rates charged by Verizon in other jurisdictions and those charged by some other RBOCs. The costs are inflated for the most part because

Verizon assumes excessively low fill factors for its SONET based transport.

EELs:

- As with many of its other rates, Verizon's rates for multiplexing are a multiple of those charged by other ILECs and by Verizon itself in other jurisdictions. Much of the costs are calculated in the "black-box" ICM model, and thus the source of the inflated costs can not be determined with certainty. However, most likely it concerns excessively low fill factors for 357c equipment. The fills should be no lower than 90%.

Switching Cost Studies:

- The GTD-5 is not used by Verizon anywhere except for former GTE operations. It should be eliminated from the forward-looking, least-cost technology mix.

- Switching studies should be based on an appropriate weighting of the high discounts for new switches and low discounts for growth on existing switches -- not the lower growth discounts used by Verizon in SCIS and COSTMOD. Exhibit AHA-3 provides calculations of determining the appropriate weighing of growth and cutover lines using a method that considers the relative proportion of new and growth facilities over the entire economic life of a switch. The result is a

weighing of 72% new/cutover line discounts and a 28% growth line discounts.

Verizon's rate proposal that requires CLECs to purchase features on an *a la carte* basis is generally anticompetitive and serves only to artificially inflate recurring and non-recurring charges. Monthly switch port charges should include the availability and use of all features. This eliminates the need for any service ordering activities and associated nonrecurring costs for features.

Non-recurring Charges:

- Nonrecurring charges should be based on forward-looking, least cost processes and exclude the need for expensive labor intensive manual processes.

Geographic De-Averaging:

- Rates should be appropriately de-averaged to reflect cost variations across geographic regions. Verizon's opposition to de-averaging based on arguments regarding universal service concerns should be ignored.

Cost of Capital:

- Based upon the Commission's decision in the BellSouth phase of this proceeding and the orders I cite from New York and New Jersey, I recommend that the Commission set Verizon's cost of capital no higher than the 10.24% approved for BellSouth and no lower than the 8.8% approved for Verizon in New Jersey. In doing so, the Commission should require that equity comprise no more than 60% of Verizon's capital structure.

Depreciation:

- I recommend that the Commission use the range of FCC approved lives. However, if the Commission does not accept my recommendation to use the range of projection lives approved by the FCC, then I recommend that the Commission adopt the lives approved for BellSouth in the earlier phase of this proceeding since they are relatively close to those approved by the FCC.

III. GENERAL RATE COMPARISON AMONG VERIZON COMPANIES

Q. HAS QSI REVIEWED VERIZON'S COST STUDIES IN OTHER JURISDICTIONS?

A. Yes. Over the last two years, QSI has participated in TELRIC proceedings for Verizon in a number of jurisdictions, such as New Jersey, New York, Maryland and Massachusetts.

Q. SHOULD VERIZON'S COSTS HERE IN FLORIDA BE COMPARABLE TO THOSE IN OTHER JURISDICTIONS AND REFLECT THAT VERIZON IS THE NATION'S *LARGEST ILEC*?

A. Yes. But reading Verizon's testimony, it is obvious that the company is using cost analysts and costs studies from the old GTE companies. The witnesses are former GTE employees and the ICM cost model is used nowhere else by Verizon but for the former GTE companies.

The Commission should make every effort, however, to evaluate the cost studies and the proposed rates against the standards that applys to *Verizon as the nations' largest local exchange carrier.* Since the merger, the former GTE companies operate under Verizon management and procedures and facilities and network equipment are being procured under Verizon contracts. The combined company -- as Verizon itself argued in its merger application -- will be able to operate more efficiently by implementing best practices and leveraging its buying powers associated with large volume purchases.

In the post-merger environment, therefore, it is important that the Commission evaluate Verizon's cost studies and rates filed in the current proceeding against, among other standards, filings made by Verizon for the same unbundled elements in proceedings in other states. Of course, this type of comparative evaluation, which involves comparisons of rates and costing procedures, is standard practice for larger ILECs, such as

Verizon, SBC, BellSouth and Qwest. In fact, the Commission itself routinely considers for comparison evidence concerning, for example, BellSouth's proposals and rates in other BellSouth states. Such cross-state comparisons reveal interesting patterns and can point the Commission to inconsistencies in company positions that may adversely affect the public interest in Florida. In short, given that the former GTE operations now operate as part of Verizon, the studies and rates should be evaluated not just against the FCC's TELRIC standard but against Verizon filings in other states as well as those of similar large ILECs such as BellSouth.

Q. ALTHOUGH COMPARISONS TO OTHER JURISDICTIONS ARE USEFUL, SHOULD RATES BE TELRIC BASED?

A. Yes. The comparison of Verizon's cost studies and rate proposals filed here in Florida against those filed by Verizon in other states only serves to detect obvious attempts to inflate costs. For example, if Verizon here in Florida proposes certain switching rates while the same switching functionality is offered by Verizon in New Jersey, New York, and other states at a fraction of the costs, then the Commission knows that Verizon's cost studies filed in Florida are artificially inflated. The rates in other states act as a "sanity check" but ultimately the Commission must set TELRIC-based rates.

Q. ARE VERIZON'S PROPOSED RATES UNREASONABLY HIGH RELATIVE TO VERIZON'S RATES FOUND IN OTHER STATES?

A. Yes. Exhibit AHA-4 compares for a select set of UNEs Verizon's rates proposed here in Florida to Verizon's rates in two other jurisdictions where Verizon's rates have recently been reviewed.

It is clear from this comparison that Verizon's proposed rates are unreasonably high relative to those that prevail in other Verizon states where rates have recently been evaluated. I believe the rates are so high because, among other reasons, the GTE witnesses and GTE cost models continue to rely on GTE's embedded operations and simply fail to reflect the post merger environment and the efficiencies of Verizon as the largest ILEC in the nation.

Q. BUT ARE THERE NO ASPECTS OF VERIZON'S OPERATIONS HERE IN FLORIDA THAT WOULD CAUSE IT TO HAVE HIGHER COSTS THAN ELSEWHERE?

A. This argument should be treated with great suspicion. First, Verizon has used this very same argument in other states, such as New York, to justify higher proposed rates. Second, this argument is unpersuasive where it concerns costs related to functions such as switching and service ordering. On a forward-looking basis, switches will be purchased under the Verizon contracts that are serving-area wide and reflect the purchasing power of the larger corporation. Given that some of the cost

components of switching, such as real estate, are likely to be cheaper for Verizon's operations here in Florida than, for example, those in Manhattan, switching costs here in Florida should be comparable and possibly lower than those in New York. Also, service ordering and many functions associated with the non-recurring charges should reflect the efficiencies of Verizon's operations and should not be evaluated based on the much smaller GTE operations. GTE's former service ordering centers presumably are – or should be – consolidated with the Verizon service ordering centers (surely, they should be presumed consolidated for cost study purposes.) As such, the costs should be roughly the same as elsewhere for Verizon. Moreover, given the size of Verizon's operations, many of the non-recurring charges should, in fact, be no higher than, say, those approved by the Commission for BellSouth.

Third, as long as costs are appropriately de-averaged, the Commission should be able to make an apples-to-apples comparison between Verizon's rates proposed here and the Verizon's rates that prevail in other states. For example, it is not clear to me why Verizon's proposed loop rates in the rural areas (Zone 3) should be *more than seven times as high* as Verizon's loop rates in wooded, remote, mountainous, rural New Jersey. One is left wondering: how wild and uncultivated does Verizon think that rural Florida is?

In short, it is no longer appropriate for the former GTE analysts to rely on the notion that their cost studies are for a smaller more rural local exchange company that may need protection in order to preserve universal service, arguments heavily relied on in the past by GTE witnesses. Verizon is the largest ILEC in the nation – the Commission should treat it as such.

Q. IF THE COMMISSION ARTIFICIALLY PROTECTS VERIZON FROM COMPETITION WILL THIS BE DISCRIMINATORY TOWARDS BELLSOUTH AS WELL?

A. Yes. Obviously, at the rates proposed by Verizon, no UNE based competition will be possible in Verizon's serving area in Florida. This result should be most troublesome to BellSouth. First, to the extent that competition continues to grow in Florida, it will tend to favor the BellSouth serving area since the UNE rates are relatively more favorable. Further, as competition develops between BellSouth and Verizon, BellSouth faces an uphill battle in that Verizon will have certain territories that are relatively off limit to competition while the Commission may continue to set rates for BellSouth's UNEs that to a greater or smaller degree do allow for competitive entry. The old practice of protecting GTE as a smaller and more rural company is simply no longer appropriate and will lead to troublesome distortions not just for the CLECs but for BellSouth as well.

IV. GENERAL COSTING AND PRICING ISSUES

Q. PLEASE DISCUSS THE GENERAL COSTING PRINCIPLES BY WHICH VERIZON-FL'S COST STUDIES SHOULD BE EVALUATED.

A. In general, Verizon's cost studies should be reviewed in light of the FCC's TELRIC principles as defined in the FCC's Local Competition Order and the Commission's own TELRIC Orders. In general, the TELRIC principles can be summarized as follows:

Principle # 1: *The firm should be assumed to operate in the long run.*

Principle # 2: *The relevant increment of output should be total company demand for the unbundled network element in question.*

Principle # 3: *Technology choices should reflect least-cost, most efficient technologies.*

Principle # 4: *Costs should be forward-looking.*

Principle # 5: *Cost identification should follow cost causation.*

Q. HAS THE FCC MADE OTHER RELEVANT COMMENTS REGARDING

OPERABILITY OF COST MODELS?

A. Yes. In addition to these TELRIC principles, the FCC also noted that *cost models should be transparent, open and verifiable* by Commissions and intervenors. The FCC directed that in upcoming cases to be arbitrated by the FCC, involving VerizonVerizon and three CLECs, computerized cost models "must be submitted in a form that allows the Arbitrator and the parties to alter inputs and determine the effect on cost estimates." (Procedures Established for Arbitration of Interconnection Agreements Between Verizon, AT&T, Cox, and WorldCom, DA 01-270 (February 1, 2001), Paras. A.2.1.i; A.3.1.c.)

In my review of the cost studies I will continuously refer back to these basic but essential cost principles.

Q. IN YOUR OPINION, IS VERIZON' COST MODEL TRANSPARENT, OPEN AND VERIFIABLE BY COMMISSION'S AND INTERVENORS?

A. No. The ICM is not an open model. Cost analysts cannot verify the model itself because it is nearly impossible to audit the algorithms without extraordinary effort. Moreover, certain types of assumptions are essentially "embedded" in the software program and cannot be altered without rewriting and recompiling the programming code. I will elaborate on the problems with Verizon's cost model later in my testimony.

V. THE CLECS CAN NO LONGER AFFORD INFLATED RATE PROPOSALS

Q. HAVE YOU PERFORMED A FINANCIAL ANALYSIS TO SHOW THAT THE COMPETITIVE INDUSTRY IS NO LONGER ABLE TO SUPPORT VERIZON'S INFLATED RATE PROPOSALS?

A. Yes. I have performed an analysis that calculates the dramatic change in market value of the CLEC industry over the period of December 31, 1999 through April 23, 2001, based on the value of the common shares held by investors. For the IXC and CLEC industries, the total decline in market capitalization over this period is a staggering *$405 billion, or 64%.* Exhibit AHA-2 illustrates the CLECs, IXCs, and RBOCs for which the change in market capital has been calculated. The data for just CLECs, excluding IXCs, is *$122 billion, or 69%.* By contrast, the RBOCs experienced declines in market capitalization over the same period of *only 16%,* a percentage roughly comparable to the decline in the S&P 500 Index.

Q. PLEASE DESCRIBE IN MORE DETAIL HOW YOU CALCULATED THE CHANGE IN MARKET CAPITALIZATION.

A. As noted, this change in value was determined from December 31, 1999 to April 23, 2001. Market capitalization as of December 31, 1999 was used as the baseline value for two primary reasons: (1) this point in time was still within the bull market period before the first significant market correction took place in the first quarter of 2000; and (2) the components

necessary to calculate market capitalization, common shares outstanding and market price, were both readily available from publicly available sources such as websites that provide current and historical price quotes and Securities Exchange Commission ("SEC") filings.

The companies included in the analysis were classified into three categories:

(1) CLECs & Wholesale Suppliers

This category includes CLECs and wholesale suppliers. Not included are the CLEC divisions of the major IXCs – they are included in the third category described below. (The companies included in this category are identified in Exhibit AHA-2.)

(2) RBOCs

This category includes the four remaining RBOCs: Qwest, SBC, BellSouth, and Verizon.

(3) Major IXCs

This category includes the major IXCs: Williams Communications, Level 3 Communications, Global Crossing, Sprint, WorldCom, and AT&T.

These categories mirror the groups of companies that are compared and contrasted within the Kellogg-Huber Report of April 5,

2001, *Competition for Special Access Service, High Capacity Loops, and Interoffice Transport*, attached to the petition filed by Verizon, SBC and BellSouth before the FCC to be relieved of their obligations to provide unbundled access to high-capacity facilities. (Joint Petition of BellSouth, SBC, and Verizon for Elimination of Mandatory Unbundling of High-Capacity Loops and Dedicated Transport, CC Docket No. 96- 98, DA 01-911, April, 2001).

Major IXCs such as AT&T, WorldCom, Level 3, and Sprint that also operate as CLECs were separated from the CLECs & Wholesale Suppliers category because the nature and scope of their operations are quite different from the other CLECs.

The Debt to Equity ratio was also determined for each company over the same time period to measure changes in relative financial strength based on the amount of debt used to fund operations versus stockholder's equity. Large ratios or ratios that increase over time indicate declining financial strength as debt becomes a larger component of the firm's capital structure. This can be attributed to a greater use of debt as equity markets dry up, declining stockholder's equity as a result of accumulated operating deficits, or a combination of both.

Q. PLEASE DISCUSS THE RESULTS OF YOUR ANALYSIS.

A. The analysis demonstrates that the competitive carriers have suffered serious financial setbacks over the last year. The decline in market

capitalization for the three categories, CLECs & Wholesale providers, RBOCs and Major IXCs, is 69%, 16%, and 62% respectively.

A more detailed breakdown of the decline in market capitalization for these three categories of carriers is found in tables 1, 2, and 3 in Exhibit . AKA-5. The summary results are illustrated in the graphs.

A large number of publicly traded CLECs have filed for bankruptcy protection or liquidation in the last six months and others are on the brink within the year. The number of remaining CLECs that have reported negative stockholders' equity due to accumulated operating deficits increased to nine as of December 31, 2000 compared to five as of December 31, 1999.

Since the market capitalization decline of the CLECs and IXCs is significantly greater than for the RBOCs, the relative value of each group to the total of the three groups combined has also changed dramatically. Exhibit AHA-2 illustrates the increasing relative financial strength of the RBOCs over the last 15 months.

It is clear from revenue of this exhibit that the financial strength of the remaining four RBOCs is increasingly dominating the telecommunications industry. It is also clear that the state of the CLEC industry is not as rosy as Verizon would have the Commission believe.

Q. HAS THE FINANCIAL DECLINE IN MARKET CAPITALIZATION OF THE CLEC INDUSTRY BEEN NOTED BY THE FINANCIAL COMMUNITY AND THE PRESS?

A. Yes. The collapse in market value of the competitive telecommunications industry, including long distance, which is apparent from the financial data, has been duly noted by the financial community and the press. Not a day goes by without some pundit or another commenting on the dismal state of telecommunications competition. As Brian Adamik of the Yankee Group concludes:

> In telecommunications, we are rolling back the competitive progress made over the last ten years – disabling the enabling industry of economic growth when we need it most. (Brian Adamik, Yankee Group, *The Death of Competitive Telecom?* CBS MarketWatch, May 3, 2001).

Other articles go so far as to declare the entire competitive effort to be a failure and note that the RBOCs have slowly but steadily out-maneuvered their would-be competitors. A recent article in The New York Times declared that the battle is over:

> Of the Baby Bell local phone carriers, once seven in number, three [sic] remain — Qwest Communications, SBC Communications and Verizon Communications — and they are by far the most powerful and important communications companies in the nation. The corporations once known as long-distance carriers, like AT&T, are shells of their former

selves. ... The Bells — the race's tortoises — have won. (Seth Schiesel, *Sitting Pretty: How Baby Bells May Conquer Their World.* The New York Times, Money & Business, Section 3, page 1. Sunday, April 22, 2001.

The potential danger to the nation's economy cannot be overstated. As is well recognized, the telecommunications industry is a critical component in the "high-tech engine" that has propelled our economy forward over a period longer than any other in modern times. That "engine" is now at risk of being usurped – as a natural result of the corporate quest for profit maximization – by a small group of very powerful companies: the RBOCs. As Wired magazine notes in yet another article on the demise of the competitive telecommunications industry:

> The Bells own 88 percent of the local lines in the US and upgrade on their own terms – conveniently, after most of their competitors have died off. (Frank Rose, Telechasm: *Can we get to the future from here? First we have to get telecom out of the Stone Age.* Wired, May 2001, page 131).

Whatever may be the merit of these somber prognoses, the fact remains that the competitive telecommunications industry is struggling to survive. In the war of attrition, waged by the RBOCs against their competitors, in the market place, in the U.S. Congress, the courts, and before regulators, it has not gone well for the CLEC industry: and the financial community knows it. Since regulatory policies are a critical component of the

overall landscape, it is most important that regulators stand firm – now more than ever – against all attempts on the part of the ILECs to raise barriers to entry any further.

V. GENERAL DISCUSSION OF VERIZON'S (GTE'S) ICM MODEL

HAVE YOU REVIEWED VERIZON'S (GTE'S) ICM MODEL?

A. Yes, I have reviewed the written testimony, data responses, and the supporting documentation for ICM. I have also examined the ICM model itself, as it was provided on CD.

ICM is a computerized cost modeling system. It is a very complex software application that accepts certain types of inputs, and performs calculations to determine the costs of Basic Network Functions ("BNFs") and Unbundled Network Elements ("UNEs"). Included among those UNEs are the costs of loops, basic switching, vertical switch features, transport, and signaling. The ICM was written using the Delphi programming language, and also makes use of Paradox tables for data storage. This data is called on and acted upon by the Delphi programming code. Both Delphi and Paradox are software products developed by Borland International, Inc.

For switching inputs, ICM relies on information generated from two external models. One model, the "Switch Cost Information System" ("SCIS"), is produced by Bellcore. SCIS calculates basic switching and vertical switching service costs for Nortel and Lucent switches. A second

model, GTE's "COSTMOD," calculates basic switching and vertical switching service costs for the GTD-5 switch. The outputs from these switching models are input into the ICM.

In addition to the switching models, an activity-based cost study and a common cost study are conducted externally to the ICM. Finally, material costs and placement costs for those materials are included in database tables in ICM. This information is derived from material and labor contract information.

Q. MR.DAVID C.TUCEK CONTENDS THAT THE ICM MODEL IS OPEN TO INSPECTION AND REVIEW (TUCEK, DIRECT TESTIMONY, P. 10). IS THE ICM MODEL SUFFICIENTLY OPEN TO ALLOW FOR A COMPLETE AUDIT OF THE MODEL'S ALGORITHMS AND RESULTS?

A. No. Being open to inspection and being open to review is not the same as being sufficiently open to allow for a complete audit of the model's algorithms and results. While one can see the ICM's programming code, one cannot readily change it and evaluate the results of the changes. The ICM software program is not sufficiently flexible to allow model auditing and inputting of different assumptions in order to compare various possible outcome scenarios.

In New York and New Jersey, for example, Verizon provides almost exclusively Excel-based models that are completely open and that be can audited and *edited on a cell-by-cell* basis. The importance of open models cannot be overstated: cost analysts simply cannot verify cost studies

results if they cannot verify the models themselves. ICM is not an open model in that it is nearly impossible to audit the model's algorithms without extraordinary efforts that go well beyond what should be required of intervenors in regulatory proceedings – particularly since transparent Excel-based models can do everything that the ICM model does and provide easy auditing capabilities.

Further, the ICM has been designed so that certain types of assumptions are essentially "embedded" in the software program, and cannot be altered without re-writing and re-compiling the programming code. In other words, the computer model already essentially incorporates certain decisions about issues that are controversial in these type of proceedings, making it difficult or impossible to see what the result would be of an alternate assumption. The ICM is thus not an "open" system, and this makes it difficult to use as a common platform for comparing Verizon's proposals here with those presented by the company elsewhere.

For example, ICM assumes that digital loop carrier ("DLC") equipment is placed beyond a predetermined fiber-copper cross-over point, but in many instances this costly DLC equipment may serve only a few customers. In such instances, it might be more efficient to employ longer copper loops with range extension systems. This built-in assumption greatly increases loop costs by assuming a network

architecture that is illogical and wasteful, yet it cannot be easily changed within the ICM.

Q. CAN YOU PROVIDE AN EXAMPLE OF A SPECIFIC ERROR THAT INTERVENORS FOUND IN VERIZON'S LOOP MODEL IN NEW YORK THAT THEY WOULD NEVER BE ABLE TO FIND IN THE "BLACK BOX" ICM MODEL?

A. Yes. In New York, Verizon inadvertently made an error in its loop cost calculation for a type of DLC system that was one of the main cost drivers in the model. The model included DLC systems that can accommodate anywhere from 96 to 2016 lines, with a DLC system that could accommodate 672 voice grade lines being the one most common one. The model, however, recovered the cost of this 672 DLC system over 192 lines associated with a much smaller 192 DLC system as opposed to over 672 lines (prior to accounting for fill factors.) This calculation was clearly an error in the model since it differed from the manner in which the costs for the DLC systems of all other sizes were calculated. In fact, it was almost certainly a result of a "cut-and-paste" job where a Verizon cost analyst forgot to change the 192 line count (from the calculations for the 192 DLC system) to the 672 line count for the 672 DLC. The result was that the cost of the 672 DLC system was approximately 3.5 times higher than it should have been.

The important point is that while in New York other intervenors and QSI witnesses were able to examine the loop cost model in full detail and identify this type of error, here in Florida no such audit of the ICM model is possible. Quite literally, the Commission is asked to take it on faith that Verizon's analysts have made no errors in their programming of the ICM. This is a grant request that implies the heroic assumption that Verizon personnel are infallible. Given the wide and largely unexplained discrepancy between the rates proposed by Verizon in Florida and those that prevail in other Verizon states, this assumption seems entirely unwarranted. That is, there are reasons to believe that the ICM is riddled with errors that cause costs to be higher than they should be. Unfortunately, neither Staff nor intervenors are able to line edit the ICM's algorithms -- the truth is Verizon-Florida's proposed rates are based on "black box" calculations that have not been audited by either Staff or intervenors. This should trouble the Commission greatly.

Q. HOW DOES THE ICM MODEL COMPARE TO VERIZON'S EXCEL MODELS PRESENTED IN NEW YORK AND NEW JERSEY?

A. The ICM model, once one is acquainted with the model, is relatively easy to run; however, it is form over substance. The purpose of this proceeding is not to establish how *user friendly* the model is for personnel who only need to run the model for variations in a predetermined set of inputs. The purpose is to *audit* and *verify* that the model functions properly and

models the least cost network design to provide the required services and network elements to the correct locations - and, for all practical purposes, that is impossible with the ICM.

VI. VERIZON'S LOOP COST MODEL

Q. HAVE YOU REVIEWED VERIZON'S LOOP COST MODEL?

A. Yes. I have reviewed Verizon's testimony, discovery responses and electronic version of the ICM model and I have found a significant number of problems with Verizon's loop cost model.

Q. PLEASE SUMMARIZE THE PROBLEMS THAT YOU HAVE FOUND WITH VERIZON'S LOOP STUDY.

A. I have found the following problems:

-- Verizon's fill factors are generally too low.

-- IDLC technology, not UDLC technology as proposed by Verizon, is the least-cost, forward looking technology.

-- Verizon's studies fail to reflect an appropriate concentration ratio for IDLC based loops.

-- Verizon's assumed drop lengths are too long.

In addition to the aforementioned problems, Verizon's cost studies must also be changed to reflect the necessary adjustments to Verizon's shared and common cost mark-ups and annual charge factors.

In what follows, I will discuss each of these issues in more detail.

A. VERIZON'S LOOP FILL FACTORS ARE GENERALLY TOO LOW

Q. HAVE YOU BEEN ABLE TO EXAMINE VERIZON'S LOOP FILL FACTORS?

A. Not really. As previously discussed, the ICM's algorithms are cumbersome if not impossible to audit. As a result, I have not been able to determine for the various components of the loop what the fill factors are and, specifically, how and where in the model the fill factors are applied.

Q. DOES ICM REPORT CERTAIN GLOBAL FILL FACTORS?

A. Yes. The ICM model reports fill factors for both the feeder and the distribution facilities: they are 93.59% and 38.27% respectively. It is unclear, however, whether these fills are calculated to include spare applied in the model for administration, deficient pairs, and maintenance. Further, it is not clear which components of the feeder and distribution facilities are included in these calculations.

Q. ARE VERIZON'S PROPOSED LOOP FILLS APPROPRIATE?

A. No. I believe that Verizon's proposed fill factors are inefficiently low, particularly Verizon's distribution fills.

To see the importance of fill factors in cost studies, the Commission should consider that a fill factor of, for example, less than 40% for distribution facilities, such as proposed by Verizon, has the effect of increasing costs by no less than two and a half times. Thus, while it may cost Verizon only $3.00 to provide a distribution link of a basic loop, an assumed fill factor of 40% increases the costs to dependent competitors to $7.50.

In various sections below, I will discuss Verizon's proposed fill factors individually and explain why a number of them are inappropriately low. At this point, however, I will discuss why, in general, Verizon's proposed use of fill factors is discriminatory and anti-competitive.

Q. PLEASE DISCUSS SOME OF YOUR GENERAL OBJECTIONS TO VERIZON'S DETERMINATION OF ITS FILL FACTORS?

A. My objections are threefold.

First, Verizon typically lists a large number of considerations -- such as the need to deploy spare facilities for growth, maintenance, repair, customer-churn – to justify low fill factors. Verizon then proceeds to assign values to each of these factors and, by doing so, further reduces the utilization rate. In the process, Verizon ignores the fact that spare for growth can be used for maintenance and repair and that spare for repair can be used for maintenance, etc. By making such compounded

reductions to the fill factors in such a manner, Verizon artificially reduces the level of utilization that is possible on various facilities.

By analogy, the Commission should consider that a two-car garage does not need to be twice as large as a one-car garage because it needs less spare space for cars to be able to open their doors. Clearly, a one-car garage needs space on both sides of the car for driver and passengers to be able open their doors. For a two-car garage, however, both cars can use the space between the two-cars to open their doors (though obviously not at the same time.) Thus, a two-car garage needs less *spare* space than two one-car garages. By the same reasoning, again, spare for growth can be used for other purposes. Verizon ignores this.

Second, CLECs should not be required to pay for spare for growth as Verizon's proposed fill factors require. The result of this proposal is that, if approved, CLECs will pay for facilities placed to serve Verizon's *future customers – i.e.*, CLECs will be required to pay for facilities that Verizon uses when competing against CLECs for such customers. Of course, CLECs will be able to use those facilities as well, but only after they pay for them once again. By contrast, Verizon can at any moment avail itself of the spare facilities that the CLECs are paying for and use those facilities to compete against the CLECs.

Consider a situation in which a CLEC wants to serve the tenants in a new business park that is wired with 1000 lines. Now assume that the CLEC succeeds in attracting all of the tenants in this new business park

and serves them by means of 500 unbundled loops from Verizon. Further assume, for simplicity sake, that the price for those loops is based on a 50% fill factor. Thus, the CLEC, in effect, pays for 1000 loops: it pays for 500 loops it gets to use and it pays for an additional 500 spare loops, which Verizon gets to use if it so chooses. I note that different fill factors apply to different parts of the loop. This observation, however, does not alter the conclusion of the example, that VZ's proposal is discriminatory and anticompetitive.

It is important to note that Verizon is now in the ideal, and enviable, position to approach the tenants in the business park (served by the CLEC), and to offer them cheap, nearly free service (additional fax or modem lines, special lines for long distance calling, etc.), by using the 500 spare loops. Again, Verizon can price these spare loops at a steep discount because the CLEC is already paying for them (and will continue to pay for them as long as it continues to lease the 500 unbundled loops from Verizon).

The Commission should recognize that it would indeed be foolish for Verizon not to offer a steep discount package to sell tenants the 500 spare loops -- they are being paid for by the CLEC and would otherwise be sitting idle. The Commission should also recognize that such a competitive asymmetry is not sustainable. *CLECs cannot viably compete if it they are forced to pay for the very "spare" facilities that Verizon will use to compete against them.*

This practice is discriminatory, anti-competitive and inconsistent with the FCC's First Report and Order. Moreover, in the long run, CLECs will not be able to compete under this kind of a costing arrangement. The point is that fill factors should not reflect spare for future customers – future customers should pay for their own facilities.

Q. WHAT FILL FACTORS DO YOU RECOMMEND?

A. In the sections below, I will discuss each of Verizon's proposed fill factors individually and explain why they are generally too low. If fills reflect an optimally efficient network, then they would be much closer to the levels adopted by, for example, the Michigan Public Service Commission for TELRIC studies. The fill factors adopted by the Michigan Public Service Commission and those that I recommend are found in Exhibit AHA-6.

In what follows, each of Verizon's proposed fills is discussed individually.

1. Verizon's distribution fills are too low

Q. PLEASE DESCRIBE HOW VERIZON DETERMINED ITS DISTRIBUTION FILL.

A. Verizon's ICM model reports a average weighted distribution fill of 38.27%. (See, *ICM Report Viewer Unbundled Network Elements OSP Fill*

Factors.) As noted, it is not clear how ICM calculates this fill or what components of the distribution portion of the loop are included.

Q. DOES IT APPEAR THAT VERIZON HAS USED THE FILL THAT IT ACTUALLY EXPERIENCES IN ITS NETWORK?

A. Yes. The fill factors for distribution facilities are so low that it appears that Verizon is modeling is actual embedded network and not a forward-looking, least-cost network consistent with TELRIC. Further, it appears that Verizon has included large amounts of spare facilities to accommodate anticipated growth in demand by future customers. In fact, Verizon notes that the distribution fill reflects that facilities are built "to serve ultimate demand." (See Tuceck, page 29, line 5.)

Q. IN A TELRIC SETTING IS IT APPROPRIATE TO INCLUDE SPARE FACILITIES FOR ANTICIPATED GROWTH IN DEMAND BY FUTURE CUSTOMERS?

A. No. Current customers (in this case CLECs) should only pay for the facilities that they will use. That is, they should only pay for current demand levels. Most certainly, current customers should not pay for facilities placed for future customers, as proposed by Verizon. Under the cost causation principle – essential to TELRIC – cost causers should pay. Since future customers are the cost causers for the spare facilities in

Verizon's cost studies, it is future customers that should pay for those spare facilities and not the current customers, the CLECs.

Q. DID THE FCC FIND THAT SPARE SHOULD BE BASED ON A REASONABLE PROJECTION OF ACTUAL DEMAND?

A. Yes. In paragraph 682 of its Local Competition Order the FCC found the following:

> Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility that will be "filled" with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element.

This means that unit costs should be calculated by using as the denominator "a reasonable projection of actual usage of the element," i.e., by including in the denominator future customers. That is, by including in the denominator future customers, future customers pay for the spare facilities placed to accommodate this anticipated growth in demand. And, most importantly, current customers pay only for the facilities used to serve current demand. To be sure, Verizon's modeling practices appear to totally violate the FCC's directives in this regard.

2. Verizon's Fills For Drop Facilities Are Too Low

Q. HOW DOES VERIZON DETERMINE THE FILL ON DROP FACILITIES?

A. The fill on drop facilities is determined as a combination of user inputs and the pre-programmed algorithm of ICM. Residential and business drops are calculated separately and based on their own assumptions. The fill factor issue here is obscured, however, by how the drop facilities are identified.

Q. PLEASE EXPLAIN THIS PROBLEM IN MORE DETAIL.

A. Verizon assumes in the model that there are 3 drops to every residential unit in distribution units (distribution areas) with 500 residential units or less. For demand units with more than 500 residential units, the model assumes 25 pair entrance cables. Next, the model assumes a fill of 50%.

It is clear that this method obscures the level of effective fill since it is not apparent *how many residential units are served over the 25 pair cable*. Presumably, this information can be extracted for individual distribution areas from ICM if one were to dig deep into the code and were to do separate sensitivity runs, which would be an enormous undertaking that is simply infeasible for Staff and intervenors.

Q. IS THE FILL FACTOR ON THE DROP FACILITIES PARTICULARLY IMPORTANT IN ICM?

A. Yes. The drop is a very expensive portion of the loop in ICM due to the manner in which the ICM treats drop facilities. Most importantly, ICM assumes excessively long drops, making the facilities very expensive. This issue is discussed in more detail below. Suffice it to say for now that the combination of low fills and long drop facilities cause an inappropriate inflation in loop costs.

Q. WHAT IS YOUR RECOMMENDATION?

A. I recommend that the Commission order Verizon to base its loop cost studies on no more than 2 pairs per drop and not 3. Further, I recommend that the fills on those drops are no lower than those approved for the copper distribution links.

3. Verizon's Copper and Fiber Feeder fills are too low

Q. WHAT FILL FACTOR HAS VERIZON ASSUMED FOR VARIOUS FEEDER FACILITIES?

A. As discussed, the ICM model reports fills on feeder facilities that are on average 93.59%. However, it is entirely unclear how this number is derived and which facilities it concerns. In fact, it is unclear whether this fill factor includes spare for such reasons as deficient pairs, maintenance

and administration. In view of this, I have already presented a recommendation regarding specific feeder facilities: fiber feeder, copper feeder, COT, RT and channel units. What follows is a more detailed discussion of the appropriate level of fill for these facilities.

Q. PLEASE EXPLAIN WHY VERIZON SHOULD USE AT LEAST 90% FILL ON COPPER FEEDER FACILITIES.

A. In a move toward fiber-based feeder, Verizon's own engineering guidelines explicitly *discourage the placing of new copper facilities* and *encourage the maximum use of existing copper facilities.*

The use of forward-looking technologies clearly means that there will be a migration toward fiber based feeder facilities. This means, in turn, that – on a forward-looking basis and in a least cost environment/network – little new copper feeder will be placed and existing copper feeder will grow to its objective fill of 90%. The entire dynamic used by Verizon of fill rising and falling as feeder facilities are reinforced ceases to be a relevant with respect to fill factor determinations. *Once a copper feeder facility reaches its maximum fill, it will most likely not be reinforced*; rather fiber based DLC systems will be put in place to accommodate growth. *This means that copper feeder fills should be considerably closer to the stated objective fill of 90%.*

Q. WHAT IS YOUR RECOMMENDATION FOR COPPER FEEDER FILL?

A. I recommend that the Commission order a copper feeder fill of *85%* as the appropriate fill in a forward-looking, least cost network. This figure is below the objective fill of 90% that already should exist on a large number of routes, but recognizes that on a forward-looking basis feeder facilities will be reinforced not with copper but with fiber.

4. Verizon's proposed DLC Electronic fill is too low

Q. WHAT IS A CHANNEL UNIT OR A PLUG-IN?

A. There are Channel Units for COTs and Channel units for RTs. The COT Channel Unit is the facility on which a DS1 or DS0 channel terminates between the COT and the switch (for switched circuits) or between the COT and a collocation space or some other facility for non-switched circuits. A RT Channel Unit is a plug-in card on which the copper sub-feeder or distribution cables terminate. The cards are inserted in the common equipment of the RT.

Q. WHAT LEVEL OF FILL (OR RATE OF UTILIZATION) DOES VERIZON ASSUME FOR THE CHANNEL UNITS?

A. It is not clear from either the documentation or the ICM model what level of fill is used for channel units.

Q. WHAT LEVEL OF FILL IS APPROPRIATE FOR CHANNEL UNITS?

A. Because Channel Units can be entered into the COTs and RTs as demand emerges, a very high rate of utilization can be achieved. In addition, the Channel Units can be placed to closely match the total number of end-users that are served by DLC systems Thus, to the extent that there is growth, Channel Units can be placed on very short notice, eliminating the need for anything but a minimal number of spares.

Further, Verizon's own testimony in other jurisdictions states that Verizon places plug-ins to accommodate only six months of growth. (VZ-MA Rebuttal testimony in Massachusetts, Docket 01-02). *Thus, even if one were to assume 3% annual growth, then six months of growth would still only constitute 1.5% spare plug-ins (which is 3% time 6/12). This implies a fill of 98.5% (100% - 1.5%).* Accounting for other sources of spare, such as maintenance, deficient units, administration (all of which are quite minimal), a 95% fill is conservative.

In short, I recommend that the Commission adopt a fill for channel units of 95%.

Q. WHAT LEVEL OF FILL DOES VERIZON ASSUME FOR RT ELECTRONICS FILL?

A. Again, it is not clear from the documentation or the ICM model what level of fill is used for the RT electronics.

Q. WHAT LEVEL OF FILL IS APPROPRIATE FOR COT AND RT ELECTRONICS?

A. I recommend a fill of 90% for both the RTs and the COTs.

First, RTs are highly scalable pieces of equipment and can be selected to serve customers anywhere from 92 lines to 2016. RTs can also be expanded as new demand emerges. As a result, these expensive pieces of electronics can be run at high levels of utilization.

Further, the COT can achieve an even higher fill than the RT because it serves possibly up to 5 RTs. (The Dual Feeder Route software for the Litespan 2000, for example, allows a COT to serve up to 5 RTs). This means that depending on the size of the RTs, the COT can be engineered to serve the optimal level of RTs so as to achieve an optimally efficient fill. That is, when a COT has a low rate of utilization, then more RTs can be added to increase the fill on the COT.

Q. GIVEN VERIZON'S ASSUMPTIONS ON THE DEPLOYMENT OF FIBER BASED DLC SYSTEMS, WOULD COTS BE FULLY UTILIZED?

A. Yes. Under Verizon's forward-looking loop design, there will be deployment of fiber based DLC systems. This means that in the loop cost studies, there is a much larger number of RTs and COTs than in Verizon's actual network. As a result, these facilities are more easily engineered to achieve a very high level of fill.

Q. WHAT LEVEL OF FILL DO YOU RECOMMEND FOR THE COT?

A. I recommend a 90% level of fill for the COT.

Q. DOES VERIZON'S OWN DOCUMENTATION INDICATE THAT FEEDER ELECTRONICS BE MAINTAINED AT FILL LEVELS OF 90% OR HIGHER?

A. Yes. For example, Verizon's own engineering documents require that certain types of DLC systems (SLC-96) are used **near full capacity.**

While this concerns slightly older equipment, the principle is the same: DLC electronics can be run at very high levels of utilization.

B. IDLC IS THE LEAST COST TECHNOLOGY

1. Loops Cost Studies Should Be Based On IDLC

Q. PLEASE EXPLAIN THE FUNCTION OF THE COT, THE GR303 AND UNIVERSAL INTERFACES.

A. The COT is the facility on which the fiber optic cables terminate in the central office that converts the optical signals into electronic signals. From the COT, loops either go to one of Verizon's switches or onward to a CLEC as an unbundled loop. A simplified diagram is depicted in Exhibit AHA-7.

Q. ARE VERIZON'S LOOP COST STUDIES APPROPRIATELY BASED ON IDLC SYSTEMS?

A. It is unclear to me what configuration Verizon is assuming for its digital loop carrier system. The loop cost documentation talks in terms of Next Generation Digital Loop Carrier Systems, which seems to suggest that Verizon is assuming IDLC in its loop cost studies. However, I would caution the Commission against naively assuming that Verizon is in fact basing its loop cost studies on IDLC.

First, QSI has examined Verizon's loop cost studies in New York, New Jersey, Massachusetts and Maryland. In none of these states has Verizon assumed 100% IDLC for fiber based loops. Further, in New York, Verizon assumed that the IDLC systems would have expensive universal interfaces (channel units), which was inappropriate and artificially inflated costs.

Given that the ICM model is not sufficiently open to ascertain precisely how the loops are provisioned, I cannot verify whether or not Verizon is appropriately using the IDLC technology in its cost studies.

Q. IS THIS ISSUE (IDLC VERSUS UDLC) IMPORTANT TO CLECS?

A. Yes. There is a significant cost difference between the GR303 interface and the universal interface. The cost differences are even larger if one accounts – as one should – for the ability of the GR303 system to concentrate traffic. Further, this particular issue is of utmost importance for competitors for three reasons.

First, Verizon will use integrated DLC for purposes of providing loops to its own retail customers. Integrated DLC is more efficient and less expensive than non-integrated UDLC in a number of ways. Allowing Verizon to provision its retail services using more efficient, less expensive IDLC technology while allowing it to provision unbundled loops with more expensive, less efficient non-integrated UDLC, produces a "competitive gap."

Second, with the general marketplace trend toward "fiber to thecurb" (i.e., deploying fiber deeper into the local exchange to allow higher bandwidth customer connections), Verizon will be deploying next generation IDLC in sharply increasing numbers. All evidence indicates that integrated DLC is the least cost, forward-looking technology for loop facilities (and that Verizon will be deploying it). This means that all of the problems described above (i.e., the "competitive gap" and the need to unbundled IDLC) will only become more prevalent in the future. It is for this reason that the Commission must address the issue now and correct Verizon's cost studies.

Third, UDLC systems are an inferior substitute for IDLC systems for a number of reasons. For example, because of the multiple digital/analog conversions that must take place to provision a loop via non-integrated UDLC technology, customers served via this technology receive lower data speed on a typical dial-up connection. Indeed, with a UDLC system, it is difficult, if not impossible, to connect a dial-up modem at a speed

exceeding 21Kbs (whereas a typical dial-up modem on an IDLC system may very well attain the 56Kbs connection it is designed to accommodate). While at first glance this may appear to be a small issue, the Commission should note that the vast majority of new lines placed into service over the past 3 years are second (or third) lines used to accommodate dial-up Internet connections. Given an opportunity to purchase an access line from Verizon that provides 56Kbs dial-up service, versus an offering by a CLEC that can accommodate only a 21Kbs connection, all else being equal customers will choose the faster dial-up service. This will be an important competitive advantage for Verizon that will not be lost on customers. In essence, Verizon will not only benefit from the "competitive gap" associated with lower costs it faces to produce a loop for use by its retail customers, it will also benefit from a higher quality product.

Q. PLEASE EXPLAIN WHY IDLC SYSTEMS ARE MORE EFFICIENT AND LESS EXPENSIVE AND HOW THIS COULD/WILL ESTABLISH A COMPETITIVE GAP BETWEEN THE COSTS TO VERIZON AND THE CLECS THAT USE UNBUNDLED LOOPS.

A. Integrated DLC systems allow a circuit, once digitized at the remote terminal, to remain in digital form until it is ultimately terminated in a central office switch. Likewise, integrated DLC allows a carrier to aggregate individual DS0 (voice grade) circuits into larger, more efficiently

transported bandwidths (DS1, DS3, etc.). In this manner, an IDLC system not only maintains the quality of a fully digital circuit (i.e., it removes the need to convert the signal from analog to digital form on multiple occasions – as is required by non-integrated DLC systems), it also reduces costs (because there is no need for digital/analog conversion equipment like the central office terminal and associated line equipment used by non-integrated systems). The Commission need look no further than Verizon's own cost studies – flawed as they are -- to understand the significant cost savings that can be realized with the use of IDLC equipment versus Universal Interface.

The significant cost difference between the UDLC and IDLC loop is the basis for the "competitive gap" I described earlier wherein competitors will always be at a cost disadvantage *vis a vis* Verizon if they use unbundled loops. As such, Verizon's proposed methodology undermines the pro-competitive intent of the Act of 1996 that envisions use of unbundled network elements as an important market entry alternative. Again, it does so by artificially inflating the economic costs incurred by CLECs relative to those incurred by Verizon.

Q. CAN LOOPS PROVIDED ON AN IDLC SYSTEM BE UNBUNDLED WITHOUT A UNIVERSAL INTERFACE?

A. Yes. First, whether Verizon currently deploys IDLC for unbundled loops is irrelevant. Indeed, if the Commission continues to allow Verizon to

assume the use of more expensive technology to be used by its competitors while it can use cheaper technology for its own services, *it is unlikely Verizon would ever deploy cheaper technology for its competitors' use*.

The question that needs to be answered for purposes of a proper TELRIC study is: *What is the least-cost, forward looking technology available that can be used to provision the network element in question*? Verizon's own studies show that IDLC is a least-cost alternative compared to UDLC. Likewise, the FCC indicates that it is technically feasible to use IDLC for unbundled loops. Hence, the obvious answer to the question above appears to be that IDLC systems, for fiber based feeder, are the proper technology to be assumed within an unbundled loops study consistent with TELRIC principles.

Further, attached to my testimony as Exhibit AKA-8 are three documents that discuss how unbundled loops can be provided with GR303.

Q. PLEASE BRIEFLY SUMMARIZE DSC CORPORATION'S "UNBUNDLING SOLUTIONS" PAPER.

A. A paper written by DSC Corporation (the company from which Verizon purchases its digital loop carrier equipment) entitled "Unbundling Solutions." The purpose of the paper is to tout the ability of the DSC Litespan equipment (the DLC equipment Verizon assumes are used within

its TSLRIC studies) to accommodate unbundled loops in the integrated mode. This paper dispels any argument Verizon might make regarding the inability to provision unbundled loops using IDLC equipment. Indeed, Verizon's own chosen DLC equipment manufacturer has written a paper explaining in detail how the very equipment Verizon uses can accommodate unbundled loops in the integrated mode.

Q. PLEASE BRIEFLY SUMMARIZE THE SIGNIFICANCE OF MCI WORLDCOM'S "THE VIRTUAL RDT, KEY TO UNBUNDLING THE LOCAL EXCHANGE" ABSTRACT.

A. MCIWorldCom wrote a well-researched and detailed abstract entitled "The Virtual RDT, Key to Unbundling the Local Exchange." This particular abstract not only steps the reader through a number of different ways in which an RDT (remote digital terminal) can be unbundled for access by competitive carriers, it also speaks to the urgency required for such an architecture.

Q. PLEASE BRIEFLY SUMMARIZE THE SIGNIFICANCE OF PULSECOM, INC.'S "UNBUNDLING WIRE PAIRS, SPECIAL SERVICES AND ISDN iDLC GROOMING" PAPER.

A. A paper from PulseCom, Inc. entitled "Unbundling Wire Pairs, Special Services and ISDN DLC Grooming." Like DSC, PulseCom manufactures digital loop carrier equipment. This paper not only details the manner by which an IDLC system can be used to provision unbundled loops, but also details the other uses for this type of "grooming." It highlights the fact that

IDLC systems have, in the past, proven to be less flexible than non-integrated systems in terms of providing "special circuits" used by incumbent LECs to serve their own retail non-switched customers (i.e., private line applications and other non-switched services). Hence, as would be expected, integrated DLC equipment manufacturers have remodeled their IDLC equipment to better accommodate these services. One result of these remodeled systems (Next Generation Digital Loop Carrier – NGDLC – equipment) is that they can now support both retail and wholesale non-switched loop applications (i.e., unbundled loops).

These articles, individually and together, surely dispel any notion that IDLC systems cannot be unbundled and/or, that this equipment is not widely available and in use.

Q. WHAT IS YOUR RECOMMENDATION?

A. The Commission should order Verizon to use forward-looking, least cost IDLC systems (with a GR303 interface) and should prohibit the use of UDLC in its unbundled loop studies.

2. Verizon's Studies Fail To Address An Appropriate Concentration Ratio

Q. PLEASE EXPLAIN WHAT A CONCENTRATION RATIO IS AND WHY IT IS A COST DRIVER IN VERIZON'S LOOP COST "MODEL."

A. In an all copper network, for each end-user there is a dedicated path from the customer premises to the central office. The great advantage of using a fiber based DLC system is that it allows traffic to be concentrated onto more efficient facilities. That is, because not all end-users pick-up the phone (or use their modem) at the same time, the feeder facilities do not need to have a *dedicated* path for each end-user. Instead, the DLC system assigns a path – a time slot – only to those customers who are using their line. Thus, all that is needed is a fair estimate of what percentage of the end-users use their line simultaneously in order to establish an efficient concentration that avoids blockage. This concentration ratio is critical in the loop cost studies.

To see how the concentration ratio affects cost studies, consider the following example in which an increasingly higher concentration ratio lowers the fiber based DLC costs per DS0 (voice grade analog two wire loop).

Example

DLC Costs	Concentration Ratio	Number of End Users (DS0 Channels)	Cost per DS0
$1,000	1 to 1	1000	$ 1.00
$1,000	3 to 1	3000	$ 0.33
$1,000	6 to 1	6000	$ 0.17

Given that in Verizon's loop cost studies, a large portion of the costs is associated with the fiber based DLC system, the concentration ratio is one of the most important cost drives in the loop studies.

Q, WHAT IS THE RANGE OF CONCENTRATION THAT IS ACHIEVABLE ON A GR303 DLC BASED SYSTEM?

A. The GR303 DLC based system has a range of achievable concentration levels from 1:1 to 44:1, based on calling patterns. (See Newton's Telecom Dictionary, Copyright 2000 Harry Newton, Published by Telecom Books, an imprint of CMP Media Inc., New York NY 10010, page 382)

Q. DOES VERIZON FAIL TO ACCOUNT FOR A SUFFICIENT DEGREE OF CONCENTRATION IN ITS LOOP COST STUDIES?

A. Yes. Again, given the "black-box" nature of the ICM, I am simply unable to ascertain what level of concentration is assumed in the model. For certain, the level of concentration is not a user defined input into the model, but is hard-coded into the algorithm. In other jurisdictions, Verizon has typically used a concentration ratio of 3:1, which is based on their experience with business customers and which is too low.

In any event, as I will demonstrate, Verizon should be ordered to use a higher concentration ratio of 6:1.

Q. WHAT SHOULD DETERMINE THE LEVEL OF CONCENTRATION THAT IS ACCEPTABLE IN A PARTICULAR SITUATION?

A. As discussed, with GR303, variable line concentration outside of the switch is possible due to a time slot interchanger (TSI) functionality established between the switch and an RDT. The TSI in conjunction with the time slot management channel (TMC) provides administration and dynamic channel assignment. The degree of concentration that is desirable, however, depends on the calling patterns of the community served by the DLC system and the CCS levels associated with that community.

Q. WHAT LEVEL OF CONCENTRATION DID VERIZON-NY ADVOCATE IN ITS RECENT TESTIMONY IN NEW YORK?

A. The Panel Testimony submitted by Verizon-NY stated that the concentration ratio should be between 2:1 and 4:1,

> Concentration has always taken place within the digital switch but GR303 Interface Groups allow the efficiency of concentration to be extended to the digital ports on the switch and the COT. The ratio of channel units to switch ports is set between ***2:1 and 4:1***, depending on traffic characteristics of the lines. (Case 98-C-1357, VZ-NY Panel Testimony, page137 (emphasis added)

Q. WHAT LEVEL OF CONCENTRATION DID THE ADMINISTRATIVE LAW JUDGE ORDER IN VERIZON-NY'S CURRENT TELRIC PROCEEDING IN NEW YORK?

A. In New York, having reviewed the evidence, the Administrative Law Judge found that Verizon-NY should use a 4:1 ratio, the high end of the range that Verizon-NY itself had identified. (NYPSC Case 98-C-1357, Recommended Decision, page 90)

Q. WHAT ADDITIONAL REASONS ARE THERE TO ASSUME A CONCENTRATION RATIO OF 6:1?

A. As Verizon indicates in responses to data requests, it does not yet have a high percentage of its loops on fiber. Surely, most of its residential customers are still served on copper facilities. But, if Verizon were to serve those residential customers with fiber based IDLC – *as it should, given the fiber/copper break-over point assumed in Verizon's own studies* -- then the residential calling pattern would allow for a different concentration ratio than used for business customers.

The effect of the cost study assumptions is that – in contrast to the Verizon's real network – a *mix of customers*, consisting of both *business* and *residential* customers, will be served by fiber based DLC systems. Given that the concentration ratio for business customers, a mix of residential and business customers will allow a higher concentration ratio. This observation is even more true, if one considers that business

customers call mostly during the day (i.e., *the business peak is during the day*) while residential customers call mostly at night (i.e., *the residential peak is in the early evening*). Thus, since business and residential customers are likely to have *two distinct peaks*, their calling patterns are complimentary and do not crowd out one another: as a result, a higher concentration ratio is possible.

In short, one of the consequences of Verizon's decision to assume larger quantities of fiber deployment for cost study purposes than actually deployed in its real network is that a higher concentration ratio can be achieved. Given that under TELRIC, one must assume a least-cost, forward-looking network, a concentration ratio of 6:1 is appropriate.

Q. WHAT LEVEL OF CONCENTRATION DO YOU RECOMMEND?

A. I recommend that Verizon be ordered to use a 6:1 concentration ratio. This ratio is reasonable because in its cost studies Verizon will now serve both business and residential customers on the fiber based DLC systems. Given that residential customers have an evening peak, their calling patterns do not interfere/crowd out those of the business customers.

C. VERIZON's ASSUMED DROP LENGTHS ARE TOO LONG

Q. PLEASE DISCUSS HOW ICM DETERMINES DROP LENGTHS IN THE LOOP COST STUDIES.

A. The drop lengths are calculated in the model per demand unit (distribution area) based on an algorithm that assumes that drop wires and entrance cables (for larger units) terminate at the center of each lot on which a residential or business resides. As a result of this algorithm, drop lengths and entrance cables can vary from 15 to nearly 500 feet.

Q. WHAT DROP LENGTHS DO YOU RECOMMEND?

A. I have not been able to calculate the average length of the drop and entrance cable facilities assumed in ICM. ICM does have, however, the ability to specify the lengths of the drop and the entrance facilities as user inputs. Given the highly hypothetical nature of the loop architecture in ICM and the uncertainty about how the fill factors for the drop and entrance facilities are deployed in ICM, I recommend that the Commission order user defined inputs for the length of the drop and the entrance cables. Further, I recommend that the length and the drop facilities are de-averaged by zone to reflect that the greater density and generally shorter lengths in urban areas. My specific recommendations are 75 feet for Zone 1; 100 feet for Zone 2; and 150 feet for Zone 3.

Again, these recommendations reflect that drops tend to be shorter in densely populated urban areas, where one might find more apartment complexes and town houses, than in suburban and rural areas.

D. THE NETWORK ARCHITECTURE IS NOT FORWARD-LOOKING, LEAST COST

Q. HAS VERIZON GENERALLY MODELED A FORWARD-LOOKING, LEAST-COST NETWORK?

A. No. There are a number of methodological errors and logical inconsistencies hard-coded in the ICM model that cause loop costs to be artificially high. Perhaps most important are (1) the failure of ICM to construct a network to where the demand is actually located; (2) the failure of the ICM to fully capitalize on the efficiencies of fiber for loops that use DLC systems; and (3) to recognize the efficiency of placing the RT on the customer premises for larger buildings.

1. ICM Fails to Construct a Network Where it is Demanded.

Q. DOES THE ICM CONSTRUCT IS MODEL NETWORK TO REACH ACTUAL DEMAND?

A. No. The ICM does not know the actual location of any demand and "constructs" its network to locations where customers do not exist. The ICM assumes that demand will be dispersed across an arbitrary grid structure and then "constructs" its network to provide service to these surrogate locations. This is a fundamental flaw in the ICM. Back in 1997, AT&T/WorldCom's HAI model contained a similar flaw. However, this flaw was corrected a number of years ago by AT&T/WorldCom's HAI model by geocoding customer locations and building the model network to the

actual customer locations. In addition, BellSouth's loop model, the BSTLM, geocodes customer locations in a manner similar to the HAI model. Given that this cost modeling flaw can and has been eliminated, the Commission would be delinquent if it were to adopt an inferior cost model such as Verizon's ICM to develop UNE rates.

2. ICM Fails To Capture The Efficiencies Of Fiber Facilities

Q. DOES THE ICM ADEQUATELY REFLECT THAT FIBER FACILITIES ARE RELATIVELY CHEAP AND THAT THE RT SHOULD BE DEPLOYED AS CLOSE TO THE CUSTOMER AS POSSIBLE?

A. No. In other jurisdictions Verizon recognizes that fiber is relatively cheap as compared to copper. This means that once the decision is made to deploy a fiber based DLC system – as is the case for longer loops – it is important to capitalize on the efficiencies of the fiber and to drive the fiber as deeply into the distribution area as possible so as to minimize the use of expensive copper facilities (feeder and distribution.)

This notion is well captured by Verizon recent testimony in Massachusetts: "the economics of fiber versus copper always favor extending *the RT as close to the customer as possible* as long as two conditions can be met: that a site for the RT can be obtained at reasonable cost and that the fill of the system exceeds a threshold level." (Emphasis added.) (Verizon-MA, D.T.E. Docket 01-20. Surrebuttal Panel Testimony, page 59.)

By contrast, this consideration is entirely absent in Verizon's ICM model here in Florida. The ICM model assumes that there is always a portion of the feeder that is copper based even if the loop uses a fiber based DLC system. Further, the ICM model assumes that in many instances there is even a secondary SAI (serving Area Interface) in addition to the first SAI, thus further increasing the use of copper facilities rather than diminishing it. In any event, there is no attempt in the model to place the FDI (with the RT) close to the customer and to extend the cheaper fiber facilities so as to conserve on expensive copper facilities.

3. The ICM Model Fails To Consider Placing The RT On The Customer Premises

Q. DOES THE ICM MODEL EVER RECOGNIZE THAT IT IS CHEAPER TO PLACE RT'S ON THE CUSTOMER PREMISES FOR LARGER CUSTOMERS?

A. No. In other jurisdictions Verizon recognizes that where it concerns larger buildings, it may be more efficient to locate a RT on the customer premises. This eliminates the need for expensive copper feeder and distribution facilities altogether. Further, the RT is cheaply housed on the customer premises and can still be used to serve customer is adjacent buildings. In Massachusetts, for example, Verizon assumed that for building with more than 160 customers, a RT would be located on the premises. As noted by Verizon-MA: "Locating RT's within a building

involves minimum site cost and the line size threshold used in the study insures that reasonable fill is achieved." (See Verizon-MA, D.T.E. Docket 01-20, Surrebuttal Testimony, page 59.) (In Massachusetts, Verizon has erred in its deployment of the RT by dedicating the RT to only the particular building in question. Be that as it may, the initial consideration to place the RT on the customer premises is a valid one.) Likewise, in New York, Verizon assumed that in certain instances the RT would be placed on the customer premises for larger buildings.

VI. DS-1 UNBUNDLED LOOPS

Q. HAVE YOU HAD AN OPPORTUNITY TO REVIEW VERIZON'S PROPOSED RATES FOR DS-1 UNBUNDLED LOOPS?

A. Yes, I have. Verizon proposes a statewide average DS-1 unbundled loop rate of $240.52 with corresponding deaveraged prices as follows: Zone 1: $235.24, Zone 2: $252.20, Zone 3: $309.27.

Q. DO YOU HAVE CONCERNS WITH THESE PROPOSED RATES?

A. Yes, I do. These rates far exceed rates for DS1 unbundled loops recently approved by this Commission for BellSouth and far exceed similar rates adopted by other Commissions throughout the country. The table in Exhibit AHA-9 provides a limited comparison supporting this point.

As the table above demonstrates, Verizon's proposed DS-1 unbundled loop rates in this proceeding exceed other comparable rates by nearly 400% in some circumstances.

Q. HAVE YOU BEEN ABLE TO IDENTIFY WITHIN VERIZON'S COST MODELS WHY SUCH A DISCREPANCY MIGHT EXIST?

A. Yes, to some extent. Verizon's DS1 unbundled loop study is very problematic because it allows only for limited auditing. (For example, the file "FLHiCapWtg", sheet "WC DATA" wherein the actual cost results per wire center for DS1 unbundled loops are "hardcoded" such that the analyst is unable to determine their origin or discern the manner by which they are calculated.) However, I have been able to identify a number of problems that tend to substantially overestimate Verizon's actual forward looking costs as proposed. First, Verizon assumes a very low fill factor for its most prevalent DS1 delivery architecture causing the resultant costs to soar far beyond those attributable to other substitutable architectures.

Q. PLEASE EXPLAIN THIS POINT IN MORE DETAIL.

A. Cost study file "FLHiCapWtg" sheet "Reports" identifies the four potential DS1 delivery architectures for which Verizon derives forward looking costs (see rows 12 through 18). Verizon ultimately weights each of these four delivery architectures in arriving a single, weighted average cost for DS1 delivery in each wire center. It is this weighted average DS1 cost

($**210.82**)that Verizon ultimately proposes as the TELRIC basis for its DS1 unbundled loop rates. (See file "FLHiCapWtg," shee "WC DATA").

Q. PLEASE IDENTIFY THE FOUR DELIVERY METHODS INCLUDED IN THE VERIZON ANALYSIS.

A. Verizon's cost study identifies the following DS1 delivering methods and applies the following relative weights for purposes of identifying the most and least common delivery method used:

CONFIDENTIAL DATA

a. DS1 via metallic facility	***	44.4% **
b. OC3 e/w 28 DS1s	***	54.5% **
c. OC3 e/w 84 DS1s	***	1.0% **
d. OC-12 e/w 12 DS3 & 336 DS1 Mux	***	0.1% **
		100%

Q. WHY ARE FOUR DELIVERY METHODS STUDIED?

A. DS1 transmission facilities can be accommodated in the telecommunications network via a number of delivery methods. For example, a 4-wire metallic loop facility with applicable electronics can support a single DS1 transmission signal while fiber-optic based "Optical Carrier" ("OC-N") systems can be used to accommodate a large number of DS1 transmissions. In some circumstances an ALEC may order a DS1 facility in an area where Verizon has an active OC-3 or OC-12 system thereby allowing Verizon to simply assign a small portion of the much larger OC-N system for purposes of accommodating the DS1 request. In general terms, the larger the system being used to deliver the DS1 signal

(all else being equal), the lower the per DS1 cost (because of substantial production-economies of scale). In support to of this point, Verizon's cost study indicates that costs per DS1 signal fall precipitously as DS1s are provisioned on larger and larger facilities (e.g., information taken from VerizonVerizon's DS1 cost study shows that costs per DS1 delivered fall by nearly 75% when comparing the single DS1 loop provisioned over metallic facilities with those DS1s delivered via an OC-12 system).

Q. PLEASE FURTHER EXPLAIN YOUR CONCERN REGARDING VERIZON'S FILL FACTORS AND THEIR ROLE IN THE ENORMOUS DS1 COSTS PROP0SED BY VERIZON.

A. Attached as Exhibit AHA-10 is a table extracted directly from Verizon's DS1 study. Notice the fact that as the delivery method involves equipment capable of producing a greater number of DS1 transmissions, the price per DS1 transmission (column B) falls dramatically. Notice also, that the most expensive DS1 delivering method is the "DS1 via Metallic Facility" method at $**83.64** per DS1 per month.

Column (E) indicates the likelihood that any of the individual delivery methods will be used and weights the corresponding cost figures in an effort to arrive at a weighted average cost for DS1 delivery. Notice, however, Column (C). Column (C) applies the individual fill factors used to derive what Verizon entitles "Fill Cost per DS1" (Column D). Notice further that even though the "OC3 e/w 28 DS1s" is a less expensive

delivery method than the simple metallic facility method in Column (B), when the abysmally low fill factor associated with the OC3 method is applied (**21.6**%), the picture dramatically changes. Indeed, the OC3 method becomes the second most expensive method available.

Q. IS THIS PROBLEMATIC?

A. Absolutely. Consider the result above given the following discussion. The most expensive method by which to provision a DS1 facility is via the use of a dedicated 4-wire metallic facility. Verizon's cost study makes this very point (see Column B above). Hence, if we assumed that 100% of the DS1s ordered by ALECs in Verizon's territory were provisioned via 4-wire metallic facilities, we could derive a "Maximum TELRIC Cost" upon which we could only improve with the use of more efficient equipment (e.g., OC-N). Using Verizon's study, I assumed that 100% of the DS1s provisioned would be provided via 4-wire metallic facilities (in doing so I zeroed out the other delivery methods). The resultant "Circuit Equipment Cost" was **$83.64** compared to the **$170.76** arrived at by the Verizon model. Said another way, using only the most expensive delivery method available, I arrived at costs more than one-half those that Verizon estimates.

Q. HOW IS THIS POSSIBLE?

A. This result follows from a fundamental conceptual error in the Verizon model. That is, Verizon assumes within its model that it will deliver DS1 transmission via OC-N facilities, even when it would be cheaper (given the results of this own analysis), to provide the DS1s via 4-wire metallic facilities. Verizon's analysis in this respect certainly does not match with the "least cost" requirements of a rationale TELRIC methodology and tends only to overestimate Verizon's actual costs of provisioning DS1 facilities.

Q. HOW SHOULD THE COMMISSION CORRECT VERIZON'S ERROR?

A. Verizon's error can be found in abysmally low fill factor assumptions made with respect to the utilization of its OC-N equipment. Fill factors ranging from **5.3**% to **21.6**% (as proposed by Verizon) are not consistent with the TELRIC methodology wherein facilities are assumed to be used efficiently. As discussed above, at these levels of utilization, Verizon would actually be incurring higher costs associated with more efficient equipment. In other words, if Verizon's utilization levels were accurate, Verizon (and its ALEC customers) would be better off never having installed those facilities for the provision of DS1 services. The Commission should correct this error by requiring Verizon to utilize realistic fill factor assumptions for its OC-N equipment (I would recommend a fill factor of approximately 90% which is consistent with other Field Reporting Code 357 - central office transmission equipment).

In the alternative, the Commission should require Verizon to recalculate its DS1 costs using only the least expensive delivery method as identified by its own cost study (i.e., the 4-wire metallic method).

Q. WOULD REQUIRING VERIZON TO ASSUME ONLY THE USE OF 4-WIRE METALLIC DS1 DELIVERING RESULT IN TELRIC BASED RATES?

A. Though it would be an improvement over the cost study Verizon has proposed and which I have critiqued above, it would not result in reasonable TELRIC-based rates. As I described above, such an assumption would result in a type of maximum TELRIC-based rate. Obviously there will be circumstances wherein economies of scale will allow the delivery of DS1 transmission on OC-N facilities at costs less than those experienced in dedicating a 4-wire metallic facility to the job. Hence, proper TELRIC-based rates would be lower than rates established assuming 100% metallic delivery. It is for this reason that I would recommend that the Commission correct the error in the Verizon model in a more appropriate fashion and require Verizon to re-run its DS1 study assuming that all fiber-based "circuit equipment" achieve at least a 90% fill.

VII. ENHANCED EXTENDED LINK (EEL) RATES ARE INAPPROPRIATELY HIGH

Q. HAVE YOU HAD AN OPPORTUNITY TO REVIEW MR. TRIMBLE'S TESTIMONY REGARDING THE COMBINATION OF UNBUNDLED LOOPS AND INTEROFFICE TRANSPORT COMMONLY REFERRED TO AS AN ENHANCED EXTENDED LINK ("EEL")?

A. Yes, I have. The majority of Mr. Trimble's direct testimony (pp. 54-58) addresses what Verizon believes to be its legal obligation to provide this particular combination as well as the circumstances wherein Verizon believes it is required to migrate existing special access arrangements to an EEL. I'll not respond to Mr. Trimble's arguments in this respect as they are largely legal in nature and can be addressed by the attorneys in brief. I will, however, address two issues that arise from Mr. Trimble's testimony regarding this issue.

First, I'll address Mr. Trimble's proposal that "the rate for each EEL UNE combination be the sum of the individual loop, transport and multiplexing rates for each of the individual UNEs that make up the combination." I'll explain that this approach will almost undoubtedly lead to over recovery. Second, I'll address the specific multiplexing rates proposed by Mr. Trimble in Exhibit DBT-2 to be used in combining loops and transport in an EEL arrangement. I'll explain for the Commission why Verizon's proposed multiplexing rates (monthly recurring) appear to be in excess of reasonable forward looking costs.

Q. PLEASE EXPLAIN YOUR CONTENTION ABOVE THAT VERIZON WILL MOST LIKELY BE ALLOWED TO OVER RECOVER ITS ACTUAL COSTS IF THE COMMISSION ALLOWS VERIZON TO ASSESS THE INDIVIDUAL LOOP, TRANSPORT AND MULTIPLEXING RATES ESTABLISHED IN THIS PROCEEDING WHENEVER AN ALEC PURCHASES AN EEL.

A. When an ALEC purchases an EEL it is actually purchasing a transmission path that will in most circumstances reach from a customer's premises, through Central Office A and ultimately to Central Office B. When compared to an ALEC purchasing an unbundled loop, multiplexing (or cross-connection), and interoffice transport separately, the facilities provisioned (and indeed the manner by which they are provisioned) will likely vary substantially with costs varying accordingly. An example best illustrates the potential differences.

Consider an unbundled loop that currently serves a customer using a digital loop carrier architecture. If an ALEC were to order that unbundled loop on a stand-alone basis, Verizon would terminate that unbundled loop via a 2-wire analog jumper directed to the ALEC's collocation space. In doing so, Verizon would include in the cost of that unbundled loop the central office terminal ("COT") costs of the digital loop carrier system required to multiplex the signal associated with that individual loop (likely from a DS1 transmission embedded in an OC3 bitstream) into a DS0 equivalent (the COT would also do the digital to analog conversion

necessary to arrive at an analog 2-wire interface). These COT costs are a substantial component of Verizon's 2-wire unbundled loop rate.

Consider now that the same ALEC purchases the same loop but instead of terminating that loop in its collocation space, the ALEC chooses to combine that loop with interoffice transport for purposes of gathering that loop at a distant central office (i.e., and EEL arrangement). In such a circumstance, there would be no need for Verizon to de-multiplex that original signal from its original DS1 or OC3 format (or to execute a digital to analog conversion) because that signal will simply be loaded onto a central office facility (of at least that bandwidth) for delivery to the distance central office). Because the signal need not be converted at this point to an analog, 2-wire electrical signal for delivery to the collocation space, costs can be saved. Indeed, if Verizon were to demultiplex and convert the DS0 signal representing the ALECs unbundled loop used in the EEL arrangement, it would simply be required to re-multiplex and convert the signal again before it could ready the signal for interoffice transmission. This would be duplicative and inefficient. Unfortunately, however, if the Commission adopts Verizon's simple "sum of the UNEs involved" approach, it will be sanctioning such inefficient cost recovery (whether Verizon actually undertakes this action or not).

Q. IN YOUR EXAMPLE ABOVE, WOULDN'T THE SAME DEMULTIPLEXING AND/OR DIGITAL TO ANALOG CONVERSION BE REQUIRED AT THE TERMINATING CENTRAL OFFICE ANYWAY?

A. Not likely. Many ALECs will aggregate individual DS0 unbundled loops at a Verizon central office, multiplex those DS0s onto a higher bandwidth trunk (likely DS1) and transport those DSOs across the interoffice network in bulk. In doing so, they will, at the terminating central office, receive those DS0 signals representing individual unbundled loops, at a DS1 or higher level. In this circumstance, no de-multiplexing or digital to analog conversion is necessary (indeed, the cost savings associated with avoiding these actives is one of the greatest benefits of the EEL arrangement). Unfortunately, Verizon's proposal to simply add the individual UNE rates together to arrive at EEL rates negates any of these benefits by allowing Verizon to recover costs that it never incurs (multiplexing and conversion) instead of passing savings associated with avoiding these costs onto the ALEC in lower rates.

Q. HOW CAN THE COMMISSION ENSURE VERIZON RECOVERS ONLY THE COSTS IT INCURS IN PROVIDING EELS?

A Verizon should be required to undertake an individual TELRIC study for at least the most common EEL arrangements (i.e., DS0 loop-DS1 interoffice transport, DS1 loop-DS1 transport and DS1 loop-DS3 transport). Likewise, Verizon should be required to establish rates for EELs

recognizing any cost reductions associated with purchasing the respective elements in combination. Special attention should be paid to recognizing the cost savings resulting from an integrated combination of transmission facilities for purposes of avoiding unnecessary multiplexing and conversion.

Q. DOES BELLSOUTH FLORIDA IDENTIFY RATES SPECIFIC TO THE MOST COMMON EEL ARRANGEMENTS?

A. Yes, BellSouth provides rates specific to the most common EELs as stand alone rate elements. Verizon should be required to do the same after having filed (and approved) a cost study recognizing the cost savings associated with combining the individual UNEs comprising an EEL.

Q. EARLIER YOU ALLUDED TO CONCERNS REGARDING THE MULTIPLEXING RATES PROPOSED BY VERIZON FOR USE WITH EEL ARRANGEMENTS. PLEASE ELABORATE.

A. Comparing Verizon's proposed multiplexing rates with those approved for other carriers across the country again raises concern. For example, Verizon proposes a monthly recurring rate of $517.71 per month for DS3 to DS1 multiplexing. By comparison, BellSouth is allowed to charge $211.19 for this same function. (See Order No. PSC-01-2051-FOF-TP, Docket No. 990649-TP, page 51). Likewise, Verizon in New Jersey is allowed to charge $364.60. (See NJ Board of Public Utilities, Docket No.

TO00060356, Attachment , page 3 of 5) Ameritech Michigan charges $262.31. (See Ameritech tariff M.P.S.C. No. 20R, Part 19, Section 12, 2nd Revised Sheet No. 27) Again, Verizon's proposed rate exceeds the average of these comparable rates offered by other carriers by approximately 185%.

Q. WHAT IS THE CAUSE OF VERIZON EXAGGERATED RATES?

A. Unlike DS1 loops, Verizon calculates multiplexing costs via its ICM model. As a result, I am unable to view the actual calculation that translates Verizon's material costs into what Verizon terms as TELRIC. I can only review the computer code that is used to compute the Verizon numbers and these provide little additional information. As a result, I cannot pinpoint where in Verizon's calculation it errs to the degree of allowing its rates to more than double those of most other carriers for this specific rate element. My expectation, however, is that an abysmally low fill factor (like that evidenced in Verizon's DS1 study) is to blame. As a result, I would recommend that the Commission extend its finding that a 90% fill factor for all 357c equipment (central office non-switch equipment) is a reasonable assumption that must be instituted by Verizon throughout its studies including its multiplexing analysis. It is my expectation that such a decision would go along way toward correcting the exaggerated result evidenced by Verizon's overstated multiplexing charges.

VIII. SWITCHING COST STUDIES

Q. HAVE YOU REVIEWED VERIZON'S SWITCHING COST STUDIES?

A. Yes. For switching inputs, ICM relies on information generated from two external models. One model, the "Switch Cost Information System" ("SCIS"), is produced by Bellcore. SCIS calculates basic switching and vertical switching service costs for Nortel and Lucent switches. A second model, GTE's "COSTMOD," calculates basic switching and vertical switching service costs for the GTD-5 switch. The outputs from these switching models are input into the ICM.

Q. HAVE YOU FOUND ANY PROBLEMS WITH VERIZON'S SWITCHING COST STUDIES?

A. Yes. There are a number of problems with Verizon's switching cost studies:

- Verizon includes in its technology mix an expensive and outdated switch, the GTD-5, produced by GTE. To the best of my knowledge, the GTD-5 is not used by Verizon elsewhere (other than in former GTE companies), nor is the switch used by any other large ILECs. It should not be included in the forward-looking, least cost switch technology mix.

- Verizon has not made available the switch vendor prices – and discounts – that are the most important inputs into the SCIS model and into switching studies in general.

- Feature costs are artificially inflated and ignore that the switch resources to run the features are already part of the switch and should properly be included in the monthly port charges.

- The nonrecurring costs for the features are not based on efficient operations. If features are made available as part of the unbundled port, then no costs of individually ordering features would ever come about. That is, the nonrecurring charges for features – which are exorbitantly high – are entirely the result of the rate structure and service ordering processes imposed by Verizon itself.

A. THE GTD-5 IS NOT A FORWARD-LOOKING, LEAST-COST TECHNOLOGY

Q. PLEASE DISCUSS THE SWITCH MIX PROPOSED BY VERIZON.

A. Verizon proposes to use a mix of switches that include switches form the world's larger switch vendors, Lucent and Nortel, but also switches produced by the former production arm of GTE. Specifically, the cost studies are based on a significant number of GTD-5 switches.

Q. SHOULD THE GTD-5 SWITCH BE INCLUDED IN THE FORWARD-LOOKING, LEAST COST TECHNOLOGY MIX?

A. No. To the best of my knowledge, the GTD-5 is not used by Verizon elsewhere (other than in former GTE companies), nor is the switch used by any other large ILECs. It should not be included in the forward-looking, least cost switch technology mix.

This contention is supported, for example, by the Texas Public Utility Commission. In PUC Docket No. 14943 (released on July 29, 1996), the TPUC made the following findings of fact, numbered 46-49:

- The manufacturer of the GTD-5 switch is concentrated on providing support functions to maintaining the switches in operation.

- Except for ordering a remote switch to connect to an existing GTE-5 host, GTE would not buy a GTD-5 switch today, but would buy either a Lucent 5ESS or a Nortel DMS series switch.

- The GTD-5 switch is not included in GTE's five year investment planning horizon.

- The GTD-5 switch cannot support ISDN service.

The Commission should recognize that the TPUC made this finding about six years ago – if the GTD-5 was not forward-looking then, it is hard to imagine that it is forward-looking now.

Q. WHAT DO YOU RECOMMEND?

A. I recommend that the Commission order Verizon to remove – for cost study purposes –the GTD-5 from the technology mix.

B. SWITCHING STUDIES SHOULD USE AN APPROPRIATE WEIGHTING OF NEW AND GROWTH DISCOUNTS

Q. HAS VERIZON APPROPRIATELY ACCOUNTED FOR ITS SWITCH VENDOR CONTRACTS?

A. No. Typically, switch vendor contracts have a bifurcated price/discount structure. Different prices apply for facilities when the switch is initially placed and put into service than for facilities that are placed to accommodate growth. To determine Verizon's switch investments, it is of utmost importance, therefore, to appropriately reflect what portion of Verizon's facilities have been placed at switch installation and what facilities have subsequently been placed to accommodate growth.

Verizon has based its switching studies on the discounts it will receive for growth lines. (See Tucek, page 6, lines 8 – 11.) As such, Verizon appears to ignore large numbers of facilities that would receive the large discounts if and when switches are newly installed. In other words, Verizon skewed its analysis heavily toward the expensive facilities that are placed to accommodate growth. As a result, Verizon's switch investments are greatly overstated.

Q. PLEASE DISCUSS THE BIFURCATED PRICE/DISCOUNT STRUCTURE IN THE SWITCH VENDOR CONTRACTS IN MORE DETAIL.

A. Generally, while various components of a switch can be purchased on a standalone basis, switch vendors tend to charge carriers switching costs on a per line or per trunk basis. The prices and discounts vary, however, based on whether a line was turned up when the switch was installed or subsequently turned up to accommodate customer growth. For example, if a new switch is placed and the switch serves 50,000 lines at cutover (i.e., at the time the switch is installed and put into service), the switch vendor will charge Verizon 50,000 *times* a per line price for the switch. The lines that are served by the switch upon switch installation (i.e., when the switch is put into service) are called the *cutover or replacement* lines; the prices/discounts are referred to as *cutover or replacement* prices/discounts. There are also lines for new switches that do not replace older existing switches. These lines are referred to as new lines and they are, understandably, priced/discounted at levels comparable to the cutover or replacement lines.

Then, after switch installation, higher prices (lower discounts) apply for lines that are placed subsequently to accommodate customer growth. Lines that are put into service to accommodate customer growth are called *growth lines*; the prices are referred to as *growth* prices.

This observation important because Verizon has not properly accounted for its growth and cutover lines and prices.

Q. IS THERE A SIGNIFICANT DIFFERENCE BETWEEN CUTOVER AND GROWTH PRICES/DISCOUNTS?

A. Yes. Typically the difference between the prices and discounts for growth lines versus cutover lines is enormous. In fact, growth lines can easily be two or three time as expensive as cutover lines. The difference between new/cutover trunk prices and growth trunk prices/discounts is typically no less dramatic.

It is important to note at this point that the contracts are generally expressed in terms of list prices and that the carrier will receive discounts for cut-over and growth lines that are then applied against those discounts. Ultimately, however, after the discounts are applied, cutover and growth prices become apparent.

Q. IN VIEW OF THE DRAMATIC DIFFERENCE IN CUTOVER AND GROWTH PRICES/DISCOUNTS, IS IT IMPORTANT TO PROPERLY REFLECT THE NUMBER OF CUTOVER LINES AND TRUNKS AND THE NUMBER OF GROWTH LINES AND TRUNKS?

A. Yes, it is critically important. For example, if one does not properly account for the number of cutover lines and trunks, one will end up greatly overstating per unit switch investments and, hence, switch related UNE costs.

Further, the SCIS model used by Verizon uses a table of list prices. It also requires that a discount be input into the input tables. The discussion here, then, concerns the proper calculation of the switch vendor discounts to be input into SCIS. Because I have already recommended that the GTD-5 switch be eliminated from the switch mix, this obviates the need to discuss the use of switch vendor discounts in COSTMOD. To the extent the Commission considers the GTD-5 in its determination of switching costs, the flaws in Verizon's modeling of switching costs are equally present for the GTD-5.

Q. CAN YOU PROVIDE AN EXAMPLE OF HOW THE WEIGHING OF CUTOVER AND GROWTH LINES AFFECTS THE PER UNIT INVESTMENT IN SWITCH FACILITIES?

A. Yes. The two tables below show how a change in the relative proportion of cutover and growth lines results in a radically different average per line price. While the example is a simplification of the calculations that are needed to calculate the average price that Verizon pays – and hence the average per line investment that should form the basis for UNE studies -- the results do realistically reflect the magnitude of understating the number of cutover lines, as Verizon did. (see Exhibit AHA-11)

Q. DID VERIZON PERFORM AN APPROPRIATE WEIGHING OF CUTOVER AND GROWTH PRICES?

A. I do not believe that they did. Pending responses to discovery, my understanding is that the switching studies are primarily weighted towards the more expensive growth lines. Verizon's rationale, as I understand it, is that the company will predominately be buying growth lines. However, this type of reasoning fails to recognize that under a TELRIC scenario – in which the network is newly constructed based on existing contracts – existing lines must be valued at the cutover prices.

Q. HAS VERIZON IN FACT FAILED TO PERFORM A TELRIC STUDY?

A. Yes. The "T" in TELRIC stands for "Total," meaning that a cost study should consider the total volume of demand for a network facility/element. This means that under TELRIC, cost studies should reflect costs for the entirety of Verizon's network, using the existing switch vendor contracts and the prices to calculate the costs that Verizon would incur if it were to rebuild its switching facilities using forward-looking, least cost switching technologies.

Q. DID THE FCC EXPLICITLY FIND THAT TELRIC STUDIES SHOULD CONSIDER THE TOTAL VOLUME OF DEMAND?

A. Yes. Section 51.505(b) of the FCC's pricing rules provides:

> (b) *Total element long-run incremental cost.* The total element long-run incremental cost of an element is the forward-looking cost over

the long run of the *total quantity of the facilities and functions* that are directly attributable to, or reasonably identifiable as incremental to, such element, calculated taking as a given the incumbent LEC's provision of other elements. (Emphasis added.)

This point was further emphasized in paragraph 685 of the FCC Local Competition Order, where the Commission adopted a scorched node approach:

> 685. We, therefore, conclude that the forward-looking pricing methodology for interconnection and unbundled network elements should be based on costs that assume that *wire centers will be placed at the incumbent LEC's current wire center locations*, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements.

Clearly, because Verizon focuses primarily on facilities yet to be purchased at growth discounts, its analysis is more like a Short-Run Marginal Cost study.

Q. DID THE MICHIGAN PUBLIC SERVICE COMMISSION ("MPSC") FIND THAT SWITCHING STUDIES SHOULD BE HEAVILLY WEIGHTED TOWARD CUTOVER LINES?

A. Yes. In its Order in a recent TELRIC case, the MPSC found that Ameritech's switching cost studies were too heavily weighted toward the more expensive growth lines on the switch:

> The Staff is concerned that Ameritech Michigan used a completely new model to derive costs for switching services and placed *too much weight on growth lines* (i.e., lines added after the switch is installed) for which vendors charge more per line than they charge for lines that are connected when the switch is first installed (cut-over lines). The Staff says that, by doing this, Ameritech *Michigan computed the cost for only incremental lines rather than all of its lines* as costing principle no. 3 requires. The Staff recommends that Ameritech Michigan be required to rerun the study assuming *30% growth lines rather than 70% growth lines.* (Page 13 and 14.) (*In the matter, on the Commission's own motion, to consider the total service long run incremental costs for all access, toll, and local exchange services provided by VZ Michigan*, MPSC Case No. U-11831, November 16, 1999.)

Q. IN A PURE TELRIC SETTING, SHOULD COST STUDIES BE BASED ON CUTOVER LINE PRICES AND CUTOVER TRUNK PRICES?

A. In a pure TELRIC setting, switch investments should be based on a scorched node the approach, in which all switches – for all lines -- are

replaced with new state-of-the art switching facilities at cutover prices. Thus, in a pure TELRIC approach, switch investments should be based *only on the cutover prices.*

Q. HAS THE U. S. DISTRICT COURT OF DELAWARE STATED THAT THE LARGER CUT-OVER DISCOUNTS – I.E., LOWER CUTOVER PRICES -- ARE APPROPRIATE UNDER THE TELRIC METHODOLOGY?

A. Yes. The U.S. District Court of Delaware just recently stated that the larger cut-over discounts are appropriate under the TELRIC methodology. Specifically, the court stated:

> Indeed, Bell's own expert witness admitted in testimony before the Hearing Examiners that the Local Competition Order "says rip every switch out. All of them... Every switch in the network, rip them out. Leave the ... wire center location where they [sic]are. And build the network that you would build today to serve the demand." First SGAT Report, p 31, at 16 (J.A. 1325) (quoting testimony of William E. Taylor). [FN17]

In the long-run (a period of time that varies according to the technology at issue), an efficient and rational competitor would replace <u>all of its existing switches</u> with the most current technology and receive <u>the bulk-rate discounts</u>. Viewed in this light, Bell's proposed switch costs, which it

premised upon the *smaller add-on discounts* for which it will qualify "in the coming years," looks only to the *short-run.* The Hearing Examiners correctly concluded that Bell's cost analysis was "deficient in that it does not reflect a long-run approach, but rather a series of short-run cost estimates." First Report p 33, at 18 (J.A. 1327). Therefore, the court shall affirm the Commission's SGAT Order as it relates to switch discounts. (Emphasis added.) (BELL ATLANTIC-DELAWARE, INC., Plaintiff, v. Robert J. McMAHON, Chairman, et al., Defendants. AT & T Communications of Delaware, Inc., Plaintiff,v. Bell Atlantic-Delaware, Inc., et al., Defendants. No. 97-511-SLR, 97-616-SLR. United States District Court, D. Delaware. Jan. 6, 2000).

Q. HAS THE FCC ALSO RECOGNIZED THAT THE CUTOVER LINE PRICES SHOULD BE USED IN THE ILEC'S FORWARD-LOOKING ECONOMIC COST STUDIES?

A. Yes. The FCC found the following:

> the suggestions of Ameritech, Bell Atlantic, BellSouth, GTE, and Sprint that the costs associated with purchasing and installing switching equipment upgrades should be included in our cost estimates. The model platform we adopted is intended to use the most cost-effective, forward-looking technology available at a particular period in time. ***The installation costs of switches estimated above reflect***

the most cost-effective forward-looking technology for meeting industry performance requirements. Switches, augmented by upgrades, may provide carriers the ability to provide supported services, but do so at greater costs. Therefore, such augmented switches do not constitute cost-effective forward-looking technology." (FCC Docket No. 99-304, para. 317) (Emphasis added.)

Q. WHAT DO YOU RECOMMEND?

A. If the Commission rejects the FCC's scorched node TELRIC method, which requires Verizon's switch related cost studies to be based on the cutover prices, I recommend that the Commission adjust Verizon's approach to reflect the entire base of Verizon cutover lines and growth lines. Again, Verizon ignored that most lines were placed at the cheaper cutover prices and based its calculation mostly on the expensive growth lines. This is wrong – in fact, misleading -- under all circumstances.

Q. WHAT WEIGHING OF CUTOVER AND GROWTH LINES COULD THE COMMISSION ORDER IF IT REJECTS A PURE TELRIC APPROACH?

A. An alternative weighing of cutover and growth lines is easily calculated as follows. Assuming an annual rate of growth for switch ports (lines), an appropriate weighing of cutover and growth lines is determined by applying the annual growth rate – for each year over the entire economic life of the switches -- against a base of cutover lines. For example, assume that 50,000 lines are installed at cutover, the economic life is 18

years, and that the annual growth rate is 3%. Note that in this instance, a longer life is conservative, since it permits more growth on the switch, and hence, weighs the analysis more toward the expensive growth lines. By contrast, a short economic life would reduce the number of years over which the switch is able to grow, and hence, weighs the analysis toward inexpensive cutover lines. The appropriate number of growth lines is then determined by calculating 18 years of growth at 3%. Of course, given that the growth lines are installed over the course of 18 years, each year of growth would have to be *discounted* to the present period. The *weighted average per line switch vendor price* is then calculated as follows:

$$\frac{\text{PV(cutover price x number cutover lines) + PV(growth price x number of growth lines)}}{\text{sum of cutover and growth lines}}$$

Exhibit AHA-3 provides calculations of determining the weighing of growth and cutover lines using this method. *The result is a weighing of 72% cutover line discount and a 28% growth line discount.*

Q. IS THE RELATIVE WEIGHING OF CUTOVER AND GROWTH DISCOUNTS APPROXIMATELY COMPARABLE TO THE ONE JUST RECENTLY ORDERED BY THE NEW JERSEY BOARD OF PUBLIC UTILITIES?

A. Yes. Based on Verizon's own switch vendor contracts, the NJ BPU reversed Verizon's proposals and ordered a weighing roughly comparable to the one calculated in this testimony.

Q. WHAT DO YOU RECOMMEND?

A. I recommend that the Commission use a pure TELRIC approach and order Verizon to calculate switch costs based on just the cutover discounts. If the Commission rejects this approach, then I recommend that the Commission use the switch vendor discount weighing *of 72% cutover discounts and a 28% growth discounts.*

C. VERIZON'S FEATURE COSTS ARE EXCESSIVE

Q. IS VERIZON PROPOSAL FOR FEATURES IN FLORIDA DIFFERENT THAN VERIZON PROPOSAL IN OTHER STATES?

A. Yes. Typically, feature costs are recovered in monthly port charges. The reason is that most of the feature costs are non-traffic sensitive costs and as such are most efficiently recovered on a non-measured basis. In any event, Verizon typically recovers its feature costs in either the monthly charges for the unbundled port or in the per minute of use charges for unbundled switching. Most importantly, in other jurisdictions, the cost for *all* features is included in either the port or the per minute of use charges so that the CLEC can offer the entire bundle of features to its customers

without incremental charges for individual features. This practice is also true for the other RBOCs, SBC, BellSouth and Qwest.

By contrast, here in Florida, Verizon is proposing to offer switch features on an *a la carte* basis. As Mr. Trimble notes, "Verizon Florida has never included the cost of various switch features in the cost of its switch ports or end-office switching UNEs. The rational method for recovery of switch features costs is to charge the CLECs only for what they use – i.e., on a per switch feature usage basis."

Q. DO YOU AGREE WITH VERIZON'S PROPOSAL FOR SWITCH FEATURE CHARGES?

A. No. The proposal is highly anticompetitive and not consistent with cost causation. The cost of switch features is interwined in the fabric of the switch software and is most efficiently recovered in the monthly port charges. As noted, there are little or no usage related costs associated with features.

Verizon's proposal is cumbersome and imposes artificial costs. By forcing CLECs to order features on an individual basis, the costs are artificially increased. It is analogous to being in a restaurant and ordering French fries on an individual basis rather than all at once on a plate. Clearly, the costs to the restaurant would greatly increase. So it is with the switch features.

Verizon's proposed method here artificially increases both the recurring costs for the features and the non-recurring costs.

Q. WITH RESPECT TO THE NON-RECURRING COSTS, ARE THESE AVOIDED ALL TOGETHER IF THE FEATURES COME AUTOMATICALLY WITH THE SWITCH PORT?

A. Yes. The non-recurring charges for the individual features – which are exorbitantly and prohibitively high -- are entirely avoided if the features come automatically with the switch port. Thus, while under Verizon's proposal CLECs may incur literally over a hundred dollars in non-recurring charges for basic features, a slightly different rate proposal would eliminate such charges by making the ordering process itself unnecessary. Again, in no other states in which QSI has participated has Verizon introduced this anticompetitive proposal. It should be rejected.

Q. WHAT IS YOUR RECOMMENDATION?

A. I recommend that the Commission order Verizon to include all features in the monthly port costs. Further, given that Verizon is the largest ILEC in the country and must be able to avail itself of switching facilities at costs no higher than those incurred by BellSouth, I recommend that the Commission reject Verizon's feature rates altogether and adopt switch rates no higher than those just recently adopted by the Commission for BellSouth. This recommendation is reasonable in view of Verizon's

proposal for a rate structure and associated cost studies for features that can only be construed as deliberately anticompetitive.

IX. NONRECURRING CHARGES SHOULD BE TELRIC BASED

Q. COULD NONRECURRING CHARGES POTENTIALLY POSE A SERIOUS BARRIER-TO-ENTRY?

A. Yes. As discussed previously, prices for unbundled network elements that are based on TELRIC promote efficient entry. But, while TELRIC based recurring and non-recurring prices for unbundled network elements are a necessary condition for efficient entry, they are not a sufficient condition. If the incumbent LECs are allowed to impose unreasonably high nonrecurring charges, then efficient carriers can still be prevented from operating viably in local exchange markets. That is, if nonrecurring charges are set above economic cost, then these charges could in effect create a barrier-to-entry that would protect and prolong the incumbent LEC's monopoly position in local markets.

Q. IN GENERAL, WHAT TYPES OF COSTS SHOULD BE RECOVERED THROUGH RECURRING CHARGES AND WHAT TYPES OF COSTS SHOULD BE RECOVERED THROUGH NONRECURRING CHARGES?

A. Consistent with the previously discussed TELRIC principles, cost should be recovered in the manner in which they are incurred. This means that in general, recurring costs should be recovered through recurring charges

and nonrecurring, one-time, costs should be recovered through nonrecurring charges. Furthermore, with respect to the costs of operational support systems and activities, nonrecurring costs should only be recovered through nonrecurring charges (for a network element) if the costs are a *direct cost* to a specific unbundled network element (for example, an unbundled loop for customer X) that is ordered and provisioned. If the nonrecurring cost is a *common cost* to the ordering and provisioning of *all* network elements, such costs should be recovered through recurring charges.

The rationale here is simple. In general, direct costs associated with the ordering and provisioning of a specific unbundled network element should be recovered from the ALEC customer ordering and using the network element: that is, the costs must be recovered from the cost-causers.

Common costs, on the other hand, are not caused by an individual ALEC customer but rather by all customers collectively. It is appropriate, therefore, to spread these costs over the total projected output of all network elements (for which these costs were incurred) in the form of recurring charges. This ensures that the totality of the costs are recovered without disproportionately burdening some customers (ALEC) more than others. That is, by including the common costs in recurring charges for unbundled network elements, each ALEC customer will pay for a share of the common costs of ordering and provisioning processes that is *directly*

proportional to the length of time that the unbundled elements are used by that customer.

Q. IF ILECS ARE PERMITTED TO RECOVER RECURRING COSTS THROUGH NONRECURRING CHARGES, THEN COULD THIS CREATE A BARRIER TO ENTRY AND IMPAIR THE COMPETITIVE PROCESS?

A. Yes. CLECs will attempt to enter local markets without an existing customer base. As such, they face nonrecurring charges for every customer they want to serve by means of unbundled network elements. If nonrecurring charges contain front-loaded recurring costs that will periodically be incurred by the ILEC *in the future*, then the CLECs' up-front costs for entering local markets may be increased significantly. Given that these nonrecurring charges apply disproportionately to CLECs (relative to the incumbent LECs), they constitute a barrier to entry. The FCC recognized the potentially anti-competitive nature of nonrecurring charges in paragraph 747 of its Local Competition Order:

> ...we find that *imposing nonrecurring charges for recurring costs could pose a barrier to entry* because these charges may be excessive, reflecting costs that may (1) not actually occur; (2) be incurred later than predicted; (3) not be incurred for as long as predicted; (4) be incurred at a level that is lower than predicted; (5) be incurred less frequently than predicted;

and (6) be discounted to the present using a cost of capital that is too low. (Emphasis added.)

Q. ARE THERE INSTANCES IN WHICH DIRECT NON-RECURRING COSTS MAY BE RECOVERED THROUGH RECURRING CHARGES?

Yes. There are situations in which the LECs can make reasonable predictions as to the average non-recurring costs incurred in the provision of a network element. In such instances, it could make sense to spread those costs out over the economic life of the facilities by recovering them through recurring rather than through non-recurring charges. As the FCC noted in section 51.507(e) of its Local Competition rules: "State commissions may, where reasonable, require incumbent LECs to recover nonrecurring costs through recurring charges over a reasonable period of time."

This practice is perfectly consistent with the workings of competitive markets. After all, firms in competitive markets often seek to lower the up-front costs to customers by spreading any nonrecurring costs over subsequent recurring charges.

Q. SHOULD NONRECURRING CHARGES BE BASED ON TELRIC?

A. Yes. All activities and products that local exchange companies – ILECs and CLECs – provide to one another should be based on TELRIC. As explained previously, TELRIC based prices are compensatory, ensure

efficient entry and generally promote the public interest.

Q. DID THE FCC FIND THAT NONRECURRING CHARGES SHOULD BE BASED ON TELRIC?

A. Yes. Section 51.507(e) of the FCC Local Competition Rules states:

> State commissions may, where reasonable, require incumbent LECs to recover nonrecurring costs through recurring charges over a reasonable period of time. Nonrecurring charges shall be allocated efficiently among requesting telecommunications carriers, and shall not permit an incumbent LEC to recover more than the *total forward-looking economic cost* of providing the applicable element. (Emphasis added.)

Q. DOES THIS MEAN THAT NONRECURRING CHARGES SHOULD BE BASED ON THE MOST EFFICIENT, FORWARD-LOOKING ELECTRONIC OPERATIONAL SUPPORT SYSTEMS?

A. Yes. ILECs often base cost studies for NRCs on inefficient OSS that entail large amounts of labor to complete CLECs' service orders, etc. – this is inappropriate. Particularly, these labor related inefficiencies drive up the costs for NRCs dramatically. Instead, cost studies for NRCs should be on the most efficient electronic systems available. Since labor is often such an expensive component of taking service orders, etc., the OSS

should allow to the maximum degree an integration of the CLECs electronic systems with those of the ILECs. If this is done appropriately, then the costs for NRCs are reduced significantly or they become negligibly small.

Further, the Commission should recognize that if it permits the ILECs to set nonrecurring charges based on inefficient systems, that it is rewarding these companies for inefficiencies. That is, since ILECs would be able to recoup the costs associated with inefficient systems, they would never have an incentive to enhance the efficiency of these systems. The incentives for ILECs to implement efficient systems is even further reduced by the fact that it is the CLECs that will be handicapped in their ability to compete by higher nonrecurring charges. Conversely, if prices are set based on the costs of efficient OSS, then ILECs are more likely to actually implement such systems.

Q. IN APPROVING THE ILECS' NONRECURRING CHARGES, SHOULD THE COMMISSION PAY SPECIAL ATTENTION TO THE POSSIBILITY OF DOUBLE RECOVERY OF COSTS?

A. Yes. I have already discussed how nonrecurring charges may derail the development of local competition. In view of this, it is particularly important that the Commission pay special attention that certain types of costs are not included in both the recurring and in the nonrecurring charges. While it is obvious that as a matter of costing methodology this

would be inappropriate, in practice, one is likely to find many instances of such double counts if cost studies are patiently and thoroughly scrutinized. In recognition of the potential for double recovery of costs, the FCC stated the following in its local Competition Order:

> We require, however, that state commissions take steps to ensure that incumbent LECs do not recover nonrecurring costs twice and that nonrecurring charges are imposed equitably among entrants. (Paragraph 750)

X. COSTS FOR UNEs SHOULD BE DE-AVERAGED TO REFLECT GEOGRAPHIC DIFFERENCES

Q. SHOULD RATES BE DE-AVERAGED TO REFLECT COST DIFFERENCES ACROSS GEOGRAPHIC AREAS?

A. Yes. In order to comply with section 252(d)(1)'s requirement that rates be "based on the cost . . . of providing the . . . network element," rates for unbundled network elements must accurately and fully reflect each of the "cost drivers" that have a direct impact on the costs calculatedChecklist items (i) and (ii) require interconnection and nondiscriminatory access to network elements in accordance with section 252(d)(1) of the Act. See 47 U.S.C. §§ 271(c)(2)(B)(i) and (ii).

Q. IS THE NEED TO DETERMINE DE-AVERAGED COSTS

PARTICULARLY IMPORTANT WITH RESPECT TO LOOP COST STUDIES?

A. Yes. While this mandate pertains to all unbundled network elements, it is particularly important with respect to unbundled loops. First, new entrant's access to loops at efficient, cost-based rates is critical to the development of local competition. The local loop is the most expensive and difficult portion of the local network to replicate on a ubiquitous basis. For this reason, many competitors will be forced to rely, in varying degrees, on being able to use the loop facilities of the incumbent LECs. Second, loop costs, perhaps more than the costs for any other element, vary significantly across geographic regions.

The primary cost drivers of loop costs are loop length and customer density; both vary in predictable and demonstrable ways across different geographic areas. All else being equal, longer loops in low density areas are more costly than shorter loops placed in high density areas. As a result, loop costs vary significantly across geographic areas.

The development of cost-based rates requires that these significant geographic variations in costs be accurately and fully reflected in the rates for loops. Therefore, only loop rates that are appropriately geographically de-averaged can be found to be cost-based and in compliance with section 252(d)(1) of the Act. In paragraph 764 of the Local Competition order the FCC stated that:

> de-averaged rates more closely reflect the actual costs of providing interconnection and unbundled elements. Thus, we conclude that rates for interconnection and unbundled elements must be geographically de-averaged.

In paragraph 765 of the Local Competition order, the FCC further concluded that the Act requires at least three "de-averaged" rate zones.

The principle that policy decisions should be based on de-averaged -- rather than averaged -- cost information was reconfirmed by the FCC in its Universal Service Order, CC Docket No. 96-45, May 7, 1997. In paragraph 250 of this Order, the FCC found that, for USF purposes, "the cost study or model must de-average support calculations to the wire center serving area level at least, and, if feasible, to even smaller areas such as a Census Block Group, Census Block, or grid cell." Thus, the FCC reconfirmed the consensus among cost analysts that loop costs vary from wire center to wire center and that those cost variations are significant and should not be ignored.

Q. IF LOOP COSTS ARE NOT DE-AVERAGED, WILL THIS LEAD TO INEFFICIENCIES THAT DIMINISH OVERALL WELFARE IN FLORIDA?

A. Yes. If the loop costs, and hence loop prices, are not de-averaged, the pricing scheme will discourage efficient use of existing resources. When deciding to offer service in a given area, new entrants will be making

decisions regarding whether to build their own facilities or purchase unbundled loops from the incumbent LEC. In the simplest terms, new entrants may be expected to build their own facilities when they can do so for less than the unbundled loop rates, and will lease an unbundled loop when they cannot. In order for a new entrant to make this analysis on an informed basis, however, it is essential that loop rates accurately reflect an underlying cost that is specific to the geographic area being evaluated.

In addition, the incumbent LEC will receive an artificial competitive advantage in those geographic areas in which the actual loop costs are less than the adopted rate for loops, if no de-averaging were ordered. This artificial advantage, gained through the establishment of an inefficient rate structure for elements rather than by virtue of superior efficiency on the incumbent LEC's part, will allow the incumbent to prevent the development of local exchange competition in the more metropolitan areas of the state. That is, an otherwise equally efficient CLEC would have to pay more than the actual economic costs for loops in metropolitan areas with a high density of customers and relatively shorter loop lengths. The incumbent LEC, therefore, has an artificial cost advantage and, in a competitive setting, can underprice the CLEC for competitive retail service and thereby discourage competition. Moreover, the incumbent LEC will also be able to use a portion of its inflated loop rate to subsidize other services and thereby gain a competitive advantage over its competitors. In short, if prices do not reflect cost, then the development of competition will

be impaired and the ratepayers of Florida will be deprived of an optimally efficient network at competitive prices.

XI. COST OF CAPITAL

Q. DO YOU AGREE WITH VERIZONS PROPOSED COST OF CAPITAL?

A. No, I do not. Through the direct testimony of Dr. Vander Weide filed on November 7, 2001, Verizon is requesting a 12.95% cost of capital using a market value-based capital structure that assumes a 25% debt / 75% equity ratio, a cost of debt of 7.55% and a cost of equity of 14.75%. (See Direct Testimony of Dr. James H. Vander Weide, Florida Docket 990649-TP, page 51).

Q. HAVE YOU PREPARED AN ANALYSIS OF THE WEIGHTED AVERAGE COST OF CAPITAL VERIZON – FL SHOULD USE IN THIS PROCEEDING?

A. No, I have not. However, I am providing the Commission comparative information that demonstrates the unreasonableness of Verizon – FL's request for a 12.95% cost of capital. This information demonstrates that Dr. Vander Weide's (1) recommended market value capital structure be rejected, (2) proposed debt / equity ratio of 25% / 75% is too heavily weighted towards equity, and (3) use of the S&P Industrials as a benchmark for competitive risk is without merit.

Q. WHY DO YOU DISAGREE WITH DR. VANDER WEIDE'S RECOMMENDATION THAT THE COMMISSION ACCEPT A MARKET VALUE CAPITAL STRUCTURE?

A. Dr. Vander Weide's recommended market value-based capital structure is inconsistent with this Commission's previous ruling in the BellSouth phase of this docket. In Order No. PSC-01-1181-FOF-TP, the Commission determined "...that market value capital structures have not been widely accepted and produce aberrant coverage ratios." (See Florida Public Service Commission Order No. PSC-01-1181-FOF-TP in Docket No. 990649-TP, issued May 25, 2001, page 188)

In reaching this conclusion, the Commission noted that the Telecommunications Act of 1996 requires the use of forward-looking costs, but not the use of a market value capital structure. (Id., page 187).

In rejecting BellSouth's request, the Commission determined that a 40% debt and 60% equity ratio is appropriate in part because it is close to the standards set by bond rating agencies.

Q. HAVE OTHER STATE COMMISSIONS WITHIN VERIZONS OPERATING REGION MADE DETERMINATIONS ON THE APPROPRIATENESS OF VERIZON'S REQUESTED COST OF CAPTIAL FOR UNES?

A. I know of at least two states, New Jersey and New York, where a decision has been reached rejecting Verizons proposed cost of capital.

Q. WHAT COST OF CAPITAL WAS APPROVED IN THE NEW JERSEY UNE PROCEEDING?

A. The New Jersey Board of Public Utilities adopted a cost of capital of **8.8%** as recommended by the Ratepayer Advocate in an order dated November 20, 2001. (See *In the Matter of the Board's Review of Unbundled Network Element Rates, Terms and Conditions of Bell Atlantic New Jersey, Inc.*, Summary Order of Approval in New Jersey Docket No. TO00060356, November 20, 2001, Part I(d), page 5. (*New Jersey Summary Order of Approval*))

The New Jersey Board of Public Utilities found that Ratepayer Advocate's analysis was the most reasonable and forward-looking in the record. This analysis was based upon Verizon's existing debt / equity ratio where debt comprises a larger proportion of Verizon's total capital structure, an 8.07% cost of debt derived from the interest rate of "A" rated utility debt, and a 10% cost of equity based upon data from Value Line Reports adjusted for risk (I interpret Verizon's existing debt / equity ratio to be its book value capital structure. Based upon the cost of debt, cost of equity and weighted average cost of capital calculated, the book value capital structure is approximately 60% debt and 40% equity.) (See *New Jersey Summary Order of Approval*, page 5).

Q. WHAT WAS THE RECOMMENDED COST OF CAPITAL IN THE NEW YORK UNE PROCEEDING?

A. The Administrative Law Judge recommended a weighted average cost of capital of 10.5% derived from a debt / equity ratio of 35% / 65%, a cost of debt of 7.39% and a cost of equity of 12.19%. ((See *Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements*, Recommended Decision by Administrative Law Judge Joel A. Linsider, New York Case 98-C-1357, Issued May 16, 2001, pages 82 –83).

Verizon had requested a 12.6% cost of capital while Dr. Vander Weide concluded that a 13.03% cost of capital based upon a debt / equity ratio of 25% / 75%, a cost of debt of 7.77% and a cost of equity of 14.78% would have been reasonable. *Id. at 68.* In reaching his recommendation, the judge appeared to be most concerned with Verizon's risk assumptions as it pertains to the cost of equity determination.

Q. WHAT WAS THE NEW YORK ADMINISTRATIVE LAW JUDGE MOST CONCERNED WITH IN VERIZON'S COST OF EQUITY CALCULATION?

A. The Administrative Law Judge was concerned with the risk profile presented by Verizon. In laying the foundation for his decision, the judge referenced the New York Public Service Commission's previous finding on NYNEX's (the predecessor of Verizon in New York) risk profile.

> New York Telephone greatly strains the FCC's forward-looking concept in taking it as warrant for regarding NYNEX as

> comparable, for cost of capital purposes, to certain industrial firms operating in different, if fully competitive markets. One can recognize the consequences of competition in telecommunications without concluding that NYNEX will operate in the same environment and face the same risks as the S&P Industrials. ... (*Id. at 78)*

The judge then noted that this observation was no less pertinent today than when first made. In supporting his decision, the judge emphatically stated that:

> Verizon correctly argues that TELRIC should not be understood to contemplate a "fantasy network" that makes use of speculative technology. But neither should it be taken to require basing the cost of capital on a "fantasy marketplace," in which the provision of local telephone service is as competitive as the sale of detergent. Such a market is our goal; together with federal regulators we are fostering it; and significant progress in that direction has been made. But one cannot realistically claim that the goal will be reached with respect to local service within the next few years. With respect to UNEs, vibrant competition seems even more remote; indeed, were it achieved, there would be no need for regulators to require TELRIC pricing in the first place. (*Id.* at 79)

The judge concluded that the proxy group used by AT&T in its analysis should be used to determine the cost of equity. The judge's conclusion on Verizon's use of the S&P Industrials in its cost of equity analysis is also relevant in this proceeding because Dr. Vander Weide uses the S&P Industrials in his Discounted Cash Flow analysis in his Exhibit JVW-1. He claims that, "The forward-looking risk of investing in the facilities required to provide UNEs in Florida is at least as great as the forward-looking risk of investing in the S&P Industrials.(Dr. Vander Weide, Direct, page 45) Based on the foregoing, I urge this Commission to reject this argument.

Q. WHAT COST OF CAPTIAL DO YOU RECOMMEND THE COMMISSION APPROVE IN THIS PROCEEDING?

A. Based upon the Commission's decision in the BellSouth phase of this proceeding and the orders I cite from New York and New Jersey, I recommend that the Commission set Verizon's cost of capital no higher than the 10.24% approved for BellSouth and no lower than the 8.8% approved for Verizon in New Jersey. In doing so, the Commission should require that equity comprise no more than 60% of Verizon's capital structure.

XII. DEPRECIATION

Q. DO YOU AGREE WITH MR. SOVEREIGN'S RECOMMENDATION THAT THE COMMISSION APPROVE THE USE OF ECONOMIC LIVES IN CALCULATING DEPRECIATION FOR VERIZON'S UNE COST STUDIES?

A. No, I do not. Verizon – FL should be required to set its projection lives within the range approved by the FCC.

Q. ARE THE PROJECTION LIVES PRESCRIBED BY THE FCC FORWARD-LOOKING?

A. Yes, they are. As the FCC noted in its "1999 Update" order, in 1980, it "departed from its previous practice of relying largely on historical experience to project equipment lives and began to rely on analysis of company plans, technological developments, and other future-oriented studies(FCC, 1998 Biennial Regulatory Review-Review of Depreciation Requirements for Incumbent Local Exchange Carriers, CC Docket 98-137, Report and Order, FCC 99-397, released December 30, 1999 ("1999 Update"), para. 5).

In 1995, the FCC reaffirmed its forward-looking orientation in connection with the simplification of its depreciation represcription practices. The FCC prescribed a range of projection lives that could be selected by carriers for prescription on a streamlined basis. The FCC stated that these ranges were based upon "statistical studies of the most recently prescribed factors. These statistical studies required detailed analysis of each carrier's most recent retirement patterns, the carriers' plans, and the current technological developments and trends."(See *Simplification of the Depreciation Prescription Process*, CC Docket

No. 92-296 ("Prescription Simplification" proceeding), Third Report and Order, FCC 95-181, released May 4, 1995, p. 6).

In 1999, the FCC completed a review of these ranges and updated them as appropriate (1999 Update, para. 14) The FCC stated:

> These ranges can be relied upon by Federal and state regulatory commissions for determining the appropriate depreciation factors for use in establishing high cost support and interconnection and UNE prices. (*Id.*, para. 34)

Indeed, the FCC further stated:

> In adopting a forward-looking mechanism for high-cost support, we found that depreciation expense calculations based on the Commission's prescribed projection lives and salvage factors represent the best forward-looking estimates of depreciation lives and net salvage percentages.(FCC, United States Telephone Association's Petition for Forbearance from Depreciation Regulation of Price Cap Local Exchange Carriers, ASD 98-91, Memorandum Opinion and Order, FCC 99-397, released December 30, 1999, para. 61 (emphasis added)).

Q. WHAT IS YOUR ALTERNATIVE RECOMMENDATION IF THE COMMISSION DOES NOT APPROVE PROJECTION LIVES WITHIN THE RANGE PRESCRIBED BY THE FCC?

A. If the Commission does not accept my recommendation to use the range of projection lives approved by the FCC, then I recommend that the Commission adopt the lives approved for BellSouth in the earlier phase of this proceeding since they are relatively close to those approved by the FCC. The Commission should reject Mr. Sovereign's proposal requesting projection lives shorter than those approved for BellSouth for Digital Switching and the Copper Cable accounts because his claim that Verizon is subject to more competitive pressures in its serving area than BellSouth should have no bearing on the Commission's determination. Additionally, it is difficult to believe that Verizon is subject to more competitive pressures than BellSouth when BellSouth serves the majority of the access lines in the state.

Q. DO YOU HAVE A COMPARISON OF THE VARIOUS PROJECTION LIVES YOU RECOMMEND VERSUS THOSE PROPOSED BY VERIZON – FL?

A. Yes, I do. I have prepared a matrix comparing the projection lives proposed by Verizon, the FCC-approved projection lives, and the Commission's approved lives in the BellSouth phase of this proceeding (Exhibit AHA-12).

CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Docket No. 990649B-TP
Ankum Exhibit No. AHA-10
FPSC Exhibit No. _____

DS1 FILLS

CIRCUIT EQUIPMENT COST Equipment Configuration	(A) Monthly Cost	(B) Monthly Cost per DS1	(C) Fill Factor	(D) Fill Cost per DS1	(E) Weighting Factor	(F) Weighted Cost
DS1 via Metallic Facility	$83.64	$83.64	100.0%	$83.64	44.4%	$37.16
OC3 e/w 28 DS1s	$1,459.83	$52.14	21.6%	$241.15	54.5%	$131.43
OC3 e/w 84 DS1s	$2,143.27	$25.52	14.0%	$182.77	1.0%	$1.76
OC-12 e/w 12 DS3 & 336 DS1 Mux	$7,111.81	$21.17	5.3%	$401.63	0.1%	$0.40
				Weighted Circuit Equipment Costs		$170.76

FIBER FACILITY COST Equipment Configuration	(A) Monthly Cost	(B) Monthly Cost per DS1	(C) Fill Factor	(D) Fill Cost per DS1	(E) Weighting Factor	(F) Weighted Cost
OC3 e/w 28 DS1s	$347.00	$12.39	33.3%	$37.18	54.5%	$20.26
OC3 e/w 84 DS1s	$347.00	$4.13	33.3%	$12.39	1.0%	$0.12
OC-12 e/w 12 DS3 & 336 DS1 Mux	$347.00	$1.03	33.3%	$3.10	0.1%	$0.00
					Weighted Fiber Facility Cost	$20.39
					Subtotal Monthly Cost per DS1	**$191.14**

Docket No. 990649B-TP
Ankum Exhibit No. AHA-11
FPSC Exhibit No. _____

SWITCH DISCOUNTS EXAMPLE

Example 1: True number of Cutover lines

	Number of Lines	Price	Investment
Cutover Lines	100	$ 45.00	$ 4,500
Growth Lines	40	$ 151.00	$ 6,040
Average Price per Line			***$ 75.29***

Example 2: Effect of understatement of Cutover Lines

	Number of Lines	Price	Investment
Cutover Lines	10	$ 45.00	$ 450
Growth Lines	40	$ 151.00	$ 6,040
Average Price per Line			***$ 129.80***

Docket No. 990649B-TP
Ankum Exhibit No. AHA-12
FPSC Exhibit No. _____

ECONOMIC LIVES

ACCOUNT NUMBER	NAME	VERIZON PROPOSED LIVES	FCC PRESCRIBED RANGE [1] LOW	FCC PRESCRIBED RANGE [1] HIGH	FL PSC APPROVED LIVES - DOCKET 990649-TP
2112	Motor Vehicles	8.0	7.5	9.5	8.0
2113	Aircraft	8.0	N/A	N/A	N/A
2115	Garage Work Eqpt	12.0	12.0	18.0	12.0
2116	Other Work Eqpt	12.0	12.0	18.0	15.0
2121	Buildings	35.0	N/A	N/A	45.0
2122	Furniture	15.0	15.0	20.0	15.0
2123.1	Office Support Eqpt	10.0	10.0	15.0	11.5
2123.2	Company Communications Equipment	8.0	7.0	10.0	7.0
2124	Gen. Purpose Computers	5.0	6.0	8.0	4.5
2212	Digital Switching	10.0	12.0	18.0	13.0
2220	Operator Systems	10.0	8.0	12.0	10.0
2232	Circuit [2]	9.0	N/A	N/A	N/A
2232	Digital Circuit	N/A	11.0	13.0	7.5
2232	DDS	N/A	N/A	N/A	8.0
2232	Analog Circuit	N/A	N/A	N/A	9.0
2362	Other Terminal Equipment	7.0	N/A	N/A	N/A
2411	Poles	30.0	25.0	35.0	36.0
2421	Aerial Cable - Met	15.0	20.0	26.0	18.0
2421	Aerial Cable - Fiber	20.0	25.0	30.0	20.0
2422	Underground Cable - Met	15.0	25.0	30.0	23.0
2422	Underground Cable - Fiber	20.0	25.0	30.0	20.0
2423	Buried Cable - Met	15.0	20.0	26.0	18.0
2423	Buried Cable - Fiber	20.0	25.0	30.0	20.0
2426.1	Intrabldg Cable - Met	15.0	20.0	25.0	20.0
2426.2	Intrabldg Cable - Fiber	20.0	25.0	30.0	20.0
2441	Conduit Systems	50.0	50.0	60.0	55.0

NOTE: 1 Source: FCC Docket No. 92-296 Orders released 6/28/94 and 5/4/95.

NOTE 2: The FL PSC recommended different lives for each category of Circuit Equipment, but Verizon recommends the combined life approved in the USF docket (980696-TP).