BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 030851-TP

In the Matter of

IMPLEMENTATION OF REQUIREMENTS ARISING FROM FEDERAL COMMUNICATIONS COMMISSION'S TRIENNIAL UNE REVIEW: LOCAL CIRCUIT SWITCHING FOR MASS MARKET CUSTOMERS.
_______________________________________/

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Pages 2710 through 2877

PROCEEDINGS:	HEARING
BEFORE:	CHAIRMAN BRAULIO L. BAEZ COMMISSIONER J. TERRY DEASON COMMISSIONER LILA A. JABER COMMISSIONER RUDOLPH "RUDY" BRADLEY COMMISSIONER CHARLES M. DAVIDSON
DATE:	Thursday, February 26, 2004
TIME:	Commenced at 9:00 a.m.

PLACE: Betty Easley Conference Center
Room 148
4075 Esplanade Way
Tallahassee, Florida

REPORTED BY: JANE FAUROT, RPR
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APPEARANCES: (As heretofore noted.)

I N D E X

WITNESSES

EXHIBITS

NUMBER:		ID.	ADMTD.
108	Exhibits to Witness Bradbury's Prefiled Testimony	2715	
109	Exhibits to Witness Turner's Prefiled Testimony	2715	

P R O C E E D I N G S

(Transcript follows in sequence from Volume 19.)

CHAIRMAN BAEZ: And, again, I'm working off a list, so I guess the next witness that I have on the list is Bradbury. And I'm sorry to skip over you, Mr. McGlothlin, but I'm sure we will get to you.

MR. HATCH: Mr. Chairman, we would request that the direct, rebuttal, and surrebuttal of Mr. Jay Bradbury be inserted into the record as though read.

CHAIRMAN BAEZ: Okay. Show the direct, rebuttal, and surrebuttal testimony of Jay Bradbury admitted into the record as though read.

MR. HATCH: Mr. Bradbury had a total of 14 exhibits. He had 10 direct exhibits, three rebuttal, and one surrebuttal exhibits, for a total of 14 exhibits.

CHAIRMAN BAEZ: Are all of those public exhibits?

MR. HATCH: They are all public, yes, sir.

CHAIRMAN BAEZ: Okay. Show the exhibits of Jay Bradbury -- can you number them for me?

MR. HATCH: If you want, I will go ahead and reference them the way they are originally labeled. It is JMB-1 through 10.

CHAIRMAN BAEZ: Correct.

MR. HATCH: And JMBR-1 through R-3, and JMBSR-1.

CHAIRMAN BAEZ: Okay. Those are the ones that I am showing. Show those exhibits marked as Composite 108.

(Composite Exhibit 108 marked for identification.)

CHAIRMAN BAEZ: Steven Turner, Steve Turner.

MR. HATCH: Yes. Mr. Turner filed direct, supplemental direct, and surrebuttal testimony. I would request that those testimonies be inserted into the record as though read.

CHAIRMAN BAEZ: Show the direct, supplemental direct, and surrebuttal testimony of Steve Turner entered into the record as though read.

MR. HATCH: Mr. Turner had six exhibits. It would be listed as SET-1 through 4, Revised SET-2, and SET-5.

CHAIRMAN BAEZ: Okay. Show SET-1 through 4, Revised SET-2, and SET-5 marked as Composite 109.

(Composite Exhibit 109 marked for identification.)

I. WITNESS QUALIFICATION AND INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION TITLE.

A. My name is Jay M. Bradbury. My business address is 1200 Peachtree Street, Suite 8100, Atlanta, Georgia 30309. I am employed by AT&T Corp. ("AT&T") as a District Manager in the Law and Government Affairs Organization.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE IN THE TELECOMMUNICATIONS INDUSTRY.

A. I graduated with a Bachelor of Arts degree from The Citadel in 1966. I have taken additional undergraduate and graduate courses at the University of South Carolina and North Carolina State University in Business and Economics. I earned a Masters Certificate in Project Management from the Stevens Institute of Technology in 2000.

I have been employed in the telecommunications industry for more than thirty-three years with AT&T, including fourteen (14) years with AT&T's then-subsidiary, Southern Bell. I began my AT&T career in 1970 as a Chief Operator with Southern Bell's Operator Services Department in Raleigh, North Carolina. From 1972 through 1987, I held various positions within Southern Bell's (1972 – 1984) and AT&T's (1984 – 1987) Operator Services Departments, where I was responsible for the planning, engineering, implementation and administration of personnel, processes and network equipment used to provide local and toll operator services and directory assistance services in North Carolina, South Carolina, Kentucky, Tennessee and Mississippi. In 1987, I transferred to AT&T's External Affairs Department in Atlanta, Georgia, where I was responsible for managing AT&T's needs for access network interfaces with South Central Bell, including the resolution of operational performance, financial and policy issues.

From 1989 through November 1992, I was responsible for AT&T's relationships and contract negotiations with independent telephone companies within the South Central Bell States and Florida. From November 1992 through April 1993, I was a Regulatory Affairs Manager in the Law and Government Affairs Division. In that position, I was responsible for the analysis of industry proposals before regulatory bodies in the South Central states to determine their impact on AT&T's ability to meet its customers' needs with services that are competitively priced and profitable. In April 1993, I transferred to the Access Management Organization within AT&T's Network Services Division as a Manager – Access Provisioning and Maintenance, with responsibility for ongoing management of processes and structures in place with Southwestern Bell to assure that its access provisioning and maintenance performance met the needs of AT&T's strategic business units.

In August 1995, as a Manager in the Local Infrastructure and Access Management Organization, I became responsible for negotiating and implementing operational agreements with incumbent local exchange carriers needed to support AT&T's entry into the local telecommunications market. I was transferred to the Law and Government Affairs Organization in June 1998, with the same responsibilities. One of my most important objectives was to ensure that BellSouth provided AT&T with efficient and nondiscriminatory access to BellSouth's Operations Support Systems (OSS) throughout BellSouth's nine-state region to support AT&T's market entry.

Beginning in 2002 my activities expanded to provide continuing advice to AT&T decision makers concerning industry-wide OSS, network, and operations policy, implementation, and performance impacts to AT&T's business plans.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE REGULATORY COMMISSIONS?

A. Yes, I have testified on behalf of AT&T in numerous state public utility commission proceedings regarding various network and related issues, including arbitrations, performance measures proceedings, Section 271 proceedings, and quality of service proceedings, in all nine states in the BellSouth region. I also have testified on behalf of AT&T in proceedings before the FCC regarding BellSouth's applications to provide in-region interLATA long distance service.

Q. WHAT ISSUES DOES YOUR TESTIMONY ADDRESS?

A. My testimony provides information directly related to the Commission's consideration of Issues 2 (c), 5 (c), 5 (d), and 5 (e):

2 (c) CLECs' ability to target and serve specific markets profitably and efficiently using currently available technologies?

5 (c) In which markets do any of the following potential operational barriers render CLEC entry uneconomic absent access to unbundled local circuit switching:

1. The ILEC's performance in provisioning loops;

2. difficulties in obtaining collocation space due to lack of space or delays in provisioning by the ILEC; or

3. difficulties in obtaining cross-connects in the ILEC's wire centers?

5 (d) In which markets do any of the following potential economic barriers render CLEC entry uneconomic absent access to unbundled local circuit switching:

1. the costs of migrating ILEC loops to CLECs' switches; or

2. the costs of backhauling voice circuits to CLECs' switches from the end offices serving the CLECs' end users?

5 (e) Taking into consideration the factors in (a) through (d), in what markets is it economic for CLECs to self-provision local switching and CLECs are thus not impaired without access to unbundled local circuit switching?

In addition, the description of the differences between the incumbent local exchange company ("ILEC") legacy network architecture and emerging competitive local exchange carrier ("CLEC") network architecture contained in my testimony provides a perspective and context from which all the issues to be considered in this docket may be viewed objectively.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The critical issue of this proceeding is not whether CLECs can "deploy" their own switches. Instead, the critical issue upon which this Commission should focus is whether a CLEC can "efficiently use" its own switch to connect to the local loops of end users. The differences in the way end users' loops are connected to carriers' switches are among the most important factors that cause CLECs to face substantial operational and economic entry barriers when they seek to offer Plain Old Telephone Service ("POTS") to mass-market (residential and small business) customers using their own switches and ILEC-provided loops (i.e., *via* unbundled network element-loop or "UNE-L" facilities-based entry). Until these barriers are removed, the FCC's finding of impairment cannot be overturned.

Accordingly my testimony:

- Compares the significantly different network architectures available to an ILEC and a CLEC when each wishes to use an ILEC-owned analog voice-grade loop, also referred to as a DSO loop, to connect a mass market customer with its respective switch in order to provide POTS; and

- Provides an overview of the network architecturally-based operational and economic entry barriers to successful UNE-L facilities-based entry and identify CLEC witnesses who will provide more detailed testimony on the impact of those barriers and the fact that until the underlying local network architecture that has created these barriers is changed, CLECs will continue to face significant practical and economic impairments.

Q. DID THE FCC MAKE ANY FINDINGS IN THE TRIENNIAL REVIEW ORDER ("TRO") REGARDING THE ISSUES YOU DISCUSS?

A. Yes. The FCC found on a national basis that CLECs are impaired in serving the mass market in the absence of unbundled ILEC switching.[1] This finding was based on an analysis that began with the simple, self-evident proposition that CLECs cannot use their own switches, in lieu of the ILECs', unless they can connect their switches to their end-users' loops. The FCC explained:

> Competitive LECs can use their own switches to provide services only by gaining access to customers' loop facilities, which predominately, if not exclusively, are provided by the incumbent LEC. Although the record indicates that competitors can deploy duplicate switches capable of serving all customer classes, without the ability to combine those switches with customers' loops <u>in an economic manner</u>, competitors remain impaired in their ability to provide service. Accordingly, it is critical to consider competing carriers' ability to have customers' loops connected to their switches <u>in a reasonable and timely manner</u>.[2] (Emphasis added.)

To emphasize the importance of the ability of CLECs to connect their switches to the loops of their end-users, the FCC noted that no party disputed that competitors need access to the ILECs' loops to compete in the mass market.[3]

Starting from its basic premise that an <u>economic</u> connection between the local loop and a CLEC switch is a condition of non-impairment, the FCC noted the evidence in its record indicating the large disparity between the cost that CLECs incur to connect

[1] TRO at ¶¶ 422, 459.

[2] TRO at ¶ 429 (emphasis added).

[3] TRO at n. 1316.

their end-users' loops to their own switches and the significantly lower cost that the ILECs incur to do the same thing.[4] The evidence demonstrated that "even using the most efficient network architecture available for entry using the UNE-L strategy, [CLECs] are at a significant cost disadvantage vis-à-vis the incumbent in all areas."[5] The FCC relied on evidence of the CLECs' "cost of backhauling the voice circuit to their switch from the customer's end office" where his/her loop terminates, and noted that a significant cost disparity is created because the ILEC, whose switches are located where the customers' loops end, does not experience such costs.[6]

Indeed, the FCC was very specific about evidence of the additional costs faced by the CLECs. That CLECs must backhaul the circuit to their switches, *i.e.*, to extend the customer's loop beyond the point where it had connected to the ILECs switch, gives rise to "costs of collocating in the customer's serving wire center, installing equipment in the wire center in order to digitize, aggregate, and transmit the voice traffic, and paying the incumbent to transport the traffic to the competitor's switch," all costs that "put [CLECs] at a significant cost disadvantage to the incumbent."[7]

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[4] TRO, at ¶¶ 479-481.

[5] TRO at ¶ 479.

[6] *Id.*, at ¶ 479.

[7] *Id.*, at ¶ 480 (citations omitted).

Q **HOW DO THESE DIFFERENCES IMPACT THE ABILITY OF CLECS TO SERVE CONSUMERS USING UNE-L GENERALLY OR FROM EXISTING ENTERPRISE SWITCHES IN PARTICULAR?**

A. The difference in the way that ILECs and CLECs connect to the ILEC loops serving end-users lies at the heart of the impairment that CLECs sustain in trying to serve mass market customers without access to unbundled switching and unbundled network element-platform ("UNE-P"). The ILECs' advantage in the way they connect their switches to the loops of their end user customers derives from their historic monopoly position. The CLECs cannot replicate the advantages resulting from the ILEC's legacy network.

The difference in the manner and cost of connecting loops to switches between ILECs and CLECs affects mass market customers, the consumers expecting to benefit from competition, in particular. The significant cost of the CLEC having to backhaul the loop, even after that cost is spread across all mass market customers that a CLEC can possibly serve, cannot be overcome by a CLEC being smarter or more agile in the market or by cutting corners on internal costs. It simply is too large.

Indeed, as demonstrated in the testimony of Steven E. Turner, the cost of the backhaul structure that CLECs must incur and that ILECs do not incur amounts to more than the total ILEC TELRIC cost of providing switching in order to serve the customer. That is why it is less expensive for CLECs to pay ILECs for the cost of unbundled switching, instead of using capacity on their own switches currently serving enterprise customers, even when the capacity is currently spare. Indeed, so great are the backhaul costs per mass market customer that CLECs could not compete with ILECs if forced to backhaul their mass market voice circuits to their enterprise switches, even if there is spare capacity on those switches. That is why the Commission cannot rely on the presence of switches used to serve enterprise customers in an area as probative of whether CLECs can serve mass market customers without access to mass market switching.

The FCC found the failure of CLECs to utilize their existing enterprise switches to be probative evidence of significant barriers making entry uneconomic.

> We found significantly more probative the evidence that in areas where competitors have their own switches for other purposes (e.g., enterprise switches), they are not converting them to serve mass market customers and instead relying on unbundled loops combined with unbundled local circuit switching. Given the fixed costs already invested in these switches, competitors have every incentive to spread the costs over a broader base. Their failure to do so bolsters our finding that significant barriers caused by hot cuts and other factors make such entry uneconomic.[8]

> We find . . . that the fact that competitors have not converted unbundled loops combined with unbundled local switching or served residential customers with existing switches only serves to demonstrate the barriers to such service.[9]

Q. FROM A NETWORK ARCHITECTURE PERSPECTIVE WHAT IS THE FUNDAMENTAL OR CENTRAL PROBLEM UNDERLYING THE FCC'S FINDING OF IMPAIRMENT?

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[8] TRO, at ¶ 447, fn.1365

[9] TRO, at ¶ 449, fn.1371 (citations omitted)

A. As discussed in detail below, the central problem is that the ILECs' legacy network architecture was designed to support a single regulated monopoly provider, not a competitive market with multiple service providers seeking access to the ILEC's loops. This architecture allows an ILEC to efficiently connect its legacy loops to its own switches within the ILEC's wire center to provide service to end user customers. However, the legacy ILEC network architecture provides an inefficient and uneconomic means for a CLEC that tries to connect those same loops to its switch that is always remotely located from the ILEC central office where these loops terminate. This fundamental structural difference creates overwhelming operational and economic advantages for the ILEC, advantages that make it both impractical and uneconomic for CLEC competitors to compete with the ILEC to serve mass market customers using an UNE-L architecture.

Q. WHAT ARE THE KEY COMPONENTS OF THIS STRUCTURAL DISADVANTAGE?

A. There are four key components to this structural disadvantage.

First, a CLEC must incur the time and cost to install and maintain a significant "backhaul" network infrastructure to connect its switch to the ILEC loops that terminate in the ILEC's wire center, which may also be referred to as a central office ("CO") or local serving office ("LSO"), while the ILEC has no such need for backhaul facilities. As the FCC explained in the TRO, "The need to backhaul the circuit derives from the use of a switch located in a location relatively far from the end user's premises, which effectively requires competitors to deploy much longer loops than the incumbent".[10] These CLEC backhaul costs include the non-recurring costs necessary to establish a collocation arrangement in every ILEC wire center in which the CLEC wishes to offer mass market services, the recurring costs paid to the ILEC for maintaining these collocation arrangements as well as the transport equipment and facilities necessary to extend the ILEC's loops to the remotely located CLEC switch.

Second, as the FCC found, a UNE-L CLEC must aggregate traffic from many locations in order to achieve the same switch economies of scale realized by an ILEC at a single location. This forces the CLEC to incur its backhaul cost disadvantage in many wire centers in order to achieve the type of switch scale economies that the ILEC achieves at a single wire center.

Third, the CLEC must pay exorbitant charges to the ILEC for transferring loops from the ILEC switch to a CLEC collocation facility, or from one CLEC to another. This transfer process also forces the CLEC's customers to suffer an inferior experience in converting to the CLEC's service compared with the treatment they can receive using UNE-P, or that interexchange carriers -- including the ILECs -- can offer customers using the Primary Interexchange Carrier ("PIC") change process for allowing customers to change their long distance service provider.

[10] TRO at ¶ 480 (citations omitted); see also TRO at ¶ 464, n. 1406, TRO, at ¶ 424, n. 1298 , and TRO at ¶ 429.

Finally, the CLEC is precluded from serving an entire segment of retail customers, those whose loops are currently served by integrated digital loop carrier (IDLC) systems, unless the ILEC has the spare non-IDLC loop plant in place to replace these customer's lines so that they are eligible for a UNE-L migration to a CLEC. This is described in more detail in Section V.

Because these significant economic and operational barriers are rooted in the ILECs' network design, a UNE-L market entry strategy to serve the mass market cannot be sustained unless there are significant modifications to the ILECs' existing network architecture.

Q. PLEASE DESCRIBE HOW THE REMAINDER OF YOUR TESTIMONY IS ORGANIZED.

A. Section II provides a historical overview of how the ILECs' networks developed and the principles underlying their evolution in a monopoly environment.

Section III describes how end-user locations are connected to ILEC switches and why that service configuration has serious implications for mass-market competition.

Section IV describes CLEC networks and how the incumbents' closed and integrated network architecture causes quantifiable and significant cost disadvantages for a new entrant.

Section V briefly describes the impairment created by the ILECs' increasing deployment of integrated digital loop carrier ("IDLC") technology and the impairment resulting from differences in call termination capabilities.

Section VI provides my concluding thoughts.

II. PRINCIPLES UNDERLYING THE HISTORICAL DEVELOPMENT OF ILEC NETWORKS

Q. CAN YOU PROVIDE AN OVERVIEW OF THE PRINCIPLES UNDERLYING THE HISTORICAL DEVELOPMENT OF ILEC NETWORKS?

A. Yes. The essence of the telephone network is *connecting* one party to another, whether they are physically located near each other or separated by considerable distance. There is value in merely being *able* to call any party on the network, or likewise being *able* to receive calls from any party on the network. In theory, the more parties that can be reached, the greater the value of the network. The nature of voice communication is that even brief conversations, such as emergency calls, can be of great value. Telephone networks are predominantly designed to facilitate relatively short, private, one-to-one, bilateral communications. The telephone network must stand ready to complete any particular call (or tens of millions of calls) at any time customers want to call, but stand partly idle when customers do not wish to use it.

Because of the high fixed cost required to maintain the ability to make direct connections between all customers and the relatively small proportion of time that those connections are required (coupled with the practical impossibility of directly connecting every customer to every other customer), the goal of an efficient telephone network is to balance the callers' ability to connect to any other customer with the cost of making the connection. This is accomplished by minimizing the proportion of assets dedicated to any particular customer and by creating "on-demand" connections whenever practical.

Q. HOW IS THE NEED FOR DEDICATED CONNECTIONS TO SERVE CUSTOMERS REDUCED?

A. Switching reduces the need for dedicated connections. In fact, a single switch in the ILEC's network permits any customer terminated on that switch to connect with any other customer terminating on that same switch without the need for any transport facilities. Depending on population density, these "intra-switch" calls can account for a very large percentage of all of the ILEC's traffic. By connecting switches to each other using efficient transport and tandem switching, all customers on those switches can connect with each other.

For example, assume that we wish to interconnect eight different customers for a two-way conversation between any two of the customers. (See Exhibit No.___, JMB- 1) If we count all of the transmission paths between any two of the eight customers, we find that a total of 28 such paths are required.

The maximum number of simultaneous connections that may exist, obviously, is four -- half of the subscribers talking to the other half. Furthermore, if a traffic study were made over a period of time, it would probably show that the occasions on which more than two links were in use would be quite rare. Clearly, maintaining 28 dedicated transmission paths is an inefficient arrangement.

Taking this example a step further, assume instead we have 1,000 customers that we wish to connect. It would be impossible to lay out the required 499,500 dedicated transmission paths necessary to allow these customers to communicate with each other. Thus, the central office was established as a point where all the transmission paths to the individual customers were terminated for switching. The original switches in these central offices were manual switchboards. All of today's switches are, of course, fully automated.

Q. BECAUSE A SINGLE SWITCH OBVIOUSLY CANNOT BE USED TO SERVE ALL CUSTOMERS, HOW DID THE INDUSTRY RESOLVE THIS PROBLEM?

A. Once central offices were established, two more questions rapidly came upon the industry: how many switches are needed to serve a given geographic area and how to connect customers in one switch to those in another?

The decision to invest in more switches was an economic trade off among: (1) the cost of an additional switch in a territory, (2) the cost of building long customer loops, or (3) deciding not to provide service, avoid the cost, and forego the additional revenue.

A typical copper loop without any enhancement can provide adequate telephone service out to a distance of about 18,000 feet (3.4 miles) from a switch. Thus in the early days of the industry, there were a lot of areas and customers without telephone service. Over time loop design and enhancement capabilities improved, making it possible, <u>at a cost</u>, to provide telephone service up to 160,000 feet (30.3 miles) from a switch, although such costly extreme loop lengths are rare. For decades, telephone companies extended service, grew and added switches by comparing the economics of long loops versus additional switches. In urbanized areas, bigger switches became located closer to the customers they served. In rural areas, with lower population densities, smaller switches with longer average loop lengths are more common.

Connecting all individual switches to each other with dedicated facilities may at first seem to create the same problem discussed above caused by connecting end-users with dedicated facilities; however, the connections between switches, known as "trunks" and "trunk groups" are much more efficient than loops. Loops are dedicated to individual customers; trunks, however, are used by multiple customers on an as needed basis. As a result, a key characteristic of trunks is that they carry "concentrated" traffic. Concentration, or over-subscription, is possible because it is unlikely that all potential users will want to make calls simultaneously. This permits the sharing of facilities by more users than could be accommodated if all users sought service at the same time. Concentration is limited by the level of service blockage probability that is deemed acceptable.

Trunk facilities are also less costly than individual loop facilities because trunks can be "multiplexed" – several trunks can be placed on the same facility. Multiplexing is the encoding and compacting of communications so that they take up less "space" on a communication facility. No blocking is introduced by multiplexing, although the degree to which the communications are compressed and the sophistication of the encoding may affect the ultimate service quality.

Further, "switching between switches", known as "tandem switching." can also be used, eliminating the need to build individual trunk groups from any one switch to all the other switches in the network until it is economical to do so. Such an individual trunk group would be built only when the volume of calling between any two switches warrants such a direct trunk group connection. By connecting one switch to another using efficient transport (including tandem switching), all customers of those switches can connect with each other.

Q. WHAT IS THE SITUATION TODAY RELATIVE TO LOOPS SERVING MASS MARKET CUSTOMERS?

A. The connection between a customer premises and the first point of switching – or the local loop – remains fundamentally a dedicated connection with little opportunity for cost sharing through multiplexing or concentration. The use of digital loop carrier (DLC), which only began to be deployed in the loop plant within the last two decades, provides some opportunity for cost sharing. Depending upon the type and vintage of the DLC, both multiplexing and concentration may occur. However, as I will discuss below, in Sections IV and V, the deployment of DLC in the loop plant creates additional sources of impairment. Loops were originally a simple copper cable pair between the customer's premise and the local switch, and for the mass market that remains prominently the case today, over 100 years later. The loop plant represents a high fixed cost infrastructure with little opportunity to share costs.

This is the very infrastructure the FCC found that incumbents must unbundle because competitors cannot duplicate or replace it. As the FCC explained:

> No party seriously asserts that competitive LECs are self-deploying copper loops to provide telecommunication services to the mass market.[11].

> When the incumbent LECs installed most of their loop plant, they had exclusive franchises and, as such, the record shows that they secured right-of-way at preferential terms and at minimal costs. By contrast, [the] record shows that new entrants have no such advantage.[12]

III. ILEC NETWORKS

Q. PLEASE DESCRIBE HOW LOOPS SERVING MASS MARKET CUSTOMERS ARE CONNECTED TO THE ILEC'S NETWORK.

[11] TRO at ¶ 226
[12] TRO at ¶ 238

A. In order to use an analog loop to provision traditional retail local voice service (*i.e.*, POTS), a local exchange carrier must connect that loop to a local circuit switch. The local loop is typically a copper transmission facility that originates at the customer's premise and terminates on a Main Distribution Frame ("MDF") in the incumbent LEC's wire center (see diagram at Exhibit No. ___, JMB- 2).

When an ILEC provides POTS to a retail customer, the customer's loop must be connected to a port on the ILEC's switch. The switch port recognizes when a customer wishes to make a call (*i.e.*, goes "off-hook"), indicates to the customer that a call may be placed (*i.e.*, provides dial tone) and receives the dialed digits necessary to make the call. Similarly, the switch port notifies the customer when someone is calling (initiates ringing for incoming calls). For mass-market customers served by analog voice-grade loops, the switch port connection is generally accomplished using a "jumper" wire pair at the MDF in the ILEC central office. The MDF is a large metal framework that serves the simple purpose of terminating cable pairs in a manner that permits a cable pair on one side of the frame to be connected to a specific piece of central office equipment on the other side of the frame. (See Exhibit No. ___, JMB-3.) In order to make the connection, an ILEC frame technician runs a pair of wires from one side of the frame to the other in order to make a continuous path between the customer's loop and the switch port.

Individual loops enter the ILEC central office as part of a large cable that collects many loops from a particular neighborhood. The cable typically runs through an underground cable vault and then into the building within a pre-designated infrastructure (cable ducts) to the MDF. The individual loops within the cable are then "fanned out" onto wiring blocks on the "customer facing" side of the MDF. Twisted pairs of insulated wire, commonly referred to as "jumper wires," are used to cross-connect customer loops, which appear on the customer facing side of the MDF, to wiring blocks on the "network facing" side of the frame. The latter contain the wiring blocks onto which cables from the ILEC's local switch ports are terminated. Using this technique, customer loops can be assigned to a specific analog switch port on the ILEC's circuit switch by placing or repositioning the jumper wire on the MDF. Exhibit No. ___, JMB-3 depicts a generic MDF cross-connect arrangement.

In order to provide POTS service, each customer's individual loop must be connected to an assigned switch port. Currently, the vast majority of end-user loops are serviced by the ILEC, so the vast majority of end-user loops already terminate onto the ILEC's circuit switch by way of the MDF. This is true whether or not service is currently active on the particular loop. When a customer terminates service, *e.g.*, when he or she moves from a location, the ILEC typically does not remove the jumper wires that connect that loop to the ILEC switch. Rather than disrupting the physical connection to the premises, the loop is typically placed in an "inactive" status by software commands issued to the switch's software table. In such cases, no physical work is required to restore full service when a new customer requests it. Instead, the switch software table is merely updated through the use of keystrokes from a computer workstation to show the line is no longer "inactive." This practice of leaving the

ILEC loop connected to the ILEC switch port is commonly known in the industry as "dedicated inside plant" and "dedicated outside plant". Other terms for this include "connect through" and "ready access".

Q. OBVIOUSLY THIS ASSOCIATION OF LOOPS AND SWITCH PORTS THROUGH THE USE OF FRAME CROSS CONNECTIONS OR JUMPERS REPRESENTS AN ECONOMIC AND EFFICIENT METHOD FOR THE ILEC; ARE THERE OTHER EFFICIENCIES IN THE ILEC NETWORK?

A. Yes. As discussed above, the evolution of the ILEC loop and switch architecture under monopoly protection has resulted in an effective and efficient arrangement in which both loop and switching costs have been optimized.

As a result of the volume of traffic and the resulting economies of scale that the ILEC enjoys, it is able to connect its switches for the completion of inter-switch calls for its customers by an efficient and economical inter-office transport network. The ILEC will engineer this network with direct switch-to-switch trunk groups in all cases where traffic volumes warrant such a connection. In cases where traffic volumes between two switches are not sufficient to justify a direct connection or in cases where there is overflow traffic that cannot be supported by the direct trunk group, the ILEC utilizes an efficient tandem switching and transport network to handle such traffic. This low cost network design allows the ILEC to complete its inter-switch calling using the minimum amount of trunk connections possible to complete a call between two switches. (See Exhibit No. ___, JMB-4)

The ILECs were able to attain the necessary scale because, as the historic monopoly suppliers of all telecommunications services, they could count on serving the entire population located near their switches. ILECs were also able to attain switch scale economies through the use of "host – remote" switching arrangements. A moderate to large size switch in one wire center can "host" smaller "remote" switches (actually modules of the host switch) miles away in other wire centers Such remote switches are significantly less expensive than stand alone switches of the same line size. In sum, the ILECs efficiently use their ubiquitous legacy copper loop plant that employs relatively short loops and are able to maintain quality transmission for the analog signals carried over those loops. The ability to use short loops resulted from the monopoly franchise guarantee that there would be significant numbers of end-users within close proximity of a switch, such that the ILECs could attain the scale economies necessary to make their local switches economical.

CLECs, however, cannot benefit from the ILECs' ability to maximize the joint economies of *both* switching and loop facilities. Rather, as described below, CLECs must access the ILECs' loops where they terminate (i.e. in the ILEC's wire centers) and then do their best to survive in an environment in which they are subject to substantial costs and operational impediments not faced by the ILECs.

IV. CLEC NETWORKS

Q. HOW DO CLEC NETWORKS DIFFER FROM THE EFFICIENT AND ECONOMIC ILEC NETWORK YOU HAVE DESCRIBED?

A. In contrast to the incumbents, new entrants do not have the opportunity to achieve scale economies for their switches *and at the same time* minimize loop distances and costs by locating their switches where these loops terminate. The FCC summarized the problem as follows: "The [CLECs'] need to backhaul the circuit . . . effectively requires competitors to deploy much longer loops than the incumbent".[13] The FCC's rules do not permit a CLEC to place a circuit switch in a collocation.[14] And in all events, even if a new entrant were allowed to place a circuit switch in every local serving office, it could not achieve the same scale economies as the ILEC unless it possessed the same market share as the incumbent did in that particular office. This situation is, of course, a practical impossibility. Facing such market uncertainties, CLECs can at best expect to be able to serve only a fraction of the total end-users in any ILEC wire center.

Thus, CLECs must deploy individual switches to serve much larger areas than the ILEC, because that is the only way they could possibly achieve switching scale economies comparable to those enjoyed by the ILECs. The FCC recognized this problem in the TRO, noting that "[The RBOCs' cost studies] suggest that it would be uneconomic for a competing carrier to serve customers in smaller wire centers. All the studies found that in such wire centers, entry would be much more expensive for

[13] TRO at ¶ 480

[14] 47 CFR 51.323 (ILEC may refuse to permit collocation of equipment not necessary for access to UNEs or interconnection).

the competitive LEC than for the incumbent, or simply would be uneconomic"; and "[I]n smaller wire centers, where the competitors' customer base is likely to be smaller and they are unable to take advantage of scale economies, the cost disadvantage due to backhaul is much larger" .[15]

Accordingly, CLECs cannot use the same kind of connections, *i.e.*, the MDF jumper wire pairs used by ILECs, to link their customers' loops to their distant switches. Rather, CLECs must deploy an extensive *backhaul network* that extends the existing customer loops – all of which terminate at ILEC wire centers– to a distant CLEC switching location. In Florida, there are 198 BellSouth and 90 Verizon wire centers from which CLECs must "backhaul" end-user loops if they want to use their own switching to serve customers in all of the incumbent LECs' wire centers.

Q. WHAT MUST A CLEC DO IN ORDER TO "BACKHAUL" ITS CUSTOMER'S TRAFFIC TO ITS OWN SWITCH?

A. In order for a CLEC to "backhaul" its customers' traffic to its own switch, the CLEC must first create an overlay network infrastructure that is largely dedicated to the subset of customers won from the incumbent in a specific wire center. In essence, the CLEC must add a very long, costly and dedicated "extension cord" in order to connect its end-users' loops to its switches. This requires the CLEC to:

(1) establish and maintain collocations at ILEC wire centers, where customers' loops are "collected;"

[15] *See* TRO at ¶ 484 *see also* TRO at ¶ 480 (citations omitted).

(2) install and maintain the equipment necessary to digitize and, using concentration and multiplexing techniques, aggregate the traffic on those loops to permit connections to the CLEC's switch at acceptable quality levels; and

(3) establish the necessary transport facilities that provide the physical path connecting the CLEC's collocations and its switch.

Only after all of this infrastructure and these functionalities are in place and operational in each ILEC wire center in which it wishes to compete can a switch-based CLEC begin to offer service to customers in those incumbent's wire centers. Thereafter, for each individual customer line it seeks to serve, the CLEC must then arrange and pay for a manual, volume limited, and costly "hot cut" process to have the customer's loop connection transferred to its collocation, and the customer's telephone number ported to the CLEC's switch.

In sum, due to the underlying integrated, and effectively closed, design of the incumbents' local network architecture, competitors must invest in and deploy all of the functionalities described above in order to replace a simple jumper pair across the incumbent's MDF. That is why the FCC correctly found that the barriers CLECs face in attempting to provide a UNE-L based service

> are *directly associated with incumbent LECs' historical local monopoly*, and thus go beyond the burdens usually associated with competitive entry. Specifically, the ***incumbent LECs' networks were designed for use in a single carrier, non-competitive environment*** and, as a result, the incumbent LEC connection between most voice-grade loops and the incumbent LEC switch consists of a pair of wires that is generally only a few feet long and hardwired to the incumbent LEC switch.[16] (Emphasis added)

[16] TRO at ¶ 465 (emphasis added) (citations omitted).

These barriers generate very significant costs for the CLECs, costs that ILECs do not incur. This, in turn, makes it impractical and uneconomic even for "efficient" competitors to provide service *via* UNE-L to the low volume (and low margin[17]) communications users typically found in the mass-market.

The following subsections describe in greater detail the general infrastructure and equipment that a CLEC must install and operate in order to provide service to mass market customers using analog voice grade loops (*i.e.*, collocation, collocation equipment, transport, and hot-cuts).

A. Collocation

Q. WHAT IS THE FUNCTION OF A COLLOCATION AND WHY ARE THEY PROBLEMATIC?

A. A CLEC cannot provide any telecommunications service employing a UNE-L architecture until the retail customer is physically connected to its network switch. In order to provide POTS service, as explained above, a CLEC must deploy the equipment required to digitize, encode, multiplex and concentrate its customers' traffic so that the unbundled loops terminating in the ILEC's wire center can be extended to the CLEC's switch. In order to do so, *i.e.*, to make an ILEC loop useable at a CLEC switch, the CLEC must rent space to establish a collocation in the ILEC's wire center. (See Exhibit No. ___, JMB-5)

[17] TRO at ¶ 474 (the mass market is "characterized by low margins").

Establishing a collocation involves a number of activities and costs that will vary depending on the type of collocation established. The ILECs offer various collocation arrangements including physical collocation in which the CLECs equipment can either be secured in a "caged" space or unsecured in a "cageless" space and virtual collocation in which the CLEC's equipment is leased to the ILEC and is installed and maintained by the ILEC on the CLEC's behalf.

In general, the activities required to establish a collocation include: (1) obtaining the necessary space in the wire center, which is predicated upon the ILEC having sufficient collocation space in its central office;[18] (2) engineering the collocation; (3) arranging construction (for physical caged collocations); (4) cabling the CLEC interface frames for its collocated equipment to cross-connection frames in the incumbent's space and (5) installing the required equipment in the collocated space.

Because the CLEC's equipment in the collocated space requires electric power, the CLEC must also pay the incumbent for delivery of direct current ("DC") power and emergency power to operate the collocated equipment. In some instances, the CLEC may opt to invest in additional equipment to deploy power distribution, i.e., a battery distribution fuse bay ("BDFB") within its own collocation to provide for more flexibility and to minimize the need for a subsequent (and generally very costly) power augment. In general terms, the collocation power charges are driven by the

[18] *See* TRO, at ¶ 477

charges for redundant power feeds (sized for the maximum demand in the collocation) and the necessary HVAC for the collocated equipment.

A CLEC's collocation costs can be highly influenced by the incumbent's minimum requirements for collocation purchases. For example, while a CLEC may only require 25 square feet of floor space for its equipment in a given LSO, the ILEC may have a minimum size for caged collocation of 50 or 100 square feet. Similarly, while the CLEC's equipment may only require 40 amps of power the ILEC may have a minimum power feed requirement of 60 DC amps and/or the power may be billed based on fused rather than drawn power. In Florida, a recent ruling by this Commission now requires that ILECs bill CLECs for power based on the power actually used rather than by fused amps. Such minimum space/power requirements serve to needlessly inflate a CLEC's collocation expenses, particularly for locations where the CLEC may only win a small quantity of lines. Accordingly, the average cost of collocation under such conditions may become prohibitive, because the equipment deployed actually requires substantially less space and/or power than the minimum space required or power charged for by the ILEC. Similarly, the incumbent sometimes applies large up-front one-time charges for the collocation application, cage engineering (whether for space or power) or administrative fees (such as project management, space availability reports, etc.), which may prove unrecoverable depending upon the market share achieved in the specific area served by the collocation facility.

As discussed in the testimony of Steven E. Turner, the unit collocation costs for an efficient CLEC seeking to serve the mass market in Florida are significant.

B. Collocation Electronics

Q. CAN YOU DESCRIBE THE KEY ELECTRONIC COMPONENTS NECESSARY?

A. Yes. Obviously having an empty collocation space does not by itself provide the CLEC with any of the functionality necessary to connect customers on ILEC loops to the CLEC's switch. Additional equipment is necessary to make the loop connection work. (See Exhibit No. ___, JMB-6) For example, analog voice signals degrade and unwanted noise increases as the length of a copper facility increases. Thus, the longer a copper loop, the less a voice signal can be distinguished from noise on the line. This is known as "signal loss". The incumbent's loop plant is designed so that voice grade loops consume all but a "safety margin" of the allowable signal loss on the conductor. Therefore, once the analog loop is delivered to the CLEC collocation cage, the analog telecommunication signals on the loop cannot travel much farther and still retain acceptable voice and analog modem quality levels.

Accordingly, in order for a CLEC's mass-market customers' communications to transit back and forth between the customer's premises and the CLEC's remotely located switch at an acceptable level of quality, the CLEC must install digital loop carrier ("DLC") transmission equipment. While this DLC equipment is absolutely mandatory for the CLEC, it is not required for the ILEC when serving the same customers.

The CLEC's DLC equipment must be placed in the collocation arrangement that is located in the wire center where the end-user loops terminate. The equipment digitizes, encodes, concentrates and multiplexes the analog signals received from the customer so that the CLEC can extend the loop signal back to its remote switch in a manner that (1) provides service quality that will meet customer expectations and (2) minimizes the CLEC's costs to transport its customers' traffic back and forth from its switch. This equipment includes the cross-connection frame (also known as a POTS bay) between the incumbent's MDF where the loops terminate and the DLC equipment, the DLC equipment itself, and high capacity digital cross-connection frames ("DSX-1" or "DSX-3") necessary to cross-connect the digital output from the DLC to the transmission facilities that ultimately connect to the CLEC's remotely located switch. In addition, test access and monitoring equipment must be deployed in the collocation to allow the CLEC to operate its equipment as efficiently as possible.

As noted above, the CLEC DLC equipment, which is not required in the ILEC's network, receives the analog communications from the loop and digitizes, concentrates and multiplexes the communications on the CLEC customers' loops so that the connecting transport facility can be used efficiently. The DLC also interoperates with the CLEC's switch to provide and receive the signaling necessary for call supervision, including the provision of dial tone and ringing current, digit reception and related functions. Thus, when using this architecture arrangement, the DLC equipment is not only needed to extend the CLEC's loops, it is also essential to provide electrical current for the ringing and dial-tone necessary for POTS service, functions that are performed by the ILEC's switch port as described in Section III above.

Additional equipment is needed to take the output of the DLC and place it on transport facilities for transmission out of the retail customer's wire center. The digital cross connection frame (or DSX equipment) provides for this functionality by permitting the DLC to be efficiently cross-connected to the backhaul transport facility. DSX-1 equipment allows for connections to DS-1 transport facilities. DSX-3 equipment allows for connections at the DS-3 level. The volume of traffic that will be served from the wire center dictates the type of equipment used at a particular location. As described in greater detail in the Transport section below, when transport is leased from the incumbent, the DSX equipment cross-connects DLC transmissions from the CLEC's collocation to the ILEC's transport facilities. In cases where the CLEC provides its own transport to its switches, connections from the DLC are typically to an optical multiplexer which, in turn, is connected to the CLEC's metropolitan fiber ring. (See Exhibit No. ___, JMB-7)

Q. CAN DLC EQUIPMENT AND DSX EQUIPMENT BE INSTALLED IN A MANNER THAT GROWS SMOOTHLY WITH THE GROWTH OF CLEC CUSTOMERS IN AN AREA SERVED FROM A COLLOCATION?

A. No. DLC equipment is not designed to, and therefore cannot, scale precisely with the level of demand (or number of lines) served in a wire center. Rather, there is a minimum amount of DLC equipment that must be purchased and installed. Accordingly, DLC investment is very "lumpy". The first module of collocated DLC typically includes equipment that manages the interface with both the transmission facility and the sub-modules of DLC equipment where the lines physically terminate.

For example, common equipment in the LiteSpan 2000 product, manufactured by Alcatel, can serve up to 2,016 POTS lines. Additional equipment, which is frequently referred to as a channel bank assembly, manages the interface between the analog lines and the digital switch port and provides for the sharing (concentration of lines) of the transmission facility. The channel bank assembly for the LiteSpan 2000 product handles up to 224 POTS lines. Finally, individual POTS lines terminate on electronic devices called line cards. Line cards terminate the loop and provide the electrical interface to the DLC channel bank assembly. For the LiteSpan 2000 product, 4 POTS lines can terminate on a single line card. In the LiteSpan example, in order to serve a single POTS line, a CLEC would need one line card capable of serving up to four lines, one channel bank assembly capable of serving up to 224 lines and one DLC common unit capable of serving up to 2,016 lines. No additional investment would be needed until the fifth line is served, when a second line card would be required. A new channel bank would be required when the 225th line is added, and when the 10th channel bank assembly is required (*i.e.*, when the 2,017th line is added) the whole process would start again with new common unit, a new channel bank assembly and a new line card.

Additionally, because the many collocated DLCs that subtend a CLEC's switch are so widely dispersed over a large geographic area, it is uneconomic to incur the travel expense to add small increments of equipment. Accordingly, CLECs are forced in practice to install extra capacity rather than dispatch a technician each time a new line card or channel bank assembly is needed. Thus, the CLEC must install an inordinate amount of spare equipment and suffer a sub-optimal equipment utilization rate.

The digital cross connection frame (whether a DSX-1 or DSX-3) takes the output of the DLC as a digital electrical signal and connects it to either a DS1 or a DS3 transport facility that extends the loops from the CLEC's collocation to the CLEC switch. DSX equipment is also not designed to scale smoothly with growth. A typical DSX 3 panel can terminate 24 DS-3 transport circuits. Each DS-3 is equivalent to 672 DS-0 (voice grade) channels, and DLCs typically permit 4 lines to share a single channel through the unit's concentration capabilities. A single DSX-3 panel when used in conjunction with DLCs, therefore, has capacity to handle more than 64,000 (24 x 672 x 4 = 64,512) POTS lines – approximately the equivalent capacity of a large incumbent LEC wire center.

C. Transport

Q. PLEASE DESCRIBE HOW THE TRANSPORT FUNCTION IS ACCOMPLISHED.

A. What I have described so far brings the loop into the collocation space and prepares it to be extended, along with numerous other loops, to the CLEC's distant switch. Once a CLEC customers' signals have been prepared for transport to the CLEC switch, the CLEC must arrange for transmission capability to deliver traffic from the collocation to its remotely located switch. Here again, this transport requirement does not exist in the ILEC's network.

In some cases, a CLEC's collocation will be connected to another collocation through the purchase of ILEC transport facilities (*e.g.*, DS1 and DS3 capacity facilities) as the CLEC traffic volumes at most incumbent wire centers are typically too low to justify CLEC construction and use of owned transport facilities. (See Exhibit No. ___, JMB-8) When used, this second CLEC collocation typically serves as a "hub" location to aggregate loops from several sub-tending collocations in the area and subsequently transport the loops to the CLEC's switching location, either over higher capacity leased facilities or using self-provided CLEC transport. The FCC commented on this type of arrangement in the TRO: "Competing carriers generally use interoffice transport as a means to aggregate end-user traffic to achieve economies of scale. They do so by using dedicated transport to carry traffic from their end users' loops, often terminating at incumbent LEC central offices, through other central offices to a point of aggregation." [19]

Self-provided transport between ILEC wire centers is the exception rather than the rule for mass-market service. Indeed, POTS volumes from a single wire center alone could not justify a CLEC's deployment of its own transmission facility. This is corroborated by the FCC's finding of national impairment when a CLEC requires 12 or fewer DS3s of capacity. [20] Twelve DS3s are equivalent to 32,256 POTS lines, with a four-to-one DLC concentration ratio. However, the average sized ILEC wire center has under 15,000 POTS lines.

In other cases, rather then linking two collocations together, single collocations will be equipped to extend the loops collected directly to the CLEC's switch location. (See Exhibit No. ___,JMB-5.)

In either case, regardless of which carrier provides it, a CLEC must procure transport facilities between its collocations and switching locations in order to backhaul customers' loops to its switch. Ironically, when the transmission capability is procured from the ILEC rather than self-provisioned, the CLEC's transport cost has potentially increased as a result of the TRO. In the TRO, the FCC determined for the first time that ILECs are no longer required to unbundle transport facilities for

[19] *See* TRO at ¶ 361. *See also* TRO at ¶ 370.

[20] TRO at ¶ 388.

requesting CLECs when such facilities are used to backhaul traffic from the CLEC end user loops to their switches.[21] As a result, CLECs may now be required to pay above cost special access rates to ILECs for such transport.

D. Physical Transfer Of Loops

Q. ONCE THE CLEC HAS PURCHASED, INSTALLED AND ACTIVATED ALL OF THE COLLOCATION SPACE, EQUIPMENT ELEMENTS AND TRANSPORT ARRANGEMENTS, WHAT ELSE MUST OCCUR FOR CLECS TO PROVIDE SERVICE TO CUSTOMERS USING UNE-L LOOPS?

A. Once the necessary network infrastructure described above is in place, the CLEC is finally in a position to transfer individual customer loops from the incumbent's network to its collocation and ultimately to its switch. In order to accomplish this, the CLEC must arrange for what is typically referred to as a hot cut. The hot-cut process, which is described in detail in the testimony of Mark Van de Water, involves multiple manual steps and coordinated activities of both CLEC and ILEC personnel.

These include, among other things: (1) interrupting the customer's service while changing the customer's loop cross-connection at the MDF from a terminal pair connected to the incumbent's switch port to a terminal pair that connects to a pair of terminals in the CLEC collocation and (2) coordinating the porting of the customer's telephone number to the CLEC's switch so that calls dialed to the customer's number can be properly completed. Once the hot-cut has been successfully completed, a

[21] TRO, at ¶¶ 365-369.

CLEC can finally provide service to its end-user using its own switch. In contrast, as discussed above, the ILEC can provide service to that same customer on the same loop through a software change command. Because of all of the physical work and manual touch points and the associated human error involved with a hot cut, the process is inadequate to service mass market customers.

As the FCC noted, the shortcomings of the hot cut process also stem from the ILECs legacy network created for a monopoly environment:

> The barriers associated with the manual hot cut process are directly associated with incumbent LECs' historical local monopoly, and thus go beyond the burdens usually associated with competitive entry. Specifically, the incumbent LECs' networks were designed for use in a single carrier, non-competitive environment and, as a result, the incumbent LEC connection between most voice-grade loops and the incumbent LEC switch consists of a pair of wires that is generally only a few feet long and hardwired to the incumbent LEC switch. Accordingly, for the incumbent, connecting or disconnecting a customer is generally merely a matter of a software change. In contrast, a competitive carrier must overcome the operational and economic barriers associated with manual hot cuts. Our finding concerning operational and economic barriers associated with loop access reflects these significant differences between how the incumbent LEC provides service and how competitive LECs provide service using their own or third-party switches.[22]

[22] TRO at ¶ 465 (citations omitted).

E. **Issues of Scale**

Q. DO ALL OF THE ADDITIONAL SPACE, EQUIPMENT AND FACILITIES YOU HAVE BEEN DESCRIBING THAT ARE NOT REQUIRED IN THE ILEC'S NETWORK ADD SIGNIFICANT COSTS TO THE CLEC NETWORK?

A. Yes. Each of the collocation and backhaul costs that a CLEC must incur to connect a customer's ILEC loop to the CLEC's remote switch is a cost that the ILEC does not incur to serve the same customer, because the ILEC's switch is located in the same wire center where its customers' loops terminate. The CLEC's cost disadvantage, however, is multiplied because the ILEC also significantly benefits from what economists might describe as "first mover advantages" that translate into scale advantages.

Because of its status as the incumbent, monopoly provider, the ILEC starts with all the customers in a wire center, and each of them are already served by its switch and generating revenue. Thus, the ILEC does not have to expend resources attempting to persuade customers to change carriers in order to acquire their business and revenues. Unlike competitive carriers, the ILEC does not need to "acquire" large numbers of customers. It only needs to hold its existing customers while offering attractive win-back offers to entice customers who left for a competitor to return.

These scale or share disadvantages multiply the backhaul cost disadvantage described above. Switches are expensive, fixed cost investments and are thus subject to substantial economies of scale. Put simply, switches must be filled with the lines and traffic of paying customers in order to generate the revenues needed to recover the cost of these high fixed-cost investments. However, in order for a CLEC to achieve the same switch scale economies that an ILEC achieves for a single switch at a single wire center, that CLEC must aggregate substantial quantities of loops from multiple central offices and bring the traffic from each of them back to its own switch. To do so, it must build and pay for multiple collocation and "backhaul" arrangements in order to achieve the same scale efficiencies that the ILEC achieves at a single location.

For example, assume an ILEC has 40,000 mass market voice grade lines terminating in its wire center and a switch in that wire center with the capacity to handle the quantity of traffic generated by these lines. Assume, also, the ILEC will likely retain 80% of the customer lines while the CLEC community splits the remaining 20%. If a CLEC expected to serve 10% of the lines out of that wire center (or 50% of the aggregate CLEC market share), the CLEC would expect to serve 4,000 customer lines out of the wire center while the ILEC would have the traffic and revenues from 32,000 lines to fill its switch and recover its costs.

In order for the CLEC to achieve the same 32,000 mass market lines on its (distantly located) switch, it would have to aggregate a similar percentage of the analog lines from approximately 8 ILEC central offices of equal size. (Alternatively, the CLEC would have to fill its switch by accessing loops from a larger number of smaller ILEC wire centers resulting in further increased backhaul costs.) To achieve this degree of switch usage (32,000 lines), the CLEC would need to have 8 collocations and 8 backhaul arrangements, all just to have the same switch scale economies as the ILEC in one single wire center.

Exhibit No. ___, JMB-9 provides an overview of the CLEC network architecture required to collect and extend customer's loops from the ILEC wire center to the CLEC switch. The contrast with what is required for the ILEC to perform the same function, shown in Exhibit Nos. ____ and ____, JMB-2 and 3, cross connect a loop to a switch port using a jumper on the MDF, is clear.

V. IMPACT OF ENHANCED LOOP TECHNOLOGY DEPLOYMENT AND CALL TERMINATION

Q. ARE THERE ADDITIONAL IMPAIRMENTS THAT RESULT FROM THE ILECS DEPLOYMENT OF ENHANCED LOOP TECHNOLOGY?

A. Yes. CLECs are further impaired in offering service to mass market customers because the incumbent has placed a large and growing portion of these customers' loops on integrated DLC ("IDLC") equipment. As described in the testimony of Mark Van de Water, IDLC loop arrangements, where alternative spare capacity is not available, can practically foreclose CLEC access to the retail customer.

Increased deployment of IDLC can significantly limit CLECs' ability to provide competing service if they are denied access to UNE-P. This is so because the IDLC equipment multiplexes multiple customers' traffic onto a single loop "feeder" facility that feeds directly into the ILEC's switch, and there is no simple way to segregate (or access) the traffic of a particular customer served with an IDLC loop. As a result, additional steps must be taken to segregate and access the traffic of a customer that desires to take service from a CLEC.

The steps required are dependent upon a number of factors within the LEC's control, including the accuracy of its records (as to which loops are served by IDLC) and the existence of spare loop plant of the appropriate type in the ILEC's network that would allow a competitor to provide a comparable level of service to the ILEC's service. For example, if the ILEC's database does not reveal the presence of IDLC before a conversion date is committed to the customer, the CLEC must negotiate a new date with that customer, which of course makes a negative impression.

Where the presence of IDLC is identified before the confirmation of the conversion date, the customer must be transferred to alternative facilities, provided such facilities are available and provided acceptable service quality is possible. But even then, the process to transfer the customer will require a field dispatch to the remote end of the IDLC facility so that the customer's loop may be re-wired to spare copper or UDLC facilities. In cases where acceptable spare loop plant is not available, other customers who are not otherwise involved in the hot cut may be affected. In these cases the

ILEC might "swap-out" a retail customer's non-IDLC loop facilities with the IDLC facilities of the customer who wishes to change his/her local service provider. Overall, the process to accommodate access to IDLC loops is resource intensive, costly, customer affecting and difficult to coordinate, even when compared to the "ordinary" hot cut process. Additionally, as competition increases, the CLECs may find situations where the ILEC has neither spare facilities nor retail customers with non-IDLC facilities that can be used for a swap-out. In these cases the CLEC will be precluded from offering a competitive choice to these customers.

Additionally, except when the IDLC served customer can be placed on a copper loop less than 18,000 feet in length, CLECs are denied the capability of providing DSL services to their customers. In contrast, BellSouth can provide its retail DSL service, known as FastAccess, to over 86% of its customers in Florida from 190 equipped wire centers and 3,945 equipped remote terminals despite loop lengths that preclude CLEC DSL service.

Q. IN SECTION III ABOVE YOU DISCUSSED THE EFFICIENT AND ECONOMIC NETWORK AVAILABLE TO ILECS, AND CLECS USING UNE-P, TO TERMINATE CALLS. DO CLECS FORCED TO USE UNE-L HAVE ACCESS TO THE SAME EFFICIENCIES AND ECONOMIES?

A. No. CLECs will also be impaired when trying to serve the mass market with unbundled loops by an inability to exchange traffic with the ILEC at a switch-to-switch level. As explained earlier, because the CLEC does not have the economies of scale to direct connect its switch with efficient inter-office trunk groups to each of the ILEC's local switches, the CLEC will be more reliant on the ILEC's tandem network for the exchange of traffic. This reliance will put the CLECs at a cost disadvantage because of the additional tandem switching costs and transport facilities that will be needed to complete each of its calls. Additionally, because the CLEC will route a large percentage of its traffic to the ILEC's tandem switch it will face the potential for greater call blocking as a result of tandem congestion and/or inadequate subtending trunking from the ILEC's tandems to its end offices. (See Exhibit No. ___, JMB-10)

VI. CONCLUSION

Q. HOW HAS THE MONOPOLISTIC HISTORY OF THE ILEC IMPACTED THE EVOLUTION OF THE LOCAL NETWORK OVER THE LONG RUN AND IN THE YEARS SINCE THE PASSAGE OF THE TELECOMMUNICATIONS ACT OF 1996 ("the ACT")?

A. Incumbent LEC networks were designed in a manner that enables them -- and no one else -- to maximize the efficiencies of both their loop and switching assets. This design provides them with substantially higher quality and lower costs compared to their potential competitors. Specifically, ILECs can connect their analog voice grade loops to their switches by using a simple jumper wire pair across the MDF in the customer's local serving office. ILECs were able to construct this type of network architecture because, as the historic monopolists, they supplied local telecommunications to all customers in their serving areas.

Until the passage of the Act in 1996, the network evolved for the exclusive use of a single user, the ILEC. Since the passage of the Act, the ILECs have resisted opening that network for use by their competitors, doing so only when and as specifically ordered by the FCC and various states.

Q. BECAUSE OF THE SINGLE USER NATURE OF THE ILEC'S NETWORK, WHAT ARE THE BARRIERS FACING CLECS WANTING TO USE THE LOOPS IN THAT NETWORK TO PROVIDE LOCAL SERVICE USING THEIR OWN SWITCHES?

A. CLECs cannot maximize the combined efficiencies of both the ILEC loop plant and their own network infrastructure. Rather, in order to compete, they must take the ILEC loop plant as it exists and extend all of their customers' loops to their own switches, which are typically located a significant distance from the customer's serving office, a network architecture that is expensive and necessary. Accordingly, before a CLEC can provide POTS service using its own switch and ILEC analog voice grade loops, it must:

(1) engineer, establish and maintain a collocation, including the associated HVAC and power;

(2) install and maintain digitization, concentration, and multiplexing equipment at its collocations, as well as related monitoring/testing and power distribution equipment; and

(3) arrange for and provide transport between its collocation and its switch.

Each of these activities imposes additional costs and operational barriers on CLECs, costs that ILECs do not incur to offer the same service. As noted above and demonstrated in the testimony of Steven E. Turner, the additional cost per line in Florida that such activities impose on CLECs represents significant, real costs not faced by incumbents that effectively foreclose CLECs from serving mass-market customers through the use of their own switches.

Q. GIVEN THE SIGNIFICANT BARRIERS FACING CLECS DESIRING TO ENTER THE LOCAL MARKET USING UNE-L, HOW HAS COMPETITION FOR MASS MARKET CUSTOMERS ACTUALLY DEVELOPED IN THE SEVEN YEARS SINCE THE PASSAGE OF THE ACT?

A. A number of CLECs did attempt to enter the market using UNE-L. Most are now in bankruptcy, and those who are not serve only business customers. A number of other CLECs attempted to enter the market using total services resale ("TSR"). TSR quickly proved to be financially untenable except as a niche product to serve groups of customers on a pre-paid basis that could not otherwise obtain local service.

After a delayed start, caused by ILEC regulatory opposition at the state level, UNE-P has emerged as the entry method capable of and actually bringing competition to the mass market. As Mr. Joseph Gillan notes in his testimony for FCCA, UNE-P works, and furthermore, benefits not only CLECs, but also the ILECs, and most importantly, the consumer, when compared to forced use of UNE-L.

UNE-P is an electronic service provisioning system that extends to the CLECs many of the same efficiencies and economies available in the ILEC network. UNE-L is not and cannot be made so through the implementation of "batch" hot cut processes and a pairing with "rolling access" neither of which, individually or collectively, eliminates any of the fundamental characteristics of the existing single user ILEC network.

Q. CAN THE FUNDAMENTAL CHARACTERISTICS OF THE EXISTING SINGLE USE ILEC NETWORK BE MITIGATED WITHOUT TECHNOLOGICAL CHANGE?

A. No. Until the underlying local network architecture that has created these impairments is changed, CLECs will continue to face significant practical and economic impairments in serving mass market end-users on ILEC loops *via* their own switches—impairments that make UNE-P the only viable entry method for serving the mass market.

Q. CAN THE FUNDAMENTAL CHARACTERISTICS OF ACCESS TO LOOPS BE CHANGED IN A MANNER THAT BENEFITS CONSUMERS BY EXPANDING THE DEVELOPMENT OF MASS MARKET COMPETITION?

A. Yes. There is a means available that uses currently available technology and allows the provisioning of loops to be operationally and competitively neutral, making it the local service counterpart of "equal access" in the long distance market. This is a process that AT&T has generically referred to as "electronic loop provisioning" ("ELP"). Exhibit No. ___, MDV-4, attached to the testimony of Mark Van de Water, is a videotape that concludes with an overview and demonstration of ELP and is directly related to my testimony here.

As discussed in Section IV above, the underlying single user local network architecture and technology that ILECs deployed over the decades, and have resisted changing since the passage of the Act, impose on CLECs the burdens of a vast investment in backhaul infrastructure (e.g., collocation, collocation electronics, and transport facilities) and of an inefficient and costly loop migration process (*e.g.*, hot cuts) that ILECs do not have to incur in order to serve end-users. The "batch" hot cut process and use of UNE-P based "rolling access" do not erase any of these problems that make the use of UNE-L for the mass market infeasible. Change is required and possible and, in fact, many of the components necessary to make the change are already in use in the ILEC network.

Competitively neutral, efficient access to customer loops is required for mass-market competition to develop and be sustainable in a UNE-L environment. This means that customer transfers among competing networks must be fast, inexpensive and non-disruptive for the customer choosing a CLEC as its carrier. No carrier should be advantaged or disadvantaged with regard to how customers are physically connected to competing networks. The ILECs' current network was designed to accommodate a single firm operating as a monopoly. It cannot functionally support a competitive, multi-carrier environment without significant modification. Fortunately, however, modern technology has opened new opportunities for responsibly converting the ILEC network into an efficient multi-carrier network.

The characteristics of such a network are fairly easy to define. Loops should be readily accessible at a few centralized locations, and the interface to the loops should be electronic, as it is today in the ILECs' network and when UNE-P is used. Centralized availability of digital, packetized customer signals (rather than dispersed access to physical, analog loops) would address and resolve many of the problems. First, transmitting voice signals in a digital and packet format eliminates the need for CLECs, and only CLECs, to deploy costly electronics that do not augment the types of services that may be deployed. Centralized access, highly feasible with a packet-based network infrastructure, can significantly reduce the need for, and the cost of, collocation. Equally important, packetized signals are readily redirected by software commands. This feature offers the speed, cost structure, capacity and ease of change fundamental to unconstrained competition. It removes the manual hot cut process from consideration and replaces it with electronic provisioning that is equal to that which exists for UNE-P and in the long distance marketplace. Lastly, a packet-based loop architecture would eliminate the need for competitors to adopt a circuit-switched infrastructure and permit the introduction of new services that leverage the computer controlled and higher bandwidth features of a packet-based network.

The technology and equipment necessary to realize non-discriminatory digital, centralized and packet-based loops are available today. Indeed, the digitization and packetization of voice communications can be seen as a logical extension of equipment and technology already in use by the ILECs in association with their deployment of DSL. The three major components necessary to support the necessary changes are already in service, Next Generation Digital Loop Carriers ("NGDLC"), Asynchronous Transmission Mode ("ATM") modules, and ATM-compatible equipment known as "voice gateways" or "VoATM Gateways".

Q. PLEASE SUMMARIZE THE CRITICAL ISSUE YOU DISCUSS IN YOUR TESTIMONY.

A. The critical issue of this proceeding is not whether CLECs can "deploy" their own switches. Instead, the critical issue upon which this Commission should focus is whether a CLEC can "efficiently use" its own switch to connect to the local loops of end users. The differences in the way end users' loops are connected to carriers' switches are among the most important factors that cause CLECs to face substantial operational and economic entry barrier when they seek to offer POTS to mass-market (residential and small business) customers using their own switches and ILEC-provided loops (i.e., UNE-L facilities-based entry). Without fundamental changes to the way in which the ILECs permit CLECs to gain access to the consumers' loops, the impairment found by the FCC will continue.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, at this time.

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION TITLE.

A. My name is Jay M. Bradbury. My business address is 1200 Peachtree Street, Suite 8100, Atlanta, Georgia 30309. I am employed by AT&T Corp. ("AT&T") as a District Manager in the Law and Government Affairs Organization.

Q. ARE YOU THE SAME JAY M. BRADBURY THAT PREVIOUSLY FILED DIRECT TESTIMONY IN THIS DOCKET ON DECEMBER 4, 2003?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My rebuttal testimony responds to portions of the direct testimony of BellSouth's witnesses W. Keith Milner, Pamela A. Tipton, Christopher Pleatsikas, and John Ruscilli. I also respond to certain statements contained in the direct testimony of Verizon's witness, Orville D. Fulp.

I have organized my rebuttal in sections around the following topics:

- Section I. The factual information about AT&T's deployment of local switches and network in Florida reveals that AT&T does not meet the Triennial Review Order's ("TRO") qualifications to be considered a "trigger" candidate.
- Section II. AT&T's (and other CLECs') actual local switch and network deployment, serving the mass market, has been misrepresented in the ILEC's direct testimony.
- Section III. Knowledge of where CLECs are actually providing competitive choices to customers through the use of both UNE-P and UNE-L is vital to the commission's tasks in this docket.

- Section IV. The CLEC's ability to benefit by provisioning DSL services to its customers in Florida is overstated by BellSouth's assumptions in its BellSouth Analysis of Competitive Entry ("BACE") model.
- Section V. Impairment caused by existing legacy network technology cannot be cured by improvements to the hot cut process – batch, bulk, or rolling.
- Section VI. Conclusion.

I.
THE FACTUAL INFORMATION ABOUT AT&T'S DEPLOYMENT OF LOCAL SWITCHES AND NETWORK IN FLORIDA REVEALS THAT AT&T DOES NOT MEET THE TRO'S QUALIFICATIONS TO BE CONSIDERED A "TRIGGER CANDIDATE".

Q. PLEASE PROVIDE THE COMMISSION WITH A BRIEF DEFINITION AND OVERVIEW OF THE SIGNIFICANT DIFFERENCE BETWEEN MASS MARKET AND ENTERPRISE CUSTOMERS AS THE TERMS RELATE TO YOUR TESTIMONY.

A. The significant difference for the purpose of my testimony is that mass market customers are served using analog DSO loops, while enterprise customers are served using DS1 and higher capacity loops, as noted in the TRO at paragraph 459 and note 1402.

> The mass market for local services consists primarily of consumers of analog "plain old telephone service" or "POTS" that purchase only a limited number of POTS lines and can only economically be served via analog DS0 loops.
>
> Mass market customers are residential and very small business customers – customers that do not, unlike larger businesses, require high-bandwidth connectivity at DS1 capacity and above.

A more detailed description of the differences between mass market and enterprise customers can be found in the rebuttal testimony of FCCA witness Joseph Gillan, also being filed today. For the purposes of my testimony, however, it is sufficient to divide customers served from CLEC switches into mass market or enterprise by classifying all customers served by analog DSO UNE loops as mass market customers and all others as enterprise customers.

Q. PLEASE DESCRIBE AT&T'S LOCAL SWITCH AND NETWORK DEPLOYMENT IN FLORIDA THAT IS CAPABLE OF SERVING THE MASS MARKET.

A. In Florida, AT&T operates eight (8) switches capable of providing service to mass market customers. As I will discuss further below, two (2) of these switches exclusively serve customers of Comcast under a special arrangement resulting from the merger of AT&T Broadband and Comcast. Therefore, AT&T operates only six (6) switches in Florida that can possibly be considered in any analysis of AT&T's operations under a "trigger" test. Five (5) of these switches are located in BellSouth's territory and one (1) is located in Verizon's territory. The location and identification of all eight (8) are shown in the following table.

Switch Name	Switch CLLI
JACKSONVILLE(COMCAST)	JCVLFLGHDS0
JACKSONVILLE	JCVLFLCLDS6
MIAMI – 1	NMIAFLAYDS0
MIAMI – 2	FTLDFLOVDS3
MIAMI –3	OJUSFLTLDS3
POMPANO BEACH (COMCAST)	PMBHFLEDDS0
ORLANDO	ORLEFLGVDS0
TAMPA	TAMQFLRYDS0

AT&T's six (6) local switches are, of course, dependent upon the deployment of collocation arrangements as discussed in my direct testimony and the direct testimony of BellSouth's witness W. Keith Milner. A collocation arrangement to serve an individual customer in an ILEC wire center may consist of either EELs and collocations or collocations alone. In Florida, AT&T currently has no EELs serving mass market customers and has collocations capable of serving mass market customers in only **BEGIN CONFIDENTIAL **** **** END CONFIDENTIAL** out of 288 wire centers.

Q. IS THERE A DISTINCTION BETWEEN SWITCHES BEING MASS MARKET CAPABLE AND ACTUALLY SERVING THE MASS MARKET FOR PURPOSES OF THE TRO SWITCHING TRIGGER ANALYSIS?

A. Yes. To satisfy the TRO "trigger" test, a CLEC must actually be serving mass market customers with its own switch and meet other criteria established in the TRO that will be discussed below. A Northern Telcom DMS500 switch that serves only customers on DS1 or higher loops "could" be used to provide analog POTS service to mass market customers, but unless it "is" doing so, and meets the other necessary criteria, the switch and the CLEC may not be counted as a trigger.

Q. YOU IDENTIFIED TWO SWITCHES AS SERVING ONLY CUSTOMERS OF COMCAST UNDER AN ARRANGEMENT RESULTING FROM THE MERGER OF AT&T BROADBAND AND COMCAST. PLEASE DESCRIBE THIS ARRANGEMENT IN MORE DETAIL.

A. In response to discovery from BellSouth, AT&T provided the following confidential information:

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** **END CONFIDENTIAL** (AT&T Response to BellSouth Interrogatory No. 14.)

Q. HOW THEN SHOULD THESE AT&T SWITCHES BE CLASSIFIED AND COUNTED IN A TRIGGER CASE ANALYSIS?

A. The switches, used to provide service to Comcast under this unique arrangement, should not be counted at all in a trigger analysis. They do not rely upon the ILEC analog loop to provide service to mass market customers, which is one of the criteria established by the FCC in the TRO to be applied to the analysis of trigger candidates. Further, they should not be counted because the arrangement between AT&T and Comcast is a large-scale enterprise arrangement.

Q. WITNESSES FOR BELLSOUTH AND VERIZON CONCLUDE THAT TRIGGERS HAVE BEEN MET FOR SEVERAL MARKETS IN FLORIDA. ARE THERE CRITERIA IN THE TRO THAT THIS COMMISSION SHOULD APPLY IN THE ANALYSIS OF TRIGGER CANDIDATES?

A. Yes. The direct testimony of FCCA witness Joseph Gillan discusses six criteria found in the TRO that must be applied in the "self provisioning" trigger test:

> The self-provisioning trigger criteria can be organized into six categories. Before a "trigger candidate" can be found to qualify as satisfying the self-provisioning trigger, the criteria contained in the TRO for each of these categories must be satisfied. The six categories are as follows:
>
> 1. The self-provisioning trigger candidate's switches must not be "enterprise" switches.
> 2. The self-provisioning trigger candidate must be actively providing voice service to mass market customers in the designated market, including residential customers, and is likely to continue to do so.
> 3. The self-provisioning trigger candidate should be relying on ILEC analog loops to connect the customer to its switch.
> 4. If the self-provisioning trigger candidate provides an "intermodal service," its service must be comparable to the ILEC service in cost, quality, and maturity.
> 5. The self-provisioning trigger candidate may not be affiliated with the ILEC or other self-provisioning trigger candidates.
> 6. The existence of the self-provisioning trigger candidate should be evidence of sustainable and broad-scale mass market competitive alternatives in the designated market.
>
> Only if each of these trigger criteria is met does a candidate qualify as one of the three self-provisioning providers necessary to satisfy the FCC's self-provisioning trigger. (Gillan Direct, pp 36-37 – bullets in original replaced with numbers 1-6)

I will provide evidence that AT&T's actual deployment of local switches and network does not meet the TRO's requirements for criteria 1, 2 and 6, as more fully described by Mr. Gillan's direct testimony on pages 37 through 52. As noted above, the AT&T switches used to provide service only to Comcast do not meet criteria 1 and 3.

Q. PLEASE EXPLAIN HOW AT&T'S LOCAL SWITCHES DO NOT FULFILL THE CRITERION THAT THE SELF-PROVISIONING TRIGGER CANDIDATE'S SWITCHES MUST NOT BE "ENTERPRISE" SWITCHES (CRITERION 1).

A. As shown in the data table below, AT&T's switches are being used predominantly to serve enterprise customers. AT&T does not provide service to any residential customers from these switches, and all service being provided to very small business is an artifact of a previous business plan which is no longer being pursued to provide service to new customers in Florida. Given the economic and operational impairments associated with attempting to serve mass market customers using UNE-L, it is not AT&T's business plan to serve mass market customer from these switches and so these switches will remain enterprise switches into the foreseeable future.

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Switch Name	Switch CLLI	Number of voice grade equivalent lines (VGE)	Of VGE lines, number of DSO Lines		Percent Enterprise	
			AT&T Records	ILEC Records	AT&T	ILEC
Miami 1	NMIAFLAYDS0				88%	86%
Miami 3	OJUSFLTLDS3				100%	100%
Miami 2	FTLDFLOVDS3				69%	65%
Jacksonville	JCVLFLCLDS6				97%	97%
Orlando	ORLEFLGVDS0				85%	88%
Tampa	TAMQFLRYDSO				98%	98%
STATE					88%	87%

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All but one of AT&T's local switches in Florida serve a business customer universe that is at least 85% enterprise. The single switch that has a lower percentage of enterprise customers is located in the Southeast Florida LATA that also contains two other AT&T local switches. Collectively, the three switches in the Southeast Florida LATA serve a business customer base that is at least 83% enterprise, when calculated using BellSouth's records of AT&T's use of analog DS0 loops. At the state level AT&T's local switches serve a universe of business customers that are at least 87% enterprise. All six of AT&T's local switches in Florida should be excluded as they are enterprise switches and therefore do not meet the TRO trigger test criteria.

Q. PLEASE EXPLAIN HOW AT&T'S LOCAL SWITCHES DO NOT FULFILL THE CRITERION THAT THE SELF-PROVISIONING TRIGGER CANDIDATE MUST BE ACTIVELY PROVIDING VOICE SERVICE TO MASS MARKET CUSTOMERS IN THE DESIGNATED MARKET, INCLUDING RESIDENTIAL CUSTOMERS, AND IS LIKELY TO CONTINUE TO DO SO (CRITERION 2).

A. As discussed above, AT&T does not provide residential service using UNE-L. Further, AT&T is not actively providing service to very small businesses using UNE-L and has no plans to do so in the foreseeable future. Thus, AT&T is not serving "the mass market" as defined by the TRO and is not an "active" provider of service even to the very small business segment of the mass market, and so does not meet the self-provisioning trigger criteria.

AT&T once had an active business plan to serve very small businesses using DS0 UNE-L loops, collocations, and our own local switches (which also served enterprise customers using DS1 and higher loops) in the 1999-2001 time period. That business plan did not materialize on a national basis, as well as here in Florida, because of operational, economic, and other problems that were documented at the FCC in a Declaration filed by Ellycee Brenner. Citations in the TRO to the Brenner Declaration and the problems AT&T encountered may be found in paragraphs 437, 466 and 468 and their associated footnotes. The problems identified in the TRO, which included high losses of customers before they were even cut over and ineffective coordinated hot cuts, occurred regularly here in Florida, leading to customer dissatisfaction and lower than expected financial returns, because of increased costs and other economic factors.

As a result, active provisioning of service to very small business using DS0 UNE-L loops ended in late 2001. During 2001, when the business plan was active, almost 7,000 new lines were provisioned. In 2002 the number declined to approximately 900, and in 2003 declined further to approximately 700. The embedded base, remaining as an artifact of the old business plan, has declined to approximately **BEGIN CONFIDENTIAL **** **** END CONFIDENTIAL.**

The lines being provisioned in 2002 and 2003 are not the result of an active business plan, but rather, reflect maintenance of existing very small business accounts already served via DS0 UNE-L, meeting the business needs of enterprise customers served on a DS1 level for "off lines" at the DSO level. These “off lines” are used to support facsimile machines, analog data modems, and the like.

In both cases, that is, adding new lines to existing customers and providing "off lines" to enterprise customers, the use of UNE-L rather than UNE-P avoids adding the administrative complexity of splitting the account between those lines provisioned on UNE-L and those lines provisioned on UNE-P. Alternatively, continuing to use UNE-L avoids the necessity to convert the entire account to UNE-P by arranging for and paying for a "reverse hot cut," which carries with it the very real probability of a disruption of service, and the need for the customer to reprogram all switched-based custom features and capabilities in place.

BellSouth’s own data about AT&T’s base of analog DSO loops in Florida also demonstrates that AT&T is not an active provider of services to the mass market using UNE-L and its own switches. The data in the table below, prepared from BellSouth’s response to AT&T’s Interrogatory 125, shows that in the 18 months from May 2002, through November 2003, AT&T’s use of analog DS0 loops decreased by 26% in Florida, and that the decrease was widespread, not concentrated in a single location or group of locations. They also show that AT&T’s ability to employ UNE-L to customers in individual ILEC end offices has been modest at best, and that it has never achieved a scale that would allow it to efficiently deploy, use and maintain the central office specific equipment that is necessary to collect and backhaul mass market users’ traffic to AT&T switches. This provides additional evidence that

AT&T (and carriers in similar circumstances) would not likely be able to continue to provide UNE-L service even to small business customers.

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	Market	CLLI	May 2002	Nov 2003	Percent Decrease
1	FT LAUDERDALE Z1				28%
2					23%
3					38%
4					42%
5	FT LAUDERDALE Z2				16%
6					20%
7					22%
8					28%
9					11%
10					38%
11					30%
12	JACKSONVILLE Z1				20%
13	JACKSONVILLE Z2				-
14					18%
15	JACKSONVILLE Z3				-
16	MIAMI Z1				27%
17					-
18					13%
19					33%
20					22%
21					44%
22	MIAMI Z2				38%
23					32%
24					19%
25	ORLANDO Z1				13%
26	ORLANDO Z2				8%
27					28%
28					29%
29					2%
30					27%
31	WPB-BOCA RATON Z1				28%
32					25%
33					22%
34	WPB-BOCA RATON Z2				30%
	TOTALS				26%

* AT&T (TCG) does not have collocations in these wire centers and believes BellSouth's data to be incorrect. However, the number of circuits (3) is insignificant

and does not impact the conclusion that AT&T does not actively provide service to mass market customers using UNE-L.

Shaded cells contain Confidential Information

In sum, AT&T's local switches in Florida are being used to serve enterprise customers almost exclusively. AT&T does not use UNE-L to provide service to residential customers and uses UNE-L to provide service to a relatively few and declining number of very small business customers that are an artifact of a failed business plan.

Q. PLEASE EXPLAIN HOW AT&T'S LOCAL SWITCHES DO NOT FULFILL THE CRITERION THAT THE EXISTENCE OF THE SELF-PROVISIONING TRIGGER CANDIDATE SHOULD BE EVIDENCE OF SUSTAINABLE AND BROAD-SCALE MASS MARKET COMPETITIVE ALTERNATIVES IN THE DESIGNATED MARKET (CRITERION 6).

A. As explained above, AT&T does not serve the mass market using UNE-L and its own local switches, but rather serves enterprise customers. The small embedded base of very small business customers, totaling approximately **BEGIN CONFIDENTIAL** ** ** **END CONFIDENTIAL** lines, exists only as an artifact of a failed business plan. AT&T has never served residential customers using UNE-L. There is no future plan to utilize UNE-L to serve the mass market due to the economic and operational impairments that continue to exist. Nothing about AT&T's presence in Florida provides any evidence of sustainable and broad-scale mass market competitive alternatives in any market as defined by BellSouth or Verizon.

II.
AT&T'S (AND OTHER CLECS') ACTUAL LOCAL SWITCH AND NETWORK DEPLOYMENT, SERVING THE MASS MARKET, HAS BEEN MISREPRESENTED IN THE ILEC'S DIRECT TESTIMONY.

Q. BELLSOUTH'S WITNESS PAMELA A. TIPTON STATES THAT "CLEC'S HAVE DEPLOYED MORE THAN 100 SWITCHES IN FLORIDA, AT LEAST 77 OF WHICH ARE SERVING OVER 100,000 'MASS MARKET' CUSTOMERS." SHE THEN PROVIDES EXHIBIT PAT-1 THAT SHE CLAIMS IS A LIST OF CLEC SWITCHES DEPLOYED IN FLORIDA. ARE HER STATEMENT AND EXHIBIT ACCURATE RELATIVE TO EITHER AT&T OR CLECS IN GENERAL?

A. No, and in addition, the change to Ms. Tipton's testimony filed on December 30, 2003, revising her statement to read that "at least 30" instead of 77, changes nothing about the inaccuracy of her statement or the incompleteness of her testimony. Nowhere in her testimony or its exhibits does Ms. Tipton identify the switches about which she writes or the wire centers to which they provide service. Additionally, in responses to discovery, BellSouth admits that it did not ask about the number of mass market customers being served and has no data to support any statements about how many there are. In AT&T's Interrogatory 120, BellSouth was asked to provide the number of mass market customers it claimed to be served from each switch covered by Ms. Tipton's statement. BellSouth's response was "BellSouth did not request that CLECs provide the number of mass market customers served by each CLEC switch. Therefore, BellSouth does not have the information responsive to Interrogatory 120 subpart (c)." Thus, BellSouth does not have (and affirmatively did not seek) the very kind of "objective" information that is necessary for the Commission to make a reasonable judgment as to whether the proposed trigger candidates should be counted when applying a trigger test.

In addition to the eight (8) AT&T local switches discussed above (only six (6) of which are even eligible for analysis as trigger candidates), AT&T also operates fourteen (14) toll switches in Florida. (12 in BellSouth territory and 2 in Verizon territory.) Information regarding all twenty-two (22) of these switches, including which ones were capable of serving mass market customers, was provided to BellSouth in interrogatory responses and discussed with BellSouth in at least two informal meetings in which I personally participated. Despite having this information, BellSouth and Ms. Tipton cite the source for PAT-1 as the Local Exchange Routing Guide ("LERG"), a group of databases administered by Telcordia for the industry, the purpose of which is to provide routing information, not a count of switches.

PAT-1 includes 128 rows of data that Ms. Tipton has apparently extracted from one (or more) of the LERG databases using some unidentified and inexplicable sorting criteria. While this might be the source for the claim of over 100 switches, PAT-1 does not support that claim. Many of the rows are repetitions of data about the very same switch. For example, on page 1, of PAT-1, the same information about one of AT&T's toll switches located in Ellisville is presented three times. This multiple counting of switches occurs throughout PAT-1 and is not limited to AT&T's

switches. For example, the information about NewSouth's switch in Jacksonville on page 1 of the Exhibit, or at the information about Network Telephone's switch in Pensacola on page 3. Despite knowing that AT&T operates a total of twenty-two (22) switches [eight (8) local switches and fourteen (14) toll switches], Ms. Tipton would have this Commission mistakenly believe from PAT-1 that AT&T/TCG operates 37 switches in Florida. In all, I count 58 rows of data in PAT-1 that contain duplicative data. It is impossible to determine from PAT-1 either the number of switches CLECs are operating in Florida or the number of CLEC switches which are, or are not, serving mass market customers. Ms. Tipton's and BellSouth's failure to perform a simple edit for duplicate data in PAT-1, or to state the criteria they are using to gather and sort the data they present as factual is very disconcerting. Thus, any conclusions reached by Ms. Tipton regarding the number of CLEC switches in Florida serving mass market customers are inaccurate and cannot be relied upon by the Commission in determining the outcome of this proceeding.

Q. YOU STATED THAT AT&T OPERATES 14 TOLL SWITCHES IN THE STATE. WHY DID YOU INCLUDE THIS DATA AND HOW IS IT RELEVANT TO THE MASS MARKET SWITCHING SELF-PROVISIONING TEST OF THE TRO?

A. I have included this data to be complete in my portrayal of AT&T's presence in Florida and to demonstrate that these fourteen (14) switches are, in fact, not capable of providing local service to mass market customers despite the fact that they provide a form of local service to large enterprise customers. When the enterprise lines

(BEGIN CONFIDENTIAL ** ** END CONFIDENTIAL) served from these switches are added to the enterprise lines served from the six local switches discussed above, it becomes even more evident that AT&T's self-provisioned switching in Florida is focused on the enterprise market.

The ILECs are aware that these fourteen (14) switches are used to provide a service known as AT&T Digital Link ("ADL") to enterprise customers that have their own on-site customer owned or customer provided switches, often referred to as Private Branch Exchange ("PBX") switches. Despite this knowledge, PAT-1 contains data related to AT&T's toll switches that misleadingly makes it appear that these switches provide local service to mass market customers.

The Commission may also remember discussions of ADL in other dockets. The customer's PBX provides all the classical "line side" functions to the customer's telephone sets (dial tone, vertical features, etc.) and is connected to both the ILEC local and IXC long distance networks using "trunks," not "lines". Both the ILEC local switch and the IXC long distance switch treat the PBX switch as if it were another switch on their networks. As a long distance company, AT&T has long provided "special access" trunk connections between large enterprise PBX switches and our toll switches. After the passage of the Act, AT&T began offering these same customers the opportunity to reduce their overall telecommunications expenses by using their existing "special access" trunk connections to originate and terminate local traffic. Using this option, large enterprise customers are able to eliminate the vast majority of their PBX trunks to the ILEC.

Because a toll switch with ADL customers must terminate both toll and local traffic to an ADL customer's PBX, it is necessary for the toll switch and its Location Routing Number ("LRN") to appear in local portions of the LERG databases. Unfortunately, due to Telcordia's database design limitations, when this happens the same (toll) switch appears in the LERG with a different Common Language Location Identification ("CLLI") code than it has in the toll world. Toll switch CLLI codes typically end in three characters, --T[1]; however, the same switch, when listed in the local sections of the LERG, will have a CLLI that typically ends in DS-[2]. AT&T pointed this out to BellSouth in at least one informal discussion in which I participated and followed up with a supplemental interrogatory response to BellSouth's Interrogatory 1. See Exhibit No. ___, JMB-R1. Despite this knowledge, PAT-1 contains data related to AT&T's toll switches that misleadingly makes it appear that these switches provide local service to mass market customers.

Q. CAN THESE 14 TOLL SWITCHES BE MODIFIED TO SERVE MASS MARKET LOCAL CUSTOMERS?

A. No. A more detailed explanation of why this is true is included in Exhibit No. ___, JMB-R1. Briefly, these 14 switches are either 4ESS (which even BellSouth agrees cannot be so modified), or 5ESS and DMS "edge" switches that AT&T purchased

[1] For example, 01T, 03T.
[2] For example, DS3, DS6.

with only a toll trunk switching capability. The "edge" switches do not have a "line," or "customer," side and cannot provide dial tone or vertical features. They are, like the 4ESS, purely trunk switching machines.

AT&T's fourteen (14) toll switches, when used to provide the ADL product, are serving only large enterprise customers connected to the switches via high-capacity "special access" arrangements through long-term contracts. The switches are not, and cannot be, used to provide local service to mass market customers and are therefore not relevant to the TRO's mass market switching trigger tests.

BellSouth's inclusion of data about these switches in its triggers case, with full knowledge of their characteristics and limitations, skews its analysis, results in misleading conclusions, and renders the overall evaluation of its trigger case unreliable and incompetent for supporting a commission decision.

Q. HOW DID VERIZON DEPICT AT&T'S SWITCH AND NETWORK DEPLOYMENT IN ITS DIRECT TESTIMONY?

A. Mr. Fulp also relies upon the LERG as his source of data. Verizon did not serve interrogatories on AT&T about these matters, so I cannot say that Mr. Fulp ignored AT&T's information. He simply did not ask. As a result, the table on page 15 of his direct testimony incorrectly identifies AT&T as having three (3) local switches in Verizon's territory when, in fact, we have one (1) local switch and two (2) toll switches, as discussed above. The single AT&T local switch in Verizon's territory is associated with **BEGIN CONFIDENTIAL **** **** END CONFIDENTIAL** mass market capable collocations. There are ninety (90) wire centers in Verizon's Florida territory. Thus, just as in the BellSouth territory, AT&T's actual deployment of facilities capable of supporting mass market customers is very limited and overstated by the Verizon's "evidence". AT&T's Tampa switch serves no residential customers and a business universe that is 98% enterprise.

III. KNOWLEDGE OF WHERE CLECS ARE ACTUALLY PROVIDING COMPETITIVE CHOICES TO CUSTOMERS THROUGH THE USE OF BOTH UNE-P AND UNE-L, IS VITAL TO THE COMMISSION'S TASKS IN THIS DOCKET.

Q. ON PAGE 10 OF HIS TESTIMONY, BELLSOUTH WITNESS W. KEITH MILNER PROVIDES AN EXTRACT FROM THE TESTIMONY OF AN AT&T WITNESS IN DOCKET 000731-TP, NOVEMBER, 2000. MR. MILNER CLAIMS THE EXTRACT IS A DEMONSTRATION OF "CLEC ARCHITECTURAL CONSIDERATIONS," STATES THAT CLEC NETWORKS ARE "NOT CONFIGURED LIKE BELLSOUTH'S", "RELYING ON FEWER SWITCHES AND MORE TRANSPORT." IS THE TESTIMONY MR. MILNER HAS SELECTED DESCRIPTIVE OF HOW AT&T (OR ANY OTHER CLEC) MAKES DECISIONS ABOUT WHEN, WHERE, AND HOW TO DEPLOY ITS NETWORK TO SERVE CUSTOMERS?

A. No. The issue being discussed in AT&T's Arbitration in November, 2000, was the rate BellSouth should pay AT&T when BellSouth terminated calls to one of AT&T's switches. (See Exhibit No. ____, JMB-R2 for a more complete extract showing the context in which this testimony was presented.) AT&T's position that the "tandem rate" should apply was ultimately upheld. The purpose of the testimony Mr. Milner has selected was to demonstrate that the potential coverage of AT&T's switches was comparable to that of a BellSouth tandem switch – a requirement for eligibility to receive the tandem rate. It does not address the process or factors used in determining if it is economic to deploy network equipment to actually serve the customers based upon where they are located relative to the ILEC's legacy network. The statements that "AT&T has the ability to connect..." and "TCG is able to connect..." do not provide any information about how AT&T, or any other CLEC, determines whether it is economic to make such connections. Therefore, I believe Mr. Milner misses the mark on a very important issue that must be determined at this hearing.

As I indicated in my direct testimony, a crucial issue in this proceeding is not whether a CLEC simply "can" connect its switch with the local loops of the end user, but whether a CLEC can "efficiently use" its own switch to connect to the local loops of end users. In contrast, the issue being discussed in the testimony Mr. Milner has selected was geographic comparability not the actual deployment of network facilities to serve customers.

Q. IN MR. MILNER'S DIRECT TESTIMONY HE PRESENTS INFORMATION ABOUT THE OPTIONS BELLSOUTH SAYS ARE AVAILABLE TO CLECS IN BUILDING NETWORKS TO SERVE MASS MARKET CUSTOMERS USED IN THE BELLSOUTH ANALYSIS OF COMPETITIVE ENTRY

("BACE") MODEL. IN YOUR DIRECT TESTIMONY YOU CONTRAST ILEC AND CLEC NETWORKS. DO ANY DIFFERENCES IN HOW THE TWO OF YOU DESCRIBE CLEC NETWORKS IMPACT YOUR CONCLUSIONS THAT CLECS ARE IMPAIRED BY THE ILEC'S LEGACY NETWORK ARCHITECTURE?

A. No. We both agree that CLEC networks are not configured like BellSouth's and that CLEC's must rely on fewer switches and more transport than BellSouth. Mr. Milner's testimony describing the network architecture assumptions underlying the BACE model is sufficiently generic as to be non-controversial. However, a number of other BellSouth witnesses point to Mr. Milner's testimony and to the extract from AT&T's Arbitration testimony in 2000 to support some particularly outlandish positions.

Each of the three "Network Construct" options Mr. Milner describes in his testimony explains how customers served from an ILEC central office (or wire center) are connected to the CLEC's switch using either EELs and collocations or collocations alone. In each option he describes the central office or wire center serving the customer's loop as the starting point of the analysis. The customer's wire center is essential to the "Network Construct" and the process of determining whether it is economic to serve customers in that wire center. This central role for the wire center is also noted in the testimony of BellSouth's witnesses James Stegeman and Dr. Debra Aron, and throughout Mr. Stegeman's exhibits on BACE. However, despite the testimony of witnesses Milner, Stegeman and Aron, two other BellSouth witnesses make the outlandish claims that the wire center concept has no meaning and that where the customer is located is unnecessary information in determining whether CLECs can use their own switching facilities to economically and efficiently serve mass market customers.

Q. WHICH OTHER BELLSOUTH WITNESSES MAKE THE CLAIM THAT THE WIRE CENTER HAS NO MEANING?

A. Dr. Christopher Jon Pleatsikas and Ms. Pamela A. Tipton.

Q. PLEASE DISCUSS DR. PLEATSIKAS' CLAIM.

A. Citing to the hearing transcript in the same AT&T arbitration cited by Mr. Milner (FPSC Docket 0007321-TP, Tr. at page 94), Dr. Pleatsikas concludes his testimony as follows:

> Therefore, the wire center concept has no meaning with regard to market definition, and **specifically no economic meaning in terms of how CLECs provision services to their end users**. The geographic scope of the service offered is limited by the CLEC's ability to economically serve those customers using the CLECs' network design, not by the location or span of BellSouth's wire centers. (Pleatsikas Direct, Page 11, lines 15-19. Emphasis added.)

Dr. Pleatsikas' testimony is designed to support the concept of defining the mass market to be Component Economic Areas ("CEA") divided by UNE Zones, but his statements about wire centers having no meaning in determining whether that market definition is valid, or in determining whether it is economic for CLECs to serve customers in a given wire center, are misleading and have the potential of defining a market in such a manner that only certain customers will have competitive choices. If a wire center, included in a market as defined by Dr Pleatsikas, cannot be economically and efficiently served by any CLEC using its own switching facilities, the mass market customers in that wire center having a competitive choice through CLECs' use of UNE-P will lose that choice, and be able to obtain POTS only from the ILEC.

Sprint's witness, Brian K. Stairh, at page 5, lines 3-22 of his direct testimony, discusses the requirement, supported by the TRO's language in ¶ 501 and ¶ 517, that for impairment to be found non-existent, competition must exist throughout the whole market, not only in portions of the market.

In his direct testimony, FCCA witness Joseph Gillan discusses the concept of "competitive signature" (pages 36-52), and in their joint rebuttal testimony, FCCA witnesses Don J. Wood and Joseph Gillan discuss other aspects, concepts and tools the Commission should use to evaluate whether impairment no longer exists ubiquitously across a defined market area from the wire center level up.

Q. DOES COMPETITION FOR MASS MARKET POTS CUSTOMERS CURRENTLY EXIST IN EVERY FLORIDA BELLSOUTH WIRE CENTER?

A. Yes. The evidence in this docket clearly demonstrates that one or more CLECs, using UNE-P, provide service to customers in every BellSouth wire center. Therefore, in testing any BellSouth market definition, the Commission must assure itself that UNE-L competition will exist in every wire center. Any lesser result means that the Commission will be making an affirmative decision to deny competitive choice to customers who have it today and ignoring the real economic and operational impairment faced by CLECs.

Q. PLEASE DISCUSS MS. TIPTON'S CLAIM THAT THE LOCATION OF CUSTOMERS IN A MARKET IS IRRELEVANT.

A. On page 14 of her direct testimony Ms. Tipton, referencing Mr. Milner's testimony discussed above, reaches the following incorrect conclusion about the need to provide more specific information regarding the location of CLEC customers served via UNE-L:

> Given that, the actual physical location of the individual end users in each market area is not relevant. If the CLECs have chosen to serve certain customers in BellSouth's market areas, according to the CLECs, they can serve any customers in those market areas. (Tipton Direct, page 14, lines 11-14.)

"Are," "can" and "can economically," represent three different concepts, only two of which, "are" and "can economically," have relevance to the task before this Commission as a result of the TRO. The "trigger" tests are concerned with "are" - what competitive choices <u>actually exist</u> and <u>where they exist</u>, as a result of the implementation of both UNE-P and UNE-L. The "potential deployment" test is concerned with "can economically" and, as is noted in the testimony of BellSouth's witnesses Milner, Stegeman and Aron, BellSouth incorporates <u>where</u> by basing its analysis on a wire center focused analysis.

Ms. Tipton's claim that customer location is not relevant to her trigger analysis denies the Commission knowledge of the actual data it needs, both to determine whether impairment has ceased to exist in any given market and to protect mass market customers who currently have competitive choices. AT&T served BellSouth with discovery in an attempt to obtain this necessary information. Analysis of the data in BellSouth's response to AT&T's Interrogatory 125 reveals that facilities based competition is present in only 113 (57%) of BellSouth's 198 Florida wire centers. In many of the 113 wire centers, fewer than 3 CLECs are actually present.

Q. WHY IS DATA ABOUT WHICH WIRE CENTERS ARE BEING SERVED BY CLECS USING UNE-L VITAL TO THE COMMISSION'S TASK?

A. As I noted above, customers located in 100% of BellSouth's wire centers have competitive choices today through one or more CLECs offering service using UNE-P. That simply is not the case for UNE-L. For example, AT&T offers service using UNE-L in only **BEGIN CONFIDENTIAL ** ** END CONFIDENTIAL** of the 198 BellSouth wire centers in Florida. To my knowledge, there is no combination of CLECs that results in 100% coverage of BellSouth's wire centers using UNE-L. BellSouth's answer to AT&T's Interrogatory No. 89 states that there are no collocation arrangements in 70 of its Florida wire centers and their response to AT&T's Interrogatory No. 10 reveals that BellSouth has never performed a hot cut in 92 of its Florida wire centers. As noted above, there is no facilities based competition in 57% of BellSouth's Florida wire centers.

Based on triggers, a finding that impairment does not exist in a market that contains one or more of these wire centers means that customers who currently have competitive choices for local service, by way of UNE-P, will lose those choices. Such a result is inconsistent with the Act, the TRO, and Florida Statues as discussed by FCCA witness Joseph Gillan, and would be a Type 1 error of the type described in the testimony of MCI witness Dr. Mark T. Bryant, i.e., a finding that CLECs without access to unbundled switching are not impaired when, in fact, they are impaired.

Q. DOES TESTIMONY SUBMITTED BY VERIZON CONTAIN ANY SIMILAR CLAIMS CONCERNING CLECS AND THE RELEVANCE OF WIRE CENTERS?

A. Yes. Verizon witness Orville D. Fulp makes two references to the testimony of an AT&T panel in New Jersey earlier this year (Fulp Direct, page 12, line 5, and page 17, line 16.) As in the case of the testimony cited by Mr. Milner of BellSouth, the testimony Mr. Fulp cites occurs in an arbitration proceeding, is concerned with the tandem rate issue, and is not related to how CLECs make determinations as to when, where and how to implement UNE-L market entry strategies. (Exhibit No. ___, JMB-R3 provides the testimony Mr. Fulp references in more complete context.) AT&T has also served Verizon with discovery to obtain the information necessary for the Commission's consideration in this docket. Analysis of Verizon's response to AT&T's Interrogatory 122 reveals that facilities based competition is present in only 39 (43%) of Verizon's 90 Florida wire centers. In many of the 39 wire centers, fewer than 3 CLECs are actually present

IV.
THE CLECS ABILITY TO BENEFIT BY PROVISIONING DSL SERVICES TO IT CUSTOMERS IN FLORIDA IS OVERSTATED BY BELLSOUTH'S ASSUMPTIONS.

Q. IN YOUR DIRECT TESTIMONY (PAGE 42), YOU CONTRASTED THE CLECS' AND ILECS' ABILITIES TO PROVIDE DSL SERVICES TO CUSTOMERS. HOW DOES BELLSOUTH ADDRESS THIS IN ITS DIRECT TESTIMONY?

A. Mr. Milner recognizes that limitations exist, without being specific as to what the limitations are. "By choosing this configuration, the CLEC also gives itself access to more loops composed entirely of copper facilities, thus enlarging its Digital Subscriber Line ("DSL") footprint…" (Milner Direct, page 5, lines 11-13). In contrast, Dr. Aron's assumptions about CLEC DSL penetration in her Exhibit DJA-05, and thus in the BACE model, do not reflect any consideration of these limitations. For residential customers, Dr. Aron assumes a 5% penetration rate in year one, leaping to 15% in year three. For the small office, home office ("SOHO") customer, she assumes an astounding 10% penetration in year one, leaping to 25% in year three. To place these assumptions in perspective, BellSouth's current penetration rate for its retail FastAccess Service is approximately 6% after being in the market since 1998.

CLECs using UNE-L can only offer DSL service to those customers to whom it can obtain an all copper loop of less than 18,000 feet free of any defects that disqualify it for DSL service. The data provided by BellSouth in its response to AT&T's

Interrogatory No. 25 reveals that only 42% of BellSouth's loops in Florida are all copper; however, as I noted in my Direct Testimony, BellSouth states that it can provide its retail FastAccess Service to over 86% of its customers. Therefore, at best, CLECs in Florida using UNE-L have less than half the capability to provide DSL service to customers as BellSouth.

The actual percentage of all copper loops will obviously vary by wire center, but Dr. Aron's assumptions need to be revised to reflect reality before being used in any BACE analysis.

Overstated assumptions about product penetrations will generate overstated revenues and result in false determinations that entry in a given market is economically possible.

V.
IMPAIRMENT CAUSED BY EXISTING LEGACY NETWORK TECHNOLOGY CANNOT BE CURED BY IMPROVEMENTS TO THE HOT CUT PROCESS – BATCH, BULK, OR ROLLING

Q. IN HIS TESTIMONY ON PAGE 16, LINES 7 – 21, BELLSOUTH WITNESS MR. RUSCILLI SUGGESTS THAT ONE OF THE KEY REASONS BELLSOUTH HAS DEVOTED SO MUCH OF ITS DIRECT TESTIMONY TO HOT CUTS IS BECAUSE IT EXPECTS CLECS, AT&T, AND/OR FCCA TO ADVANCE THE ARGUMENT THAT NO ADEQUATE HOT CUT PROCESS IS POSSIBLE USING EXISTING TECHNOLOGY, AND FURTHER THAT

THE FCC "REJECTED AT&T'S PROPOSAL" FOR ELECTRONIC LOOP PROVISIONING ("ELP") IN THE TRO. DID THE FCC "REJECT" AT&T'S ELP PROPOSAL?

A. No. The FCC's substantive discussion of ELP occurred in a single paragraph of the TRO (491) that ended as follows:

> Given our conclusions above, we decline to require ELP at this time, although we may reexamine AT&T's proposal if hot cut processes are not, in fact, sufficient to handle necessary volumes. (TRO ¶ 491)

The FCC did not reject ELP, it reserved the right to consider requiring it in the future.

Q. IS AT&T PROPOSING THAT THIS COMMISSION ORDER THE IMPLEMENTATION OF ELP AS A RESULT OF ITS DELIBERATIONS IN THIS DOCKET?

A. No. That is not the purpose of this docket, nor is ELP an issue in this docket. However, AT&T believes that, as a result of this docket, the Commission will find that, without access to unbundled local switching and UNE-P, the CLECs are impaired, just as the FCC determined. The FCC based its determination solely on the issues it found in the evidence before it relating to the ineffectiveness of the hot cut process. The FCC noted that there were likely other causes of impairment (operational and economic) in addition to hot cuts and charged state regulators, like this Commission, to investigate those in the "nine month" proceedings at the same time the states validated the finding of impairment resulting from the hot cut process.

AT&T firmly believes this Commission will find that impairment in Florida is widespread and results not only from hot cuts, but also from a number of operational and economic factors directly related to the limitations of the existing legacy technology. AT&T's ELP proposal directly attacks all of the technology limitations and, therefore, has the potential to eliminate impairment economically and effectively.

The Commission should open a separate docket to address how to eliminate the impairment it will find here. It is in that docket that ELP and any other proposals with potential to eliminate impairment should be considered.

AT&T's discussion of ELP in this docket in no way complicates or obscures this Commission's task in investigating the impairments CLECs face in Florida. Rather, it demonstrates that the impairment we are confident the Commission will find can be cured through an industry effort similar to that which was required to remove the impairments to competition in the long distance market through the implementation of equal access.

As I pointed out in my direct testimony, the technology and equipment necessary to implement ELP are available today and are being deployed and used by the ILECs in association with their deployment of DSL services. (Direct, page 49.)

VI.
CONCLUSION

Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A. Contrary to BellSouth's and Verizon's assertions, AT&T's use of its local switches and network in Florida does not meet the requirements of the TRO for AT&T to be identified as a trigger in any BellSouth or Verizon defined market. AT&T does not provide any mass market residential service. AT&T's universe of business customers served is 87% enterprise. The small number of very small business customers being served is an artifact of a prior failed business plan that will not be revived and that is not being used to provide service to new very small business customers. AT&T is not actively provisioning UNE-L service to very small business customers.

BellSouth has misrepresented the CLECs' actual deployment of local switches and networks in its direct testimony and failed to provide the Commission with the data to support BellSouth's claims.

BellSouth has compounded its failure to provide the data to support its claims by improperly asserting that the location of customers being served by both UNE-P and UNE-L, but particularly UNE-L, is irrelevant. Knowing where competition exists today using UNE-P, but would not exist in the future if UNE-P were made unavailable, is critical to the Commission's requirement to foster the on-going development and preservation of competition for local service.

BellSouth has overstated assumptions about the CLECs' ability to provide DSL services in a manner that may lead to the erroneous determination that entry in a given market is economically possible.

The impairment caused by the existing legacy network technology cannot be cured by improvements to the hot cut process, be they "batch", "bulk", or "rolling" processes. AT&T's Electronic Loop Provisioning proposal is capable of curing these deficiencies, but curing the continuing impairment that AT&T believes the Commission will find exists is not an issue in this proceeding. The Commission should open a separate docket to address how to eliminate the impairment it will find in this docket.

Q. **DOES THIS CONCLUDE YOUR TESTIMONY?**

A. Yes, at this time.

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION TITLE.

A. My name is Jay M. Bradbury. My business address is 1200 Peachtree Street, Suite 8100, Atlanta, Georgia 30309. I am employed by AT&T Corp. ("AT&T") as a District Manager in the Law and Government Affairs Organization.

Q. ARE YOU THE SAME JAY M. BRADBURY THAT PREVIOUSLY FILED DIRECT TESTIMONY IN THIS DOCKET ON DECEMBER 4, 2003, AND REBUTTAL ON JANUARY 7, 2004?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My surrebuttal testimony responds to portions of the rebuttal testimony of BellSouth's witnesses W. Keith Milner, A. Wayne Gray, Gary Tennyson, and Eric Fogle. I also respond to a portion of the rebuttal testimony of Verizon's panel of witnesses. My responses focus on the operational and economic impairments that arise from various CLEC network architecture requirements, the impact of those impairments upon the CLECs, and the role of Electronic Loop Provisioning (ELP) in this docket.

RESPONSES TO MR. MILNER

Q. ON PAGE 2 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR STATEMENT THAT CLEC SWITCHES ARE

ALWAYS LOCATED REMOTELY FROM THE ILEC CENTRAL OFFICE WHERE THE EXISTING LOCAL LOOPS TERMINATE. HE NOTES THAT ONE CLEC IN FLORIDA HAS CHOSEN TO INSTALL SWITCHES WITHIN COLLOCATION ARRANGEMENTS. DOES MR. MILNER'S INFORMATION DISPROVE YOUR STATEMENT?

A. No. Mr. Milner has simply provided the proverbial exception that proves the rule. Further, the FCC's findings in the TRO support the general validity of my statement (TRO ¶480, ¶464, FN 1406, ¶ 424, FN 1298, ¶ 429.) Mr. Milner's testimony is also misleading in that Mr. Milner uses the plural beginning on line 3 – "For example, one (1) CLEC in Florida has chosen to install its <u>switches</u> in that CLEC's collocation <u>arrangements</u> within BellSouth's central <u>offices</u> thereby reducing its "backhaul" costs." (Emphasis added.) In truth, however, there is *one CLEC* that has collocated *one switch* in *one BellSouth central office,* according to the response provided to the Florida Staff's Second Set of Interrogatories, Item No. 17, prepared by Mr. Milner and cited on page 6 of his rebuttal testimony.

Additionally, while placing switches in collocations might reduce "backhaul" costs, doing so will exponentially increase collocation costs (preparation, space, power, etc.) for the CLEC. Were such arrangements truly viable, one would expect to see many companies doing so, not just <u>one CLEC in one collocation in one BellSouth central office</u>.

Q. ON PAGE 2 OF HIS REBUTTAL TESTIMONY MR. MILNER ALSO CHALLENGES YOUR USE OF THE FCC'S FINDINGS RELATED TO THE

CLECS' NEED TO USE SWITCHES LOCATED "RELATIVELY FAR FROM THE END USER'S PREMISES" RESULTING IN "MUCH LONGER LOOPS THAN THE INCUMBENT ". HE STATES THAT A CLEC COULD "HOUSE ITS SWITCH IN A BUILDING DIRECTLY ACROSS THE STREET FROM THE ILEC'S CENTRAL OFFICE", AND REFERENCES CITATIONS IN HIS DIRECT TESTIMONY TO AT&T TESTIMONY IN AN EARLIER ARBITRATION PROCEEDING. PLEASE RESPOND.

A. Mr. Milner admits I have quoted the FCC correctly, but then goes on to state that he disagrees with the FCC.

Placing a CLEC switch across the street from one of several ILEC central offices being served by that CLEC switch, as Mr. Milner suggests, clearly does nothing to change the fact that the CLEC switch will still be "relatively far" from the end user's premises and require "much longer" loops than the ILEC for every end user premises NOT served from that ILEC central office. A CLEC switch that is close to an ILEC central office, by definition, means that it is "relatively far" from other ILEC central offices and the end users being served through those central offices.

Even for the <u>single</u> location where the CLEC switch is "directly across the street" from the ILEC central office, the CLEC will still require a collocation arrangement within the central office and backhaul to cross the street. Any cost reductions from such an arrangement (at the one location) would be incremental and would not eliminate the impairment that results from the significant cost disadvantage required to backhaul the loop from multiple ILEC central offices where the mass market customer loops terminate.

I have already addressed Mr. Milner's (and BellSouth's other witnesses') inappropriate use of the statements in AT&T's Arbitration testimony in my rebuttal testimony on pages 19-20, 22-23, and 24-25. In short, Mr. Milner's reliance upon AT&T's arbitration testimony is misplaced because the issues in that case are different from the issues in this docket. The fact that AT&T is entitled to the tandem switching rate because its switches serve widely dispersed enterprise customers (the issue in the arbitration) does not demonstrate that CLECs are not impaired in attempting to serve the mass market in the absence of unbundled switching (the issue in this docket).

Q. ON PAGES 3-4 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES THE NEED FOR CLECS TO "ESTABLISH A COLLOCATION ARRANGEMENT IN EVERY ILEC WIRE CENTER". CAN YOU ADDRESS THIS?

A. Yes. Mr. Milner's direct testimony and my response to BellSouth's Interrogatory 154 both indicate that CLECs may generally have three options in the use of collocation arrangements to extend loops to their switches to serve the mass market. CLEC arrangements may include (1) collocations in ILEC wire centers that directly extend loops to the CLEC switch, or (2) collocations in ILEC wire centers that are "hubbed" to collocations located in another wire center through the use of "transport," with the receiving collocation equipped to directly extend the "hubbed" collocation loops to the CLEC switch, or (3) extending loops from a wire center without a collocation to a wire center that does have a collocation through the use of DS0 Enhanced Extended

Links (EEL), with the receiving collocation equipped to directly extend the EEL loops to the CLEC switch.

Only the third option (DS0 EELs) allows the potential for a CLEC to serve a wire center without having a collocation in that wire center. However, CLECs have found that the use of DS0 EELs to serve mass market customers is operationally and financially infeasible. BellSouth reports in its response to AT&T's Interrogatory 125 that there are only 6 DS0 EELs in service from only 4 wire centers in Florida. Thus, as a practical matter, collocation in each wire center is required.

Q. ON PAGES 4-5 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR STATEMENT THAT ILEC CHARGES TO TRANSFER LOOPS FROM THE ILEC TO THE CLEC OR BETWEEN CLECS ARE EXORBITANT. WHERE CAN THE COMMISSION LOOK TO FORM AN OPINION ABOUT THE LEVEL OF ILEC CHARGES FOR LOOP TRANSFERS?

A. As stated on page 27 of the rebuttal testimony of Mark Van de Water:

> The FCC stated that the "record evidence indicates that the non-recurring costs associated with cutting over large volumes of loops would likely be prohibitively expensive for a competitive carrier seeking to provide service without the use of unbundled local circuit switching. TRO at ¶ 470. The FCC then found that a seamless, ***low-cost*** batch cut process switching mass market customers from one carrier to another is necessary, at a minimum, for carriers to compete effectively in the market. TRO at ¶ 487 (emphasis added). This batch cut process must "render the hot cut process more efficient and reduce per-line hot cut costs." TRO at ¶ 460.

Clearly, the FCC was aware the non-recurring costs had been set in state proceedings, and they found them "prohibitively expensive".

Q. **ON PAGES 5-6 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES THE VALIDITY OF COMPARING THE LOOP TRANSFER PROCESS WITH THE UNE-P OR PRIMARY INTEREXCHANGE CARRIER (PIC) CHANGE PROCESSES. ARE THESE VALID COMPARISONS?**

A. Yes. In his direct testimony, beginning on page 62, AT&T's witness Mark Van de Water discussed how the FCC identified the standard against which an ILEC's hot cut process should be measured. The FCC itself established the UNE-P process as a standard.

> This review is necessary to ensure that customer loops can be transferred from the incumbent LEC main distribution frame to a competitive LEC collocation *as promptly and efficiently as incumbent LECs can transfer customers using unbundled local circuit switching*." TRO at n.1574 (emphasis added).

My discussion serves to demonstrate what must happen in order to eliminate the operational impairment caused by the manual hot cut processes Mr. Milner references. However, as I discuss in my rebuttal testimony, the Commission should establish a separate docket to investigate ways to eliminate this operational impairment, such as Electronic Loop Provisioning (ELP), after it confirms through its deliberations in this docket that the FCC's impairment findings still apply in Florida.

Q. **ON PAGE 7 OF HIS REBUTTAL TESTIMONY MR. MILNER ASSERTS THAT CLECS DO NOT NEED TO PERFORM THE FUNCTIONS YOU DISCUSS (DIGITIZATION, CONCENTRATION, MULTIPLEXING, AND AGGREGATION) FOR THEMSELVES BUT CAN RELY UPON BELLSOUTH'S UNBUNDLED LOOP CONCENTRATION (ULC)**

OFFERING. ARE YOU AWARE OF THIS OFFERING AND IS IT THE SUBSTITUTE MR. MILNER CLAIMS?

A. Yes, I am aware of this offering and no, it is not the solution Mr. Milner would have this Commission believe.

First, it is important to note that Mr. Milner does not dispute that these functions (digitization, concentration, multiplexing, and aggregation) must be performed in order for a CLEC to backhaul its customer's traffic to its own switch. Therefore, a legitimate question is whether the CLEC should lease or purchase the equipment to perform these functions. BellSouth's ULC offer might be thought of as the option to lease the equipment rather than purchase.

However, BellSouth's ULC offering introduces a number of operational problems not present when a CLEC installs its own Digital Loop Carriers (DLC). A major operational problem is the ordering of BellSouth's ULC offering. All ordering of service for the ULC arrangement must be performed manually, using facsimile transmission of the Local Service Request (LSR). Further, there is not one word of instruction as to how to fill out such an LSR in the BellSouth Local Ordering Handbook, which may be found and searched for "Unbundled Loop Concentration" or "ULC" on-line at http://www.interconnection.bellsouth.com/guides/leo/bbrlo_releases/14_0/pdf/140-3.pdf.

Additional operational concerns include the fact that the use of BellSouth's ULC offering and the provisioning of a CLEC Digital Subscriber Line (DSL) service are incompatible and that CLEC testing and repair of the DLC portion of its backhaul arrangement is eliminated. BellSouth's ULC offering is clearly inferior to CLEC owned DLCs installed in the CLEC's collocation.

Evidently, neither BellSouth nor Mr. Milner considers ULC to be a creditable solution, since Mr. Milner's direct testimony does not mention it as part of any network architecture option available or useful to CLECs, and BellSouth's own BACE model does not include the use of the ULC offering in its manipulations.

Q. ON PAGE 7 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR REASONS FOR THE CLECS' USE OF DLC, ASSERTS THAT YOUR TESTIMONY STATES THAT ONLY CLECS MAKE USE OF DLC EQUIPMENT, AND NOTES THAT ILECS USE DLC EQUIPMENT ROUTINELY. HOW DO YOU RESPOND?

A. In his rebuttal Mr. Milner manages to ignore the contents of the very next paragraph of my testimony that states:

> The equipment digitizes, encodes, concentrates and multiplexes the analog signals received from the customer so that the CLEC can extend the loop signal back to its remote switch in a manner the (1) provides service quality that will meet customer expectations and (2) minimizes the CLEC's costs to transport its customers' traffic back and forth from its switch. (Bradbury, direct, page 30, lines 5-10.)

I make no suggestion that DLC equipment is "useful only for achieving a certain level of transmission performance." (Milner, rebuttal, page 7, lines 23-24).

Further, I make no suggestion that "only CLECs make use of DLC equipment," (Milner rebuttal, page 7, lines 24-25). In fact, on pages 40-42 of my direct testimony I discuss the impairments to CLECs that arise from the *ILECs'* use of DLCs in their network.

At the central office, the need to use DLCs in their collocations to interface with analog DSO mass market loops is unique to CLECs and not required for the ILEC's interface with those very same loops. BellSouth's response to AT&T's Interrogatory 118, prepared by Mr. Milner, confirms this. When asked to provide the number and percentage of loops converted to T1 (DS1) level interfaces through the use of DLCs located in the central office, Mr. Milner replied:

> This question cannot be answered as posed because any multiplexing of copper subloops (that is, individual cooper loop distribution pairs) unto DS1 of higher level digital transmission facilities occurs at the DLC Remote Terminal ("RT"), rather than within the central office.

Mr. Milner's claim that my direct testimony regarding the CLECs use of DLCs "is simply a red herring" (Milner, rebuttal, page 7, line 25) is totally inaccurate. CLECs must use DLCs in their ILEC central office collocations to receive analog communications from the loop, and digitize, concentrate, and mulitiplex the communications so that the connecting backhaul facility can be used efficiently; the CLEC's switch can provide the customer with dial tone, ringing, and other functions; and customer service quality will meet expectations. The ILEC is able to achieve all of this with the "jumper" wire pair I discussed on page 19 of my direct testimony.

Q. ON PAGES 8-9 OF HIS REBUTTAL TESTIMONY MR. MILNER ATTEMPTS TO ADDRESS THE "LUMPY" CHARACTERISTICS OF DLC EQUIPMENT, AND DIGITAL CROSS CONNECTION (DSX) EQUIPMENT. DO HIS COMMENTS ALTER THE PRINCIPLE YOU DISCUSS OR THE IMPACT UPON THE CLECS?

A. No. There are DLCs that come in sizes smaller than used in my example. The tool used by Mr. Turner to conduct the DSO Impairment Analysis allows for this flexibility, as does BellSouth's BACE model. However, CLECs electing to use DLCs installed in smaller increments will then have to bear the increased cost of more frequent installations. It is a decision that means the CLEC will be selecting between which kinds of lumps it wants in its cost equation – equipment cost lumps or installation cost lumps. In either case, CLEC costs to serve the same mass market customers are greater than ILEC costs.

While Mr. Milner's comments are generally factual, he has provided mis-information about DSX-3 and DSX-1 equipment. A DSX-1 is not a smaller version of a DSX-3. These two pieces of equipment operate at different digital single levels. If you need a DSX-3, a DSX-1 cannot be substituted.

Q. ON PAGE 9 OF HIS REBUTTAL MR. MILNER CLAIMS TO BE SPEAKING TO YOUR TESTIMONY LISTING THE STEPS IN BELLSOUTH'S HOT CUT PROCESS AND STATES THAT HE SEES SOME SORT OF IRONY THAT YOUR EARLIER TESTIMONY FOUND THIS PROCESS TO BE INADEQUATE. HOW DO YOU RESPOND?

A. Mr. Milner offers no rebuttal of my testimony and there is no irony. The paragraph he is citing concludes "the process is inadequate to service mass market customers." Clearly Mr. Milner had some agenda other than rebutting my testimony and the Commission should disregard the entire question and answer in Mr. Milner's testimony.

Q. ON PAGES 10-11 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR STATEMENT CONCERNING THE NEED FOR COPPER LOOPS OF LESS THAN 18,000 FEET IN ORDER TO PROVIDE DSL SERVICES, STATING THAT A CLEC "COULD LIKEWISE COLLOCATE ITS DSLAM (DIGITAL SUBSCRIBER LINE ACCESS MULTIPLEXER) AT THE REMOTE TERMINAL." IS IT REALLY THAT SIMPLE?

A. No. CLECs do not have "remote terminals" as Mr. Milner is using the term. A CLEC's "terminals" (DLCs) are located in the central office. BellSouth will not allow a CLEC to place a CLEC DSLAM card in a BellSouth remote terminal. Therefore, to have a "remote terminal collocation", a CLEC would have to build it and provide or arrange transport facilities from it to the CLEC's central office collocation.

While the technology for remote collocation exists, the economics do not. This is evidenced by the fact that, to the best of my knowledge, there are no CLEC remote terminal collocations in BellSouth's territory. If this were a valid solution one would expect to see CLECs requesting and performing remote terminal (RT) collocations. They are not.

I would note that this is another case in which BellSouth and Mr. Milner apparently do not believe in the validity of their own proposals, since Mr. Milner's direct testimony mentions remote terminal collocation only in passing and BellSouth's BACE model does not include the use of remote terminal collocation in its manipulations.

Q. ON PAGE 11 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR STATEMENT THAT THE CLECS' LACK OF ECONOMIES OF SCALE WILL MAKE THEIR CALL TERMINATION ARRANGEMENTS MORE RELIANT ON THE ILEC'S TANDEM NETWORK. HOW DO YOU RESPOND?

A. Once again, Mr. Milner is providing the exception that proves the rule. While the list of factors both the CLECs and the ILECs use in the calculus of determining whether to direct or tandem trunk are the same, the values in each parties equations will be vastly different. The values in a CLEC's equations will always result in a higher reliance upon tandem trunking because of the CLEC's relative lack of scale in comparison to the ILEC. Where a CLEC does have sufficient scale (volume) between two offices to justify direct trunking, I would expect that CLEC to make the proper economic decision.

Having a higher reliance upon ILEC tandem trunking increases the CLEC's cost of call termination and the greater potential for call blockage if the ILEC fails to properly manage the tandem trunk network.

RESPONSES TO MR. GRAY

Q. ON PAGES 7-8 OF HIS REBUTTAL TESTIMONY MR. GRAY CHALLENGES THE NEED FOR CLECS TO HAVE A COLLOCATION ARRANGEMENT IN EVERY ILEC WIRE CENTER IN ORDER TO OFFER FACILITIES BASED MASS MARKET SERVICES. IS THIS CHALLENGE ANY DIFFERENT FROM THAT MADE BY MR. MILNER?

A. No. Mr. Gray's comments are the same as those made by Mr. Milner, discussed previously. As a practical matter, collocation in each wire center is required to serve the analog DS0 loop mass market customer, EELs and assembly points notwithstanding. I would note that assembly points were not mentioned in Mr. Milner's direct testimony and that the BellSouth BACE model does not include them in its manipulations.

Q. ON PAGES 8-10 OF HIS REBUTTAL TESTIMONY MR. GRAY ADDRESSES THE ISSUE OF PLACING SWITCHES IN COLLOCATIONS. DOES THIS DISCUSSION PROVIDE THE COMMISSION WITH ANY MEANINGFUL INFORMATION?

A. No. As I discussed previously, there is *one CLEC* that has located *one switch* in *one* *collocation* in Florida. The meaningful information is the fact that no other CLECs have found such an arrangement to be economically attractive.

Q. ON PAGES 10-14 OF HIS REBUTTAL TESTIMONY MR. GRAY DISCUSSES A NUMBER OF CHARGES AND FEES ASSOCIATED WITH COLLOCATION ARRANGEMENTS. DOES ANY OF THIS INFORMATION SIGNIFICANTLY CHALLENGE OR CHANGE THE FACT THAT THESE COSTS OF COLLOCATION EXIST FOR CLECS?

A. No. Mr. Gray's comments provide clarification about how these costs are billed to CLECs by BellSouth, but otherwise confirm that the costs exist and are significant factor in any CLECs attempts to serve mass market customers using analog DS0 loops.

RESPONSES TO MR. TENNYSON

Q. ON PAGES 2 THROUGH 5 OF HIS REBUTTAL TESTIMONY MR. TENNYSON COMMENTS ON ELECTRONIC LOOP PROVISIONING (ELP), CITING TO THE TESTIMONY OF AT&T'S WITNESS MARK VAN DE WATER. DID YOU ALSO ADDRESS ELP IN DIRECT AND REBUTTAL TESTIMONY?

A. Yes. I addressed ELP on pages 46-49 of my direct testimony and on pages 28-30 of my rebuttal testimony.

Q. WHAT RECOMMENDATION TO THE COMMISSION DID YOU MAKE IN YOUR REBUTTAL TESTIMONY REGARDING ELP?

A. I noted that AT&T was not proposing that the Commission order the implementation of ELP as a result of its deliberations in this docket as that was not one of the purposes of this docket. I further noted that ELP was not an issue in the docket. My recommendation was that:

> The Commission should open a separate docket to address how to eliminate the impairment it will find here. It is in that docket that ELP and any other proposals with potential to eliminate impairment should be considered. (Bradbury, rebuttal, page 30, lines 7-9)

Q. IS THIS STILL YOUR RECOMMENDATION TO THE COMMISSION?

A. Yes it is.

Q. WHAT THEN DO YOU SUGGEST THAT THE COMMISSION DO WITH THE INFORMATION ABOUT ELP AND THE OTHER PROPOSALS WITH POTENTIAL TO ELIMINATE IMPAIRMENT BEING PRESENTED IN THIS DOCKET BY VARIOUS PARTIES, INCLUDING AT&T?

A. The Commission should accept the information that has been presented in this docket for use in formulating the scope of the follow-on docket in which it would consider these issues. This would allow the parties and the Commission to focus in the current docket on the issues specifically requiring consideration in this proceeding by the TRO.

In the separate follow-on docket the parties and the Commission would then not be constrained by the arbitrary 9-month interval mandated by the TRO. The parties and the Commission could then devote the appropriate resources necessary to present and consider the complex technological, cost and policy issues associated with an effort to eliminate impairment in a more reasoned and less constrained manner.

Q. IS THERE SPECIFIC INFORMATION IN MR. TENNYSON'S TESTIMONY TO WHICH YOU WISH TO RESPOND?

A. Yes. In keeping with my view of how the Commission should proceed with regard to information presented in this docket related to ELP and other proposals with potential to eliminate impairment, I will limit my comments, with the expectation that there will be a forum at a later date in which a full investigation of the issues will occur. Additional detail about ELP in support of the comments I will make below can be found in Exhibit No. ____, JMB-SR1, a presentation entitled "Electronic Loop Provisioning (ELP), Enabling the Competitive, All Service Network of the Future," dated November, 2003.

On page 3, Mr. Tennyson discusses packetizing digital signals into Asynchronous Transfer Mode (ATM) cells and then asserts "this packetization is not performed in any DLC systems used in BellSouth today". This is misleading. All DLCs in Florida that BellSouth has equipped to provide DSL service (approximately 4,000) do perform packetization to ATM format for the DSL service. BellSouth has not invested in cards for those DLCs that are capable of packetizing voice or combined voice and DSL. Such cards convert the existing Next Generation DLCs (NGDLCs) into the "true" NGDLC (tNGDLC) discussed in Exhibit No. ____, JMB-SR1.

At the bottom of page 3, Mr. Tennyson provides the following note and assertion. "Note that this process (referring to ELP) would require that every loop be connected to an ATM switch, a switch that does not exist in BellSouth's network today." Mr. Tennyson is wrong on both counts. As can be seen in the diagrams on pages 15, 26 and 27 of Exhibit No. ____, JMB-SR1 in the ELP architecture, once the loop has been treated by the tNGDLC it is the highly efficient, packetized, high capacity ATM uplink of the tNGDLC that is connected to the ATM switch, individual loop connections to the ATM do not exist. Second as Mr. Tennyson later admits (page 5) BellSouth does have ATM switching capability. Today that capability is used to support BellSouth's DSL product lines and others that make use of ATM technology. The fact that "BellSouth does not have the location, capacity, or quantity necessary to deploy ELP" (Tennyson, rebuttal page 5, lines 11-12) is unremarkable and does not demonstrate that it could not deploy additional ATM switching capacity to implement ELP.

On page 5, Mr. Tennyson also admits that BellSouth has voice gateways in its network, but once again makes the unremarkable claim that they are not "in the right locations, capacity, or quantity." This claim does not demonstrate that BellSouth could not deploy additional voice gateway capacity to implement ELP.

On page 4, Mr. Tennyson makes the claims that "ELP is not the best architecture to enable DSL and would impede DSL innovation." These claims are absurd – ELP is built on exactly the same architecture that BellSouth is using to implement DSL -- remote terminal NGDLC deployments using ATM protocols.

On page 5, Mr. Tennyson, in discussing how long it might take to deploy ELP, states "It would take at least several years, given the magnitude of such an undertaking given that each and every loop in BellSouth's region will need to be modified." ELP can be implemented in phases, over time and by "priority", starting when and where BellSouth desires to be relieved of its obligation to provide unbundled switching. As each geographic area is converted on BellSouth's (or the Commission's ordered) schedule, unimpaired competition would be established and BellSouth would receive the relief it seeks. While, ultimately, modification of "each and every loop" *may* eventually be required, it also may *never* be required. Only those loops that actually do become subject to migration to a CLEC need to be immediately "ELPed," allowing for the use of a managed process like that being used for the support of BellSouth's DSL deployment. Further, I would note that the UNE-P to UNE-L transition itself, if BellSouth were granted relief in this docket, would not complete until May 2007, or several years from now.

Finally there is the matter of cost. Mr. Tennyson provides a discussion of cost on page 4, lines 5-13, but provides no support for how any of the three major data points he presents were determined. First he claims that with ELP, CLECs would <u>avoid only $13 per loop in costs</u> compared to the existing hot cut costs. There is no explanation as to how this number was derived; however, here are some factors that would have to play in such a calculation: (1) the cost to CLECs of an SL1 hot cut in Florida is $83.11; (2) the BellSouth central office technician work time per hot cut is approximately 43 minutes; (3) an additional hour of BellSouth outside plant technician work time is required on all loops served by IDLC (36% in Florida). It is difficult to grasp Mr. Tennyson's determination that only $13 dollars of cost is avoided by ELP given the known amount of work that is eliminated. Second, Mr. Tennyson states that there would have to be an on-going monthly charge of $6.66 per loop per month. Again no explanation is provided. Possibly this number was somehow derived from Mr. Tennyson's third claim that "it would cost BellSouth approximately $8 billion in capital expenditures to implement ELP in its network," but there is no indication how that number was determined, either.

Exhibit No. ___, JMB-SR1 addresses costs on page 21. AT&T's estimate of the total cost to implement ELP in BellSouth's territory would be approximately one-half BellSouth's estimate, and that does not take into consideration the costs avoided by the elimination of collocation costs, hot cuts, etc.

Q. SHOULD COST BE THE ONLY CONSIDERATION IN EVALUATING AN ELP PROPOSAL?

A. No, of course not, and that is one of the major reasons behind my recommendation that the Commission open a separate docket to consider these matters. An investment in ELP or any other proposal with the potential to eliminate impairment must be viewed in the context of its benefits. ELP provides significant benefits (including cost reductions, enhanced features, and increased revenue opportunities) to a broad range of constituents and telecommunications issues, including:

- End-Users

- Competition
- CLECs & ILECs
- Broadband & Advanced Services
- Local Network Infrastructure
- Telecommunications Industry / Market
- U.S. Economy

It simply is not possible within the scope and the artificial time constraints placed upon this proceeding by the TRO for the Commission to make a fully informed decision about ELP in this docket.

RESPONSES TO MR. FOGLE

Q. ON PAGE 20 OF HIS REBUTTAL TESTIMONY, MR. FOGLE CHALLENGES YOUR STATEMENT THAT CLECS ARE DENIED THE ABILITY TO PROVIDE DSL SERVICE TO CUSTOMERS EXCEPT WHEN A COPPER LOOP OF LESS THAN 18,000 FEET IN LENGTH IS AVAILABLE AND DISCUSSES A NUMBER OF OPTIONS HE STATES A CLEC CAN UTILIZE. IS THERE ANY DIFFERENCE BETWEEN MR. FOGLE'S COMMENTS AND THOSE OF MR. MILNER, TO WHICH YOU RESPONDED ABOVE?

A. Not really. Mr. Fogle's list of options is longer but contains none that allows any CLEC to have a DSL reach relative to mass market customers that is anywhere near equal to BellSouth's at an economic cost. As I noted in my direct testimony, the retail product BellSouth provides to the mass market is its FastAccess ® Service. All of the options Mr. Fogle lists are either (1) prohibited by BellSouth, (2) uneconomic,

(3) inappropriate for the mass market, (4) and/or provide an inferior service when compared to BellSouth's FastAccess ® Service.

RESPONSES TO VERIZON FLORIDA'S PANEL OF WITNESSES

Q. ON PAGE 8 OF THEIR REBUTTAL TESTIMONY VERIZON'S PANEL ASSERTS THAT THE FCC HAS REJECTED AT&T'S ELP PROPOSAL. IS THIS CORRECT.

A. No. As I noted in my discussion of this issue on pages 28-30 of my rebuttal testimony the FCC did not reject ELP, it reserved the right to consider requiring it in the future. Please see my responses to the rebuttal testimony of BellSouth's witness, Tennyson, above, for a more complete discussion of the role ELP should play in this docket.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

I. INTRODUCTION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven E. Turner. My business address is Kaleo Consulting, 2031 Gold Leaf Parkway, Canton, Georgia 30114.

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

A. I own and direct my own telecommunications and financial consulting firm, Kaleo Consulting.

Q. PLEASE DESCRIBE YOUR EDUCATION BACKGROUND.

A. I hold a Bachelor of Science degree in Electrical Engineering from Auburn University in Auburn, Alabama. I also hold a Masters of Business Administration in Finance from Georgia State University in Atlanta, Georgia.

Q. PLEASE DESCRIBE YOUR WORK EXPERIENCE.

A. From 1986 through 1987, I was a Research Engineer for General Electric in its Advanced Technologies Department developing high-speed graphics simulators. In 1987, I joined AT&T and, during my career there, held a variety of engineering, operations, and management positions. These positions covered the switching, transport, and signaling disciplines within AT&T. From 1995 until 1997, I worked in the Local Infrastructure and Access Management organization within AT&T. In this organization, I gained familiarity with many of the regulatory issues surrounding AT&T's local market entry, including issues concerning the unbundling of incumbent local exchange company ("incumbent" or "ILEC") networks. I was on the AT&T team that negotiated with Southwestern Bell Telephone Company concerning unbundled network element definitions and methods of interconnection. A copy of my resume is provided as Exhibit SET-1.

Q. HAVE YOU PREVIOUSLY TESTIFIED OR FILED TESTIMONY BEFORE A PUBLIC UTILITY OR PUBLIC SERVICE COMMISSION?

A. I have testified or filed testimony before the commissions in the states of Alabama, Arkansas, California, Colorado, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, Washington, and Wisconsin. Additionally, I have filed testimony before the Federal Communications Commission ("FCC").

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony describes and quantifies the significant cost disadvantages that an efficient competitive local exchange carrier ("CLEC") would confront in attempting to serve mass market customers if continued access to unbundled local switching and the unbundled network element platform ("UNE-P") were denied.

Q. WHAT SPECIFIC ISSUES IN THIS DOCKET DO YOU ADDRESS?

A. Specifically, I address Issue 5(d), which covers the potential economic barriers that render CLEC entry uneconomic absent access to unbundled local circuit switching:

1. The costs of migrating ILEC loops to CLECs' switches; or
2. The costs of backhauling voice circuits to CLECs' switches from the end offices serving the CLECs' end users?

My testimony demonstrates that in the absence of unbundled local switching, CLECs face practically insurmountable cost disadvantages relative to the Incumbent Local Exchange Carriers ("ILECs") if unbundled network element loops ("UNE-L") used in conjunction with their own (or a third party provider's) switching is the sole option for providing local services to mass market customers.

The significant disadvantages I describe apply whether a CLEC uses self-provided switching or switching that is provided by a separate non-ILEC entity. For simplicity in presentation, I will discuss these cost disadvantages in the context of self-provided switching. However, they would also apply if a CLEC attempted to provide service to mass-market customers using "wholesale" switching provided by another carrier.

The FCC's Triennial Review Order ("TRO") recognized that the "absolute cost advantages" enjoyed by an ILEC can constitute a barrier to entry that would satisfy the impairment standard. (TRO¶ 90).

Q. GENERALLY, WHAT COSTS COMPRISE THE COST DISADVANTAGE THAT AN EFFICIENT CLEC WOULD INCUR TO SERVE ITS CUSTOMERS USING UNE-L?

A. A CLEC seeking to serve mass market customers using its own switches would incur the costs for backhauling a customer loop from the ILEC central office to the CLEC's switch (i.e., "backhaul costs") as well as attendant costs for transitioning the customer's service from the ILEC to the CLEC (i.e., hot cut costs, number portability).

To accomplish this, the CLEC must first deploy a costly "backhaul" infrastructure between the ILEC central office where it seeks to serve mass market customers and the physical locations where its switches are located. Backhaul is the term used to describe the process and equipment needed to haul the customer's loop from the ILEC's central office where the customer loop terminates to the CLEC's switch in another location so that voice service can be provided to the customer. As described in the accompanying Testimony of AT&T's witness Jay Bradbury, creation of this backhaul infrastructure typically entails (1) the cost of preparing the loop for transport out of the ILEC's central offices, and (2) the cost of transporting the traffic back to the CLEC's switch location. Together, these costs are referred to as the "backhaul infrastructure". The cost of preparing the loop for transport out of the ILEC's central office includes: (1) the costs of acquiring collocation space in the offices in question and (2) the deployment of electronic equipment in that space (a) to convert an end user's traffic from the analog signals generated by standard telephone sets to digital signals, and (b) to concentrate and multiplex those digital signals.

In addition, a CLEC must incur the costs of "hot cuts" and number portability. "Hot cuts", as an example, are the transfer of the customer's active service with the ILEC to the CLEC by transferring the customer's loop from the ILEC switch to the CLEC switch without interrupting the customer's service. Number portability is a critical capability established as a result of the Act. Number porting permits the customer to retain and freely move his/her telephone number amongst competing networks. *See* Direct Testimony of AT&T Witness Mark Van De Water.

My testimony focuses upon these components of the absolute cost disadvantages associated with this CLEC "backhaul," and hot cut costs associated with connecting a customer's loop with the CLEC switch which are highly significant and contribute to the impairment a CLEC faces in using self-provided switches to serve mass-market customers. Other cost disadvantages may also exist for the CLEC, such as in customer acquisition cost or in OSS platform fixed costs that I do not address but which may also add to the CLEC's disadvantage beyond the level that I quantify.

Q. HOW HAVE YOU QUANTIFIED THIS ABSOLUTE COST DISADVANTAGE?

A. The "impairment analysis tools" that underlie my testimony quantify these *additional* costs of loop connectivity incurred by CLECs, but not by the ILEC, if CLECs are required to provide facilities-based mass-market local services based upon a voice grade UNE-L architecture. As discussed in the Direct Testimony filed by Jay Bradbury, these costs are a product of the "closed" legacy network architecture employed by the ILEC.

In performing this analysis, I have followed the FCC's admonition not to examine results for a specific CLEC; instead, my analysis focuses on a hypothetical, efficient CLEC. I also have made a conscious effort to be conservative with respect to inputs and assumptions. As will become clear from the results of this analysis, the most conservative assumption, given current conditions, is the working premise that a CLEC would enter the market using a facilities based and voice grade UNE-L architecture to serve the mass market at all because there are no offsetting absolute CLEC cost advantages available to offset these CLEC cost disadvantages.

As a result, the tools I use calculate the *minimum* level of cost disadvantage an efficient CLEC would face. In order to provide the degree of "granularity" required by the FCC's order, the tools utilize data that is specific to BellSouth's operations in Florida.

Q. HOW IS THE REMAINDER OF THIS TESTIMONY ORGANIZED?

A. The remainder of my testimony is organized as follows. Section III provides the background to my analysis and an overview and summary of the results. I provide results based by LATAs in the BellSouth-Florida territory.

The discrete analysis of BellSouth's central offices in Florida, upon which the LATA results are based, covers a broad range of lines. Not surprisingly, the absolute cost disadvantage per line is highest in those central offices where a CLEC can be expected to serve a relatively small number of mass market lines, and lower in those central offices where a CLEC can be expected to serve a relatively larger number of lines. Nevertheless, even when a very substantial number of lines is served in an individual office the unit cost disadvantage experienced by the CLEC for backhaul and hot cuts is substantial. As explained more fully in the accompanying economic testimony of AT&T's witness Don Wood, ILEC cost advantages of the magnitude I have calculated for all wire centers in BellSouth-Florida constitute an entry barrier that preclude mass-market local competition without access to unbundled local switching.

Section IV of my testimony describes, in general terms, the tools that I relied upon to measure the CLECs' cost disadvantage and the analysis that has been undertaken for BellSouth-Florida LATAs using those tools. A more detailed explanation of the technical aspects of the tools, including an overview of the calculations the tools perform, is set forth in the Technical Appendix that is attached as an electronic exhibit in CD-ROM format to this testimony as Exhibit SET-2. Additionally, Exhibit SET-2 will also contain the electronic version of the DS0 Impairment Analysis Tools as well as the results by LATA for BellSouth in Florida. Finally, in Section V, I present the results for BellSouth in each LATA in Florida. These results are supplemented in detail by the information contained in Exhibit SET-2. Included in that discussion is a description of the inputs and sources of the inputs used. The results demonstrate that CLECs cannot practically overcome the significant cost disadvantages identified in this study. Thus, the modeling results for the "hypothetical CLEC" and actual market experience are entirely consistent: there currently is a notable absence of actual, broad based facility-based competition for mass market customers using voice grade UNE-L which corroborates the FCC's national finding of impairment for switching to serve mass market customers.

III. BACKGROUND AND SUMMARY OF RESULTS

A. Impairment Resulting From Absolute Cost Disadvantages Experienced by a CLEC, and the Network Architectures That Create That Impairment

Q. YOU HAVE PREVIOUSLY REFERRED TO AN ABSOLUTE COST DISADVANTAGE THAT A CLEC ENCOUNTERS WHEN USING SELF-PROVIDED SWITCHING TO SERVE MASS MARKET CUSTOMERS. COULD YOU EXPLAIN THIS CONCEPT IN MORE DETAIL?

A. Among the types of barriers to entry that the FCC expressly recognized in the TRO are "absolute cost advantages" enjoyed by the ILEC, or absolute cost disadvantages experienced by the CLEC. That is, competitors will be impaired if, in the absence of unbundling, an efficient CLEC would incur substantially higher costs than do the ILECs in order to self deploy the network facility in question. Thus, as the FCC observed, "[w]hen the incumbent LEC has absolute cost advantages, other firms may be deterred from entering the market." TRO, ¶ 90 and n. 302. This is particularly so if the ILEC is providing service at rates close to its average cost. *Id.*

Q. WOULD A HYPOTHETICAL EFFICIENT CLEC USING SELF-PROVIDED SWTICHING TO SERVE THE MASS MARKET EXPERIENCE ABSOLUTE COST DISADVANTAGES AS COMPARED TO BELLSOUTH?

A. Yes.

Q. WOULD THIS RESULT IN THE CLEC BEING IMPAIRED IN ITS ABILITY TO PROVIDE SERVICE TO MASS MARKET CUSTOMERS IN FLORIDA?

A. Yes.

Q. WHY?

A. The absolute cost disadvantages analyzed in my testimony are created by differences in the basic characteristics of the network architectures employed by

ILECs, on the one hand, and CLECs on the other. The network architecture testimony presented by Jay Bradbury describes these important differences in the network configurations employed by CLECs and ILECs in detail. These differences, which I summarize briefly below, are generally recognized and were explicitly acknowledged by the FCC in the *TRO*. *See, e.g.*, TRO at ¶ 480.

Q. GENERALLY, HOW WAS AN ILEC'S NETWORK DESIGNED?

A. The ILECs' local networks were designed in a monopoly environment. As a result, they rely upon an integrated network architecture that does not easily allow for multiple carriers to access a customer's loop to provide voice service.

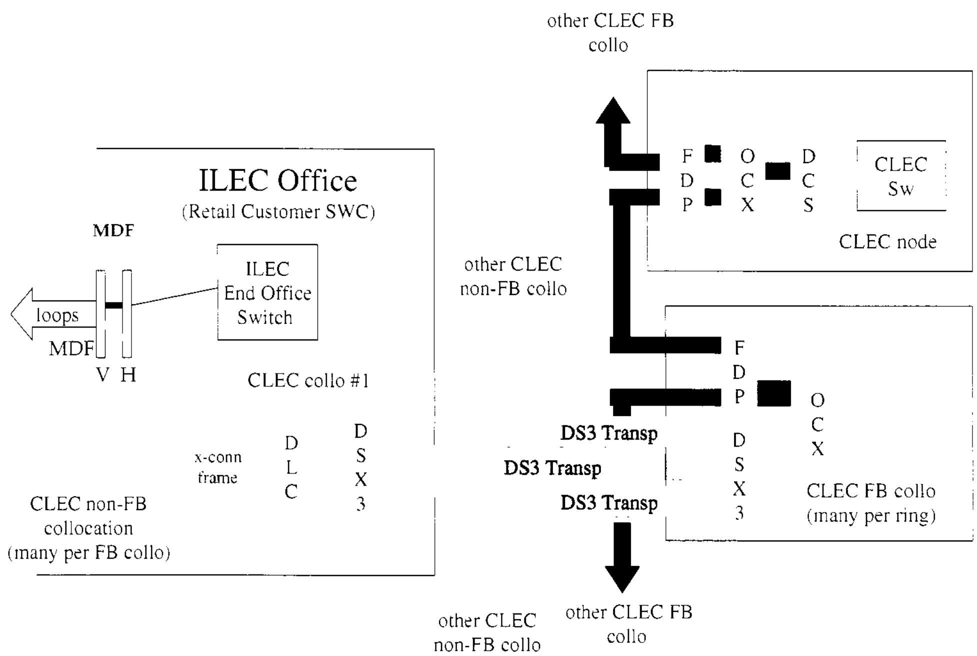
The ILEC network was designed and built based upon analog (and largely copper-based) technology. Because analog signals degrade over distance, copper loops could not exceed relatively short lengths without the need for expensive equipment to ensure that the voice signal could travel from the caller to the called party. As a result, the ILECs deployed – and by virtue of their historical monopoly position they were able to deploy – a relatively large number of local switches, each of which served a relatively small geographic area limited generally to an area determined by the length of copper that could practically support voice services. As the FCC confirms in the TRO, in recent years the ILECs have deployed increasing amounts of fiber optic equipment in the "feeder" portion of the loop, but the "distribution" portion of loop plant – that connecting to the customer's premises – remains almost entirely copper, and the basic architecture characterized by a high density of local offices/switches where customer loops are terminated remains the same.

Furthermore, because a switch was placed at the termination point for these analog loops, ILECs could inexpensively connect their customers' loops to their switches by using a simple set of "jumper" wires across the main distribution frame ("MDF"). And for the vast majority of mass market customers, those jumper pairs are left in place even when a customer moves, so that when a new customer moves in to this same residence or small business location, the ILEC can re-activate service through the use of software commands from a service representative without the need for any physical work.

Q. DOES THE CLEC NETWORK DESIGN DIFFER FROM THE ILEC NETWORK?

A. Yes. The diagram below displays the facilities that a CLEC must employ to connect a customer loop to its switch, and compares them to the facilities an ILEC needs to perform the same functions. The DS0 Impairment Analysis Tools quantify the *minimum* equipment and network functionality that a facilities-based efficient hypothetical CLEC (*i.e.*, a CLEC providing its own switching) would need to extend a customer's UNE loop obtained from the ILEC central office where the customer's loop terminates to the CLEC's own switch, which is also depicted in Figure 1 (the larger orange and blue lines running from the MDF to the CLEC Switch).

Figure 1
Comparison of CLEC Backhaul Network
With ILEC Cross-Connect



Q. HOW DOES THE CLEC NETWORK DESIGN DIFFER FROM THE ILEC NETWORK DESIGN?

A. The local network architecture employed by an efficient CLEC that is self-providing switches is very different from the ILEC network. Because CLECs are attempting to enter markets that have long been dominated by a single monopoly provider, they are unlikely – even in the medium to long term – to be able to generate sufficient customer volume for it to make economic sense to place their own switches at locations close to each ILEC central office. Instead, a CLEC must provide service to customers from multiple ILEC central offices with a single switch in order to generate a sufficient volume of customer line terminations and calls per switch that is comparable to the customer line terminations and call volume on a switch that is on average achieved by ILECs.

As a result, the CLEC must deploy extensive equipment – which is a large and substantially demand insensitive cost – to extend each and every loop from collocations located at various ILEC wire centers to its local switches. In order to extend customer loops to its switches, a CLEC must install and maintain Digital Loop Carrier (DLC) equipment in each ILEC central office where the customer's analog loops (voice grade UNE-loops) are located. This DLC equipment, as previously mentioned, is used to digitize, concentrate and multiplex the traffic delivered over these analog loops to permit efficient backhaul from the ILEC central office where the customer's loop terminates to the distant CLEC switch without substantially reducing the quality of the customer's voice service. The DLC deployed by the CLEC must permit the distant CLEC switch port to interoperate with the customers' telephone sets to enable the CLEC to provide such capabilities as dial tone and the ability to ring the customer's telephone set. In addition, the CLEC must have connectivity between the DLC (in the collocation space) and its switch so that the voice signal has a path to travel between those two points.

The need to deploy equipment to "backhaul" the customer's loop to the CLEC switch in connection with UNE-L has been recognized by the FCC: "The need to backhaul the circuit derives from the use of a [CLEC] switch located in a location relatively far from the end user's premises, which effectively requires competitors to deploy much longer loops than the incumbent." TRO ¶ 480.

Once this expensive backhaul infrastructure is deployed, the CLEC must arrange for, and pay ILEC charges for a hot cut. In addition, the CLEC may incur charges for number portability when the customer wants to maintain the phone number it previously had with the ILEC for each active customer loop it migrates to its network.

Q. DO THESE DIFFERENCES IN THE ILEC AND CLEC NETWORK DESIGNS RESULT IN DIFFERENT COSTS TO PROVIDE SERVICE TO MASS MARKET CUSTOMERS FOR CLECS USING UNE-L AND ILECS?

A. Yes. The crucial economic fact is that costs to backhaul customer lines to the CLEC switch, hot cuts to provision the migration of service to the CLEC switch with limited service interruption, and number portability to maintain the customer's same telephone number are not faced by the ILEC. Unlike a CLEC seeking to use the UNE-L architecture, the ILEC connects its loops and switching using a simple, inexpensive copper wire pair cross-connection in the central office where its loops terminate. Thus, the ILEC's "backhaul" network consists of only a relatively short pair of jumper wires.

Collectively, the CLEC's costs associated with collecting and backhauling its customers' loops to its switch to create the same functionality as the ILEC's "short pair of jumper wires" represents an absolute cost disadvantage and results in a substantial barrier to market entry using UNE-L in Florida. The analytical tools described in my testimony, which I refer to generally as "DS0 Impairment

Analysis" tools, identify and quantify the *absolute cost disadvantages* a CLEC would likely face if it sought to broadly serve the mass-market in a particular area with a relatively ubiquitous backhaul network using voice grade UNE-L. Conversely, the backhaul disadvantage represents a significant component of ILEC profit margin that is never eroded even if an efficient CLEC actually entered these markets in the face of such a disadvantage.

B. Overview of Results

Q. WILL YOU GIVE AN OVERVIEW OF THE DS0 IMPAIRMENT TOOLS THAT YOU USED TO QUANTIFY THE ABSOLUTE COST DISADVANTAGE THAT AN EFFICIENT CLEC WOULD EXPERIENCE AS COMPARED TO BELLSOUTH?

A. Yes. However, a more detailed description of the DS0 Impairment Analysis Tools is contained in Section IV and in the accompanying technical appendix (Exhibit SET-2). In addition, the LATA results for Florida are set forth in Section V, which also contains a general discussion of the inputs employed (along with the specific inputs used for each LATA analysis).

Broadly speaking, the DS0 Impairment Analysis Tools calculate the costs that CLECs face in three broad categories: (1) preparation of the loop for transport from ILEC central offices (including DS0 equipment infrastructure and collocation); (2) backhaul transport between the ILEC's central offices and the CLEC's switch; and (3) customer transfer costs for hot cuts and number portability. The tools use inputs that are based upon the experience and judgment of subject matter experts (SMEs) as to the costs an efficient CLEC would incur to provide the backhaul and customer transfer functions efficiently. (*See* generally TRO, ¶ 517, providing that costs should be based on the entry of an efficient

CLEC, not any particular CLEC.) In other instances, the costs are developed using state-approved rates (*e.g.*, for elements of the cost of collocation and hot cuts) or interstate charges (*e.g.*, the cost of high capacity special access facilities, purchased under multi-year term plans). As noted earlier, it is my opinion that the methodology employed and the inputs used produce conservative results. That is, they tend to reflect relatively *low* estimates of the absolute cost disadvantage that would be experienced by a "hypothetical efficient CLEC" that is attempting to enter the local market using UNE-L. Of course, CLECs could experience far higher costs depending upon their customer base.

Q. CAN YOU PROVIDE AN OVERVIEW OF THE DOLLAR AMOUNT FOR THE COST DISADVANTAGE THAT A CLEC WOULD FACE USING UNE-L?

A. The results of my analysis, which are shown in Section V, support the conclusion that hypothetical efficient CLECs face substantial, absolute cost disadvantages relative to the ILEC in each geographic market in which BellSouth has elected to challenge the FCC's national finding of impairment. Those cost disadvantages range from a high of $22.94 per line per month to a minimum of $12.79 for the Florida LATA study areas. These costs *do not include* the monthly recurring charges paid to the incumbent simply to lease an unbundled loop. Thus, to the extent that the TELRIC costs paid by a CLEC to lease the loop are higher than the ILEC's efficient costs for providing the loop to itself, such cost disadvantages are not reflected

Q. WHAT DOES THE MINIMUM IMPAIRMENT DOLLAR FIGURE REPRESENT?

A. The latter minimum figure in fact provides a shorthand basis – and a conservative one at that (for the reasons I have previously discussed) – for supporting a general finding of economic impairment in Florida consistent with the FCC's national finding of impairment. As noted earlier, an important characteristic of impairment is that the number of customer lines a CLEC serves in a given ILEC central office (as distinct from the absolute size of the ILEC central office) is a key determinant of the absolute cost disadvantage. Thus, the cost disadvantage of serving 500 lines in a 5,000 line office would be much the same as the cost disadvantage of serving 500 lines in a 50,000 or 100,000 line office. That is because collocation charges and hot cut costs do not vary based on the ILEC office size, and the backhaul cost is largely a fixed cost related to the type of DLC deployed and the designation used by the tools for a particular ILEC central office (*i.e.*, whether it is a "node" or "satellite," *see* infra.). Generally, therefore, the average cost disadvantage per line decreases as the number of lines served in an office increases, but the important point is that it *never* drops below a level of absolute cost disadvantage that would preclude mass-market competition.

Thus, even if a CLEC serves a very substantial number of lines in an individual central office in Florida, the minimum cost impairment per line I cite above would nevertheless constitute a cost penalty that is competitively disqualifying under any reasonable measure.

As discussed in the testimony of Don Wood, a CLEC cost disadvantage of the magnitude described above constitutes a clear barrier to entry and should by itself satisfy any reasonable definition of "impairment."

Q. HOW DOES THE IMPAIRMENT FOR CLECS CALCULATED BY THE DS0 IMPAIRMENT TOOL COMPARE TO CLEC IMPAIRMENT COSTS CALCULATED BY ILECS?

A. The types of costs and the general levels of impairment I have identified are consistent with calculations submitted by ILECs during the FCC proceedings leading up to the *TRO*. In January, 2003, for example, SBC Communications, Inc. ("SBC") submitted an Ex Parte letter to Chairman Powell from James C. Smith, a Senior Vice President of SBC ("SBC Ex Parte"). (See Exhibit SET-3). Attachment 3 to that letter is a document entitled "SBC's Analysis of the Economic Viability of Facilities-Based UNE-L Residential Serving Arrangements," in which SBC claims that it "compares the cost of a UNE-L-based serving arrangement with the revenue stream a CLEC could reasonably anticipate when serving residential customers." *Id.*, p. 1.

In its ex parte SBC identified a series of cost categories that CLECs might incur in using UNE-L to serve residential customers that would not also be incurred by ILECs. These include:

- payments by CLECs to ILECs for hot cuts (SBC appears, however, to have excluded internal CLEC costs that would be incurred to implement the hot cut process (*Id.* at 3);
- the costs of collocation (*Id.* at 4-5);
- the costs of GR-303 concentration and multiplexing equipment (*Id.* at 5); and
- transport costs (*Id.* at 7).

These are the very same cost elements that are reflected in the tools and calculations that I discuss below.

For the three states that SBC analyzed, *i.e.*, California, Michigan and Texas, SBC developed estimated cost differentials that totaled respectively $10.74, $10.88 and $10.74 per line for these cost components for a central office in which a CLEC would serve 250 lines; and $9.00, $7.85 and $8.80 per line, respectively, for these cost components for a central office in which a CLEC would serve 500 lines. (*See* February 4, 2003 Ex Parte letter from Joan Marsh, AT&T Director of Federal Government Affairs, to Ms. Marlene Dortch, Secretary, Federal Communications Commission in CC Docket Nos. 01-338, 96-98, and 98-147, appended hereto as Exhibit SET-4. Note that for a 100 percent increase in lines served, the impairment per line declines only 16 to 29 percent, depending on the state). Thus, SBC's own analysis presented to the FCC shows that the cost disadvantage faced by a CLEC – essentially the same cost disadvantage discussed in my testimony – is substantial.

IV. THE DS0 IMPAIRMENT ANALYSIS TOOLS

A. Overview

Q. CAN YOU EXPLAIN IN MORE DETAIL HOW THE DS0 IMPAIRMENT TOOLS WORK?

A. Because UNE-L entry requires CLECs to connect ILEC loops to their own switches, the forward-looking cost of such connections is central to any analysis of the economic viability of UNE-L as an entry strategy to serve mass-market customers. The DS0 Impairment Analysis Tools described in this section of my testimony compute the loop-related impairment costs of providing service that would be incurred by an efficient CLEC using UNE-L that are *not* incurred by incumbents. Again, the analysis reflects the anticipated experience of a hypothetical, efficient CLEC seeking to broadly serve the mass market using UNE-L, rather than focusing on the business strategy of any particular competitive carrier.

Q. DO THE DS0 IMPAIRMENT TOOLS MAKE ASSUMPTIONS REGARDING THE CUSTOMER BASE OF AN EFFICIENT CLEC?

A. Yes, there are four important sets of assumptions. *First*, the DS0 Impairment Tools require an assumption about the market share of mass market customers a hypothetical efficient CLEC is expected to achieve. *Second*, it employs assumptions about how rapidly a CLEC will acquire that market share. *Third*, as discussed above, it assumes that transport costs will be defrayed by traffic for both enterprise and mass market customers, which has the effect of reducing backhaul transport costs included as impairment. *Fourth*, it requires estimates of customer "churn," *i.e.*, how long a hypothetical efficient CLEC can expect to keep a customer that it takes from the ILEC or another CLEC.

The DS0 Impairment Tools assume that an efficient hypothetical CLEC will benefit by serving both the enterprise and the mass-market customers, particularly in the area of self-provided transport. Self-provided transport cannot generally be justified solely by local voice demand, particularly if only mass-market customers are considered. If, in particular, data networking and long distance demand of enterprise customers cannot be addressed, there are limited instances where self-provided facilities are economically justifiable. The DS0 Impairment Analysis

Tools deploy self-provided facilities between large incumbent offices, and assume that these facilities are also utilized for mass-market backhaul. Thus, the calculations described here assume that the CLEC has an active enterprise business. If it did not, there would be no basis for hypothesizing the existence of self-provided fiber facilities between ILEC offices. Apportioning costs of node-to-node transport between mass market and enterprise customers is one of many ways that the Impairment Analysis Tools assume the efficient sharing of facilities used to serve mass market customers. In addition, where there are facility-based collocations, the DS0 backhaul infrastructure reflects the economies of shared use between mass market and enterprise customers.

Q. DO THE IMPAIRMENT TOOLS MAKE ANY ASSUMPTIONS ABOUT REVENUES GENERATED BY MASS MARKET CUSTOMERS?

A. No. As noted earlier, the DS0 Impairment Tools are designed only to quantify the absolute cost disadvantage experienced by a hypothetical efficient CLEC. Revenues are not relevant to this determination. Revenues would be highly relevant to an analysis of whether entry could be profitable, given the level of cost impairment calculated by the DS0 impairment tool, but that is not the subject of this testimony.

Q. CAN YOU DESCRIBE HOW THE DS0 IMPAIRMENT TOOL IS ORGANIZED?

A. The DS0 Impairment Tools are a collection of spreadsheet models that calculate the cost associated with connecting a customer's loop that terminates in an incumbent's central office to a CLEC's switch, and the associated customer acquisition costs.

One of the spreadsheets is called the Facility Ring Processor Tool, which determines the transport equipment and facilities that are required to efficiently connect collocation arrangements where unbundled loops are collected back to the CLEC switch. This tool essentially identifies the "backhaul" transport architecture that is needed to establish connectivity between a customer's loop that terminates in the ILEC's central office and a CLEC switch.

The output of the Facility Ring Processor is used as an input to the Transport Cost Analysis Tool. The Transport Cost Analysis Tool calculates the transport cost per DS3 as a function of the number of DS3s active at a Network Node, (a collocation that is connected to a fiber CLEC ring used to provide service to customers) based on the transport network determined by the Facility Ring Processor Tool. A DS3 is equal to 28 DS1s and provides for approximately 45 megabits per second of transport connectivity between two points.

Finally, the cost generated by the Transport Cost Analysis Tool is used as an input to the DS0 Impairment Analysis Tool. In addition to the transport costs, the DS0 Impairment Analysis Tool calculates costs associated with (1) digital loop carrier equipment, (2) collocation, including space and power, (3) interconnection arrangements at the collocation and the CLEC switching office, and (4) the cost of hot cuts. The total of these individual cost components at each wire center, divided by the number of lines a hypothetical efficient CLEC is anticipated to acquire in each wire center, yields the DS0 impairment per line for each wire center which can be and was for this proceeding aggregated into LATA results.

Q. DO THE DS0 IMPAIRMENT TOOLS CALCULATE THE TOTAL COSTS THAT AN EFFICIENT CLEC INCURS TO PROVIDE SERVICE TO A CUSTOMER?

A. No. It is important to emphasize that the DS0 Impairment Analysis Tools quantify only certain significant components of the cost disadvantage that would be faced by a hypothetical efficient CLEC using UNE-L, as compared to the ILEC. The tools do *not* calculate the total cost that would be experienced by a hypothetical efficient CLEC to provide service in Florida. For example, a CLEC's costs to acquire customers are appreciably higher than the costs of the monopoly ILEC, *e.g.*, TRO ¶ 471, particularly when the likelihood of price discounting is considered. Likewise, customer-servicing operations become most efficient only when they are used to serve very large customer groups. These factors are considered in connection with a "business case" analysis, as are the costs of the local switching and local transport. Any business case analysis must take into account the implications of providing local switching and transport to both enterprise and mass market customers, and the benefits the CLEC might realize from deploying fewer, larger switches relative to the ILEC.

B. Costs of Preparing Loops for Transport Out of the ILEC's Central Offices

Q. WHAT COSTS WOULD A CLEC INCUR TO PREPARE CUSTOMER LOOPS FOR TRANSPORT OUT OF THE ILEC CENTRAL OFFICES?

A. As noted earlier, there are two major components of the cost of preparing the signal, *i.e.*, (1) the cost of DLC and related equipment housed within the ILEC's central office (together with associated equipment at the CLEC's central office) used to digitize, concentrate and multiplex the signals on the CLEC's customers' loops, and (2) the CLEC's cost to obtain collocation space in the ILEC's central office in which to place the DLC and related equipment.

Q. COULD YOU DESCRIBE THE TYPES OF EQUIPMENT THAT THE CLEC MUST DEPLOY TO TRANSPORT THE CUSTOMER'S LOOP OUT OF THE ILEC'S CENTRAL OFFICE?

A. The three main types of equipment required by a CLEC to provide voice grade services using UNE-L are: (1) digital loop carrier (DLC) equipment, *i.e.*, the equipment necessary to digitize, multiplex and concentrate the traffic on individual voice grade loops at the originating ILEC central office, and the corresponding equipment at the location of the CLEC switch; (2) facility terminating equipment, *i.e.*, the cross-connection frames within the CLEC's collocation facilities in each ILEC central office on which the incoming voice grade loops terminate, the out-going transport facilities terminate, and equipment cross-connections are made; and (3) supporting infrastructure equipment, *e.g.*, the battery distribution fuse bay and test equipment, that the CLEC must install in order to make its collocated facilities operational.

1. DLC Infrastructure and Facility Terminating Equipment

Q. DOES THE COST FOR DLC EQUIPMENT VARY BY GEOGRAPHIC LOCATION?

A. Because DLC and related equipment can be purchased on the open market, its cost is the same regardless of the geographic area being served. However, the cost per line for providing such equipment varies significantly as a function of the number of customers actually served out of a given central office. For example, the cost of the collocation in an ILEC central office which the equipment is housed *does* vary by state and incumbent LEC (but typically does not vary by specific central office for comparable configurations). The DS0 Impairment Tools take these characteristics into account.

Q. HOW DOES THE DS0 IMPAIRMENT TOOL SIZE THE DLC AND SUPPORTING INFRASTRUCTURE EQUIPMENT?

A. At a high level, the DS0 Impairment Analysis Tool sizes the required DLC and supporting infrastructure based upon the number of lines the CLEC will serve out of a given central office. For each central office, the tool selects the lowest cost investment option from among three differently sized DLC alternatives. Because the frame space required to house the DLC modules and common units is also known, the DLC frame requirements are calculated for each central office, depending upon the DLC alternative selected.

Q. IS THIS SAME METHOD USED FOR SIZING FACILITY TERMINATING EQUIPMENT?

A. Yes. A similar approach is used to establish the number of cross-connection panels (and corresponding frames required) to provide a connection between the ILEC's MDF and the DLC equipment in the CLEC's collocation area for each line acquired in a central office by the CLEC. Each cross-connection panel has a known capacity of the number of voice lines that can terminate on the panel and each panel consumes a specific amount of frame space. Thus, by knowing the number of lines served (which determines the number of terminations), the number of required cross-connection panels can be calculated; and knowing the number of cross-connection panels determines the number of frames required.

Once the quantity of DLC equipment items required in an ILEC central office is determined (*i.e.*, DLC modules, common units and line cards, and termination panels and frames) – and the installed unit costs are calculated – the tools quantify the gross investment in the infrastructure investment needed for voice grade lines for each central office.

Q. IS THE INVESTMENT FOR DLC AND DLC EQUIPMENT SIZED FOR THE ULTIMATE CUSTOMER DEMAND THE EFFICIENT CLEC IS EXPECTED TO SERVE?

A. No, not for all the equipment. The DLC calculations incorporate the effects of a "ramp up" to reflect the fact that a CLEC would not acquire all of its customers instantaneously. The DLC common equipment is sized to meet ultimate demand (*i.e.*, the tools select the particular DLC alternative, and the corresponding cross-connect panels and frames, based on the *final* CLEC market share and line count assumed in the study It is economically prudent to initially install the type of DLC common units that will ultimately be required, rather than to start with smaller units and then replace them with larger ones over time).

However, due to the size and variable nature of line card investment, the tools incorporate the line card investment only as to the demand sufficient to serve the initial customers that the CLEC acquires. The line cards are installed in the collocated DLC equipment to actually terminate the unbundled loops into the equipment that will allow for the backhaul to the CLEC's switch. The tools incorporate a demand "ramp-up" profile that reflects that general experience of new market entry. That is, demand is initially zero, it increases to close to the ultimate level in the first few years and then remains flat for the remainder of the 10-year study period. The "ramp up" adjustment reflects the fact that common equipment that must be installed on day one is recovered over a smaller number of customers in the earlier period than in latter periods. In addition, it provides for a sizeable deferral of the line card investments to future periods.

Q. DO THE DS0 IMPAIRMENT TOOLS CALCULATE THE COSTS FOR ANCILLARY DC POWER EQUIPMENT REQUIRED TO OPERATE THE DLC EQUIPMENT?

A. Yes. Ancillary power equipment such DC power distribution equipment (sometimes referred to as a mini-battery distribution fuse bay or mini-BDFB) is also included in the support infrastructure investment. The CLEC's choice to install this equipment within its collocation arrangements allows the CLEC to further divide the power (*e.g.*, from one 60 amp circuit to two 30 amp circuits) and thereby gain flexibility and potentially minimize the need for subsequent (and costly) power augments as the CLEC's customer base increases. Therefore, the tools allow power distribution equipment to be added to the CLEC's collocation arrangement.

2. Collocation Costs

Q. WHERE DOES THE CLEC HOUSE THE DLC AND RELATED EQUIPMENT?

A. Before a CLEC can deploy the equipment required to prepare a loop for transport, it must rent collocation space from BellSouth, in each BellSouth central office where it seeks to provide service. The minimum amount of floor space, including a wide range of collocation elements such as interconnection arrangements based on the particular equipment needs described previously, are computed for each wire center in Florida.

Q. HOW ARE THESE COLLOCATION COSTS DETERMINED?

A. Collocation cost is principally a function of the amount of space, cross-connections and power required to provide the backhaul functionality. Because the number of frames required in a central office is developed in the analysis above, and because the average floor space required by a frame is known, the minimum amount of collocation space required in the central office can be calculated. In addition, since the type of DLC and the number of lines served are known, the DC power requirements at the office can be established.

Q. WHAT SOURCE DOES THE DS0 IMPAIRMENT TOOL RELY UPON FOR THE COLLOCATION RATES?

A. The source data for the DS0 Impairment Analysis Tools includes the prevailing collocation rates, by type of collocation, for BellSouth in Florida. The tools use current collocation charges for BellSouth for the following components, established by the Florida Public Service Commission, to build bottom-up collocation costs for each BellSouth central office that is used to provide service to mass-market customers in Florida:

- AC and DC power Cost
- Space occupancy
- Space construction
- Administrative charges
- DS0 connectivity
- Fiber Entrance Facilities

The DS0 Impairment Analysis Tools establishes the collocation costs for each affected central office by applying the state established costs to the equipment space, power and cross-connection requirements of the particular central office (calculated as described above). ILEC collocation charges, both recurring and non-recurring, are calculated on the basis of common collocation measurement units (*e.g.*, square feet of space, DC amps required, and 2-wire cross-connections), and then multiplied by the collocation rate per unit for each central office. If the ILEC requires a CLEC to purchase a minimum block of capacity (such as minimum costs for cage construction, power feeds and/or cable terminations), then the minimum block size just sufficient to address the equipment deployed in the specific office is determined and used in the cost calculation (because the number of required frames is known, as is the typical "footprint" of each frame, then the total square footage requirement can be determined).

For example, DC power charges are based upon the number and size (maximum capacity) of the power feeds and a per amp charge multiplied by the total amps. The DC power computation is based on the calculated power consumption of the required equipment and appropriate BellSouth tariff rates. The tools also include the capability to match the projected equipment power requirement to the basis upon which the incumbent charges are applied. For nodes, the DS0 backhaul is assigned only the proportion of the cost for DC power that is actually required by the equipment deployed. This approach is taken for nodes in that the service to enterprise customers is assumed to consume all existing power (or space, depending on the element being evaluated) not required for the DS0 infrastructure. For satellites, however, the primary purpose for establishing the collocation arrangement is to interconnect with unbundled loops. As such, for these central office collocations, the entire cost for an appropriate sized collocation arrangement (including the cost for DC power) is assigned to the DS0 backhaul.

Q. HOW DOES THE DS0 IMPAIRMENT TOOL DETERMINE THE AMOUNT OF COLLOCATION SPACE THAT IS NEEDED FOR THE EQUIPMENT?

A. The space occupancy and construction charges generally reflect minimum standard sizes and additional incremental blocks of space. Once the relevant charges are selected, the DS0 Impairment Analysis Tools use the actual square footage needed at that central office to compute the relevant costs. In order to account for all possible variations in ILEC tariff structures, the collocation section of the DS0 Impairment Analysis tool employs a series of logical formulas and lookup tables to select the appropriate collocation charges. The DS0 Impairment Tools calculates the total number of frames deployed (for DLC, termination equipment, and test equipment) and multiplies the total frame count by user-adjustable inputs for the floor space required by each of the different types of frames. The resulting square footage is the minimum amount of collocation space required to serve the anticipated efficient hypothetical CLEC market share at each ILEC central office. The tool effectively calculates the cost of collocation for space requirements running from zero to 300 square feet in one square foot increments, based upon the charges contained within BellSouth's approved collocation appendix and the increments of space where the charges change. The tool selects the minimum cost alternative given the amount of space required. For example, an ILEC may offer minimum initial purchases of 100, 200, and 300 square feet. Additional increments may be in 25 square foot increments. If 137 square feet were required in an office, the tool would check to determine if a 150 square foot cage (100 initial + two 25 square foot increments), a 200 square foot or a 300 square foot cage represents the lowest total cost. Regardless of the actual size, the lowest cost alternative is selected.

Q. HOW DOES THE DS0 IMPAIRMENT TOOL DETERMINE THE COLLOCATION CHARGES FOR LOOP CONNECTIVITY?

A. Connectivity charges are computed separately at the Voice Grade, DS1, or DS3 level or for fiber (depending on the type of transport deployed). The incumbent charges a CLEC to physically cross-connect transport facilities to the CLEC equipment in the collocation. This specific CLEC equipment allows the customer loop to be transported from the ILEC central office back to where the CLEC's switch is located. If leased transport is employed, the cross-connection is at the DS1 or DS3 level. The costs may also include the cost of a cable from the CLEC's collocation to an intermediate cross-connection frame in the ILEC space where the ILEC actually makes its cross-connection. In a similar manner, charges may apply (in addition to hot cut charges) to install and terminate wire cables between the CLEC collocation and an intermediate frame in ILEC space, where a second cable to the MDF is also terminated. These connections represent pre-wiring to the MDF necessary for the CLEC to access voice grade loops. Tariff charges (in addition to the hot cut charges) may apply to install and terminate cables between the CLEC collocation and an intermediate frame in ILEC space where the ILEC's cable (generally to the MDF (for loop) or a transport frame (for interoffice connections) terminate and a cross-connection is made. If tariff charges exist, they are utilized by the model. On the other hand, if the cables must be installed by an ILEC-certified contractor (*i.e.*, no tariff charge exists but a cost is incurred), the average installed cost of an appropriately sized cable is included.

Even when self-provided transport is employed, charges may apply to cross-connect fiber running from the CLEC facility in the street outside the office to the CLEC's collocation space within the central office (commonly referred to as a collocation Entrance Facility).

In general, connectivity charges apply based upon one or more of the following categories: per termination, per block of terminations or conductors, and/or per cable. The tool determines, based upon the number and type of backhaul facilities and the number of customer loops served (and inputs regarding maximum cable sizes), the quantity of each category needed based upon the conditions in each central office out of which the CLEC serves its customers. To the extent that an ILEC does not impose charges for a particular category, the unit price is zero.

Q. ARE THE COLLOCATION COSTS ADJUSTED TO ACCOUNT FOR THE PREVIOUSLY-DESCRIBED "RAMP UP" IN THE NUMBER OF CUSTOMERS AN EFFICIENT CLEC WOULD ULTIMATELY SERVE?

A. Yes. Like the DLC calculations described above, collocation costs associated with DC Power consumption are adjusted to incorporate the effect of a "ramp up" that reflects the fact that an efficient CLEC would not acquire all of its customers instantaneously. For example, power feed related charges are incurred immediately based on the maximum expected lines in service, and collocation space construction is based on the projected number of frames, rather than incrementally as each frame is added. Collocation costs which are not incurred on day one, but only as demand materializes, are treated similar to the line-card investment portion of total DLC investment as described above. In addition, collocation amperage-related charges (including HVAC) as well as DS0 termination charges are incurred only as actual demand materializes, and these receive the same treatment as DLC line cards.

C. Costs of Connecting to the CLEC's Switch (Backhaul Infrastructure)

1. Facility Ring Processor Tool

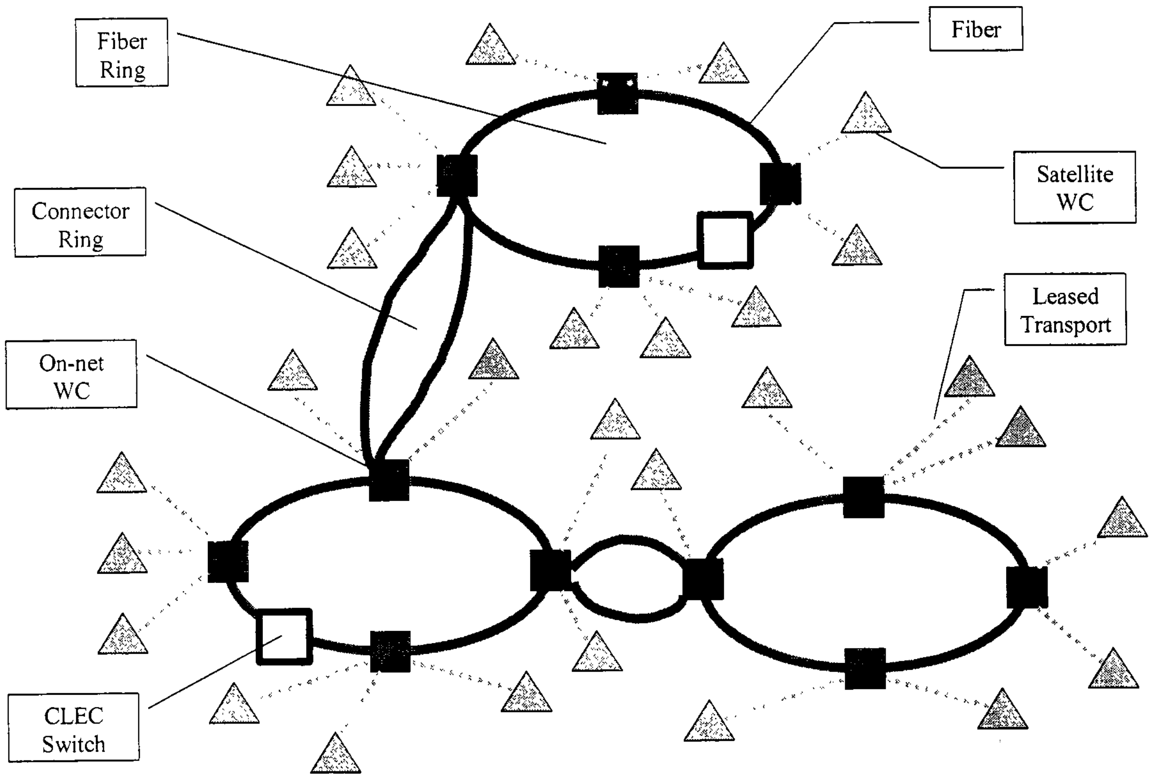
Q. HOW DO THE DS0 IMPAIRMENT TOOLS CALCULATE THE LEVEL OF COST IMPAIRMENT ASSOCIATED WITH BACKHAULING A CUSTOMER'S LOOP FROM AN ILEC CENTRAL OFFICE TO THE CLEC SWITCH?

A. The Facility Ring Processor Tool ("FRP") initially establishes a self-provided CLEC facility network that is linked to the largest ILEC central offices. The CLEC's collocations at those wire centers form the "nodes" of its transport facilities. Each remaining wire center (or satellite location) to be served is then "homed" to the closest node location that is on the CLEC network or "on-net". This process creates the basic backhaul transport network.

Q. CAN YOU PROVIDE A BRIEF DESCRIPTION OF THE FRP TOOL?

A. Yes. The following diagram displays the basic architecture the FRP Tool uses:

Figure 2



The facility architecture designed by the FRP Tool requires the designation of central offices in Florida as either Network Nodes (or "core" offices) or Satellite offices. The FRP Tool will connect each network node to another network node using self-provided facilities (nodes connected to at least two other nodes), and "Satellite offices" are connected to the closet node office using facilities leased from the incumbent. As a default mechanism, the FRP ranks all wire centers in Florida by number of lines, and then assigns wire centers in declining line count order as Network Nodes until 50 percent of lines have been assigned to nodes. Generally, this mechanism designates approximately 30 percent of the central offices as Network Nodes. However, the user can change the default mechanism or change the designation of any individual node.

Once the Network Node offices are identified, the FRP tool treats all of the incumbent central offices that are *not* designated as node office locations as Satellite offices. The tool separately assigns each Satellite location to its nearest Network Node location.

The FRP tool combines multiple individual physical rings to connect all of the Network Nodes, with each ring serving up to the user-specified maximum number of Network Nodes. The tool uses "ring connectors" to interconnect adjacent rings. An algorithm (written in Visual Basic for Applications code) determines the mix of rings and ring connectors.

Q. HOW DOES THE FRP CALCULATE THE MILEAGE BETWEEN NODES?

A. The FRP tool calculates both the airline mileage and the rectilinear mileage between Network Node-to-Network Node office pairings, based on the vertical and horizontal coordinates of the pair. The tool separately accumulates the airline and the rectilinear distances for all Network Node-to-Network Node connections required in a particular study area, and calculates the average airline miles per node and the average rectilinear miles per node within the study area. Similar calculations are made for the ring connector distances. Based on these distance calculations, the FRP tool determines where fiber signal "regenerators" (used to "boost" the fiber signal after a certain distance) are required (using the user-specified regenerator spacing input) for rings and ring connectors. Finally, the

FRP tool calculates a density zone distribution for the self-deployed facilities. The FRP tool estimates construction costs based on eight density zones in order to reflect the different cost characteristics of serving areas with different populations.

As noted earlier, the FRP tool also associates each Satellite location with its nearest Network Node location. The fundamental assumption in the FRP tool is that Satellite offices will connect to nodes using incumbent-supplied interoffice transport (*i.e.*, special access). Because BellSouth's charges for these types of connectivity are based upon airline distance, the FRP tool determines the closest Network Node to each particular Satellite office on the basis of airline distance. This distance is used subsequently to determine pricing of incumbent supplied transport (*i.e.*, interoffice transport) in the calculation of backhaul costs in the DS0 Impairment Analysis tool.

2. Transport Cost Analysis Tool

Q. HOW DO THE FACILITY RING PROCESSOR TOOL AND TRANSPORT COST ANALYSIS TOOL RELATE TO ONE ANOTHER?

A. The Facility Ring Processor Tool fundamentally calculates the mileage between the nodes that are incorporated into the CLEC's SONET rings and the mileage between the satellites that are then connected to their nearest node. Once this network of nodes is identified along with the corresponding mileage for these rings, and the mileage to connect the satellites back to the nodes, the Transport Cost Analysis Tool is then used to develop the costs of actually constructing or leasing that network.

Q. DOES THE TRANSPORT COST ANALYSIS TOOL DETERMINE THE COSTS TO CONNECT AND OPERATE THE NODES AND SATELLITES?

A. Yes. Satellite-to-node connections are leased facilities from the ILEC and their cost is a function of the established airline distance between those locations which is established by the FRP tool. The node-to-node connections are based on a ring architecture that used SONET rings self-deployed by the CLEC to connect all CLEC node offices. The mileage of fiber that is calculated for a particular SONET ring in the FRP is developed using an algorithm that minimizes the amount of fiber deployed but also accounts for the engineering reality that SONET rings are limited in the number of nodes that can be placed on a particular physical ring and the maximum distance that can exist between any two nodes. The details of this calculation can be found in the Technical Appendix. Once the SONET ring fiber mileage (referred to as "conductor mileage") is established in the FRP, the facility costs are calculated by the Transport Cost Analysis Tool in much the same manner as occurs in the TELRIC studies for ILEC UNE transport. For node (or on-net) offices, the backhaul cost is the self-provided network cost only which is allocated to a typical DS1 or DS3 that would be served on this self-provided network. It is important to understand that this allocation is another of the conservative assumptions made within the model in that the implicit assumption is that the SONET rings built between the nodes will be used for more than just the backhaul of customer loops. As such, by calculating the average cost of a DS1 or DS3 on the self-provided network, this cost will be attributed to the backhaul of customer loops terminating at node collocations assuming that other DS1s or DS3s on the same self-provided network are bearing their share of the network's cost from other enterprise applications. The number and size (DS1 or DS3) of transport required is based on the actual lines being served out of a node collocation in the same manner as the calculations are performed for a satellite central office.

After the tool has completed the cost development for the "node" locations in the study area, it is necessary to develop the transport cost for "satellite" locations. As noted previously, satellite locations are central offices where the CLEC will need to obtain the customer's unbundled loop, but will not have a fiber network extended to the particular office. As such, the tool must determine the unit cost for DS1 and DS3 leased transport for the connections from the satellite locations, which are not on the CLEC SONET fiber rings, to the nearest node locations, which is on the CLEC SONET fiber ring. The calculation is based on the shortest distance between a satellite and the closest node to that satellite (referred to in tariffs as interoffice transport or special access as "airline mileage"). This airline mileage between the node and satellite central offices is then used to calculate the DS1 or DS3 transport cost using the relevant BellSouth rates for a DS1 connection and a DS3 connection. The actual selection of whether a DS1 connection or a DS3 connection is used is based on the number of unbundled loops that the CLEC expects to serve within a central office. There are specific calculations that take account of the functionality of the DLC that are also used to identify the specific number and size (DS1 or DS3) of connections that are required between the DLC at the satellite central office and the nearest node, but the underlying driver of this determination is the number of lines that the CLEC anticipates serving at the satellite central office. Based on the number and size (DS1 or DS3) of the connections and the mileage between the satellite central office and nearest node central office, the total transport cost calculation for this pair of offices can be made. This same set of calculations is repeated for each satellite central office contained within the study area. For satellite locations, the backhaul cost is the combination of the leased facility cost to the node location and the self-provided transport from the node location to the CLEC switch.

When special access tariffs are used to determine the pricing of such facilities, it may also require knowledge of the specific offices connected, in order to determine whether price cap or pricing flexibility tariffs apply. All these preceding factors are taken into account by the tools' calculations.

Q. EARLIER YOU BRIEFLY DISCUSSED THAT THE ALLOCATION OF THE COSTS FOR THE SONET NETWORKS IS PERFORMED BASED ON THE EXISTENCE OF OTHER SERVICES SHARING THE SAME NETWORK. COULD YOU DESCRIBE THIS ALLOCATION IN MORE DETAIL?

A. Yes. As I noted earlier, such a CLEC self-provided SONET transport infrastructure would rarely if ever be built to handle exclusively transport traffic generated only by mass market customers. In recognition of this fact, the Transport Cost Analysis Tool assumes that there would also be significant enterprise customer traffic moving between Network Node locations on the transport ring.

The Transport Cost Analysis Tool gives effect to this assumption by employing a "utilization" or "fill" factor that effectively allocates the total costs of the self-provided SONET network structure and optical equipment required by the OC-48 ring built to connect all Network Nodes in a study area as follows:

$$\text{Average Cost of Back-Haul per DS3 per Node} = \frac{\text{Total Cost of OC-48 Network}}{\text{48 DS3s per OC-48} * 80\%}$$

Q. HOW WOULD YOUR UTILIZATION BE AFFECTED IF MORE NODES WERE ADDED TO THE NETWORK?

A. Quite simply, the addition of more nodes to the SONET network would cause the utilization level to drop. The precise mechanics of this relationship have not been modeled because it is not possible to know all of the enterprise demand that would exist between the nodes on the SONET network. However, utilization is not a static assumption. If additional nodes were added to the network, these additional nodes on the same SONET rings cause the following to occur: (1) Increase the average cost of back-haul transport per DS3 per mile because more miles of transport have been added to the SONET network to incorporate the additional node; and (2) Decrease the anticipated average utilization of the ring because you would generally be adding nodes with a lower anticipated demand.

D. Costs of Transferring Customers from the ILEC to CLEC Network (Hot Cuts)

Q. THE THIRD MAJOR COMPONENT OF ABSOLUTE CLEC COST DISADVANTAGE YOU IDENTIFIED EARLIER INVOLVES THE COSTS OF TRANSFERRING CUSTOMERS. CAN YOU DESCRIBE HOW THESE COSTS ARE CALCULATED?

A. Yes. The third major component of the CLEC's economic impairment is the costs associated with transitioning customer loops from the ILEC to a CLEC using UNE-L. This customer transfer is referred to in the industry as a "hot cut." The largest component of this cost consists of the charge(s) that BellSouth assesses to transfer each customer's loop from its network facilities to the CLEC's collocation (*i.e.*, the "hot cut" charge). The hot cut cost assessed by BellSouth is a nonrecurring per-line charge imposed on CLECs so they can connect ILEC-supplied loops to CLEC-owned switches. The hot cut charge may include charges that vary per order and per line on an order (or on a first and additional line basis), with the number of the lines converted for a unique retail customer address typically being the determining factor. As input to the impairment analysis, weighted average costs per line are developed based upon the profile of single and multi-line mass-market customer locations. Separate calculations are made for consumer and business locations.

For Florida, BellSouth, for example, today exacts a nonrecurring charge of $83.11, assuming that a coordinated hot cut is employed for a single line order. As the FCC has recognized, charges such as these can "contribute to a significant barrier to entry." *See* TRO, ¶470.

Q. DO HOT CUT COSTS CONSIST ONLY OF THE ILEC IMPOSED COSTS?

A. No. Additional hot cut costs may also include the cost of work that must be performed *internally* by the CLEC in order to accomplish this transfer. (*See, TRO, ¶470.* The FCC recognizes not only economic impairment arising from the hot cut process, but also operational issues. *See, TRO,* ¶465, which discusses operational impairments associated with hot cuts.) Therefore, the DS0 Impairment Analysis tool can include the internal CLEC's costs to manage hot cuts in addition to the charges assessed by the incumbent. The average hot cut costs per month are a function of customer churn, the calculated "per-line" hot cut charges and the internal costs of the CLEC. If customers that choose a CLEC remained that CLEC's customer forever, the CLEC would incur only a single hot cut cost for each customer that it adds to its network. However, customer behavior in a competitive mass-market would be characterized by significant churn. For example, the default churn rate employed is 4.6 percent per month. *See* Banc of America Securities, April 30, 2003, page 10. For this reason, the calculation of the hot cut charges per customer line must be higher to reflect the effects of this churn on total hot cut activity. (*See, e.g.*, TRO ¶ 471: "The evidence in the record demonstrates that customer churn exacerbates the operational and economic barriers to serving mass market customers.") This is accounted for in the tool by the combination of the CLEC's net growth in lines and its disconnect rate. Thus if the CLEC grows its overall number of lines by five percent in a year, and it also anticipates a five percent disconnect rate, its hot cut expenses in that year would be the hot cuts associated with the five percent net line growth *plus* the hot cuts associated with replacing the five percent of lines that would otherwise be lost, *i.e.*, a total of 10 percent of the lines in that year would experience a hot cut.

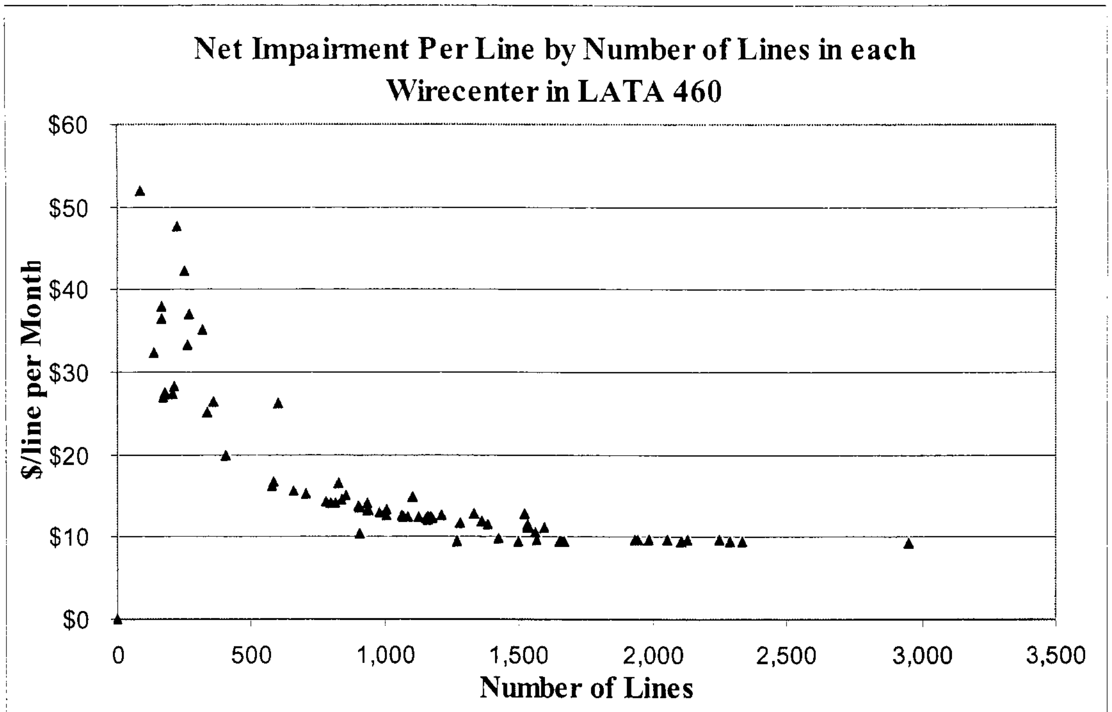
V. TOTAL CLEC DS0 COST DISADVANTAGE

Q. PLEASE SUMMARIZE THE DS0 COST DISADVANTAGE YOU HAVE DEVELOPED FROM THE DS0 IMPAIRMENT ANALYSIS TOOLS.

A. As indicated in the previous discussion, the DS0 Impairment Analysis Tools rely upon specified inputs for each of the calculations leading to the total cost disadvantage faced by a CLEC entering the mass market. Overall, these inputs are conservative because (1) they focus only on major components of impairment and ignore other sources of impairment, (2) assume enterprise customers will defray a significant proportion of the costs of back-haul transport and collocation, and (3) ignore many of the costs that a hypothetical efficient CLEC would spend to effectuate customer acquisition.

The results of my study, by geographic market, are summarized in the tables set forth below. Market-specific details, including inputs, are shown on Exhibit SET-2.

The lowest average impairment for any Florida LATA is $12.79 (for LATA 460). The following graph depicts the total impairment per line for each wirecenter within that LATA. It demonstrates that the impairment increases rapidly as the number of lines served in an office declines.



Based on the average impairment for LATA 460 (the largest LATA in Florida) my analysis shows that CLECs would experience an average cost disadvantage of $12.79 if UNE-L had to be used to serve mass-market customers.

The conclusion is inescapable that cost impairment in the form of an absolute cost disadvantage of this magnitude to the CLEC – and corresponding cost umbrella for the ILEC – constitutes a clear barrier to entry.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

INTRODUCTION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven E. Turner. My business address is Kaleo Consulting, 2031 Gold Leaf Parkway, Canton, Georgia 30114.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS DOCKET?

A. Yes. I filed direct testimony on December 4, 2003.

Q. WHY ARE YOU FILING SUPPLEMENTAL DIRECT TESTIMONY?

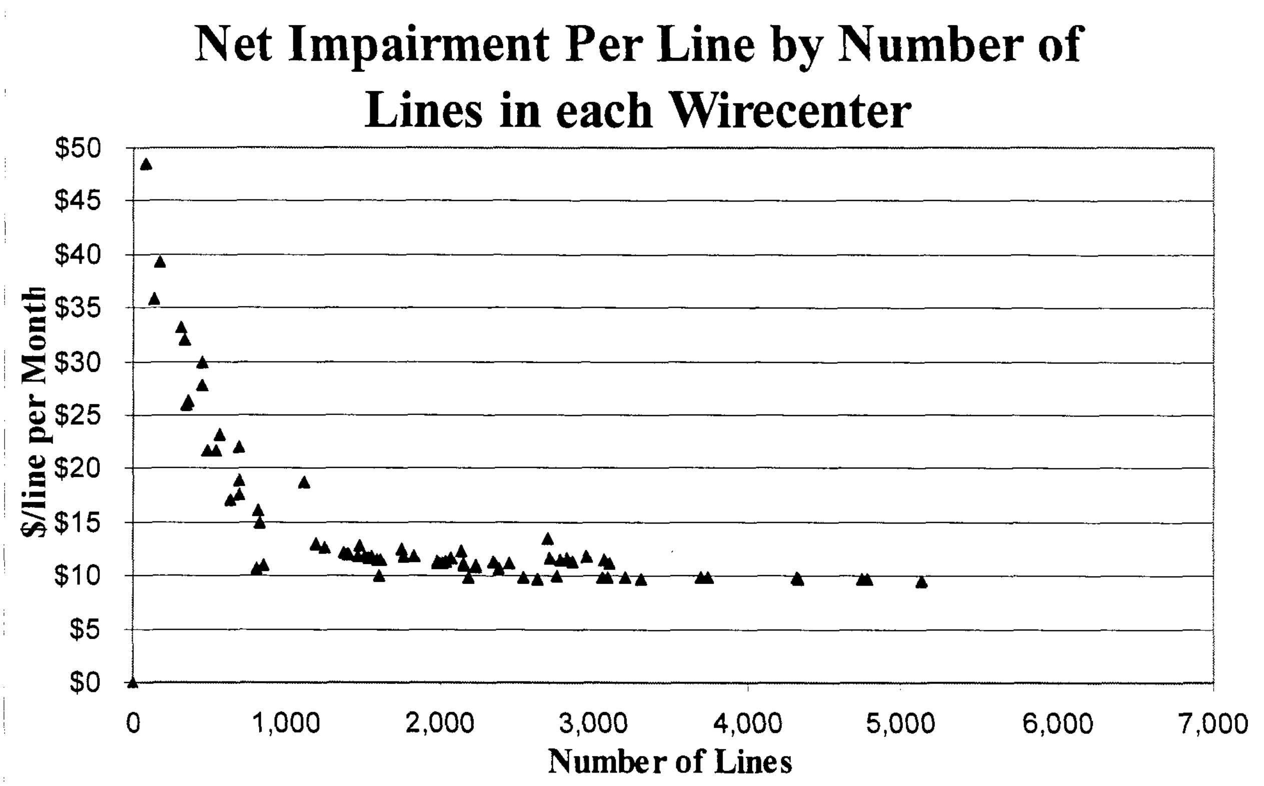
A. Since the filing of my direct testimony, I have identified certain errors in the DSO Impairment tool. In order to correct these errors, on behalf of AT&T, I am filing revised DSO Impairment results. The revised results are attached to my supplemental testimony as Revised Exhibit SET-2, which is electronic format on a CD-ROM.

Q. ARE THE CORRECTIONS TO THE DSO IMPAIRMENT TOOL SET FORTH IN DETAIL ANYWHERE?

A. Yes. Exhibit SET-5, which attached to my supplemental testimony, details all of the changes and corrections that were made to the DSO Impairment Tool and are reflected in the market specific results contained in Revised Exhibit SET-2.

Q. ARE THERE ANY OTHER CHANGES TO YOUR DIRECT TESIMONY AS A RESULT OF THE CORRECTIONS TO THE DSO IMPAIRMENT TOOL?

A. Yes. Page 17, Line 17 should be revised from $22.94 to $19.74. Page 17, Line 17 should be revised from $12.79 to $11.86. Page 44, Line 8 should be revised from $12.79 to $11.86. Page 45, Line 4 should be revised from $12.79 to $11.86. Finally, the chart on Page 45 should also be revised to that provided below.



Q. ARE THERE ANY OTHER CHANGES THAT YOU NEED TO INDICATE TO THE COMMISSION?

A. Yes. Exhibit SET-2 to my direct testimony contained the Technical Appendix, the electronic version of the DS0 Impairment Analysis Tools, the results by LATA for BellSouth in Florida, the detailed runs of each LATA for BellSouth in Florida, and the Input Portfolio on a CD-ROM. The results, the model itself, and the Technical Appendix have changed based on the foregoing. As such, a

Revised Exhibit SET-2 is attached to my supplemental testimony that replaces the previous CD-ROM.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

I. INTRODUCTION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven E. Turner. My business address is Kaleo Consulting, 2031 Gold Leaf Parkway, Canton, Georgia 30114.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS DOCKET?

A. Yes. I filed Direct Testimony on December 4, 2003 and Supplemental Direct Testimony on December 22, 2003.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q. WHY ARE YOU FILING SURREBUTTAL TESTIMONY?

A. I have been asked by AT&T Communications of the Southern States, LLC ("AT&T") to respond to the Rebuttal Testimony of Dr. Debra J. Aron. Mr. W. Keith Milner. and Mr. John A. Ruscilli on behalf of BellSouth Telecommunications Inc. ("BellSouth"). These three witnesses have filed limited rebuttal to my Direct Testimony regarding the AT&T DS0 Impairment Analysis Tools. In my Direct Testimony, I demonstrated that an efficient CLEC would expect to incur an absolute cost disadvantage to BellSouth for providing facilities-based switched service of between $11.86 and $12.79 per month depending on the LATA within BellSouth territory. In short, my Direct Testimony supports the conclusion that hypothetical efficient CLECs face substantial, absolute cost disadvantages relative to the ILEC in each geographic market in which BellSouth has elected to challenge the FCC's national finding of impairment.

Q. HAVE BELLSOUTH'S WITNESSES OFFERED ANY EVIDENCE THAT YOUR EVALUATION OF THE COST DISADVANTAGE FACED BY CLECS IN FLORIDA DOES NOT EXIST?

A. Absolutely not. Dr. Aron simply attempts to dismiss my analysis as being "useless."[1] It is not surprising that Dr. Aron would attempt to be so trivializing of my testimony in that it is not possible for her to legitimately rebut the clear cost disadvantage CLECs face in Florida. Nonetheless, in the testimony that follows, I address her claims that this Commission should ignore these cost disadvantages and I show that the cost of impairment is a vital consideration that this Commission should evaluate in its determination regarding access to unbundled cost-based switching for CLECs in Florida.

Mr. Milner provides four high level criticisms of my impairment cost development.[2] My testimony demonstrates that these criticisms do not in any way undermine the validity of the analysis that I have performed or the resulting impairment cost that I document. In fact, most of his criticisms have nothing to do with developing the cost of impairment at all.

Finally, Mr. Ruscilli raises only one point related to the cost for hot cuts that completely misses the point of the cost calculation that I have performed.[3] In short, Mr. Ruscilli has offered no rebuttal whatsoever to the conclusion that I

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[1] BellSouth Telecommunications, Inc., Rebuttal Testimony of Dr. Debra J. Aron, Before the Florida Public Service Commission, Docket No. 030851-TP, January 7, 2004, p. 29. (Hereafter referred to as "Aron Rebuttal Testimony."

[2] BellSouth Telecommunications, Inc., Rebuttal Testimony of W. Keith Milner, Before the Florida Public Service Commission, Docket No. 030851-TP, January 7, 2004, pp. 13-14. (Hereafter referred to as "Milner Rebuttal Testimony."

[3] BellSouth Telecommunications, Inc., Rebuttal Testimony of John A. Ruscilli, Before the Florida Public Service Commission, Docket No. 030851-TP, January 7, 2004, pp. 33-34. (Hereafter referred to as "Ruscilli Rebuttal Testimony."

reach that CLECs face systematic cost disadvantages to BellSouth that range between $11.86 to $12.79 per month depending on the LATA within BellSouth territory. This cost disadvantage is real and is a critical concern that this Commission should consider in its evaluation of whether to maintain BellSouth's requirement to provide access to unbundled switching in Florida.

III. RESPONSE TO DR. DEBRA J. ARON

Q. DR. ARON'S SOLE REBUTTAL TO YOUR TESTIMONY IS THAT YOUR ANALYSIS IS "USELESS" BECAUSE YOUR APPROACH TO IMPAIRMENT WAS "CONSIDERED AND EXPLICITLY REJECTED BY THE FCC." COULD YOU PLEASE RESPOND TO HER ASSERTION?

A. Dr. Aron's testimony is simply wrong, because my analysis is directly responsive to the FCC's express directions in the TRO.

The TRO (¶ 520) provides that a state commission "*must* consider *all factors affecting the costs* faced by a competitor providing local exchange service to the mass market." (emphasis added) And critically in this regard, the TRO (*id.*) found that "these costs would likely include (among others) the recurring and non-recurring charges paid to the incumbent LEC for . . . collocations, transport, hot cuts and other services and equipment necessary to access the [mass market customer's] loop, the cost of collocation and equipment necessary to serve local exchange customers in a wire center, taking into consideration an entrant's likely market share, the scale economies inherent to serving a wire center, and the line density of the wire center; the cost of backhauling the local traffic to the competitor's switch; other costs associated with transferring the customer's service over to the competitor; the impact of churn on the cost of customer acquisitions; the cost of maintenance, operations, and other administrative activities; and the competitors' capital costs." Moreover, the FCC specifically held that "*State commissions should pay particular attention to the impact of migration and backhaul costs on competitors' ability to serve the market.*" *Id.* (emphasis added) That is exactly what my analysis does; it specifically focuses on the unique migration and backhaul costs that CLECs incur when they attempt to serve mass market customers without access to ILEC switching. Accordingly, my analysis is not at all "useless"; rather, it is directly responsive to the FCC's requirements.

My analysis also provides critical background data for the Commission's review of the ILECs' trigger claims, because it demonstrates that CLECs face a very sizable economic impairment (from $11.86 to $12.79 per line per month) when they attempt to serve the mass market. This is especially true when the average impairment cost is compared to the reasonably anticipated "typical" revenues that can be earned from serving "average" mass market customers. TRO ¶ 472. Accordingly, in order to obtain economically rational results from the "short form" trigger review, the Commission should establish criteria for identifying proposed trigger firms that assure those firms' actual performance in the market is persuasive evidence that they have overcome the significant economic impairment CLECs face when attempting to serve average mass market customers.

IV. RESPONSE TO W. KEITH MILNER

Q. MR. MILNER BELIEVES THAT YOUR IMPAIRMENT COST ANALYSIS IS WRONG BECAUSE OF HIS BELIEF THAT "MANY OF THE COSTS MR. TURNER ATTRIBUTES TO CLEC OPERATIONS BUT NOT TO ILEC OPERATIONS, ARE IN FACT INCURRED BY ILECS."[4] PLEASE RESPOND TO HIS ASSERTION.

A. This assertion covers two of the four criticisms that he makes of the cost analysis that I perform. If I understand Mr. Milner correctly, he believes that I should have somehow included BellSouth's customer migration costs back from the CLEC to BellSouth in developing the cost of impairment that is faced by CLECs. This is illogical. The question that my testimony and the AT&T DS0 Impairment Analysis Tools answers, in response to the TRO's requirements, is the cost disadvantage that the CLEC has in "backhauling" loops that appear in BellSouth's disparate central offices to the CLEC's own switch as compared to the cost that BellSouth incurs in connecting the same loops to its switch that is located normally on the same floor of the central office where the loops terminate. The criticisms that Mr. Milner raise regarding my failure to include BellSouth's costs for switching a customer back to its network do not make sense in light of the analysis that I perform.

Q. COULD YOU PROVIDE MORE DETAIL REGARDING HIS CONCERNS THAT YOU DID NOT INCLUDE BELLSOUTH'S "HOT CUT" COSTS?

A. Mr. Milner notes the following:

> While Mr. Turner is correct that the CLEC will incur costs associated with the hot cut to disconnect the loop serving the customer from BellSouth's switch and then re-connect the loop to the CLEC's switch, he ignores the fact that in cases where a customer chooses to return to the ILEC, these same work steps

[4] Milner Rebuttal Testimony, p. 13.

> (disconnection of the serving loop from the CLEC's switch and re-connecting the loop to the ILEC's switch) will likewise be incurred by the ILEC.[5]

Here is the problem with Mr. Milner's logic. *When the customer is migrated from BellSouth's network to the CLEC, the CLEC pays BellSouth for all of the cost that BellSouth incurs to make this migration plus the CLEC pays for its own costs as well.* However, BellSouth only incurs *some* of these costs for some of their customers – those won back from a CLEC. Yet CLECs must incur these costs for *every single customer* they acquire.

Q. WHAT IS THE OTHER COST THAT FALLS INTO THIS SAME CATEGORY?

A. Mr. Milner believes that Local Number Portability cost falls into this same category. This is not the case. Mr. Milner's notes the following:

> Mr. Turner attributes costs to perform Local Number Porting ("LNP") activities to the CLEC but does not likewise attribute those same costs to ILECs in cases where the customer chooses to return to the ILEC. In other words, the work steps required to "port" the telephone number from BellSouth's network to the CLEC's network are required to "port" the telephone number from the CLEC's network to BellSouth's network.[6]

First of all, Mr. Milner is mistaken regarding the inclusion of Local Number Porting activities or costs in the specific run made for Florida. The DS0 Impairment Analysis that was run for Florida did not include *any* costs for Local Number Portability making the fundamental premise of Mr. Milner's criticism inaccurate.

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5 *Id.*

6 *Id.*

Q. MR. MILNER TAKES ISSUE WITH THE COLLOCATION COSTS THAT ARE INCLUDED IN THE DS0 IMPAIRMENT ANALYSIS TOOLS. COULD YOU PLEASE RESPOND?

A. Yes. First of all, Mr. Milner asserts that the DS0 Impairment Analysis Tools has used the "most expensive type of collocation" available.[7] Mr. Milner does not even identify the type of collocation that the DS0 Impairment Analysis Tool uses (Physical Caged Collocation). Moreover, he has provided absolutely no evidence that this choice leads to higher costs for collocation. There are numerous elements associated with collocation such as space preparation, security, land and building space, power, and interconnection arrangements. All of these elements come into play in one manner or another regardless of the form of collocation that is selected. From a modeling standpoint, Physical Caged Collocation was used because it is straightforward to model and representative of what CLECs routinely use for collocation within BellSouth central offices. Mr. Milner has not even identified what he believes would be the lower cost collocation alternatives or how he believes that it would result in lower costs. Therefore, it is difficult to provide a quantifiable reply other than to say that the costs that have been incorporated into the DS0 Impairment Analysis Tools for collocation are consistent with what CLECs would expect to incur. Notably, the DSO Impairment Analysis Tools do not assess all of the costs of a collocation to serving the mass market. Indeed, one of the express purposes of these tools is to *minimize* the assigned costs for collocation by, for example, looking only at the exact "footprint" of the space needed to provide the necessary functionality to

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[7] Milner Rebuttal Testimony, p. 14.

backhaul mass market loops. Further, if BellSouth believes that the floor space included in the cost development should be treated more in the manner of Cageless Collocation (for example), the breakage assumption can be changed in the model so that only the space needed just for backhaul will be included in the satellite offices. This would give an approximation of the cost for Cageless Collocation, but it is minimally different that what has already been evaluated within my filing of the DS0 Impairment Analysis Tools for Florida.

Q. DO YOU BELIEVE THAT VOICE GRADE EELS PRESENT A VIABLE ALTERNATIVE FOR CLECS TO PROVIDE SERVICE TO CUSTOMERS IN FLORIDA?

A. Once again, Mr. Milner has made assertions in his testimony without any support whatsoever. I have performed evaluations regarding the use of EELs for Voice Grade applications and I have never seen, from a cost standpoint, any EEL arrangement for voice grade service that is economically viable. The DS0 Impairment Analysis Tool gives a hypothetical large efficient CLEC every opportunity to achieve some scale economies through the use of leased backhaul and digital loop carrier equipment to make the assigned costs as low as possible. Mr. Milner appears to believe that assuming much lower volumes and using EELs instead of concentrated transport would produce a lower cost. In my experience, this is simply not the case. Further, Mr. Milner has offered no evidence on his own part to provide that EELs would lower the cost of impairment below that which I have calculated using the DS0 Impairment Analysis Tools.

Q. MR. MILNER CLAIMS THAT THE FACILITY RING PROCESSOR TOOL USED IN YOUR ANALYSIS "DOES NOT REDUCE THE TOTAL FACILITIES COSTS BY THE AMOUNT OF THE CAPACITY REQUIRED TO HANDLE THAT PORTION OF THE CAPACITY USED THAT IS NOT FOR 'BACKHAULING' LOOPS AND IS NOT USED FOR 'ENTERPRISE' CUSTOMER TRAFFIC." COULD YOU PLEASE RESPOND TO HIS CRITICISM?

A. Yes. Mr. Milner seems to have picked up on an explanation provided in my testimony and the documentation of the DS0 Impairment Analysis Tools without really evaluating what is happening within the cost model. First of all, to simply get the facts about the DS0 Impairment Analysis Tools straight, Mr. Milner is incorrect regarding this alleged error in the Facility Ring Processor ("FRP"). The FRP establishes the least cost ring architecture among the wire centers that make up the CLEC's self-provided network. It does not address any of the cost calculations regarding the allocation of transport cost to backhaul, enterprise traffic, or other uses such as interconnection. Instead, these calculations are contained within the Transport Impairment Analysis Tool.

In fact, if Mr. Milner had reviewed the calculations in the latter tool, he would have found that the cost per DS3 is developed by assuming an 80 percent fill factor on the transport. My testimony and the supporting documentation references the use of the transport network for circuits such as for enterprise traffic as an example of why we assumed such a *high* fill factor. However, other reasons justify why the fill level would be this high, including its use for interconnection facilities. Nonetheless, from a modeling standpoint, the DS3 cost per circuit that is applied to backhaul is developed using an 80 percent fill factor, regardless of whether the other circuits that contribute to that high level of fill are related to, whether they be enterprise traffic, interconnection, or any other application. Mr. Milner has simply picked an issue with the documentation. However, the model calculates the cost for backhaul in an extremely conservative and appropriate manner – the details of which contradict Mr. Milner's criticism and the details of which Mr. Milner has found no issue with. One of the conservative assumptions in the model is that the CLEC will use self-provided transport rather than purchase special access from the incumbent. This assumption lowers the cost for transport. In short, Mr. Milner's criticism is unfounded and does not change the cost of impairment developed in the DS0 Impairment Analysis Tool.

V. RESPONSE TO JOHN A. RUSCILLI

Q. MR. RUSCILLI'S ONLY REBUTTAL IS THAT IF AT&T BELIEVES THE COST FOR A HOT CUT IS TOO HIGH, AT&T SHOULD HAVE RAISED THIS IN A COST PROCEEDING – NOT NOW IN THE TRO PROCEEDING.[8] WHAT IS YOUR RESPONSE?

A. Mr. Ruscilli has missed the point of my testimony. While I do not believe the cost for the hot cut is appropriate. my testimony is not criticizing BellSouth for the absolute level of the cost of the hot cut – that should be taken up in a cost proceeding. Instead, my testimony simply notes that the cost of the hot cut is a critical driver in the overall cost of impairment that CLECs face in Florida that cannot be ignored – a cost that contributes significantly to the overall cost of impairment for CLECs in Florida. Mr. Ruscilli's rebuttal testimony that AT&T should have complained about the level of this cost in another proceeding does not change what the cost is now. The hot cut cost that exists in Florida is what

[8] Ruscilli Rebuttal Testimony, pp. 33-34.

CLECs will be faced with and this cost leads to a large portion of the overall cost of impairment faced by CLECs in Florida. It is simply a fact that Mr. Ruscilli's testimony does nothing to change.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

(Transcript continues in sequence with Volume 21.)

STATE OF FLORIDA)

: CERTIFICATE OF REPORTER

COUNTY OF LEON)

I, JANE FAUROT, RPR, Chief, Office of Hearing Reporter Services, FPSC Division of Commission Clerk and Administrative Services, do hereby certify that the foregoing proceeding was heard at the time and place herein stated.

IT IS FURTHER CERTIFIED that I stenographically reported the said proceedings; that the same has been transcribed under my direct supervision; and that this transcript constitutes a true transcription of my notes of said proceedings.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties' attorney or counsel connected with the action, nor am I financially interested in the action.

DATED THIS 1st day of March, 2004.

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