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March 1, 2004

VIA HAND DELIVERY

Hon. Deborah Taylor Tate, Chairman
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, TN 37238

Re: *Implementation of the Federal Communications Commission's Triennial Review Order (Nine-month Proceeding) (Loop & Transport)*
Docket No. 03-00527

Dear Chairman Tate:

Enclosed are the original and fourteen copies of the non-proprietary direct testimony on behalf of BellSouth from the following witnesses:

Dr. Andy Banerjee
A. Wayne Gray
Shelley Padgett

Proprietary versions of Dr. Banerjee's and Ms. Padgett's testimony are being submitted under separate cover, subject to the terms of the Protective Order entered in this docket. Copies of the enclosed are being provided to counsel of record.

Very truly yours,

Guy M. Hicks

GMH:ch

CERTIFICATE OF SERVICE

I hereby certify that on March 1, 2004, a copy of the foregoing document was served on the parties of record, via the method indicated:

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PUBLIC VERSION

ON BEHALF OF BELLSOUTH TELECOMMUNICATIONS, INC.

DIRECT TESTIMONY OF ANIRUDDHA (ANDY) BANERJEE, Ph.D.

BEFORE THE TENNESSEE PUBLIC SERVICE COMMISSION

DOCKET NO. 03-00527

MARCH 1, 2004

I. INTRODUCTION AND SUMMARY

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

A My name is Aniruddha (Andy) Banerjee I am a Vice President at NERA Economic Consulting located at One Main Street, Cambridge, Massachusetts 02142

Q. PLEASE DESCRIBE YOUR EDUCATIONAL, PROFESSIONAL, AND BUSINESS EXPERIENCE.

A I earned a Bachelor of Arts (with Honors) and a Master of Arts degree in Economics from the University of Delhi, India, in 1975 and 1977 respectively I received a Ph D in Agricultural Economics from the Pennsylvania State University in 1985, and subsequently served there as an Assistant Professor of Economics I have over eight years of experience teaching undergraduate and graduate courses in various fields of Economics, and have conducted academic research that has led to several publications and conference presentations

Since 1988, I have held various positions in the telecommunications industry Prior to my present position, I have been an economist in the Market Analysis & Forecasting Division at AT&T Communications in Bedminster, NJ, a Member of Technical Staff at Bell Communications Research in Livingston, NJ, and a Research Economist at BellSouth Telecommunications in Birmingham, AL In these positions, I was responsible for conducting economic and market analysis, building quantitative demand models for telecommunications services, developing economic positions and strategies, and providing

expert testimony support on regulatory economic matters

In my present capacity, I provide quantitative and regulatory economic analysis for telecommunications industry clients principally on matters of concern to local exchange carriers I have testified before state and federal regulators on interconnection and unbundling, universal service, local and long distance competition, efficient rate rebalancing, and inter-carrier compensation I have participated in several proceedings on antitrust damage issues, price and alternative regulation, and telephone company mergers I have published several papers and made several presentations at international forums on topics such as telephone service quality performance, mobile telephony growth, telecommunications privatization, and Internet economics My curriculum vita is attached to this testimony as Exhibit AXB-1

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A In my Direct Testimony, I present evidence based on the potential deployment test for determining whether or not competitive local exchange carriers ("CLECs") are impaired without access to an incumbent local exchange carrier's ("ILEC's") unbundled network elements ("UNEs") This test is prescribed by the Federal Communications Commission ("FCC") for circumstances in which specific "triggers"—signifying actual competitive availability of the desired UNEs—do not exist

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A Upon applying the potential deployment test to loops and transport facilities in BellSouth's service territory in Tennessee, I find that CLECs are not impaired without access to BellSouth's unbundled loops in 225 customer locations, and CLECs are not impaired without access to BellSouth's transport facilities on 21 inter-office transport routes

Q. ARE THESE CUSTOMER LOCATIONS AND ROUTES INCREMENTAL TO THOSE ALREADY INCLUDED IN THE TRIGGERS ANALYSIS?

A The routes identified in the potential deployment test are incremental to those included in the triggers analysis However, that need not be the case for customer locations Because of differences in building-address conventions, it is possible that—despite best efforts—

some overlap may remain between the customer locations identified in the potential deployment test and in the triggers analysis Any overlap should not, however, be considered particularly significant because the customer locations in that overlap would already qualify for relief under the triggers analysis

II. POTENTIAL LOOP DEPLOYMENT

Q. PLEASE DESCRIBE THE FCC'S POTENTIAL DEPLOYMENT TEST FOR IDENTIFYING CUSTOMER LOCATIONS WHERE CLECs ARE NOT IMPAIRED WITHOUT ACCESS TO UNBUNDLED LOOPS FROM THE ILEC?

A For DS3 and dark fiber, the FCC's *Triennial Review Order*[1] allows state commissions to analyze "whether [a] particular customer location *could* be economically served by competitive carriers through deployment of alternative loop transmission facilities" even if the location does not meet the triggers test provided by the FCC [2]

The FCC requires that, in conducting such an analysis,

> a state must consider and may also find no impairment at a particular customer location even when this trigger has not been facially met *if* the state commission finds that no material economic or operational barriers at a customer location preclude [CLECs] from economically deploying loop transmission facilities to that particular customer location at the relevant loop capacity level In making a determination that CLECs *could* economically deploy loop transmission facilities at that location at the relevant capacity level, the state commission must consider various factors affecting the ability to economically deploy at that particular customer location These factors include evidence of alternative loop deployment at that location, local engineering costs of building and utilizing transmission facilities, the cost of underground or aerial laying of fiber or copper, the cost of equipment needed for transmission, installation and other necessary costs involved in setting up service, local topography such as hills and rivers, availability of reasonable access to rights-of-way, building access restrictions/costs, availability/feasibility of similar quality/reliability alternative

[1] FCC, *In the Matter of Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, CC Docket No 01-338, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No 96-98, and *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No 98- 147, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking ("*Triennial Review Order*"), released August 21, 2003

[2] *Triennial Review Order*, at ¶335

transmission technologies at that particular location [3]

Q. WHAT IS THE PURPOSE OF BELLSOUTH'S POTENTIAL DEPLOYMENT ANALYSIS?

A The purpose of BellSouth's potential deployment analysis for loops is to identify customer locations that do not meet the triggers, but which "could be economically served by competitive carriers" when the criteria described above are examined As I show below, 225 such locations have been identified in BellSouth's service territory in Tennessee

Q. HOW MANY CLECS ARE REQUIRED TO "ECONOMICALLY SERVE A LOCATION?"

A In the self-provisioning trigger analysis described above, the *Triennial Review Order* sets *two* CLECs as the lower threshold for competitive supply that would be sufficient for no impairment Therefore, I assume that a minimum of two CLECs is also required in my potential deployment analysis That is, if one actual CLEC currently serves a location, to establish non-impairment it would only require the demonstration that one more CLEC could potentially deploy loop facilities to that location If no actual CLEC currently serves that location, then it would be necessary to demonstrate that two CLECs would potentially be able to deploy loop facilities This methodology allows me to take into account "evidence of alternative loop deployment at that location," as the *Triennial Review Order* requires

Q. PLEASE DESCRIBE BELLSOUTH'S POTENTIAL DEPLOYMENT ANALYSIS AT A CONCEPTUAL LEVEL.

A BellSouth's potential deployment analysis investigates the economic attractiveness to CLECs of deploying fiber-based loop facilities to additional customer locations where they may not have such facilities at the present time The financial viability of extending fiber to an additional customer location is determined using a net present value ("NPV") test, as

[3] *Id* Emphasis in original

prescribed by the *Triennial Review Order* (fn 260) That is, with a positive NPV, it is economically rational for a carrier to deploy fiber to that location, as the potential revenue exceeds the potential cost The "revenue" in this case is derived from the portion of end-user spending that a CLEC could capture by serving a particular customer location The "cost" comprises the expenses that the CLEC would incur (both upfront and on an ongoing basis) to extend its network by deploying fiber to the additional location from its nearest current "fiber node," i e , a BellSouth wire center at which it is collocated currently or a fibered building

Q. HOW DO YOU CALCULATE THE REVENUE OPPORTUNITY PER BUILDING?

A I use data from TNS Telecoms, a third-party data source that provides an estimate of wireline telecommunications spending per tenant for business locations nationwide For each building located in BellSouth's service territory in Tennessee, I sum the spending of all tenants in that building to get an estimate of the total end-user spending per building

Q. DO YOU BELIEVE THAT TNS TELECOMS IS AN ACCURATE SOURCE OF DATA ON TELECOMMUNICATIONS SPENDING?

A Yes TNS Telecoms is the leading market research firm for site-specific demand for telecommunications services In the context of universal service, the FCC, AT&T, MCI, and many other companies have relied on TNS Telecoms to estimate the exact locations of business and voice lines Moreover, a comparison of revenue estimates from TNS Telecoms with national revenue estimates made by J P Morgan confirms that the estimated spending reported by TNS Telecoms is reasonable and even a little conservative (about 10% lower)

Q. HOW DO YOU DETERMINE THE COST TO DEPLOY LOOP FACILITIES PER BUILDING?

A This calculation proceeds in two steps First, I determine the length of the fiber facilities that a carrier would have to deploy in order to connect a building (customer location) to its network Next, I determine the costs of installing and providing service over such a facility

Q. HOW DO YOU DETERMINE THE LENGTH OF THE FIBER LOOP THAT A CLEC NEEDS TO EXTEND ITS FACILITIES TO A CUSTOMER LOCATION?

A The determination of the length of the fiber loop requires the creation of two tables The first table contains, for each CLEC, information on every building and wire center currently connected by its self-deployed fiber This is the same information (compiled from discovery, BellSouth's internal data, and GeoResults) that is used by BellSouth witness Shelley Padgett in her Direct Testimony in this proceeding to conduct the triggers test for unbundled loop and transport facilities BellSouth's internal records and standard address-matching software provide the latitude and longitude for every wire center

The second table contains all buildings in the TNS Telecoms database that are associated with at least $5,000 of estimated retail wireline spending per month (this minimum spending threshold is a conservative "filter" that is applied to make the table smaller and, therefore, more manageable) This file also includes the latitude and longitude for each building, as provided by TNS Telecoms

Given the two tables, a Microsoft Excel and Visual Basic program is used to determine, for every building in the second table, the two CLECs that have the nearest "fiber nodes," defined as buildings or the wire centers where they have already deployed fiber (as listed in the first table) Distance between the building under consideration for potential deployment and a node is calculated as the North-South right angle distance, which generally overestimates the distance because a more direct route can usually be found The specific formula used for this purpose is described in the FCC's rules in 47 CFR Section 73 208(c)

Q. HOW DO YOU DETERMINE THE COST FOR A CLEC TO EXTEND LOOP FACILITIES TO A CUSTOMER LOCATION?

A The necessary elements to construct the loop and the cost of each such element are presented in the Direct Testimony of BellSouth witness A Wayne Gray in this proceeding I rely upon Mr Gray's evidence to establish the physical cost of the loop in my analysis

Q. WHAT ADDITIONAL COSTS DO YOU CONSIDER?

A I consider four other types of cost that CLECs incur to serve customers (1) cost of goods

sold (COGS), (2) other network costs (ı e , not ıncludıng the loop whıch was already covered above), (3) sales and marketıng (S), and (4) general and admınıstratıve (G&A)

I rely on the BellSouth Analysıs of Competıtıve Entry model for busıness customers wıth four or more lınes to determıne COGS and other network costs [4] Based on thıs model, COGS and other network costs combıned are 25% of revenue I have used a sales and marketıng cost of **BEGIN PROPRIETARY *** END PROPRIETARY** tımes the monthly revenue [5]

Sales cost ıs ıncurred ın year zero (the first year of operatıons), along wıth other costs of establıshıng servıce to a customer In addıtıon, sales and marketıng cost ıs ıncurred on an ongoıng basıs as the CLEC offsets the churn of approxımately 20% per year for busıness customers wıth other gross customer addıtıons Fınally, G&A ıs assumed to be 27 4% of revenue, obtaıned as a weıghted average of G&A costs for long dıstance voıce servıce (15% of revenue) and remaınıng servıces (28 5% of revenue) [6]

Q. HAVING DETERMINED THE REVENUES AND COSTS, HOW DO YOU CALCULATE THE NPV OF THE DEPLOYMENT?

A The NPV ıs calculated ın the standard way from the after-tax cash flows, assumıng that all capıtal expendıtures are made ın year zero and depreclate over 10 years and usıng the tax and cost of capıtal assumptıons that were filed ın Docket No 03-00491 That ıs

1 Calculate requıred capıtal expendıtures ın year zero

2 Calculate the annual depreclatıon and the resultıng depreclatıon tax-shıeld usıng an average tax rate of 39%

3 Calculate network-operatıng expenses, ıncludıng COGS and SG&A

4 Calculate pre-tax operatıng ıncome by subtractıng network operatıng expenses from revenue

5 Calculate after-tax operatıng ıncome and, hence, cash flows (by addıng the depreclatıon tax shıeld)

[4] See Dırect Testımony of James Stegeman ın Docket No 03-00491

[5] See Dırect Testımony of Debra Aron ın Docket No 03-00491

[6] *Id*

6 Calculate the 10-year NPV, using the mid-year convention for cash flows and a discount rate of 10 8% To be conservative, I do not assume any continuing value beyond the 10-year period

Q. HOW DO YOU SELECT THE BUILDINGS THAT SATISFY THE POTENTIAL DEPLOYMENT TEST?

A The buildings that satisfy the potential deployment test are those with NPV > 0 at some assumed market share To be conservative, I assume that any building that only requires the CLEC to achieve a market share of 15% or less for the loop deployment to yield a positive NPV satisfies the potential deployment test This assumption is consistent with both CLEC experience in the marketplace and the information found in JP Morgan's *Broadband 2001* report (which estimates that the overall CLEC share of telecommunications spending in a building could be as high as 50%)

Q. BASED ON THE ANALYSIS THAT YOU HAVE JUST DESCRIBED, WHICH CUSTOMER LOCATIONS SATISFY THE POTENTIAL DEPLOYMENT TEST FOR NON-IMPAIRMENT WITH RESPECT TO LOOPS AND DARK FIBER?

A Exhibit AXB-2 shows the list of customer locations that satisfy the test for potential deployment of fiber-based facilities These buildings, therefore, meet the test for potential deployment of dark fiber and DS3 loops, and I conclude that there is no impairment for those facilities at the customer locations on that list

Q. ARE YOU SUBMITTING THE FINAL LIST OF BUILDINGS THAT QUALIFY FOR UNBUNDLING RELIEF ON THE BASIS OF THE POTENTIAL DEPLOYMENT TEST?

A No BellSouth reserves the right to change the list of buildings after receiving responses to additional discovery requests

III. POTENTIAL TRANSPORT DEPLOYMENT

Q. PLEASE DESCRIBE THE FCC'S POTENTIAL DEPLOYMENT TEST FOR IDENTIFYING ROUTES WHERE CLECS ARE NOT IMPAIRED WITHOUT

ACCESS TO UNBUNDLED TRANSPORT FROM THE ILEC.

A For DS3 and dark fiber, the *Triennial Review Order* allows state commissions to analyze the *potential* ability of CLECs to deploy transport facilities along a particular route even if the route does not meet the triggers described above [7]

The FCC requires that in conducting this analysis,

> a state must consider and may also find no impairment on a particular route that it finds is suitable for "multiple, competitive supply," but along which this trigger is not facially satisfied States must expressly base any such decision on the following economic characteristics local engineering costs of building and utilizing transmission facilities, the cost of underground or aerial laying of fiber, the cost of equipment needed for transmission, installation and other necessary costs involved in setting up service, local topography such as hills and rivers, availability of reasonable access to rights-of-way, the availability or feasibility of alternative transmission technologies with similar quality and reliability, customer density or addressable market, and existing facilities-based competition [8]

Q. WHAT IS THE PURPOSE OF BELLSOUTH'S POTENTIAL DEPLOYMENT ANALYSIS?

A The purpose of BellSouth's potential deployment analysis is to identify routes that do not meet the triggers for transport, but which are suitable for "multiple competitive supply" when the criteria described above are examined As I show below, 21 such routes have been identified in BellSouth's service territory in Tennessee

Q. HOW MANY CLECS ARE REQUIRED ON A ROUTE FOR "MULTIPLE COMPETITIVE SUPPLY?"

A In the self-provisioning trigger analysis described above, the *Triennial Review Order* sets *three* CLECs as the lower threshold for "multiple competitive supply" that would be sufficient for non-impairment Therefore, I assume that a minimum of three CLECs is also required in my potential deployment analysis That is, if two actual CLECs currently serve

[7] *Triennial Review Order*, at ¶410

[8] *Id*

a route, to establish non-impairment, it would only require the demonstration that one more CLEC could potentially deploy transport facilities along that route If no actual CLEC currently serves that route, then it would be necessary to demonstrate that three CLECs would potentially be able to deploy transport facilities This methodology allows me to take into account "existing facilities-based competition," as the *Triennial Review Order* requires

Q. PLEASE DESCRIBE BELLSOUTH'S POTENTIAL DEPLOYMENT ANALYSIS AT A CONCEPTUAL LEVEL.

A BellSouth's potential deployment analysis investigates the economic attractiveness to CLECs of deploying fiber-based transport facilities to additional BellSouth wire centers where they may not have such facilities at the present time The financial viability of extending fiber to an additional wire center is determined using a net present value ("NPV") test, as prescribed by the *Triennial Review Order* (fn 260) That is, with a positive NPV it is economically rational for a CLEC to deploy fiber to that wire center, as the potential revenue exceeds the potential cost

The "revenue" in this case (unlike that in the potential loop deployment situation) is the savings that a CLEC could realize by no longer having to lease from BellSouth the unbundled transport and special access for routes that connect a wire center where the CLEC is not collocated currently to other wire centers where it is already collocated The "cost" comprises the expenses that the CLEC would incur (both upfront and on an ongoing basis) to extend its network by deploying fiber to the additional wire center from the nearest current collocation site where it has fiber facilities

From an economic perspective, this analysis represents the familiar "buy or build" decision Its purpose is to determine whether it is more economical for the CLEC to continue leasing transport facilities from BellSouth or to build its own facilities

Q. HOW DO YOU DETERMINE THE POTENTIAL REVENUE WHEN A CLEC EXTENDS ITS NETWORK TO AN ADDITIONAL WIRE CENTER BY INVESTING IN ITS OWN FIBER TRANSPORT FACILITIES?

A As described above, the potential revenue to a CLEC from extending its network to an additional wire center where it is not currently collocated can be conservatively estimated as that CLEC's current total spending on BellSouth leased transport from that wire center to other wire centers within its network This spending, which the CLEC saves (or avoids) by deploying its own fiber transport facilities, is determined for every CLEC from BellSouth's actual September 2003 billing records for wholesale transport (UNE and special access) Although a CLEC that has installed its own facilities could likely generate additional revenue by leasing transport on a wholesale basis to *other* carriers, my conservative estimate of potential CLEC revenue does not account for that possibility

Q. HOW DO YOU DETERMINE THE CLEC'S ADDITIONAL COST TO EXTEND ITS NETWORK TO AN ADDITIONAL WIRE CENTER?

A As explained in Mr Gray's Direct Testimony, a CLEC's network is typically fully interconnected, i e , transport facilities connect every wire center within a LATA at which the CLEC is collocated It follows that, to add a new wire center to its network, a CLEC merely has to extend fiber to it from any location at which it is currently collocated To calculate the cost of that network extension, it is first necessary to identify the nearest location from which the extension can be made Subsequently, it is necessary to determine the expenses that would be incurred to lay the new fiber and add the equipment needed to make the fiber operational and ready to provide transport I describe each of these steps below

Q. IN CONSIDERING A WIRE CENTER THAT MAY BE ADDED TO THE CLEC'S NETWORK, HOW DO YOU DETERMINE THE NEAREST LOCATION (WIRE CENTER) WHERE THE CLEC CURRENTLY HAS FIBER?

A That determination requires the creation of two tables The first table contains, for each CLEC, information on every wire center currently connected by its self-deployed fiber This is the same information (compiled from discovery and BellSouth's internal data) that is used in BellSouth witness Shelley Padgett's Direct Testimony to conduct the triggers test for unbundled loop and transport facilities BellSouth's internal records and standard

address-matching software provide the latitude and longitude for every wire center

The second table contains, for each CLEC, the remaining wire centers at which the CLEC is *not* collocated presently, but at which it could *potentially* collocate to augment its existing network

Given the two tables, queries in Microsoft Access are used to determine, for each CLEC, the distance between each wire center from the second table and the *nearest* wire center from the first table This exercise provides the distance that needs to be covered to connect a currently off-network wire center to the nearest on-network wire center As for extending loop facilities, distance here is also calculated as the North-South right angle distance, which generally overestimates the distance because a more direct route can usually be found

Q. HOW DO YOU DETERMINE THE COST TO EXTEND THE CLEC'S NETWORK TO AN ADDITIONAL WIRE CENTER?

A The network design and the costs of the various components of that network design necessary to extend the CLEC's network are described in the Mr Gray's Direct Testimony I rely on Mr Gray's evidence to establish the cost of extending the CLEC network in my analysis

Q. HAVING DETERMINED THE REVENUES AND COSTS, HOW DO YOU CALCULATE THE NPV OF THE DEPLOYMENT?

A The NPV is calculated in the standard way from the after-tax cash flows, assuming that all capital expenditures are made in year zero and depreciate over 10 years, and incorporating the tax and cost of capital assumptions as filed in Docket No 03-00491 That is

1 Calculate required capital expenditures in year zero

2 Calculate the annual depreciation and the resulting depreciation tax-shield using an average tax rate of 39%

3 Calculate network operating expenses

4 Calculate pre-tax operating income by subtracting network operating expenses from revenue

5 Calculate after-tax operating income and, hence, cash flows (by adding the depreciation

tax shield)

6 Calculate the 10-year NPV, using the mid-year convention for cash flows and a discount rate of 10 8% To be conservative, I do not assume any continuing value beyond the 10-year period

Q. HOW DO YOU SELECT THE WIRE CENTERS (AND, HENCE, THE ROUTES) THAT MEET THE POTENTIAL DEPLOYMENT TEST?

A For a given CLEC, the wire centers that satisfy the potential deployment test are those for which NPV > 0 as calculated according to the methodology described above Once those wire centers are identified, it is a simple matter to calculate the additional routes on which a CLEC would be able to deploy its own transport facilities Once this is done for every CLEC, it is a matter of simply counting the routes for which a finding of no impairment must be made

Q. BASED ON THE ANALYSIS THAT YOU HAVE JUST DESCRIBED, WHICH ROUTES SATISFY THE POTENTIAL DEPLOYMENT TEST FOR NON-IMPAIRMENT WITH RESPECT TO TRANSPORT FACILITIES?

A Exhibit AXB-3 shows the list of routes (pairs of wire centers) that satisfy the potential deployment test for DS3 and dark fiber transport facilities Based on the test prescribed by the FCC, I conclude that there is no impairment for DS3 and dark fiber transport on the routes on that list

Q. ARE YOU SUBMITTING THE FINAL LIST OF ROUTES THAT QUALIFY FOR UNBUNDLING RELIEF ON THE BASIS OF THE POTENTIAL DEPLOYMENT TEST?

A No BellSouth reserves the right to change the list of routes after receiving responses to additional discovery requests

IV. GENERAL ISSUES

Q. YOUR POTENTIAL DEPLOYMENT TEST IDENTIFIES SEVERAL CUSTOMER LOCATIONS (BUILDINGS) AND TRANSPORT ROUTES THAT CLECS COULD

POTENTIALLY SERVE. PLEASE COMMENT ON WHY CLECS SEEM TO HAVE PASSED UP THOSE BUSINESS OPPORTUNITIES SO FAR.

A CLECs are unlikely to have chosen voluntarily to pass up profitable business opportunities presented by the customer locations that are identified by my potential deployment test Entry and expansion decisions by firms are dictated by a variety of factors including the availability of alternative deployment strategies, the appropriate scale of efficient operations relative to the level of available demand, access to capital markets, and (frequently) the business models and objectives of those firms regarding the scope and timing of their activities In the environment in which CLECs operate in Tennessee, the availability of UNEs at regulated prices is likely to have an important bearing on CLEC choices because the relative economics of leasing UNEs and deploying owned facilities may well prompt CLECs to choose to expand through the use of UNEs rather than by deploying their own facilities As a result, although the presence of facilities meeting the triggers test is evidence of non-impairment, the absence of such facilities *cannot* be taken as evidence of impairment The advantage of having a "potential deployment" test in addition to the triggers is that this fact is properly recognized

Q. WHAT IMPACT, IF ANY, DOES ACCESS TO CAPITAL HAVE ON POTENTIAL DEPLOYMENT CONSIDERATIONS?

A None The FCC (through the *Triennial Review Order*) set criteria to be applied when conducting the potential deployment test, and no additional criteria (e g , access to capital, capacity ceilings) are necessary or permitted It is important to keep in view that the potential deployment test is merely a gauge of whether a CLEC *could*, if it so chose, feasibly deploy its own loop facilities to a customer location or over a transport route, it is decidedly not a test of whether it *would* do so As for any concern about CLEC access to capital, the prevailing circumstances of the capital market are already reflected in the return on equity, which determines, in turn, the CLEC's cost of capital

Q. IN YOUR POTENTIAL DEPLOYMENT ANALYSIS, DO YOU INCLUDE ALL COSTS INCURRED BY CLECS TO SERVE RETAIL CUSTOMERS?

A Yes Beyond the investment cost associated with loops, I also include two categories of cost "COGS and other network cost," and SG&A As I explained earlier,

1 "COGS and other network cost" includes all network-related expenses beyond the cost of the loop, including any potential capacity upgrades to the CLEC's existing network that would be necessary to provide retail services to *new* customer locations For example, this category of cost includes the cost of voice switches (both operating expenses and depreciation), switched access and other interconnection costs, various transport, transit, and peering costs, cost of data network equipment, etc

2 "SG&A" includes all CLEC expenses, including sales and marketing, billing, customer care, and overhead expenses

These categories are more than sufficient to account for CLECs' expenses The basis for these inputs is detailed in the Direct Testimony of Debra Aron in Docket No 03-00491 The expenses in the two categories above, which are based on actual CLEC experiences, amount to more than 50% of retail revenue

Q. CAN YOU PROVIDE ADDITIONAL DETAIL REGARDING THE ASSUMPTION OF AT LEAST $5,000 OF MONTHLY REVENUE PER BUILDING?

A The $5,000 monthly revenue figure is used primarily as a filter to reduce the number of buildings considered in the potential deployment analysis By using this filter, I have reduced the number of buildings in Tennessee from over 156,000 to approximately 3,000 Thus, while it is reasonable to infer that a certain minimum level of revenue (customer spending) is necessary to allow a CLEC to recover, over a suitable period of time, its fixed investment costs, the $5,000 monthly figure is an approximation rather than a minimum monthly requirement A lower level for the monthly spending filter would be less effective at reducing the number of candidate buildings (to which to apply the potential deployment test), making the analysis unnecessarily cumbersome

Q. PLEASE EXPLAIN THE BASIS FOR YOUR ASSUMPTION THAT BOTH CLECS IN A BUILDING WOULD HAVE 15% OF THE AVAILABLE REVENUE.

A My assumption that each of the two potential CLECs serving a new building would have 15% of the available revenue is based on actual CLEC experience in the marketplace I rely on three specific market reports that document revenue shares achieved by CLECs

serving business customers These are (1) *Teligent, Inc Initial Report* by Ferris Baker Watts, September 21, 2000, (2) *Winstar Communications, Inc Initial Report* by Ferris Baker Watts, January 26, 2001, and (3) *Broadband 2001* by McKinsey & Company and J P Morgan, April 2, 2001

Q. HOW DO YOU RECONCILE YOUR ASSUMPTION THAT TWO CLECS CAN EACH GAIN A 15% SHARE IN A BUILDING WITH THE POSSIBILITY THAT CUSTOMERS ARE TIED UP IN LONG-TERM CONTRACTS WITH THEIR CURRENT SUPPLIERS?

A This is a reasonable assumption because, when selecting buildings from the TNS Telecoms database, all the buildings with fewer than three tenants were removed from consideration This left only buildings with a large enough pool of potential customers to be targeted by CLECs Also, customers in the enterprise market typically have a choice of multiple telecommunications suppliers that gives those customers an opportunity to negotiate better contracts and to obtain redundancy to protect against network failures This multiple supplier environment, together with the filter on number of tenants per building, ensures that opportunities exist for CLECs to gain market share in a building It is unlikely for all tenants in a building to be tied up in long-term contracts at the same time, or for all of those contracts to be far from expiration

Q. YOU CHARACTERIZE THE CLEC'S DECISION TO DEPLOY ITS OWN FIBER LOOP ON A TRANSPORT ROUTE AS PART OF A "BUILD OR BUY DECISION." WHY DOESN'T THAT CHARACTERIZATION APPLY TO LOOP DEPLOYMENT?

A There is a fundamental difference between the two situations Loops deployed to business customer locations in buildings are part of a retail facilities-based local exchange service, the revenue for which accrues in the form of spending on that service by end-user business customers With a retail service, no "build or buy" decision is involved

On the other hand, transport is a wholesale service where the CLEC has a choice of deploying either its own facilities or purchasing/leasing them from the ILEC The

"revenue" in this instance is the cost saved from the forgone option

Q. PLEASE EXPLAIN HOW YOUR ANALYSIS ADDRESSES THE FACTORS SET FORTH IN THE APPLICABLE RULES FOR LOOP AND TRANSPORT POTENTIAL DEPLOYMENT.

A I detail below the manner in which I take the nine factors or criteria into account

Loops (see *Triennial Review Order*, ¶335, and Rules §51 319(a)(5)(ii), (6)(ii))

Factor 1 (*Evidence of alternative loop deployment at that location*)

As described above, I count actual loops deployed to the customer location towards the two carriers required to show competitive supply That is, if one actual carrier currently serves a location, a finding of non-impairment would only require the demonstration that one more carrier could potentially deploy facilities to that location

Factors 2 to 5 (*Local engineering costs of building and utilizing transmission facilities, the cost of underground or aerial laying of fiber or copper, the cost of equipment needed for transmission, installation and other necessary costs involved in setting up service*)
The costs of building the network to the customer location and setting up service are fully considered in the analysis and are detailed in Mr Gray's Direct Testimony

Factor 6 (*Local topography such as hills and rivers*)
To determine the cost of deploying a fiber cable to a customer location, I use, as a reasonable proxy, the conservative assumption that the fiber loop follows a right-angle path from the CLEC's fiber node to the customer location Because the locations for which potential deployment is viable are located in urban commercial areas with few topography concerns, and since CLECs already have fiber nodes relatively close to these locations, the right-angle methodology that is a conservative alternative and a reasonable method to account for local topography

Factor 7 (*Availability of reasonable access to rights-of-way*)
Costs associated with rights-of-way are taken into account, as described in Mr Gray's Direct Testimony

Factor 8 (*Building access restrictions/costs*)

Based on BellSouth's experience in deploying high-capacity services to commercial buildings, few building access restrictions or costs constitute a material barrier to loop deployment Typically, building owners in BellSouth's service territory do not charge access fees and, in the limited situations in which this occurs, such costs are passed directly on to end-user customers

Factor 9 (*Availability/feasibility of similar quality/reliability alternative transmission technologies at that particular location*)

Although the *Triennial Review Order* provides the flexibility to consider alternative transmission technologies that may be more cost effective for particular customer locations, BellSouth has chosen to model costs for a fiber-optics network architecture similar to the one it uses when deploying loops to high-capacity buildings

Transport (see *Triennial Review Order*, ¶410, and (§51 319(e)(2)(ii), (3)(ii))

Factors 1 to 4 (*Local engineering costs of building and utilizing transmission facilities, the cost of underground or aerial laying of fiber or copper, the cost of equipment needed for transmission, installation and other necessary costs involved in setting up service*)

The costs of building the network and setting up service are fully considered and are described in Mr Gray's Direct Testimony

Factor 5 (*Local topography such as hills and rivers*)

The transport analysis is similar to the loop analysis, which uses, as a proxy, the conservative assumption that the fiber loop follows a right-angle path from the CLEC's fiber node to the wire center Because the wire centers involved are in fully urbanized commercial areas with few or no topography concerns, and since CLECs already have fiber nodes relatively close to these wire centers, this methodology is a conservative and a reasonable method to account for local topography

Factor 6 (*Availability of reasonable access to rights-of-way*)

Costs associated with rights-of-way are taken into account, as described in Mr Gray's

Direct Testimony

Factor 7 (*Availability/feasibility of similar quality/reliability alternative transmission technologies along the particular route*)

Although the *Triennial Review Order* provides the flexibility to consider alternative transmission technologies that may be more cost effective for particular routes, BellSouth has chosen to model costs for a fiber-optic network architecture similar to the one it uses when deploying interoffice transport facilities

Factor 8 (*Customer density or addressable market*)

My analysis of potential deployment of transport facilities uses a "build versus buy" decision where the benefit of self-deployment (i e , building) for each CLEC is the savings achieved by not leasing wholesale transport from BellSouth Since I use the actual BellSouth revenues by CLEC for each specific route in the analysis, this methodology goes one step further than considering the addressable market Instead, it considers the *actual* market (i e , circuits and revenues) served by each CLEC that BellSouth believes to be unimpaired

Factor 9 (*Existing facilities-based competition*)

As described above, I count actual transport facilities deployed towards the three carriers required to show competitive supply That is, if two actual carriers currently have transport facilities along a route, a finding of non-impairment would only require the demonstration that one more carrier could potentially deploy facilities on that route

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A Yes

Exhibit AXB-1

ANIRUDDHA (ANDY) BANERJEE, Ph.D.

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Dr Banerjee is a Vice President at NERA He is responsible for providing analysis of, and expert witness testimony on, regulatory and economic issues of concern to telecommunications companies and other public utilities, preparing and responding to interrogatories in regulatory proceedings, and conducting econometric/statistical analysis to support marketing and market research activities of telecommunications companies Dr Banerjee works on a range of issues including Internet economics, price cap and incentive regulation, antitrust violations and remedies for damages, protections against anti-competitive pricing, local and long distance competition, pricing of interconnection and unbundled services, pricing and optimal tariff design, reciprocal and inter-carrier compensation, resale and avoided cost, benchmark and proxy cost models, universal service, service quality, and cellular telephony His market research activities are carried out, as needed, in collaboration with leading providers of telecommunications data or directly with telecommunications companies

Before coming to NERA, Dr Banerjee was a Research Economist (and internal economic consultant) at BellSouth Telecommunications where he was responsible for providing economic policy guidelines to key decision-makers and the Officer Body, preparing testimony and cross-examination questions, responding to interrogatories, and building econometric models to answer business questions He provided quantification support for BellSouth's successful initiative of designing and securing price cap regulation for itself in each of its nine states, and contributed to BellSouth's policies on local and toll imputation, universal service, interconnection pricing, rate rebalancing, and per use pricing of vertical services In the process, Dr Banerjee collaborated with consultants from McKinsey and Company and Strategic Policy Research, Inc He also represented BellSouth's participation in the National Telecommunications Demand Study, an ongoing study of demand trends in the telecommunications industry

Prior to BellSouth, Dr Banerjee was an economic consultant as a Member of the Technical Staff at Bell Communications Research and a Staff Supervisor at AT&T Dr Banerjee has several years of experience teaching graduate and undergraduate courses in economic theory, statistics, econometrics, industrial organization, and public finance He has conducted research on the dynamics of futures markets and various aspects of time series econometrics He has presented a number of papers on telecommunications economics issues at national business and academic conferences

EDUCATION

THE PENNSYLVANIA STATE UNIVERSITY

Ph D , Agricultural Economics, 1985

UNIVERSITY OF DELHI, INDIA

M A , Economics, 1977 (Delhi School of Economics)

UNIVERSITY OF DELHI, INDIA

B A , Economics (Honors), 1975 (St Stephen's College)

EMPLOYMENT

NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC.

2002- Vice President Responsible for applying economic theory, regulatory economics, and econometric analysis to a variety of issues and problems facing both regulated and non-regulated firms (including public utilities) Provide expert witness testimony and strategic advice

1995-2002 Senior Consultant, Communications Practice Responsible for applying economic theory, regulatory economics, and econometric analysis to a variety of tasks supporting telecommunications firms in litigation and regulatory matters, market research, and strategic planning Provided expert witness testimony and strategic advice

BELLSOUTH TELECOMMUNICATIONS

1992-1995 Research Economist, Statistics and Econometrics Group
Developed, led, and disseminated economic and econometric research on issues of concern to BellSouth Telecommunications in particular and the telecommunications industry in general Contributed to each of the following areas regulatory economics, demand analysis (growth and elasticities), market potential, diffusion, pricing, cost, new product planning, forecasting, market research, competitive analysis, and the development of strategy/policy positions for BellSouth Supervised and collaborated with other BellSouth economists and strategic planners and outside consultants

BELL COMMUNICATIONS RESEARCH

1989-1992 Member of Technical Staff, Regulatory Economics and Pricing Theory, Demand Response Analysis Group Developed various statistical and econometric methods and models that are applicable to the study of demand for various types of telephone service The focus was on analysis, forecasting, and rate design support to client companies including BellSouth, U S West, NYNEX, and Bell Atlantic Developed software for demand and market potential analysis using advanced mathematical/statistical languages Transformed original techniques research into business tools for analysts within client companies

AT&T COMMUNICATIONS

1988-1989 Staff Supervisor, Market Analysis and Forecasting, Consumer Markets and Services Assisted and contributed to demand analysis and forecasting efforts of the group The focus was on demand issues related to AT&T's business and residential long distance telephone services

THE PENNSYLVANIA STATE UNIVERSITY

1985-1988 Assistant Professor, Department of Economics Developed and taught undergraduate and graduate courses in economics and econometrics Conducted personal research in economics and econometrics Supervised graduate student research leading to M S and Ph D degrees in economics Developed the econometrics component of a new graduate program in policy analysis at Penn State And, advised undergraduate economics students on their curriculum and course selection Taught courses on introductory macro-economic theory, introductory and

intermediate micro-economic theory, industrial organization, public sector economics, statistics, and introductory econometrics Developed and taught advanced graduate econometrics and time series courses (frequency-domain econometrics and spectral analysis, dynamic simultaneous equations systems and state space models, causality, model testing and validation, nonlinear time series, and asymptotic theory

1982-1985 Instructor, Department of Economics Taught a number of undergraduate economics courses including macro-economic theory, micro-economic theory, public sector economics, and statistical foundations of econometrics

1979-1982 Research Assistant, Department of Agricultural Economics & Rural Sociology Assisted in research activities of Professor Robert D Weaver of the Department of Agricultural Economics Research areas included stabilization of prices of internationally traded agricultural commodities, choice under risk-aversion by a firm faced with multiple sources of uncertainty, impacts of public policy on risk-averse firms, market efficiency, role of information, distribution of asset returns, and market equilibrium, and productivity and cost relations in the wheat, corn, and soybean producing areas of the U S using crop survey data from the U S Department of Agriculture Most of the work consisted of literature research, writing computer programming, and econometric data analysis

UNIVERSITY OF DELHI, INDIA

1977-1979 Lecturer, Department of Economics, Shri Ram College of Commerce Taught undergraduate economics courses including micro-economic theory, public finance, and economic planning and policy

HONORS AND AWARDS

Marquis' Who's Who in the South and Southwest, 1995-96
Gamma Sigma Delta Honor Society of Agriculture, inducted 1983
Phi Kappa Phi, inducted 1982

Department Head Award, BellSouth Telecommunications, 1993
Department Head Commendation, Bell Communications Research, 1992
Vice President's Award, Bell Communications Research, 1990

PAPERS AND PUBLICATIONS

CONTRIBUTIONS TO NERA REPORTS

"NERA Reply Declaration" (on FCC's proposal to reform the TELRIC methodology for determining prices of unbundled network elements), with William E Taylor and Harold Ware, for BellSouth Telecommunications (filed with FCC in WC Docket 03-173), January 30, 2004

"NERA Declaration" (on FCC's proposal to reform the TELRIC methodology for determining prices of unbundled network elements), with William E Taylor and Harold Ware, for BellSouth Telecommunications (filed with FCC in WC Docket 03-173), December 16, 2003

"NERA Reply Declaration" (on FCC's unbundled network element policy and effects on competition and entry), with William E Taylor, Charles Zarkadas, and Agustin Ros, for BellSouth Corporation (filed with FCC in CC Docket Nos 01-338, 96-98, and 98-147), July 17, 2002

"A Unified Inter-Carrier Compensation Mechanism for all Forms of Interconnection Calling Party's Network Pays or Bill and Keep?" (with William E Taylor), for BellSouth Corporation, filed November 5, 2001

"Efficient Inter-Carrier Compensation for Internet-Bound Traffic Reply to Time Warner Telecom," (with William E Taylor), ex parte with FCC on behalf of Qwest Corporation, October 23, 2000

"An Economic and Policy Analysis of Efficient Intercarrier Compensation Mechanisms for ISP-Bound Traffic," (with Agustin Ros and William E Taylor), ex parte with FCC on behalf of U S WEST Communications, Inc , November 12, 1999

"Determining Fair and Reasonable Rates Under Competition Response to Major Themes at the FPSC Workshop," for BellSouth Telecommunications, Inc , November 1998

"Costing and Pricing Principles for Determining Fair and Reasonable Rates Under Competition," for BellSouth Telecommunications, Inc , September 1998

"Local Telecommunications Competition An Evaluation of a Proposal by the Communications Staff of the Florida Public Service Commission," with William E Taylor, for BellSouth Telecommunications, Inc , November 1997

"Costing and Pricing Principles for Competitive Telecommunications A Critique of David Gabel's Recommendations," for BellSouth Telecommunications, March 1997

"Comments (on Universal Service and the Hatfield Model)," with William E Taylor, for BellSouth Telecommunications, Inc (filed with the Federal Communications Commission for CC Docket No 96-45), August 1996

"Telephone Company Provision of Broadband Services Economies of Scope, Competition, and Public Policy," for BellSouth Interactive Media Services, 1995

"Economic Welfare Benefits from Rate Rebalancing," for Stentor Resource Centre Inc , 1995

TESTIMONY

Direct and Rebuttal testimony on the matter of the potential deployment test of non-impairment for loop and transport facilities in North Carolina, on behalf of BellSouth Telecommunications, Inc , North Carolina Utilities Commission, Docket No P-100 SUB 133S, February 16, 2004, and March 1, 2004

Direct, Supplemental Direct, and Rebuttal testimony on the matter of the potential deployment test of non-impairment for loop and transport facilities in Georgia, on behalf of BellSouth Telecommunications, Inc , Georgia Public Service Commission, Docket No 17741-U, January 30, 2004, February 12, 2004, and February 18, 2004

Direct, Supplemental Direct, and Surrebuttal testimony on the matter of the potential deployment test of non-impairment for loop and transport facilities in Florida, on behalf of BellSouth Telecommunications, Inc , Florida Public Service Commission, Docket No 030852-TP, December 22, 2003, January 9, 2004 and February 4, 2004

Rebuttal testimony on the matter of rate rebalancing of local and switched access rates in Florida, on behalf of BellSouth Telecommunications, Inc , Florida Public Service Commission, Docket Nos 030961-TL, 030867-TL, 030868-TL, and 030869-TL, November 19, 2003 [Appeared at Hearings, December 2003]

Declaration, on behalf of Qwest Communications International, Inc , evaluating alternative statistical methods for selecting an appropriate benchmark to

determine state eligibility for federal universal service support Federal-State Joint Board on Universal Service, December 20, 2002

Rebuttal Testimony opposing Oregon Public Utility Commission Staff and other intervenors on adjustments to rate structure design proposed by Qwest Corporation for its intraLATA long distance services, on behalf of Qwest Corporation, Oregon Public Utility Commission, Docket No UT 125 Phase II, May 3, 2001 [Appeared at Hearings, May 2001]

Rebuttal testimony opposing the position of Global NAPs, a competitive local exchange carrier, that it is owed reciprocal compensation for the carriage of Internet-bound traffic, on behalf of BellSouth Telecommunications, Inc , Florida Public Service Commission, Docket No 991267-TP, December 20, 1999 [Appeared at Hearings, January 2000]

Affidavit, on behalf of the United States Telephone Association, Review of the Depreciation Requirements for Incumbent Local Exchange Carriers, CC Docket No 98-137, November 23, 1998 (with William Taylor)

Affidavit supporting BellSouth Telecommunications Inc 's motion to dismiss liability case brought by Public Storage Inc of California because of lack of personal jurisdiction, before the U S District Court of the Central District of California, Case No 90-3943 R (RZX), September 1998

Affidavit and Reply Affidavit supporting the application by BellSouth Corporation for provision of in-region, interLATA services in Louisiana, Round 2, CC Docket No 98-121, July-August 1998

Affidavit and Reply Affidavit supporting the application by BellSouth Corporation for provision of in-region, interLATA services in Louisiana, CC Docket No 97-231, October-December 1997

Testimony critiquing the Hatfield Cost Model for setting unbundled network element rates for GTE in Alabama, on behalf of GTE South and Contel of the South in Arbitration with AT&T, Alabama Public Service Commission, Docket No 25704, November 1996 [Testified at Hearings, December 1996]

Testimony critiquing the Hatfield Cost Model for setting unbundled network element rates for GTE in Texas, on behalf of GTE Southwest in Arbitration with ASCI, Texas Public Utility Commission, Docket No 16,473, November 1996 [Testified at Hearings, December 1996]

Testimony critiquing the Hatfield Cost Model for setting unbundled network element rates for GTE in Oklahoma, on behalf of GTE Southwest in Arbitration with AT&T, Oklahoma Corporation Commission, Cause No PUD 960000242, November 1996 [Testified at Hearings, November 1996]

Direct Testimony critiquing the use of the Benchmark Cost Model for setting the unbundled loop rate for BellSouth in Georgia, on behalf of BellSouth Telecommunications, to Georgia Public Service Commission, Docket 6759-U, October 1996 [Testified at Hearings, October 1996]

Consolidated Direct and Rebuttal Testimony critiquing bill and keep compensation for interconnection, on behalf of BellSouth Telecommunications, to Florida Public Service Commission, Docket 950985-TP (Petitions by Continental Cablevision, Metropolitan Fiber Systems of Florida, and MCI Metro Access Transmission Services), November 1995 [Testified at Hearings, January 1996]

Direct Testimony on unbundling by local exchange carriers and related cost issues, on behalf of BellSouth Telecommunications, to Florida Public Service Commission, Docket 950984-TP (Petitions by Metropolitan Fiber Systems of Florida, and MCI Metro Access Transmission Services), November 1995 [Testified at Hearings, January 1996]

Rebuttal Testimony critiquing bill and keep compensation for interconnection, on behalf of BellSouth Telecommunications, to Florida Public Service Commission, Docket 950985-TP (Petition by Teleport Communications Group), September 1995

Direct Testimony addressing interconnection rate structure design, on behalf of BellSouth Telecommunications, to Florida Public Service Commission, Docket 950985-TP (Petition by Teleport Communications Group), September 1995

Testified on behalf of BellSouth Telecommunications in Universal Service Proceeding, Tennessee Public Service Commission, Docket 95-02499, October 1995

Prepared NERA testimony/comments/affidavits presented to

- state regulatory commissions on
    1 Price cap, local competition, interconnection, and unbundling issues (Arizona, Connecticut, Kentucky, Louisiana, Mississippi, Pennsylvania, New Mexico, Vermont)
    2 Regulatory Reform (Arizona)
    3 Rate case (Arizona, New Mexico)

4 Universal service issues (Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Jersey, New Mexico, North Carolina, South Carolina, Tennessee)
5 Loop cost subsidies measurement and testing (New Mexico, North Dakota)
6 Resale and avoided cost (Alabama, Louisiana, Tennessee)
7 Network Cost models (Alabama, Georgia, Massachusetts, Missouri, New Jersey, New York, Oklahoma, Pennsylvania, Texas)
8 Estimation of Loop Cost (New York)
9 Local company entry into interLATA long distance (Alabama, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee)
10 TELRIC pricing of unbundled elements (Alabama, Delaware, Maryland, Mississippi, New Jersey, North Carolina, South Carolina, Tennessee, Virginia, Washington DC, West Virginia)
11 Access charge reform (Arizona, Nebraska, Pennsylvania)
12 Rate rebalancing and welfare impacts (Ohio, Florida)
13 Pricing flexibility under price caps (New Mexico, North Carolina, Wyoming)
14 Cost recovery for Operations Support Systems and service quality and performance measurement (Alabama, Arizona, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee)
15 Reciprocal compensation for cellular, paging, and internet service providers (Alabama, Arizona, Colorado, Florida, Georgia, Idaho, Kentucky, Louisiana, Massachusetts, Mississippi, Montana, Nebraska, New Mexico, North Carolina, Oregon, South Carolina, Tennessee, Washington)
16 Payphone rates and new services test (Arizona, Louisiana, South Carolina, Tennessee)
17 Telephone company mergers (Arizona, Minnesota, Montana, Utah, Washington, Wyoming)
18 Reclassification of competitive services (Arizona, Nebraska, Washington, Wisconsin)
19 Fair competition and promotions (Alabama)

- Federal Communications Commission in dockets or ex partes on
  1 Unbundled Network Element rules and pricing (for BellSouth)
  2 TELRIC rules (for BellSouth)
  3 CMRS interconnection (for NYNEX)
  4 Benchmark and proxy cost models (for BellSouth, Southwestern Bell, and NYNEX)

5 Universal service (for BellSouth)
6 InterLATA authority (for BellSouth)
7 Access reform (for BellSouth)
8 Regulatory forbearance for hicap services (for BellSouth)
9 Depreciation reform (for USTA)
10 Inter-carrier compensation for Internet-bound traffic (for U S WEST/Qwest)
11 Unified Compensation Mechanism for All Forms of Interconnection (for BellSouth)

- Canadian Radio-television and Telecommunications Commission in price cap proceeding (for Manitoba Telephone System)

- Telefonica Spain, on matters of reciprocal compensation

- Civil Action No 94-324 (GK), FreBon International Corp v Bell Atlantic Corp , et al , Defendant's Expert Disclosure Statement

- Case No 99-1706, U S District Court, Southern District of Florida, Supra Telecommunications & Information Systems v BellSouth Telecommunications, Expert Reply Report on Economic Assessment of Damages

- Arbitration V, CPR Institute for Dispute Resolution Arbitral Tribunal, Supra Telecommunications & Information Systems v BellSouth Telecommunications, Expert Reply Report on Economic Assessment of Damages

TELECOMMUNICATIONS-RELATED PAPERS

"Drivers of Demand Growth for Mobile Telecommunications Services Evidence from International Panel Data," 2003, forthcoming in book published by the International Telecommunications Society Co-authored with Agustin Ros

"Patterns in Global Fixed and Mobile Telecommunications Development A Cluster Analysis" (with Agustin Ros), *Telecommunications Policy*, Vol 28, 2004, pp 107-132

"Does Incentive Regulation "Cause" Degradation of Retail Telephone Service Quality?" *Information Economics and Policy,* Vol 15, 2003, pp 243-269

"Interconnection Rules and Inter-Carrier Compensation Implications for Carrier Incentives and Economic Welfare," 2000 Co-authored with Agustin Ros

"Telecommunications Privatization and Tariff Rebalancing Evidence from Latin America" (with Agustin Ros), *Telecommunications Policy*, Vol 24, 2000, pp 233-252

"The Internet Implications for Regulation and Public Policy," 1999 Co-authored with Agustin Ros

"The Internet Market Characteristics and Regulatory Conundrums," 1999 Co-authored with Agustin Ros Chapter in *Forecasting the Internet Understanding the Explosive Growth of Data Communications*, edited by Lester D Taylor and David G Loomis, Kluwer Academic Publishers

"Using Covariances of Share Changes to Determine Substitutability" (an application to media advertising), 1997 Co-authored with Michael Salinger

"The Case Against Imputation of Access Charges in IntraLATA Toll Prices Economic Efficiency and Fairness Reconsidered," BellSouth Telecommunications, 1994

"Pricing of Local Exchange Interconnection Service From the Perspective of Economic Theory," BellSouth Telecommunications, 1993

"Economies of Scale and Scope, Subadditivity of Costs, and Natural Monopoly Tests for Regulated Utilities," BellSouth Telecommunications, 1993

"Fairness and Economic Efficiency in Regulation Imputation v Equal Contributions in IntraLATA Toll Pricing," Report to the Task Force on Imputation of Access Charges in IntraLATA Toll Price, BellSouth Telecommunications, 1993

"Economic Analysis of Efficient versus Imputation-Based Pricing by a Regulated Public Utility," Report to the Task Force on Imputation of Access Charges in IntraLATA Toll Price, BellSouth Telecommunications, 1993

"**E** A Maximum Likelihood Estimation Program, A User's Guide to Some Applications," Bell Communications Research, 1992

"Error Components Panel Data Modeling of Share Equation Systems An Application to Telecommunications Access Demand," Bell Communications Research, 1989

"Analysis of Demand Migration and Take Rates for Special Access High Capacity Services," Bell Communications Research, 1990

"Business Outbound Service System An Empirical Modeling Framework," AT&T, 1989

MISCELLANEOUS PAPERS

"Does Futures Trading Destabilize Cash Prices? Evidence for U S Live Beef Cattle," (with R D Weaver), Journal of Futures Markets, Vol 10(1), 1990, (pp 41-60)

"Market Structure and the Dynamics of Retail Food Prices," (with R D Weaver and P Chattin), Northeastern Journal of Agricultural and Resource Economics, Vol 18(2), 1989, (pp 160-170)

"Cash Price Variation in the Live Beef Cattle Market The Causal Role of Futures Trade," (with R D Weaver), Journal of Futures Markets, Vol 2(4), 1982, (pp 367-389)

"Unemployment Rate Dynamics and Persistent Unemployment Under Rational Expectations A Comment," (with V Moorthy), Working Paper No 8-87-1, Department of Economics, The Pennsylvania State University, 1987

"The Standard Errors of Characteristic Roots of a Dynamic Econometric Model A Computational Simplification," Working Paper No 5-87-3, Department of Economics, The Pennsylvania State University, 1987

"Market Structure, Market Power, and Dynamic Price Determination in the Retail Food Industry," (with R D Weaver), Working Paper No 5-87-2, Department of Economics, The Pennsylvania State University, 1987

"Does Futures Trading Destabilize Cash Prices? Evidence for Live Beef Cattle," (with R D Weaver), Working Paper No 5-87-1, Department of Economics, The Pennsylvania State University, 1987

"Existence of Portfolios with Simultaneous Trading in Unrelated Speculative Assets," Working Paper No 8-86-2, Department of Economics, The Pennsylvania State University, 1986

"Models of Cash-Futures Market Complexes for Commodities Characterized by Production Lags," Working Paper No 7-86-2, Department of Economics, The Pennsylvania State University, 1986

"Cash Price Stability in the Presence of Futures Markets A Multivariate Causality Test for Live Beef Cattle," (with R D Weaver), Staff Paper No 45, Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University, 1981

"Optimal Interpolation and Distribution of Time Series by Related Series Using a Spectral Estimator for the Residual Variance," Bell Communications Research, 1990

"Size and Power Characteristics of Three Tests of Nonlinearity in Time Series," AT&T, 1989

"Model Testing and Selection in Applied Econometrics," AT&T, 1989

CONFERENCE PRESENTATIONS

"Drivers of Demand Growth for Mobile Telecommunications Services Evidence from International Panel Data," International Telecommunication Society 14th Biennial Conference, Seoul, South Korea, August 18-21, 2002

Discussant of "Providing Location and Context Aware Services for Mobile Commerce Technological Approaches, Applications, and Policy Issues" by Charles Steinfield and Junghyun Kim, and "Explaining the Success of NTT DoCoMo's I-Mode Wireless Internet Service," by Martin Fransman, International Telecommunication Society 14th Biennial Conference, Seoul, South Korea, August 18-21, 2002

Discussant of "The Impotence of Imputation," by T Randolph Beard, David Kaserman, and John Mayo, 21st Annual Eastern Conference of the Advanced Workshop in Regulation and Competition, Rutgers University, Newport, RI, May 22-24, 2002

"Does Incentive Regulation "Cause" Degradation of Retail Telephone Service Quality?" 20th Annual Eastern Conference of the Advanced Workshop in Regulation and Competition, Rutgers University, Tamiment, PA, May 23-25, 2001 Also presented at 19th Annual International Communications Forecasting Conference, Washington DC, June 26-29, 2001, and National Association of Regulatory Utility Commissioners, Summer Committee Meetings, Seattle, WA, July 17, 2001

"Telecommunications Privatization and Tariff Rebalancing Evidence from Latin America and Relevance to India," India Telecom 2000 Conference Keynote Speech, New Delhi, India, October 31-November 2, 2000

"Interconnection Rules and Inter-Carrier Compensation Implications for Carrier Incentives and Economic Welfare," (with Agustin Ros), 19th Annual Eastern Conference of the Advanced Workshop in Regulation and Competition, Rutgers University, Lake George, Bolton Landing, NY, May 24-26, 2000 Also presented at International Telecommunication Society 13th Biennial Conference, Buenos Aires, Argentina, July 2-5, 2000

"The Internet Implications for Regulation and Public Policy," (with Agustin Ros), 27th Annual Telecommunications Policy Research Conference, Alexandria, VA, September 25-27, 1999

"The Internet Market Characteristics and Regulatory Conundrums," (with Agustin Ros), International Communications Forecasting Conference, Denver, CO, June 15-18, 1999

"Telecommunications Privatization and Tariff Rebalancing Evidence from Latin America," (with Agustin Ros), 18th Annual Eastern Conference of the Advanced Workshop in Regulation and Competition, Rutgers University, Newport, RI, May 26-28, 1999

"An Estimate of Current Universal Service Obligations and the Likely Impact of Federal and State Universal Service Plans," (with Agustin Ros and Neil Zoltowski), International Communications Forecasting Conference, St Louis, MO, June 9-12, 1998

"Competitive Telecommunications and its Aftermath Economic Policy Issues and Modeling Needs," International Communications Forecasting Conference, Dallas, TX, April 16-19, 1996

"On Modelling the Dynamics of Demand for Optional and New Services," International Communications Forecasting Conference, Toronto, Canada, June 13-16, 1995

"The Case Against Imputation of Access Charges in IntraLATA Toll Prices Economic Efficiency and Fairness Reconsidered," Rutgers University Advanced Workshop in Regulation and Public Utility Economics, Seventh Annual Western Conference, San Diego, CA, July 6-8, 1994

"Future Directions in Modeling the Demand for Vertical Services," National Telecommunications Demand Study Conference, La Jolla, CA March 24-25, 1994

"E A Maximum Likelihood Estimation Program," National Telecommunications Forecasting Conference, Crystal City, VA, June 1-4, 1993

Discussant of "The National Telecommunications Demand Study," National Regulatory Research Conference on Telecommunications Demand, Denver, CO, August 3-5, 1992

"Using Demographics to Predict New Service Take Rates Discrete Choice Analysis vs Categorical Data Analysis," National Telecommunications Forecasting Conference, Atlanta, GA, May 5-8, 1992

"Price Cap Regulations for the LECs Implications for Demand and Revenue Forecasting," National Telecommunications Forecasting Conference, Boston, MA, May 30, 1991

"Demand Migration for Special Access High Capacity Services," Rutgers University Advanced Workshop in Regulation and Public Utility Economics, Third Annual Western Conference, San Diego, CA, July 11-13, 1990

"Error Components Panel Data Modeling of Telecommunications Access Demand," Bellcore-Bell Canada Telecommunications Demand Analysis

Conference, Hilton Head, SC, April 22-25, 1990, and Bell Atlantic Business Research Conference, Baltimore, MD, October 24-27, 1989

"Analysis of Integrated Demand Systems," Rutgers University Advanced Workshop in Regulation and Public Utility Economics, Second Annual Western Conference, Monterey, CA, July 5-7, 1989

Panel Discussion on "The Regulatory and Operational Impacts of Price Caps," National Telecommunications Forecasting Conference, San Francisco, CA, May, 1989

March 2, 2003

Exhibit AXB-2: Customer locations that meet the criteria for potential deployment of high-capacity loop facilities

Index	Address	City
1	5252 HICKORY HOLLOW PKWY	ANTIOCH
2	100 WESTWOOD PL	BRENTWOOD
3	100 WINNERS CIR	BRENTWOOD
4	109 WESTPARK DR	BRENTWOOD
5	210 WESTWOOD PL	BRENTWOOD
6	5200 MARYLAND WAY	BRENTWOOD
7	5214 MARYLAND WAY	BRENTWOOD
8	5250 VIRGINIA WAY	BRENTWOOD
9	5301 MARYLAND WAY	BRENTWOOD
10	5301 VIRGINIA WAY	BRENTWOOD
11	750 OLD HICKORY BLVD	BRENTWOOD
12	1 FOUNTAIN SQ	CHATTANOOGA
13	1 UNION SQ	CHATTANOOGA
14	100 E 11TH ST	CHATTANOOGA
15	1000 VOLUNTEER BLDG	CHATTANOOGA
16	1101 MARKET ST	CHATTANOOGA
17	1110 MARKET ST	CHATTANOOGA
18	1501 RIVERSIDE DR	CHATTANOOGA
19	2 UNION SQ	CHATTANOOGA
20	2100 HAMILTON PLACE BLVD	CHATTANOOGA
21	2333 MCCALLIE AVE	CHATTANOOGA
22	2525 DESALES AVE	CHATTANOOGA
23	401 CHESTNUT ST	CHATTANOOGA
24	537 MARKET ST	CHATTANOOGA
25	540 MCCALLIE AVE	CHATTANOOGA
26	5959 SHALLOWFORD RD	CHATTANOOGA
27	600 MARKET ST	CHATTANOOGA
28	601 WALNUT ST	CHATTANOOGA
29	615 MCCALLIE AVE	CHATTANOOGA
30	701 MARKET ST	CHATTANOOGA
31	735 BROAD ST	CHATTANOOGA
32	801 PINE ST	CHATTANOOGA
33	979 E 3RD ST	CHATTANOOGA
34	1000 CORPORATE CENTRE DR	FRANKLIN
35	113 SEABOARD LN	FRANKLIN
36	1800 GALLERIA BLVD	FRANKLIN
37	263 SEABOARD LN	FRANKLIN
38	277 MALLORY STATION RD	FRANKLIN
39	341 COOL SPRINGS BLVD	FRANKLIN
40	501 CORPORATE CENTRE DR	FRANKLIN
41	720 COOL SPRINGS BLVD	FRANKLIN
42	810 CRESCENT CENTRE DR	FRANKLIN
43	830 CRESCENT CENTRE DR	FRANKLIN
44	9009 CAROTHERS PKWY	FRANKLIN
45	6750 POPLAR AVE	GERMANTOWN
46	1000 RIVERGATE PKWY	GOODLETTSVILLE
47	708 W FOREST AVE	JACKSON

48	101 E BLOUNT AVE	KNOXVILLE
49	1111 N NORTHSHORE DR	KNOXVILLE
50	137 E BLOUNT AVE	KNOXVILLE
51	1600 RIVERVIEW TOWER	KNOXVILLE
52	1900 WINSTON RD	KNOXVILLE
53	1924 ALCOA HWY	KNOXVILLE
54	2200 SUTHERLAND AVE	KNOXVILLE
55	400 W SUMMIT HILL DR	KNOXVILLE
56	550 W MAIN ST	KNOXVILLE
57	620 MARKET ST	KNOXVILLE
58	7600 KINGSTON PIKE	KNOXVILLE
59	900 E OAK HILL AVE	KNOXVILLE
60	1 COMMERCE SQ	MEMPHIS
61	100 N MAIN ST	MEMPHIS
62	100 PEABODY PL	MEMPHIS
63	1000 RIDGEWAY LOOP RD	MEMPHIS
64	1010 JUNE RD	MEMPHIS
65	1023 CHERRY RD	MEMPHIS
66	1030 JEFFERSON AVE	MEMPHIS
67	1100 RIDGEWAY LOOP RD	MEMPHIS
68	119 S MAIN ST	MEMPHIS
69	1211 UNION AVE	MEMPHIS
70	125 N MAIN ST	MEMPHIS
71	1325 EASTMORELAND AVE	MEMPHIS
72	1331 UNION AVE	MEMPHIS
73	1355 LYNNFIELD RD	MEMPHIS
74	1407 UNION AVE	MEMPHIS
75	160 N MAIN ST	MEMPHIS
76	165 MADISON AVE	MEMPHIS
77	1715 AARON BRENNER DR	MEMPHIS
78	175 TOYOTA PLZ	MEMPHIS
79	1800 PYRAMID PL	MEMPHIS
80	1991 CORPORATE AVE	MEMPHIS
81	200 JEFFERSON AVE	MEMPHIS
82	201 POPLAR AVE	MEMPHIS
83	22 N FRONT ST	MEMPHIS
84	2491 WINCHESTER RD	MEMPHIS
85	2525 HORIZON LAKE DR	MEMPHIS
86	2555 POPLAR AVE	MEMPHIS
87	2650 THOUSAND OAKS BLVD	MEMPHIS
88	2670 UNION AVENUE EXT	MEMPHIS
89	2714 UNION AVENUE EXT	MEMPHIS
90	2760 N GERMANTOWN PKWY	MEMPHIS
91	300 COURT AVE	MEMPHIS
92	3150 LENOX PARK BLVD	MEMPHIS
93	332 N LAUDERDALE ST	MEMPHIS
94	35 UNION AVE	MEMPHIS
95	3535 KIRBY RD	MEMPHIS
96	3610 HACKS CROSS RD	MEMPHIS
97	3840 HOMEWOOD RD	MEMPHIS
98	40 S MAIN ST	MEMPHIS
99	4300 NEW GETWELL RD	MEMPHIS

100	4465 POPLAR AVE	MEMPHIS
101	4646 POPLAR AVE	MEMPHIS
102	50 N DUNLAP ST	MEMPHIS
103	50 N FRONT ST	MEMPHIS
104	5050 POPLAR AVE	MEMPHIS
105	5350 POPLAR AVE	MEMPHIS
106	5384 POPLAR AVE	MEMPHIS
107	5575 POPLAR AVE	MEMPHIS
108	5705 STAGE RD	MEMPHIS
109	5865 RIDGEWAY CENTER PKWY	MEMPHIS
110	5959 PARK AVE	MEMPHIS
111	6000 POPLAR AVE	MEMPHIS
112	6005 PARK AVE	MEMPHIS
113	6019 WALNUT GROVE RD	MEMPHIS
114	6055 PRIMACY PKW	MEMPHIS
115	6060 POPLAR AVE	MEMPHIS
116	6060 PRIMACY PKWY	MEMPHIS
117	6075 POPLAR AVE	MEMPHIS
118	6263 POPLAR AVE	MEMPHIS
119	6305 HUMPHREYS BLVD	MEMPHIS
120	6363 POPLAR AVE	MEMPHIS
121	6401 POPLAR AVE	MEMPHIS
122	6410 POPLAR AVE	MEMPHIS
123	6525 N QUAIL HOLLOW RD	MEMPHIS
124	6555 QUINCE RD	MEMPHIS
125	66 N PAULINE ST	MEMPHIS
126	6745 LENOX CENTER CT	MEMPHIS
127	755 CROSSOVER LN	MEMPHIS
128	775 RIDGE LAKE BLVD	MEMPHIS
129	7777 N BROTHER BLVD	MEMPHIS
130	80 MONROE AVE	MEMPHIS
131	803 CHANNEL 3 DR	MEMPHIS
132	814 JEFFERSON AVE	MEMPHIS
133	825 CROSSOVER LN	MEMPHIS
134	8285 TOURNAMENT DR	MEMPHIS
135	845 CROSSOVER LN	MEMPHIS
136	850 RIDGE LAKE BLVD	MEMPHIS
137	860 RIDGE LAKE BLVD	MEMPHIS
138	920 MADISON AVE	MEMPHIS
139	965 RIDGE LAKE BLVD	MEMPHIS
140	ART MUSEUM CFA	MEMPHIS
141	1301 E MAIN ST	MURFREESBORO
142	400 N HIGHLAND AVE	MURFREESBORO
143	1 BURTON HILLS BLVD	NASHVILLE
144	1 GAYLORD DR	NASHVILLE
145	1 PARK PLZ	NASHVILLE
146	1 PUBLIC SQ	NASHVILLE
147	1 TERMINAL DR	NASHVILLE
148	1 VANTAGE WAY	NASHVILLE
149	1005 DR DB TODD JR BLVD	NASHVILLE
150	113 CANDY LN	NASHVILLE
151	1211 22ND AVE S	NASHVILLE

152	1214 CHURCH ST	NASHVILLE
153	1281 MURFREESBORO PIKE	NASHVILLE
154	1310 24TH AVE S	NASHVILLE
155	1321 MURFREESBORO PIKE	NASHVILLE
156	1415 MURFREESBORO PIKE	NASHVILLE
157	150 4TH AVE N	NASHVILLE
158	1700 ELM HILL PIKE	NASHVILLE
159	1719 W END AVE	NASHVILLE
160	1801 W END AVE	NASHVILLE
161	1808 W END AVE	NASHVILLE
162	1900 CHURCH ST	NASHVILLE
163	20 BURTON HILLS BLVD	NASHVILLE
164	200 ATHENS WAY	NASHVILLE
165	200 JAMES ROBERTSON PKWY	NASHVILLE
166	2000 CHURCH ST	NASHVILLE
167	2002 RICHARD JONES RD	NASHVILLE
168	201 4TH AVE N	NASHVILLE
169	201 8TH AVE S	NASHVILLE
170	2100 W END AVE	NASHVILLE
171	2126 ABBOTT MARTIN RD	NASHVILLE
172	21ST & GARLAND	NASHVILLE
173	22 CENTURY BLVD	NASHVILLE
174	222 2ND AVE N	NASHVILLE
175	226 CAPITOL BLVD	NASHVILLE
176	2300 PATTERSON ST	NASHVILLE
177	2400 PATTERSON ST	NASHVILLE
178	2401 21ST AVE S	NASHVILLE
179	2451 ATRIUM WAY	NASHVILLE
180	25 CENTURY BLVD	NASHVILLE
181	2525 W END AVE	NASHVILLE
182	26 CENTURY BLVD	NASHVILLE
183	2636 ELM HILL PIKE	NASHVILLE
184	2800 OPRYLAND DR	NASHVILLE
185	2817 W END AVE	NASHVILLE
186	2931 ELM HILL PIKE	NASHVILLE
187	300 20TH AVE N	NASHVILLE
188	301 S PERIMETER PARK DR	NASHVILLE
189	3102 W END AVE	NASHVILLE
190	312 8TH AVE N	NASHVILLE
191	319 FESSLERS LN	NASHVILLE
192	3200 W END AVE	NASHVILLE
193	3310 W END AVE	NASHVILLE
194	3322 W END AVE	NASHVILLE
195	3354 PERIMETER DR	NASHVILLE
196	3401 W END AVE	NASHVILLE
197	3841 GREEN HILLS VILLAGE DR	NASHVILLE
198	391 WALLACE RD	NASHVILLE
199	400 DEADERICK ST	NASHVILLE
200	401 CHURCH ST	NASHVILLE
201	404 BNA DR	NASHVILLE
202	404 JAMES ROBERTSON PKWY	NASHVILLE
203	414 UNION ST	NASHVILLE

204	4230 HARDING PIKE	NASHVILLE
205	424 CHURCH ST	NASHVILLE
206	425 5TH AVE N	NASHVILLE
207	440 HOGAN RD	NASHVILLE
208	475 METROPLEX DR	NASHVILLE
209	500 DEADERICK ST	NASHVILLE
210	500 JAMES ROBERTSON PKWY	NASHVILLE
211	501 NELSON PL	NASHVILLE
212	505 DEADERICK ST	NASHVILLE
213	511 UNION ST	NASHVILLE
214	53 CENTURY BLVD	NASHVILLE
215	545 MAINSTREAM DR	NASHVILLE
216	545 MARRIOTT DR	NASHVILLE
217	611 COMMERCE ST	NASHVILLE
218	621 MAINSTREAM DR	NASHVILLE
219	703 MURFREESBORO RD	NASHVILLE
220	710 JAMES ROBERTSON PKWY	NASHVILLE
221	719 THOMPSON LN	NASHVILLE
222	811 ROYAL PKWY	NASHVILLE
223	830 FESSLERS PKWY	NASHVILLE
224	151 LAFAYETTE DR	OAK RIDGE
225	990 OAK RIDGE TPKE	OAK RIDGE

Exhibit AXB-3: Routes between BellSouth wire centers in the same LATA that meet the criteria for potential deployment of transport facilities

Index	CLLI 1	CLLI 2	LATA
1	KNVLTNBE	KNVLTNFC	KNOXVILLE
2	KNVLTNBE	KNVLTNMA	KNOXVILLE
3	KNVLTNBE	KNVLTNWH	KNOXVILLE
4	KNVLTNBE	OKRGTNMT	KNOXVILLE
5	KNVLTNFC	KNVLTNMA	KNOXVILLE
6	KNVLTNFC	KNVLTNWH	KNOXVILLE
7	KNVLTNFC	OKRGTNMT	KNOXVILLE
8	KNVLTNMA	KNVLTNWH	KNOXVILLE
9	KNVLTNMA	OKRGTNMT	KNOXVILLE
10	KNVLTNWH	OKRGTNMT	KNOXVILLE
11	FKLNTNCC	NSVLTNAP	NASHVILLE
12	FKLNTNCC	NSVLTNBW	NASHVILLE
13	FKLNTNCC	NSVLTNCH	NASHVILLE
14	FKLNTNCC	NSVLTNDO	NASHVILLE
15	FKLNTNCC	NSVLTNMT	NASHVILLE
16	FKLNTNCC	NSVLTNST	NASHVILLE
17	FKLNTNCC	NSVLTNUN	NASHVILLE
18	MRBOTNMA	NSVLTNCH	NASHVILLE
19	MRBOTNMA	NSVLTNDO	NASHVILLE
20	MRBOTNMA	NSVLTNMT	NASHVILLE
21	MRBOTNMA	NSVLTNUN	NASHVILLE

BELLSOUTH TELECOMMUNICATIONS, INC.

DIRECT TESTIMONY OF A. WAYNE GRAY

BEFORE THE TENNESSEE REGULATORY AUTHORITY

DOCKET NO. 03-00527

MARCH 1, 2004

Q. PLEASE STATE YOUR NAME, YOUR BUSINESS ADDRESS, AND YOUR POSITION WITH BELLSOUTH TELECOMMUNICATIONS, INC. ("BELLSOUTH").

A My name is A Wayne Gray My business address is 675 West Peachtree Street, Atlanta, Georgia 30375 My title is Director – Regional Planning and Engineering Center in the Network Planning and support organization

Q. PLEASE SUMMARIZE YOUR BACKGROUND AND EXPERIENCE.

A I graduated from Georgia Tech in 1979, with a Bachelor of Electrical Engineering degree In 1992, I received a Master of Business Administration degree from Emory University I began working for Southern Bell in 1979, in the Equipment Engineering organization in Miami, Florida Over the course of my 24-year career with BellSouth, I have held various line and staff positions in Equipment Engineering, Traffic Engineering (Capacity Management), Infrastructure Planning and Project Management In November 1999, I became Director-Collocation in the Network Planning and Support organization In December 2001, my scope of responsibility was expanded and my title was changed to Director – Regional Planning and Engineering Center In this position, I am responsible

for ensuring that BellSouth provisions collocation arrangements in the timeframes established by contractual agreements and governmental mandates I am also responsible for managing the planning and engineering of BellSouth's Advanced Intelligent Network, Common Channel Signaling Network, Link Monitoring System, Public Packet Switching Network, MemoryCall® Service platform, Pooled Internet Access Platforms, and corporate transport network My responsibilities also include the activities performed by BellSouth's Numbering and Technology Forecasting groups In addition, I direct all switch software upgrades and contract administration for the purchase of network technologies

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A The first part of my testimony describes the network architecture an efficient Competitive Local Exchange Carrier ("CLEC") would utilize to self provide high capacity loops over which it serves its customers The second part of my testimony describes the network architecture an efficient CLEC would utilize to self provide high capacity interoffice transport facilities I describe the certain network costs associated with the network architecture that a CLEC would utilize to self provide high capacity loops and transport, and which are discussed in the testimony of Dr Aniruddha ("Andy") Banerjee

I. HIGH-CAPACITY LOOPS

Q. WHAT DO YOU MEAN BY "HIGH CAPACITY LOOPS?"

A The types of loops covered in my testimony are DS1, DS3, and dark fiber These loops are known as "high-capacity loops" because they allow transmission speeds significantly higher than the 64 Kbps of voice grade lines High-capacity loops are typically used in corporate data networks and to provide voice service to enterprise locations requiring a large number of lines

"DS1 loop facilities" refer to digital loops having a total transmission speed of 1 544 Mbps provided over various transmission media including, but not limited to, two-wire and four-wire copper, coaxial cable, fiber optics, wireless, radio, and power line facilities A DS1 capacity loop contains the equivalent of 24 voice-grade or DS0 channels

"DS3 loop facilities" refer to digital loops having a total transmission speed of 44 736 Mbps provided over various transmission media including, but not limited to, fiber optics, coaxial cable, wireless, radio, and power line facilities A DS3 capacity loop contains the equivalent of 28 DS1 channels or 672 DS0 channels

"Dark fiber" refers to optical transmission loops without attached electronics, through which no light is transmitted and no signal is carried There is no transmission speed associated with dark fiber since the transmission speed of the loop depends on the type of electronics used to light the fiber

Q. PLEASE DISCUSS THE CAPACITY LEVELS ACHIEVED WHEN CARRIERS DEPLOY FIBER-OPTIC BASED TRANSMISSION SYSTEMS.

A Carriers typically deploy fiber-optic facilities that can operate at a range of capacities

determined by the electronics attached to them For example, when laying fiber it makes sense to deploy high-capacity, "OCn" facilities so that there will always be enough bandwidth to handle the traffic on a given loop The term "OCn" refers to Optical Carrier where "n" designates the optical carrier level The optical carrier level "n" is directly related to the quantity of DS3 capacity units the system is capable of handling simultaneously For example, OC48 systems provide capacity for 48 individual DS3 transmission "pipes" The carrier can then attach electronics to subdivide (or "channelize") the available capacity, activating the amount of capacity and number of channels needed along the loop The electronics used to do this channelization of OCn facilities into DS1 or DS3 facilities are relatively inexpensive, are widely available, and can be quickly installed whenever the carrier has demand for DS1 or DS3 facilities The equipment required is the same type of equipment CLECs such as AT&T and MCI use in their networks, and based upon my review of testimony filed by these CLECs and others, I am confident that CLECs are capable of performing the necessary tasks to subdivide capacity as needed

Q. ONCE AN OCn FACILITY IS INSTALLED, IS IT OPERATIONALLY READY TO OFFER DS1 OR DS3 LOOPS?

A Yes As explained in the previous answer, a carrier with channelized OCn facilities is operationally ready to provide DS1 or DS3 facilities

Q. PLEASE DISCUSS THE COSTS A CARRIER WOULD INCUR WERE IT TO CONSTRUCT ITS OWN HIGH CAPACITY LOOP FACILITIES TO OFFER RETAIL SERVICE IN A BUILDING.

A There are two types of cost that a carrier would incur -- the costs of extending the loop facility and the other costs of offering service (e g , sales costs, and general and administrative costs) I will describe the first category of costs below, the second category is discussed by BellSouth witness Dr Banerjee

Q. WHAT COSTS ARE INCURRED FOR A COMPETITIVE CARRIER TO EXTEND A LOOP FACILITY TO A PARTICULAR CUSTOMER LOCATION?

A Costs for network extension consist of one-time capital expenditures as well as operating expenses incurred on a recurring basis These costs are incurred at three points in the network (see Exhibit AWG-1) – at the newly connected building, at the currently collocated wire center or building that the new location is being connected to, and at a "node" along the fiber route itself

Moving from the left of Exhibit AWG-1, the "Off Net Building" is the one that is not connected directly to the existing fiber network It is sometimes referred to as a "spoke" off the fiber-optic network At that Off Net Building, one would find the equipment elements listed on the left hand side of Exhibit AGW-1 The Light Guide Cross-connect ("LGX") allows the attachment of individual fiber optic strands (via fiber optic "jumpers") to connectors that allow the fiber to be interfaced with other electronics such as the multiplexers The fiber optic "pipe" is then channelized by the multiplexer into smaller DS1 or DS3 transmission paths (dependent on customer demand) via plug-in electronic cards and other cross-connect panels At the customer's premises, channel-bank equipment is utilized to convert the DS1 or DS3 pipes into individual channels (at

DS0 level) via so-called D-4 channel bank equipment The intra-building network cable and termination ("INCT") provides the inside wiring required to access the entire customer location INCT is not always required to be purchased for various reasons, but I have made the conservative assumption that the CLEC is required to purchase INCT in 100% of the buildings it serves

Between the Off Net Building and the node on the CLEC's existing fiber-optic network is the fiber optic cable itself Here, a CLEC would incur the (distance-sensitive) material cost of the fiber-optic cable, as well as construction fees and other fees paid to use another party's poles, ducts or conduits

At the node location on the CLEC's fiber optic network, the CLEC would incur costs for the same types of equipment needed at the Off Net building (LGX bays, fiber jumpers, etc)

The configuration of the network equipment required at the new and existing wire centers to terminate the fiber and provide DS0/DS1/DS3 loops to end-use customers is illustrated in Exhibit AWG-2 This diagram shows pictorially the relationship of the individual "piece parts" described above

Q. WHAT ARE THE COSTS FOR THE EQUIPMENT ELEMENTS LISTED?

A Both the capital and operating costs for each piece of equipment is listed in Exhibit AWG-3 These numbers reflect the fully installed costs of all equipment, including

material, labor, all overhead, and taxes These costs are taken directly from the cost study that BellSouth filed in the Authority's most recent UNE cost case, Docket No 00-00544, and which underlie the UNE rates approved by this Authority While CLECs will no doubt contend that such costs may not reflect CLEC specific costs, any such contention is misguided UNE rates are intended to reflect the costs associated with deploying an efficient network architecture Moreover, in considering whether entry is economic in the context of analyzing potential deployment for switching, the FCC notes that such an analysis "must be based on the most efficient business model for entry rather than any particular carrier's business model " It stands to reason that any cost considerations involved in the potential deployment analysis for loops and transport should focus on an efficient network and an efficient business model

Q. HOW DO THE COSTS THAT BELLSOUTH FILED WITH THE AUTHORITY ACCOUNT FOR RIGHTS OF WAY?

A The costs filed with the Authority include what BellSouth pays for Right of Way ("ROW") and other permitting fees both at the state and the municipality level Specifically, these and other miscellaneous fees are accounted for 1) in the in-plant factor that is applied to the base material cost to determine the fully-loaded capital cost, 2) in the "Ad Valorem & Other Tax" factor that is used to determine the non-plant-specific operating expense These factors include ROW, municipal license taxes, state privilege taxes, state self-insurer's tax, and taxes levied upon the assessed value of property

Q. HOW DO YOU DETERMINE THE QUANTITY OF MULTIPLEXERS AND DS1/DS3 CARDS NEEDED?

A The quantities of network equipment needed scales with demand We assume that one DS1 circuit equivalent to be provided for every $500 per month of retail revenue This factor was estimated based on the report "Art of War," J P Morgan, November 2003, and its supporting spreadsheet After determining the number of DS1 equivalents ("N") needed, the requirement of DS1/DS3 plug-ins is calculated as follows

If N <= 28, number of DS1s = N, number of DS3s = 0

If N > 28, number of DS1s = max (28, N x 1/3), rounded up to the next integer, number of DS3s = 2/3 x N/28, rounded up to the next integer

If more than 3 muldems (another term for a multiplexer) are needed, equipment is scaled by adding another OC3 multiplexer, as shown in Exhibit AWG-2

II. HIGH-CAPACITY TRANSPORT

Q. WHAT IS A "ROUTE?"

A A route is defined in the FCC's rules as "a transmission path between one of an incumbent LEC's wire centers or switches and another of the incumbent LEC's wire centers or switches" within a LATA Furthermore, "a route between two points (*e g* , wire center or switch "a" and wire center or switch "z") may pass through one or more intermediate wire centers or switches (*e g* , wire center or switch "x") Transmission paths between identical end points (*e g* , wire center or switch "a" and wire center or switch "z") are the same 'route,' irrespective of whether they pass through the same

intermediate wire centers or switches, if any " 47 C F R §51 319(e)

Q. IS IT REASONABLE TO INFER THAT A CARRIER IS OPERATIONALLY READY TO USE ITS FACILITIES TO PROVIDE DEDICATED TRANSPORT ALONG A "ROUTE" BETWEEN ANY PAIR OF INCUMBENT LEC WIRE CENTERS WHERE IT HAS OPERATIONAL COLLOCATION ARRANGEMENTS?

A Yes It is logical and reasonable to conclude that a carrier can route traffic between any pair of wire centers within a LATA where it has operational collocation arrangements, i e that a carrier's network is fully interconnected Although, for network and cost efficiency reasons it is unlikely that a CLEC would have a *direct* link between every ILEC wire center where it is collocated (e g , it may instead have a "hub and spoke" layout where traffic is routed through the CLEC's point of presence), that fact is not determinative under the FCC's definition of a "route," because that definition expressly states that intermediate wire centers or interconnection points outside the ILECs' facilities (e g , collocation hotel, data center, CLEC point of presence) may be present on the transmission path between two ILEC wire centers For example, in response to discovery in Florida Docket No 030852, AT&T explained its transport network as "connect[ing], for example, our switch to ILEC office A and facilities that connect our switch to ILEC office B using portions of a fiber that passes near/through both A and B " (AT&T Response to Verizon's First Interrogatories, No 1)

CLECs, especially CLECs that are also interexchange carriers, can use hub-and-spoke arrangements or fiber connections directly off of their existing fiber rings to connect

central office collocations The architecture is such that the connection can be made by connecting fiber from one ring to fiber from another ring to construct the route This approach can also be used to connect end user locations to the network

Q. HOW DO INDIRECT ROUTES THROUGH A SWITCH COMPARE WITH DIRECT ROUTES BETWEEN ILEC WIRE CENTERS IN TERMS OF RELIABILITY AND QUALITY OF SERVICE?

A For all practical purpose, they are equivalent Indirect routes with multiple intermediate switches are used all the time in any voice or data network and the number of intermediate switches is typically higher for interLATA routes (especially for routes across the country) CLECs typically use indirect routes to route traffic between two ILEC central offices even if they buy dedicated transport from the ILEC since their logical architecture is still a hub and spoke with every circuit passing through a CLEC switch Finally, it is common for BellSouth to use intermediate switching equipment on routes between its central offices, although this fact is transparent to CLECs buying dedicated transport from BellSouth

Q. IF A CARRIER HAS AN OCn TRANSPORT FACILITY TO A COLLOCATION ARRANGEMENT IN AN ILEC WIRE CENTER, IS THAT CARRIER OPERATIONALLY READY TO PROVIDE DS3 AND DS1 TRANSPORT TO THAT SPECIFIC WIRE CENTER?

A Yes As described above for loops, carriers typically deploy fiber-optic facilities that can operate at a range of capacities determined by the electronics attached to them For

example, when laying fiber it makes sense to deploy high-capacity, OCn facilities so that there will be enough bandwidth to handle all traffic on a given route and leave additional capacity available for growth The carrier can then attach electronics to subdivide (or "channelize") the available capacity, activating the amount of capacity and number of channels needed along the route The electronics used to do this channelization of OCn facilities into DS1 or DS3 facilities are relatively inexpensive, are widely available, and can be quickly installed whenever the carrier has demand for DS3 or DS1 transport facilities The fact that the capacity of the facility itself is at the OCn level is therefore independent of the carrier's ability to provide a dedicated DS1 or DS3 transport route over that facility

Q. WHEN CARRIERS CONSTRUCT FIBER OPTIC TRANSMISSION SYSTEMS, IS IT COMMON TO INCLUDE AN ALLOWANCE FOR SPARE (SOMETIMES REFERRED TO AS "UNLIT") FIBER OPTIC STRANDS?

A Yes, for network engineering reasons and based on the cost structure of fiber cables, it is common to place additional spare fiber strands in anticipation of future needs Since the cost of deploying a fiber cable is mostly fixed (e g , digging up the streets, attaching cable to poles, and deploying the fiber) and only slightly correlated with the number of fiber strands in the cable, carriers almost always choose to deploy a considerable larger number of strands than what they need for their immediate transmission needs In fact, although generally four (4) fibers are enough to support OCn circuits that can provide enough capacity for any route (e g , an OC192 has capacity for 192 DS3s, or 129,024 simultaneous voice conversation, and this capacity can be multiplied several times over with the use of Dense Wave Division Multiplexing ("DWDM") technology), CLECs

typically deploy 144 fiber strands or more when extending a cable to large commercial buildings or ILEC wire centers Sizing cables in this manner is how BellSouth is able to provide dark fiber to CLECs on request – when carriers construct networks, no carrier simply places facilities only for actual demand Instead, demand for future needs are factored in such that an efficient carrier does not later incur additional construction costs

Q. WHAT FACTORS INFLUENCE A CARRIER'S COSTS TO EXTEND THE CARRIER'S NETWORK TO AN ADDITIONAL WIRE CENTER?

A A competitive carrier's network is typically fully interconnected That is, transport can be provided between all of a carrier's collocated wire centers in a LATA It follows that to add a new wire center to its network, all a carrier has to do is extend its fiber from any location where it is currently present to the new wire center This will allow it to connect the new wire center with all its others in the LATA To determine the costs of making such an extension, one must first identify the nearest location, then determine what expenses will be incurred in laying the new fiber and adding equipment to make the fiber operationally ready to provide transport

Q. HOW DO YOU DETERMINE THE COST TO EXTEND THE CARRIER'S NETWORK TO AN ADDITIONAL WIRE CENTER?

A Costs for network extension consist of one-time capital expenditures as well as operating expenses incurred on a recurring basis These costs are incurred at three points in the network (see Exhibit AWG-4) – at the newly connected wire center, at the currently collocated wire center or building that the new location is being connected to, and along

the fiber route itself

As is shown starting on the left side of the diagram in Exhibit AWG-4, the network equipment required at the new (the so-called "Off Net" central office) and existing central office to terminate the fiber and provide DS1/DS3 facilities is depicted Those devices are functionally similar to those used in the context of providing high capacity loops to a new customer location that I described earlier in this testimony For the sake of brevity, I will not repeat that discussion here Exhibit AWG-5 shows the physical and functional interaction between those devices CLECs also have to pay BellSouth nonrecurring and recurring collocation charges at the new central office, which vary based on the equipment deployed and the amount of space occupied Additional costs are incurred in constructing fiber cable to the new wire center This cost is a function of the distance, and – depending on the geography – a combination of aerial, buried and underground fiber may need to be deployed There are additional pole and conduit costs associated with aerial and underground fiber, respectively

I would note that, to determine reasonable costs, certain expenses incurred when connecting facilities to central offices and to customers buildings are not unique associated with a particular route

Q. WHAT ARE THE COSTS FOR THE EQUIPMENT ELEMENTS LISTED?

A Both the capital and operating costs for each piece of equipment is listed in Exhibit AWG-6 These numbers reflect the fully installed costs of all equipment, including materials, labor, all overhead, and taxes These costs are taken directly from the cost

study which BellSouth filed in the Authority's most recent UNE cost case, Docket No 00-00544, and which underlie the UNE rates approved by this Authority The costs are those that an efficient provider could reasonably be expected to pay

Q. HOW DO YOU DETERMINE THE QUANTITY OF MULTIPLEXERS AND DS1/DS3 CARDS NEEDED?

A The quantities of network equipment needed scales with demand The number of OC12 and OC48 multiplexers is determined by the number of corresponding circuits demanded The number of OC3 multiplexers is determined by adding the number of OC3 circuits demanded and the OC3 multiplexers needed to handle the demand for DS1 and DS3 circuits The requirement of DS1s and DS3s cards is calculated by adding the DS1/DS3 cards needed to handle demand for these circuits, and the DS1/DS3 cards needed for 100% utilization of OC3, 90% utilization of OC12, and 80% utilization of OC48 multiplexers, assuming equal share of DS1 and DS3 muldems

Q: THE FCC'S HAS INCLUDED, AS PART OF ITS WHOLESALE TRANSPORT RULE, A REQUIREMENT THAT CLECS ARE ABLE TO OBTAIN REASONABLE ACCESS TO CROSS-CONNECTS. CAN YOU ADDRESS THIS?

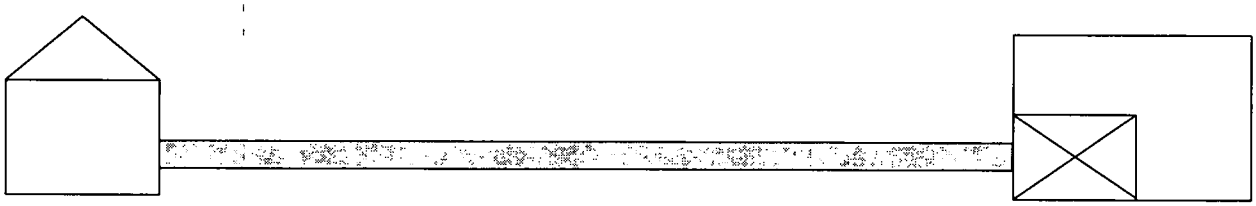
A Yes The availability of cross-connects is discussed in my direct testimony in Tennessee Switching Docket No 03-00491 That testimony accurately answers this question

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A Yes

COST ELEMENTS FOR NETWORK EXTENSION (HIGH CAPACITY LOOPS)

BellSouth Telecommunications, Inc
Tennessee Regulatory Authority
Docket Number 03-00527
Exhibit AWG-1



"Off Net" building

- LGX
- Fiber jumpers
- OC3 multiplexer(s) depending on demand (commons + hardwire)
- DS1/DS3 plug-ins
- DS1/DS3 cross connect panels
- D-4 channel bank with plug-ins
- Intrabuilding Network Cable and Termination (INCT)

Other costs include

- COGS**
- SG&A

CLEC fiber extension (distance sensitive)

- Right-of-way fees
- Installed investment for aerial, buried, and underground fiber
- Associated pole and conduit costs

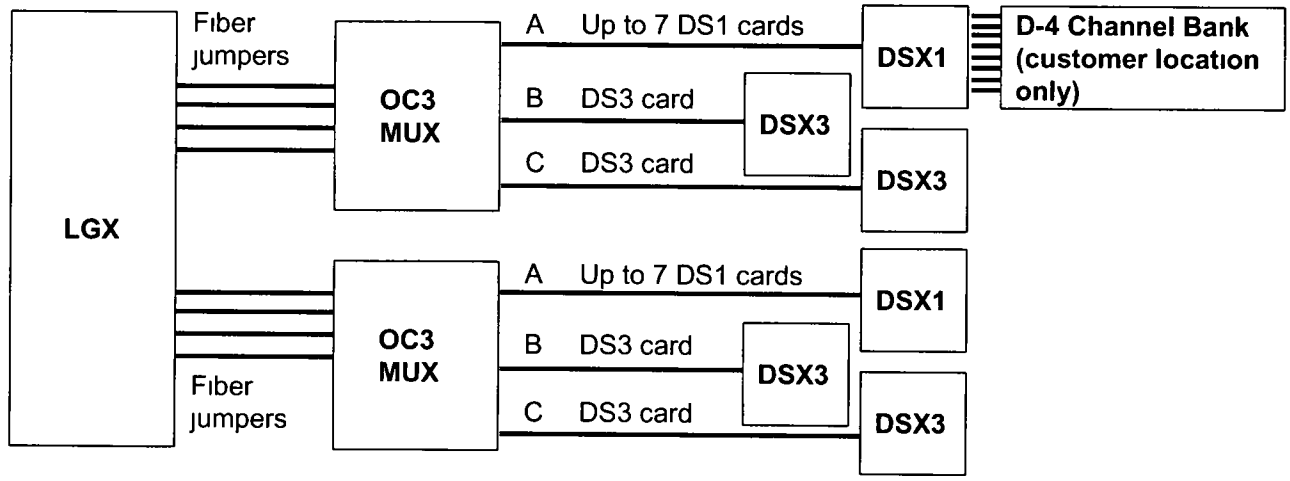
CLEC existing node

- LGX
- Fiber jumpers
- OC3 multiplexer(s) depending on demand (commons + hardwire)
- DS1/DS3 plug-ins
- DS1/DS3 cross connect panels

Includes Ad Valorem and other taxes
Includes all non loop costs and some depreciation for equipment in other parts of the network e g switch for local voice

BellSouth Telecommunications, Inc
Tennessee Regulatory Authority
Docket Number 03-00527
Exhibit AWG-2

NETWORK ARCHITECTURE/EQUIPMENT NEEDED FOR FIBER EXTENSION (HIGH CAPACITY LOOPS)



Notes

- Same equipment is installed at both ends, except the channel bank which is located only at the customer location
- Network equipment scales with demand, as follows
  - Number of DS1 circuits are forecast based on potential revenue
  - For N DS1 circuits required, the number of DS1s and DS3s are calculated as follows
    - If N <= 28, number of DS1s = N, number of DS3s = 0
    - If N > 28, number of DS1s = max (28, N x 1/3), rounded up to the next integer, number of DS3s = 2/3 x N/28, rounded up to the next integer
- Equipment is scaled by adding another OC3 MUX if more than 3 muldems are needed

BellSouth Telecommunications, Inc
Tennessee Regulatory Authority
Docket Number 03-00527
Exhibit AWG-3

Cost elements for network extension (High capacity loops)

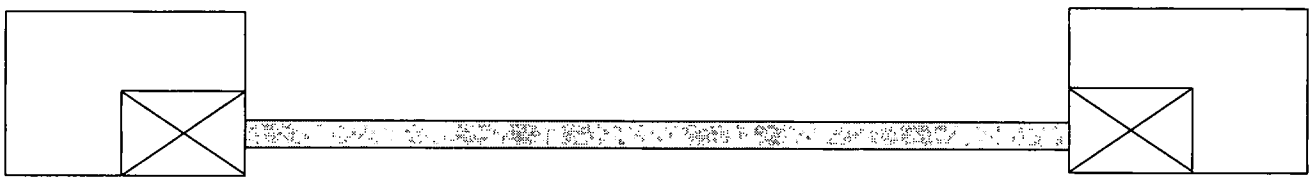
		Year 0 Capex ($)	Year 1+ Opex ($)
NetworkCosts (at customer premise)			
LGX		1,459 12	38 68
Fiber jumpers		149 26	3 96
OC3 multiplexer (commons + hardwire)		12,071 88	319 98
DS1 plug-in		1,030 29	27 31
DS3 plug-in		1,736 89	46 04
DS1 cross connect panel		2,162 03	57 31
DS3 cross connect panel		7,120 89	188 75
D4 channel bank (commons + hardwire)		6,948 20	184 17
Channel bank plug-ins (2 Data, 2 ISDN, 12 VG)		733 30	19 44
DS0 INCT first / additional	94 56 /	29 35	16 20
DS1 INCT first / additional	116 14 /	37 10	27 12
Network Costs (at node)			
LGX		486 37	12 89
Fiber jumpers		149 26	3 96
OC3 multiplexer (commons + hardwire)		12,071 88	319 98
DS1 plug-in		1,030 29	27 31
DS3 plug-in		1,736 89	46 04
DS1 cross connect panel		2,162 03	57 31
DS3 cross connect panel		7,120 89	188 75
Fiber Extension Costs (per foot for 100-strand fiber)			
Average # of strands in fiber cable	100		
Total installed investment		4 64	0 07
Pole factor		0 67	0 03
Conduit factor		1 29	0 01
Total per foot costs		***6 6032***	***0 1096***

ASSUMPTIONS

- Number of fiber strands 100
- Aerial Fiber 47 1%
- Buried fiber 13 3%
- Underground fiber 39 6%

BellSouth Telecommunications, Inc
Tennessee Regulatory Authority
Docket Number 03-00527
Exhibit AWG-4

COST ELEMENTS FOR NETWORK EXTENSION (DEDICATED TRANSPORT)



"Off Net" Central Office**

- LGX
- Fiber jumpers
- OC3/OC12/OC48 multiplexer(s) depending on demand (commons + hardwire)
- DS1/DS3 plug-ins
- DS1/DS3 cross connect panels

Other costs include

- Collocation expense

CLEC fiber extension (distance sensitive)

- Right-of-way fees
- Installed investment for aerial, buried, and underground fiber
- Associated pole and conduit costs

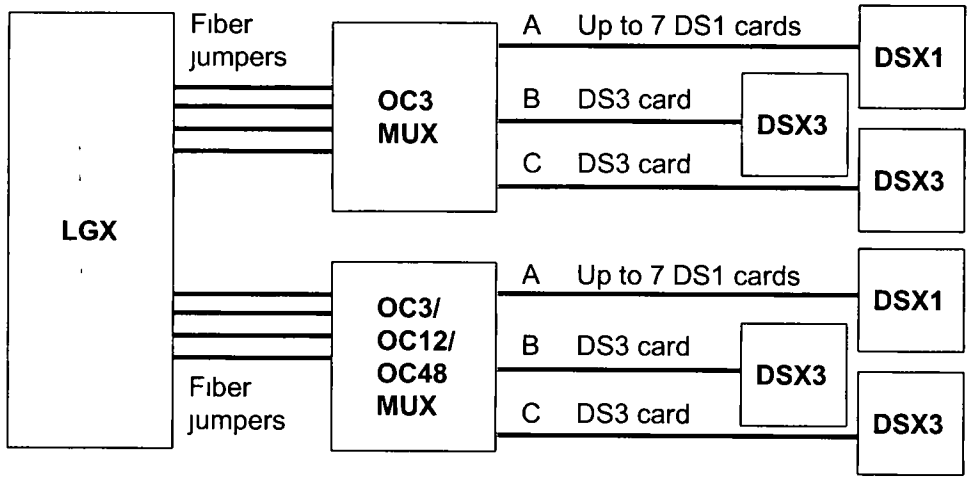
Central office* with CLEC fiber and collocation**

- LGX
- Fiber jumpers
- OC3/OC12/OC48 multiplexer(s) depending on demand (commons + hardwire)
- DS1/DS3 plug-ins
- DS1/DS3 cross connect panels

Includes Ad Valorem and other taxes
BLS central office where CLEC has not built fiber
** Fiber may pass through an existing node before reaching here

BellSouth Telecommunications, Inc
Tennessee Regulatory Authority
Docket Number 03-00527
Exhibit AWG-5

NETWORK ARCHITECTURE/EQUIPMENT NEEDED FOR FIBER EXTENSION (DEDICATED TRANSPORT)



Notes

- Same equipment is installed at both ends
- Network equipment scales with demand, as follows
  - Number of OC12 and OC48 multiplexers is determined by the number of corresponding circuits demanded
  - Number of OC3 multiplexers is determined by adding the number of OC3 circuits demanded and the OC3 multiplexers needed to handle the demand for DS1 and DS3 circuits
  - The requirement of DS1s and DS3s cards is calculated by adding
    - DS1 and DS3 cards needed to handle demand for DS1 and DS3 circuits
    - DS1 and DS3 cards needed for 100% utilization of OC3, 90% utilization of OC12, and 80% utilization of OC48 multiplexers, assuming equal share of DS1 and DS3 muldems

BellSouth Telecommunications, Inc
Tennessee Regulatory Authority
Docket Number 03-00527
Exhibit AWG-6

Cost elements for network extension (Dedicated Transport)

		Year 0 CapEx ($)	Year 1+ OpEx ($)
NetworkCosts (at new CO)			
LGX		$2 863 65	$69 59
Fiber jumpers		$292 93	$7 12
OC3 multiplexer (commons + hardwire)		$14 113 72	$342 98
OC12 multiplexer		$22 649 63	$550 41
OC48 multiplexer		$65,529 56	$1,592 43
DS1 plug-in		$1 022 69	$24 85
DS3 plug-in		$1 724 07	$41 90
DS1 cross connect panel		$4 243 14	$103 11
DS3 cross connect panel		$13 975 30	$339 61
Collocation expense		$8 722 74	$24 155 45
Network Costs (at CO currently in cloud)			
LGX		$954 55	$23 20
Fiber jumpers		$292 93	$7 12
OC3 multiplexer (commons + hardwire)		$14,113 72	$342 98
OC12 multiplexer		$22,649 63	$550 41
OC48 multiplexer		$65 529 56	$1,592 43
DS1 plug-in		$1 022 69	$24 85
DS3 plug-in		$1,724 07	$41 90
DS1 cross connect panel		$4,243 14	$103 11
DS3 cross connect panel		$13,975 30	$339 61
Fiber Extension Costs (per foot for 100-strand fiber)			
Average # of strands in fiber cable	100		
Total installed investment		$4 64	$0 07
Pole factor		$0 67	$0 03
Conduit factor		$1 29	$0 01
Total per foot costs		***$6 6032***	***$0 1096***

ASSUMPTIONS

- Number of fiber strands 100
- Aerial Fiber 47 1%
- Buried fiber 13 3%
- Underground fiber 39 6%

BELLSOUTH TELECOMMUNICATIONS, INC

DIRECT TESTIMONY OF SHELLEY W PADGETT

BEFORE THE TENNESSEE REGULATORY AUTHORITY

DOCKET NO 03-00527

MARCH 1, 2004

I. INTRODUCTION

Q PLEASE STATE YOUR NAME, YOUR POSITION WITH BELLSOUTH TELECOMMUNICATIONS, INC ("BELLSOUTH") AND YOUR BUSINESS ADDRESS

A My name is Shelley W Padgett I am employed by BellSouth as Manager – Regulatory and Policy Support in the Interconnection Services organization My business address is 675 West Peachtree Street, Atlanta, Georgia 30375

Q PLEASE PROVIDE A BRIEF DESCRIPTION OF YOUR BACKGROUND AND EXPERIENCE

A I graduated summa cum laude from Harding University in 1992, with a Bachelor of Arts degree in International Studies, and I did post-graduate work at The George Washington University I began my career in market research at ALLTEL Telecommunications, Inc ,

but left to obtain a Master of Business Administration degree from Texas A&M University, graduating in 1998. After receiving my graduate degree, I began employment with BellSouth in the Interconnection Services organization. I have held various positions involving Negotiations and Product Management within the BellSouth Interconnection Services organization. I have held my present position since October 2001.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I identify the customer locations and interoffice transport routes in BellSouth's territory in Tennessee where the triggers for loop and transport facilities established by the FCC in its Triennial Review Order (TRO) have been satisfied, and where Competitive Local Exchange Providers (CLECs) are therefore not impaired without access to unbundled high-capacity loops or dedicated transport.

The first part of my testimony focuses on the facilities triggers for high-capacity loops. I describe the two triggers the FCC established, explain how they should be applied, and present evidence of where the triggers have been satisfied in BellSouth's territory in Tennessee. My testimony demonstrates that the triggers have been met for DS1 loops to 33 customer locations, for DS3 loops to 37 customer locations, and for dark-fiber loops to 37 customer locations. For these locations, which represent only a very small percentage of BellSouth's almost 14,000 total locations served by high-capacity loops in Tennessee,

the Tennessee Regulatory Authority (" the Authority") should find that BellSouth is not required to continue offering unbundled loops at the capacity level for which the triggers have been satisfied

The second part of my testimony focuses on the facilities triggers for dedicated transport I describe the two triggers the FCC established, explain how they should be applied, and present evidence of where the triggers have been satisfied in BellSouth's territory in Tennessee My testimony demonstrates that the triggers have been met for DS1 dedicated transport on 81 interoffice routes, for DS3 dedicated transport on 81 interoffice routes, and for dark-fiber dedicated transport on 75 interoffice routes For these routes, which represent only a small percentage of the approximately 5,700 total routes between BellSouth's central offices in Tennessee, the Authority should find that BellSouth is not required to continue offering unbundled dedicated transport at the capacity level for which the triggers have been satisfied

The third part of my testimony briefly discusses the transition to a market rate environment when the Authority finds that no impairment exists along a particular route or to a specific customer location

II. HIGH-CAPACITY LOOPS

Q WHAT TYPES OF LOOPS DO YOU ADDRESS IN YOUR TESTIMONY?

A I discuss DS1, DS3, and dark fiber loops These loops are described and defined in BellSouth witness Wayne Gray's testimony

Q PLEASE DESCRIBE THE TRIGGERS THAT THE FCC ESTABLISHED TO IDENTIFY CUSTOMER LOCATIONS FOR WHICH COMPETING CARRIERS ARE NOT IMPAIRED WITHOUT ACCESS TO UNBUNDLED LOOPS FROM THE ILEC

A There are two triggers set forth in the FCC's TRO – the "self-provisioning trigger" (which applies to DS3 and dark-fiber loops) and the "competitive wholesale facilities" trigger (which applies to DS1 and DS3 loops) If, for a given loop capacity, any applicable trigger is met for a particular customer location, this Authority must find that BellSouth is no longer required to offer unbundled loops at that capacity to the location

Both triggers are simple, "bright line" tests that require this Authority to count the number of competitors providing loops to a given location To meet the self-provisioning trigger for DS3 or dark-fiber loops, there must be "two or more competing providers not affiliated with each other or with the incumbent LEC, including intermodal providers of service comparable in quality" that have self-deployed facilities to a particular location (§51 319(a)(4)(ii)(B) and §51 319(a)(5)(i)(B)) To meet the competitive wholesale facilities trigger for DS1 or DS3 loops, there must be "two or more competing providers not affiliated with each other or with the incumbent LEC, including intermodal providers

of service comparable in quality" that have deployed facilities to a particular location and that are offering a loop on a widely available wholesale basis to other carriers seeking to serve customers at the location (§51 319(a)(4)(ii) and §51 319(a)(5)(i)(B))

Carriers may attempt to add imaginary requirements to those outlined in the TRO in order to make the triggers more difficult to meet (e g , claiming capacity limits or the need for additional electronics before facilities can qualify for the triggers) However, the rules are quite clear as to the requirements for meeting the triggers, the TRO does not allow room for additional criteria to be added, and this Authority should resist any call to do so

Q DOES A LOOP HAVE TO TERMINATE AT AN ILEC CENTRAL OFFICE TO COUNT TOWARD THE TRIGGERS?

A No If the provider of the loop facility is the ILEC, as it is the case for UNEs, the central office would, of course, be the ILEC central office However, in the context of the triggers for high-capacity loops, the loops in question are alternative loops provided by CLECs The objective of the self-provisioning triggers is to identify if "two or more competitive LECs have self-provisioned loop transmission facilities, either intermodal or intramodal facilities, to a particular customer location" and are "serving customers at that location at the relevant loop capacity level " (TRO, 332) Clearly, whether the other side of the loop goes to an ILEC central office or some other point in the CLEC's network is completely immaterial to the showing of a CLEC's ability to serve customers in that

location over their own loop facilities, and it is therefore irrelevant for purposes of meeting the trigger The discovery responses of numerous carriers included lists of "self-provisioned loops" that do not terminate at a BellSouth central office, demonstrating that carriers agree that for purposes of the trigger analysis, the "owner" of the central office is irrelevant

The FCC did not differentiate its use of the term "loop" in the context of the wholesale trigger from its use in the self-provisioning trigger The TRO describes both tests using the same language without any distinction between what qualifies as a loop for each of the triggers and without adding any extra condition to the wholesale trigger specifying that loops have to terminate at an ILEC central office In Paragraph 329 of the TRO, the FCC says that "incumbent LEC unbundling obligation[s] can be eliminated where two or more unaffiliated competitive providers have deployed transmission facilities to the location and are offering alternative loop facilities to competitive LECs on a wholesale basis at the same capacity level (Competitive Wholesale Facilities Trigger) " (Emphasis added) The important point is that both triggers demonstrate that CLECs can provide service to customers at a location using alternative facilities

Q SHOULD A FACILITY QUALIFY FOR THE SELF-PROVISIONING TRIGGER IF THE CLEC DOES NOT HAVE ACCESS TO THE ENTIRE CUSTOMER LOCATION?

A Yes The requirement that each "competing provider has access to the entire customer location, including each individual unit within that location" (47 C F R §§ 51 319(a)(4)(ii)(B), (a)(5)(i)(B)(2)) applies only to the wholesale triggers for DS1 and DS3 loops No such requirement exists for any of the self-provisioning triggers for high-capacity loops (See 47 C F R § 51 319(a)(5)(i)(A), (6)(i))

Q DID BELLSOUTH CONDUCT A CAPACITY-SPECIFIC ANALYSIS?

A Yes BellSouth examined the evidence provided through discovery to determine what types of facilities a carrier has provisioned to a specific customer location If the carrier indicated that it had provisioned only DS1 capacity, the facility was counted toward the DS1 Wholesale Trigger only If the carrier indicated that it had a DS3 or higher loop or dark fiber in place, or if we use data from GeoLIT™ Plus Report indicating fiber-based facilities, it can be inferred that the carrier is capable of providing any capacity service As BellSouth witness Mr Wayne Gray discusses in his testimony, carriers typically deploy fiber-optic facilities that can operate at a range of capacities determined by the electronics attached to them For example, when laying fiber it makes sense to deploy high-capacity OCn facilities so that there will always be enough bandwidth to handle the traffic on a given loop The carrier then attaches electronics to subdivide (or "channelize") the available capacity, activating the amount of capacity and number of channels needed along the loop Indeed, this channelization is extremely common given that the vast majority of retail loops sold are at the DS3 level or below – indeed,

according to the market research firm IDC, more than 99% of dedicated enterprise loops, excluding switched voice lines, are provided at DS3 or lower capacity

Q SHOULD AN OCn FACILITY QUALIFY FOR THE DS3 AND DS1 WHOLESALE TRIGGERS?

A Yes, as long as the competitive carrier offers DS1 and DS3 loop facilities to other carriers on a wholesale basis, the capacity of the underlying facility is irrelevant As explained by Mr Gray, a carrier with channelized OCn facilities is operationally ready to provide DS1 or DS3 facilities and its network can support the sale of DS1 and DS3 loops, so whether the carrier wholesales depends only on its choice of commercial strategy

Q REGARDING THE DARK FIBER TRIGGERS, DOES THE TRO REQUIRE THE COMPETITIVE CARRIER TO HAVE AVAILABLE UNLIT FIBER STRANDS IN ITS LOOP FACILITY?

A No The dark fiber trigger is a self-provisioning trigger and therefore it does not require the provisioning carrier to have additional dark fiber strands (i e , fiber strands that have not been lit by attaching transmission electronics) to potentially sell to other carriers The Rule is clear that as long as a competitive carrier deployed a fiber loop to a customer location, it should qualify for the dark fiber trigger at that customer location Specifically, the FCC's rules require that "two or more competing providers ( ) have

deployed their own dark fiber facilities at that specific customer location " (47 C F R § 51 319(a)(6)(i), emphasis added)

Q WHAT EVIDENCE DID YOU USE TO IDENTIFY THE CUSTOMER LOCATIONS WHERE COMPETITIVE CARRIERS HAVE DEPLOYED LOOP FACILITIES THAT QUALIFY FOR THE SELF-PROVISIONING TRIGGERS ON DS3 AND DARK FIBER LOOPS?

A I used two data sources to identify customer locations where competitive carriers have deployed loop facilities that qualify for the self-provisioning triggers

First and foremost, I used carriers' discovery responses describing the locations they serve with high-capacity loop facilities I aggregated these responses by building, counting facilities where carriers confirmed that they have deployed fiber towards the self-provisioning trigger for dark fiber loops, and facilities where carriers confirmed transmission capacities of DS3 or OCn towards the self-provisioning trigger for DS3 loops (For the reasons explained above, many carriers' responses indicated OCn facilities even though carriers rarely sell OCn loops to end users)

Since BellSouth has not received discovery responses from several carriers with loop facilities in Tennessee and not every carrier that responded has provided BellSouth with complete data on where it deployed loops, I was required to turn to a third-party vendor

for data on carriers from whom I did not have adequate responses BellSouth purchased data from GeoResults, Inc , an independent consulting firm specializing in national business and residential databases, customized database marketing and geo-mapping services, business level telecom bandwidth, demand and spend estimates, a comprehensive set of telecom competitive intelligence reports, proprietary wire center boundary products and spatial analysis tools and services

GeoResults provided its GeoLIT™ Plus Report, listing buildings that contain fiber-based equipment together with the names of the carriers that own the equipment The GeoLIT™ Plus Report was further refined to exclude instances where a carrier obtained the loop facility from another carrier (including BellSouth) on a wholesale basis, leaving only those buildings where the carrier has deployed its own fiber loop facility capable of providing DS3 and dark fiber loops In the absence of responses to discovery, which comply with the triggers used by the FCC, BellSouth relied on information from the GeoLIT™ Plus Report to determine where the carrier has deployed loops Exhibit SWP-13 lists these carriers

Q WHY DO YOU BELIEVE THE GEOLIT™ PLUS REPORT IS A RELIABLE SOURCE OF DATA TO USE IN THE TRIGGERS' ANALYSIS?

A First let me reiterate that using the GeoResults data is the best alternative BellSouth had to overcoming the lack of useful discovery data, and that I have used this data only in

instances where a carrier has not provided us with complete information through discovery

The GeoLIT™ Plus Report is a summary of building locations that have been identified as being served by a fiber facility and lists carriers providing fiber-based services in those buildings The report is based on the CLONES (Central Location Online Entry System) database from Telecordia, to which carriers self-report records of their equipment as it is deployed This database is widely used in the industry to create, update, and maintain Common Language Location (CLLI) Codes to uniquely identify geographic places and certain types of equipment GeoResults uses proprietary analysis methodologies and data compilation techniques to determine, from CLONES, which pieces of equipment are fiber-based

I also note that the GeoLIT™ Plus Report is conservative, because it is does not identify all instances where competitive carriers have deployed fiber-base loop facilities GeoResults uses a conservative algorithm to identify fiber-based loop facilities, which only identifies facilities as "lit" when it is absolutely clear from the description field in CLONES that the equipment is fiber-based – when in doubt, the facility is not identified as "lit " Moreover, since creating records in CLONES is voluntary, there are not infrequent situations where a competitive carrier deploys a loop facility to a customer location, but fails to create a CLONES record for the facility Facilities with no records in CLONES are obviously not captured in the GeoLIT™ Plus Report from GeoResults

Q WHICH FACILITIES COULD QUALIFY FOR THE "COMPETITIVE WHOLESALE FACILITIES" TRIGGER FOR DS1 AND DS3 LOOPS?

A Any facility that qualifies for the self-provisioning trigger could potentially meet the wholesale facilities trigger also – the only question is whether the provisioning carrier chooses to offer loops on it to other carriers on a wholesale basis Further, because any carrier with an OCn or DS3 facility is operationally able to provide a DS1 loop, as described by Mr Gray, the same set of qualifying facilities should be used for DS1 and DS3 loops

Q HAVE YOU IDENTIFIED CARRIERS THAT USE THEIR FACILITIES TO OFFER LOOPS ON A WHOLESALE BASIS? IF SO, HOW?

A Yes Although I believe it would be rational for any carrier with its own facilities to wholesale, to be conservative I only identified as a "wholesaler" a carrier for which there is actual evidence that it has entered into wholesale deals or that it actively promotes wholesale service This evidence was compiled from a number of sources

- Carriers' discovery responses, indicating the offer or purchase of wholesale loops and/or transport
- BellSouth's experience in losing wholesale contracts to another carrier
- A carrier's own advertisements offering wholesale services

- A carrier's public statements and filings indicating willingness to wholesale or revenues from wholesaling

- Analyst and industry reports identifying carriers as wholesalers

A list of carriers that offer wholesale facilities based on these sources is included as Exhibit SWP-1 Excerpts from the advertisements, public statements, and industry reports regarding these carriers' wholesaling activities are included in Exhibit SWP-11

Some carriers have supplied discovery responses indicating that they do not wholesale loops However, given the misinterpretation of "loop" as having to terminate at an ILEC central office in order to qualify for the wholesale trigger (explicitly claimed by KMC, AT&T, and Xspedius in filings in Florida), BellSouth used other indications of a carrier's willingness to wholesale loops in these cases In the absence of responses to discovery that comply with the triggers used by the FCC, we used other evidence (which is presented in summary form in Exhibit SWP-11) to infer that the carrier offers wholesale loops

It is important to note that for a competitive provider to qualify for the wholesale trigger, it does not have to be *currently selling* wholesale services – the Order is clear that the competitive provider only has to be *willing* to provide wholesale service (TRO ¶329) That is, even if it does not currently have a wholesale customer, it would still qualify as long as it is willing to provide wholesale service Given that, the analysis to determine which competitive carriers offer facilities on a wholesale basis can be conducted by

carrier, rather than by customer location, because the decision about whether a carrier is willing to wholesale is one of business model, and so it is made at the company level rather than on a location-by-location basis In other words, if a carrier is willing to wholesale high-capacity loops at a given customer location, it is also likely to be willing to wholesale high-capacity loops at all other customer locations where it has deployed its own loop facilities I don't know of any reason to believe that this is not the case and nothing that we learned through discovery suggests otherwise

Q DOES BELLSOUTH PROVIDE LOCATION-SPECIFIC EVIDENCE THAT THE WHOLESALE TRIGGER HAS BEEN MET?

A Yes BellSouth does in fact provide location-specific evidence that the wholesale trigger, as described by the FCC in the TRO, is met Wherever relief is claimed, granular evidence is presented that at least two competitive carriers who are willing to offer wholesale service are present at each customer location at the specific capacity level

A carrier only counts towards the trigger at a given customer location if it has deployed its own facilities to that specific location *and* is a wholesaler BellSouth uses data from discovery and the GeoLIT™ Plus Report to obtain granular evidence that carriers have deployed their own facilities on a location-by-location basis Carriers are classified as wholesalers at the carrier level based on the evidence from discovery and other that

indicate a carrier's willingness to wholesale This evidence is presented in summary form in Exhibit SWP-11

The classification of a carrier as a wholesaler is made at the carrier level since the willingness to sell wholesale to other carriers is part of each carrier's commercial strategy rather than a decision that is made at a granular level for each route and customer location The wholesale trigger defined by the FCC in the TRO is consistent with this standard since it does not require the carrier to currently provide wholesale service in the customer location, but only that it is willing to offer access to its loop facilities on a wholesale basis (e g , see TRO 337) Further, as explained earlier, it would create internal and external problems for a wholesaler to selectively refuse to provide wholesale service on part of its facilities

All the evidence that BellSouth collected, including advertisements, public statements and industry reports, support the conclusion that carriers willing to sell their own facilities on a wholesale basis do not selectively refuse to provide wholesale service on part of their transport and loop facilities Any criterion that required evidence of willingness to wholesale at the route or customer location level would be impossible to meet – carriers do not advertise wholesale service on a location-by-location basis, but rather indicate general willingness to do so

Q HAVE YOU IDENTIFIED LOCATIONS THAT MEET THE DS1 WHOLESALE FACILITIES TRIGGER? IF SO, PLEASE IDENTIFY THOSE LOCATIONS

A Yes The customer locations that satisfy the wholesale trigger for DS1 loops are listed in Exhibit SWP-2 Exhibits SWP-1 and SWP-3 provide supporting evidence used in the analysis Exhibit SWP-3 shows, by location, the carriers with high-capacity loops deployed in Tennessee and the capacities the carrier is capable of providing to that location As previously discussed, Exhibit SWP-1 lists carriers that are willing to offer services on a wholesale basis

Q HAVE YOU IDENTIFIED LOCATIONS THAT MEET THE DS3 SELF-PROVISIONING TRIGGER? IF SO, PLEASE IDENTIFY THOSE LOCATIONS

A Yes The customer locations that satisfy the self-deployment trigger for DS3 loops are listed in Exhibit SWP-4 Exhibit SWP-3 provides supporting evidence used in the analysis, as described above

Q HAVE YOU IDENTIFIED LOCATIONS THAT MEET THE DS3 WHOLESALE FACILITIES TRIGGER? IF SO, PLEASE IDENTIFY THOSE LOCATIONS

A Yes The customer locations that satisfy the wholesale trigger for DS3 loops are also listed in Exhibit SWP-4 Exhibits SWP-1 and SWP-3 provide supporting evidence used in the analysis, as described above

Q HAVE YOU IDENTIFIED LOCATIONS THAT MEET THE DARK FIBER SELF-DEPLOYMENT TRIGGER? IF SO, PLEASE IDENTIFY THOSE LOCATIONS

A Yes The customer locations that satisfy the self-deployment trigger for dark fiber loops are listed in Exhibit SWP-5 Exhibit SWP-3 provides supporting evidence used in the analysis, as described above

III. HIGH-CAPACITY TRANSPORT

Q PLEASE DESCRIBE THE TRIGGERS THAT THE FCC ESTABLISHED TO IDENTIFY ROUTES FOR WHICH COMPETING CARRIERS ARE NOT IMPAIRED WITHOUT ACCESS TO UNBUNDLED DEDICATED INTEROFFICE TRANSPORT FACILITIES

A There are two triggers set forth in the TRO – the "self-provisioning trigger" (which applies to DS3 and dark-fiber transport) and the "competitive wholesale facilities" trigger (which applies to DS1, DS3, and dark-fiber transport) If, for a given transport capacity,

any applicable trigger is met on a particular route, the Authority must find that BellSouth is no longer required to offer unbundled dedicated transport at that capacity on the route

Both triggers are simple, "bright line" tests that require the Authority to count the number of competitors on a given route To meet the self-provisioning trigger for DS3 or dark-fiber transport, there must be "three or more competing providers not affiliated with each other or with the incumbent LEC, including intermodal providers of service comparable in quality" that have self-deployed fiber transport facilities along a particular route and that are operationally ready to use those facilities to provide transport along that route (47 C F R §§ 51 319(e)(2)(i)(A) and (e)(3)(i)(A)) To meet the competitive wholesale facilities trigger for DS1, DS3, or dark-fiber transport, there must be "two or more competing providers not affiliated with each other or with the incumbent LEC, including intermodal providers of service comparable in quality" that are operationally ready and willing to offer wholesale transport of a given capacity along a particular route (47 C F R §§51 319(e)(1)(ii), (e)(2)(i)(B) and (e)(3)(i)(B))

Carriers may attempt to add criteria to those outlined in the TRO in an attempt to make the triggers more difficult to meet However, as I mentioned previously with regard to the loop triggers, the rules are quite clear as to the requirements for meeting the triggers, and the FCC did not allow room for additional requirements This Authority should not allow carriers to divert attention from identifying where the triggers have been met by attempting to add imaginary requirements

Q WHAT IS A "ROUTE," AS THE TERM IS USED IN THE FCC'S TRIGGERS?

A A route is defined in the FCC's rules as "a transmission path between one of an incumbent LEC's wire centers or switches and another of the incumbent LEC's wire centers or switches" within a LATA Furthermore "a route between two points (*e g* , wire center or switch "A" and wire center or switch "Z") may pass through one or more intermediate wire centers or switches (*e g* , wire center or switch "X") Transmission paths between identical end points (*e g* , wire center or switch "A" and wire center or switch "Z") are the same 'route,' irrespective of whether they pass through the same intermediate wire centers or switches, if any " (47 C F R §51 319(e))

Q HOW MIGHT THE DEFINITION OF "ROUTE" BE MISREPRESENTED?

A Some CLECs have claimed in discovery that a carrier must provide service directly connecting the two central offices at each end of the route in order for its transport facilities to count towards the transport triggers on that route They also state that to support a trigger claim, the ILEC must produce evidence that the CLEC self-provisions transport service between the two ILEC wire centers and that each collocation arrangement in question is being used as an endpoint for a transport route

These carriers say that most CLEC networks follow a hub and spoke architecture and are constructed such that collocation arrangements are used as a traffic aggregation point that can only backhaul traffic to the CLEC's switch They apparently believe that even if a CLEC can indirectly send traffic between two ILEC central offices, this CLEC does not count toward the triggers test for that route However, as the FCC has explained, passing through an intermediate wire center or an intermediate switch – ILEC or CLEC – does not prevent the connection of two central offices to form a route Rule 319(e) clearly includes "transmission paths between identical points irrespective of whether they pass through the same intermediate wire centers or switches" in the definition of a route This misuse of the term "route", then, clearly is not in agreement with the rules set forth by the FCC

Q HOW WOULD THIS INTERPRETATION OF A "ROUTE" SUBVERT THE FCC'S OBJECTIVE IN CREATING THE TRANSPORT TRIGGERS?

A The FCC found, in the course of its Triennial Review proceeding, that competitive facilities are available and designed the triggers to identify where competitive facilities are already available Paragraph 360 of the TRO states, "The record indicates that competitive DS1, DS3, and dark fiber transport facilities are available on a wholesale basis in some areas, and that competing carriers have deployed their own transport networks in some areas Because the record is not sufficiently detailed concerning exactly where these facilities have been deployed, and because the nature of transport

facilities requires a highly granular impairment analysis, we establish specific triggers for states to apply in conducting such an analysis " However, contrary to this finding, AT&T and MCI, the two largest CLECs in the country, claim they have no facilities in any of BellSouth's nine states that would qualify under either transport trigger This is because AT&T and MCI use their own definition of a "route" to justify such claims It defies logic to claim that the FCC would have set up triggers specifically to identify where carriers have deployed alternative facilities and then define the trigger such that the two largest CLECs in the country, which acquired large CAPs (Competitive Access Providers) (that existed to provide alternative transport in the first place), wouldn't have any facilities that would qualify

Q IS THERE OTHER EVIDENCE THAT YOU ARE AWARE OF THAT ILLUSTRATES CLECs ARE MORE INTERESTED IN HIDING BEHIND DEFINITIONS, THAN IN PRESENTING ACCURATE FACTS TO THIS AUTHORITY?

A Yes In responses to discovery in Docket No 030850-TP in Florida as well as in Tennessee, MCI admitted that *** BEGIN CONFIDENTIAL *** "[redacted] *** END CONFIDENTIAL *** After admitting this, in testimony before the Florida Public Service Commission, MCI's witness claimed that it did not provide dedicated transport (See generally Rebuttal Testimony of Lonnie Hardin, p 7)

Q GIVEN THE TRO'S REDEFINITION OF "DEDICATED TRANSPORT", CAN A TRANSPORT "ROUTE" FOR PURPOSES OF THE TRIGGERS ANALYSIS INCLUDE INDIRECT ROUTES THROUGH A SWITCH?

A Yes. Counting indirect routes between ILEC wire centers for the purpose of meeting the dedicated transport triggers is perfectly consistent with the new definition of dedicated transport. The FCC says in Paragraph 366 of the TRO that " the more reasonable approach is to not consider those facilities outside of the incumbent LEC's local network as part of the dedicated transport network element that is subject to unbundling. Therefore, we find that the dedicated transport network element includes only those facilities that coincide with the incumbent LEC's transport network – the transmission links connecting incumbent LEC switches or wire centers." However, inclusion or exclusion of facilities connecting an ILEC central office and a CLEC switch (i.e., entrance facilities) from the *unbundling* obligation has no bearing on whether or not that "link" is part of the larger "route" connecting ILEC wire centers. In fact, as I will demonstrate, the only purpose of a CLEC deploying more than one entrance facility per LATA is to bypass the ILEC interoffice network and to create an alternative to buying dedicated transport from the ILEC. Therefore it is only logical to count these facilities towards the transport triggers.

To understand how entrance facilities provide an alternative to dedicated transport provided by the ILEC, see, for example, the case in Exhibit SWP-15, Situation A where a CLEC has only one stand-alone entrance facility from its Point of Presence (POP) to ILEC Central Office (CO) 1 and also needs transmission links to CO2, CO3 and CO4 in order to carry traffic from its end users served from these COs In a typical CLEC hub and spoke architecture, the CLEC purchases dedicated transport from the ILEC between CO1, where it has its stand-alone entrance facility to its POP, and all the other ILEC COs it needs to reach

Now, consider the situation presented in Exhibit SWP-15, Situation B where the same CLEC deploys two additional entrance facilities from its POP to CO2 and CO3 The deployment of these entrance facilities allows the CLEC to bypass the ILEC interoffice network and provides the CLEC with a real alternative to purchasing dedicated transport between ILEC COs (in fact, this is the only purpose of deploying these facilities) In this example, by using the entrance facilities as segments of interoffice routes, the CLEC would have alternative transmission facilities on routes CO1-CO2, CO1-CO3 and CO2-CO3, but would still purchase dedicated transport between CO1 and CO4 No one is arguing that the stand-alone CO to POP facilities should be counted as routes, however, it is obvious that in this scenario "carriers have the ability to use alternatives to the incumbent LEC's network" (TRO, 360) and therefore must be counted towards the transport triggers

Q IS IT REASONABLE TO INFER THAT A CARRIER HAS A "ROUTE" BETWEEN ANY PAIR OF INCUMBENT LEC WIRE CENTERS IN THE SAME LATA WHERE IT HAS OPERATIONAL COLLOCATION ARRANGEMENTS?

A Yes CLEC's are clearly operationally ready to provide transport when they have fiber-based collocation arrangements at both ILEC central offices Establishing a connection between two operationally ready collocations via a switch or hub typically requires only a software-based configuration of a circuit Thus, even if a CLEC does not typically use its interoffice facilities to provide transport between ILEC central offices, this fact is irrelevant for the transport triggers since they are operationally ready to do so

Moreover, as explained in Mr Gray's testimony, it is logical and reasonable to assume that a carrier's network within a LATA is fully interconnected Additionally, Time Warner Telecom and MCI indicated that any point on their network may be connected to any other point on the network Time Warner's response to the BellSouth's Requests filed December 15, 2003, states, "TWTC admits that it can route or transport traffic using TWTC's own facilities between any pair of central offices to which it has deployed high capacity transport facilities in that state " Additionally, even MCI, in direct contradiction of its assertions in Florida that it has no facilities that qualify as a route under the triggers, admitted in its response to BellSouth's discovery requests in several states regarding self-provisioned transport facilities between BellSouth central offices that it could connect any "on-net" collocation to any other collocation

Specifically, MCI's response states, "MCI has provided BellSouth with a list of its 'on-net' collocations This list identifies the BellSouth wire center buildings that are physically on the network owned by MCI Once traffic is delivered to MCI at any of its on-net collocation sites it can be delivered to any other MCI on-net collocation locations without leaving MCI's network " (See Discovery Responses of MCI in Georgia Dkt No 17741-U, filed December 29, 2003, Kentucky Case No 2003-00379, filed December 15, 2003, Louisiana Dkt No U-27572 filed December 8, 2003, Mississippi Dkt No 2003-AD-714, filed in December 2003, and North Carolina Dkt No P-100, sub 133s, filed December 15, 2003, and February 13, 2004)

Q DOES THE FACT THAT CLECS TYPICALLY DO NOT USE THEIR FACILITIES TO CONNECT TWO ILEC CENTRAL OFFICES EXPLAIN WHY THE TRO USES THE TERM "OPERATIONALLY READY" IN THE SELF-PROVISIONING TRIGGER FOR TRANSPORT?

A Yes Unlike for loops, where the FCC requires that "each competing provider has ( ) deployed its own DS3 facilities at that specific customer location and is serving customers via those facilities at that location," (47 C F R § 51 319(a)(5)(i)(A), emphasis added), the self-provisioning trigger for transport only requires that "the competing provider has deployed its own transport facilities and is operationally ready to use those transport facilities to provide dedicated DS3 transport along the particular route " (47 C F R § 51 319(e)(2)(i)(A), emphasis added) Realizing that in most cases CLECs do

not use their transport facilities to provide transport between ILEC central offices, the FCC does not require that the CLEC currently provides transport on each specific route, but only that it is operationally ready to do so

Q IF A CARRIER HAS AN OCn TRANSPORT FACILITY TO A COLLOCATION ARRANGEMENT IN AN ILEC WIRE CENTER, DOES IT MEET THE "OPERATIONALLY READY" CONDITION IN THE DS1 and DS3 TRIGGERS?

A Yes The FCC's rules say that to count toward the trigger, the competing provider should have "deployed its own transport facilities and [be] operationally ready to use those transport facilities to provide dedicated DS3 transport along the particular route " (47 C F R §51 319(e)(2)(i)(1)) In reality, as explained in Mr Gray's testimony, carriers typically deploy fiber-optic facilities that can operate at a range of capacities determined by the electronics attached to them For example, when laying fiber it makes sense to deploy high-capacity, OCn facilities so that there will be enough bandwidth to handle all traffic on a given route and leave room for growth The carrier can then attach electronics to subdivide (or "channelize") the available capacity, activating the amount of capacity and number of channels needed along the route As Mr Gray explains, the electronics used to do this channelization of OCn facilities into DS1 or DS3 facilities are relatively inexpensive, are widely available, and can be quickly installed whenever the carrier has demand for DS3 transport facilities The fact that the capacity of the facility itself is at the

OCn level is therefore independent of the carrier's ability to provide a dedicated DS1 or DS3 transport route over that facility

Q DID BELLSOUTH CONDUCT A CAPACITY-SPECIFIC ANALYSIS?

A Yes BellSouth examined the evidence provided through discovery to determine what types of facilities a carrier has provisioned on a specific route If the carrier indicated that it had provisioned only DS1 capacity, the facility was counted toward the DS1 Wholesale Trigger only If the carrier indicated that it had a DS3 or higher facility or dark fiber in place, or if we used BellSouth data indicating a fiber-based collocation, it can be inferred that the carrier is capable of providing any capacity service, as explained above

Q SHOULD AN OCn FACILITY QUALIFY FOR THE DS3 AND DS1 WHOLESALE TRIGGERS?

A Yes, as long as the competitive carrier offers DS1 and DS3 transport to other carriers on a wholesale basis, the capacity of the underlying facility is irrelevant As explained above, a carrier with channelized OCn facilities is operationally ready to provide DS1 or DS3 facilities – its network can support the sale of DS1 and DS3, so whether the carrier wholesales or not depends only on its commercial strategy

Q REGARDING THE DARK FIBER SELF-PROVISIONING TRIGGER, DOES THE TRO REQUIRE THE COMPETITIVE CARRIER TO HAVE AVAILABLE UNLIT FIBER STRANDS IN ITS COLLOCATION ARRANGEMENT?

A No. This requirement in the TRO applies only for the wholesale trigger, which requires the competitive provider be ready to provide dark fiber facilities to other carriers. For the self-provisioning trigger, the TRO is clear that as long as a competitive carrier deployed fiber transmission facilities to a collocation arrangement, it should qualify for the dark fiber trigger in that wire center (TRO ¶408). Specifically, the FCC's rules require that "the competing provider has deployed its own dark fiber facilities, which may include dark fiber facilities that it has obtained on a long-term, indefeasible-right of use basis." (47 C.F.R. § 51.319(e)(3)(i)(A)(1), emphasis added). There is no condition on the existence of extra dark fiber strands that have not yet been lit. In fact, since the use of dark fiber for a carrier's own operations (in contrast to wholesale) requires the carrier to light the fiber, it would not be logical to assume that the self-provisioning trigger would require the presence of unused facilities in order to be met.

Q HOW DID YOU IDENTIFY ROUTES WHERE COMPETITIVE CARRIERS HAVE DEPLOYED FACILITIES THAT QUALIFY FOR THE SELF-PROVISIONING TRIGGER FOR DS3 AND DARK FIBER ROUTES?

A I initially hoped to rely primarily on discovery responses from competitive carriers Unfortunately, to date, BellSouth has received far fewer responses than expected, so we have been forced to rely heavily on our own billing and operations data regarding collocation arrangements and fiber entrance facilities Using discovery and these internal data, a list of fiber-based collocations for each competitive carrier was created and used to generate all the potential transport routes for a given carrier using the assumption that competitive carriers can route traffic between any pair of fiber-based collocation arrangements in a LATA Furthermore, if a carrier has a collocation arrangement in a BellSouth wire center and it has pulled its own fiber to the collocation, it is reasonable to assume that it should qualify for the self-provisioning trigger for both dark fiber and DS3 dedicated transport (due to the channelization I described above)

It should be noted that some CLECs responded to BellSouth's discovery requests by stating that they did not have transport facilities However, as explained above, these carriers rely on a misinterpretation of "route" in order to make this claim In the absence of responses to discovery that comply with the definitions used by the FCC, BellSouth has used its own data These instances are noted in Exhibit SWP-14

Q WHICH FACILITIES COULD QUALIFY FOR THE "COMPETITIVE WHOLESALE FACILITIES" TRIGGER FOR DS1, DS3 AND DARK FIBER TRANSPORT?

A Any route that qualifies for the self-provisioning trigger could meet the wholesale facilities trigger also – the only question is whether the competitive carrier chooses to offer transport on it to other carriers on a wholesale basis Further, because any carrier with an OCn or DS3 facility is operationally able to provide DS1 transport, I made the same inference concerning qualifying facilities for DS1 transport as for DS3 transport Additional DS3 and DS1 facilities that qualify for wholesale are included only if we learned through discovery of facilities that meet the conditions of the wholesale triggers but not the self-provisioning triggers (i e , the carrier does not own the underlying fiber used in the transport facility)

Finally, for dark fiber the wholesale trigger requires the competitive provider to have unused dark fiber to sell to other carriers and that requesting carriers are able to obtain reasonable and nondiscriminatory access to the competing providers' termination points through a cross-connect to the providers' collocations (§51 319(e)(3)(i)(B)) For the reasons explained by Mr Gray, it is logical to assume that interoffice facilities have spare fiber strands Furthermore, our billing records indicate that most CLECs that pulled fiber into BellSouth's wire centers requested 2 cables of 12-24 strands each, leaving plenty of spare strands to wholesale In short, unless we learn through discovery that carriers do not have extra dark fiber, it is reasonable to assume that any dark fiber facility that meets the self-provisioning trigger may count toward the wholesale trigger also, if the provisioning CLEC chooses to wholesale them

Q HAVE YOU IDENTIFIED CARRIERS THAT USE THEIR FACILITIES TO OFFER DEDICATED TRANSPORT ON A WHOLESALE BASIS? IF SO, HOW?

A Yes A list of carriers that offer wholesale facilities is included as Exhibit SWP-6 (see my loop testimony above for a description of how this list was compiled) Excerpts from the advertisements, public statements, and industry reports regarding these carriers' wholesaling activities are included in Exhibit SWP-12

As I explained for high-capacity loops, it is important to note that for a competitive provider to qualify for the wholesale trigger, it does not have to be *currently selling* wholesale services – the Order is clear that the competitive provider only has to be *willing* to provide wholesale service (TRO ¶ 412)

Although, as previously discussed, some carriers have supplied discovery responses indicating that they do not provide wholesale transport in light of CLECs misinterpretation of "route", BellSouth relied upon evidence other than self-serving discovery responses to conclude a carrier provides wholesale transport Exhibit SWP-14 lists these carriers The evidence that I relied upon is set forth in Exhibit SWP-12

Q DOES BELLSOUTH PROVIDE ROUTE-SPECIFIC EVIDENCE THAT THE WHOLESALE TRIGGER HAS BEEN MET?

A Yes BellSouth does in fact provide route-specific evidence that the wholesale trigger, as described by the FCC in the TRO, is met Wherever relief is claimed, granular evidence is presented that at least two competitive carriers who are willing to offer wholesale service are present along each route at the specific capacity level

A carrier only counts towards the trigger on a given route if it has deployed its own facilities on that specific route and is a wholesaler BellSouth uses data from discovery and its own internal billing and operations data to obtain granular evidence that carriers have deployed their own facilities on a route-by-route basis Carriers are classified as wholesalers at the carrier level based on the evidence from discovery and other evidence that indicates a carrier's willingness to wholesale This evidence is presented in summary form in Exhibit SWP-12

As explained earlier, the classification of a carrier as a wholesaler is made at the carrier level since the willingness to sell wholesale to other carriers is part of each carrier's commercial strategy rather than a decision that is made at a granular level for each route and customer location The wholesale trigger defined by the FCC in the TRO is consistent with this standard since it does not require the carrier to currently provide wholesale service in the customer location, but only that it is willing to offer access to its loop facilities on a wholesale basis (e g , see TRO, 412)

It would be bizarre for a wholesaler to selectively refuse to provide wholesale service on part of its facilities since this would create serious problems in terms of relationship with customers, marketing strategy, and even internal operations to differentiate facilities that can and cannot be offered on a wholesale basis

All the evidence that BellSouth collected, including advertisements, public statements and industry reports, support the assumption that carriers willing to sell their own facilities on a wholesale basis do not selectively refuse to provide wholesale service on part of their facilities Any criterion that required evidence of willingness to wholesale at the route level would be impossible to meet – carriers do not advertise wholesale service on a route-by-route basis, but rather indicate general willingness to do so

Q HAVE YOU IDENTIFIED ROUTES THAT MEET THE DS1 WHOLESALE FACILITIES TRIGGER? IF SO, PLEASE IDENTIFY THOSE ROUTES

A Yes The routes that satisfy the wholesale trigger for DS1 transport are listed in Exhibit SWP-7 Supporting evidence is presented in Exhibits SWP-6 and SWP-8 Exhibit SWP-8 shows, by route, the carriers that have deployed transport facilities in Tennessee and the capacities the carrier is capable of providing on that route Exhibit SWP-6 lists carriers that are willing to offer transport services on a wholesale basis and whether the carrier has provided discovery responses to BellSouth

Q DO THE FACILITIES USED TO DETERMINE THE ROUTES IDENTIFIED IN EXHIBIT SWP-7 TERMINATE IN A COLLOCATION ARRANGEMENT?

A Yes. The methodology used to identify routes that meet the trigger assures that all the facilities used in the trigger analysis terminate in collocation arrangements on both ends.

Q HAVE YOU IDENTIFIED ROUTES THAT MEET THE DS3 SELF-PROVISIONING TRIGGER? IF SO, PLEASE IDENTIFY THOSE ROUTES.

A Yes. The routes that satisfy the self-provisioning trigger for DS3 transport are listed in Exhibit SWP-9. Supporting evidence is presented in Exhibit SWP-8, as described above.

Q DO THE FACILITIES USED TO DETERMINE THAT THE ROUTES IDENTIFIED IN EXHIBIT SWP-9 TERMINATE IN A COLLOCATION ARRANGEMENT?

A Yes. The methodology used to identify routes that meet the trigger assures that all the facilities used in the trigger analysis terminate in collocation arrangements on both ends.

Q HAVE YOU IDENTIFIED ROUTES THAT MEET THE DS3 WHOLESALE FACILITIES TRIGGER? IF SO, PLEASE IDENTIFY THOSE ROUTES.

A Yes The routes that satisfy the wholesale trigger for DS3 transport are listed in Exhibit SWP-9 Supporting evidence is presented in Exhibits SWP-6 and SWP-8, as described above

Q DO THE FACILITIES USED TO DETERMINE THAT THE ROUTES IDENTIFIED IN EXHIBIT SWP-9 TERMINATE IN A COLLOCATION ARRANGEMENT?

A Yes The methodology used to identify routes that meet the trigger assures that all the facilities used in the trigger analysis terminate in collocation arrangements on both ends

Q HAVE YOU IDENTIFIED ROUTES THAT MEET THE DARK FIBER SELF-PROVISIONING TRIGGER? IF SO, PLEASE IDENTIFY THOSE ROUTES

A Yes The routes that satisfy the self-provisioning trigger for dark fiber transport are listed in Exhibit SWP-10 Supporting evidence is presented in Exhibit SWP-8, as described above

Q DO THE FACILITIES USED TO DETERMINE THAT THE ROUTES IDENTIFIED IN EXHIBIT SWP-10 TERMINATE IN A COLLOCATION ARRANGEMENT?

A Yes The methodology used to identify routes that meet the trigger assures that all the facilities used in the trigger analysis terminate in collocation arrangements on both ends

Q HAVE YOU IDENTIFIED ROUTES THAT MEET THE DARK FIBER WHOLESALE FACILITIES TRIGGER? IF SO, PLEASE IDENTIFY THOSE ROUTES

A Yes The routes that satisfy the wholesale trigger for dark fiber transport are listed in Exhibit SWP-10 Supporting evidence is presented in Exhibits SWP-6 and SWP-8, as described above

Q DO THE FACILITIES USED TO DETERMINE THAT THE ROUTES IDENTIFIED IN EXHIBIT SWP-10 TERMINATE IN A COLLOCATION ARRANGEMENT?

A Yes The methodology used to identify routes that meet the trigger assures that all the facilities used in the trigger analysis terminate in collocation arrangements on both ends

Q DO THE PROVIDERS USED TO DETERMINE THAT THE ROUTES IDENTIFIED IN EXHIBIT SWP-10 HAVE SUFFICIENT QUANTITIES OF DARK FIBER AVAILABLE TO SATISFY DEMAND ALONG THAT ROUTE?

A Yes For the reasons explained above, we assume that there is enough spare fiber to wholesale unless carriers tell us otherwise through discovery In those instances, the transport facility is not included in Exhibit SWP-10 Therefore I believe that there are

sufficient quantities of dark fiber in all routes in Exhibit SWP-10 to satisfy current demand

IV. TRANSITION

Q FOR LOCATIONS AND ROUTES WHERE ONE OR MORE OF THE TRIGGERS IS MET, AND THERE IS THEREFORE NO IMPAIRMENT AT THOSE LOCATIONS AND ALONG THOSE ROUTES, WHAT IS THE APPROPRIATE TRANSITION PERIOD?

A BellSouth will continue to offer loops and transport at a market rate so a transition period is unnecessary However, if the Authority determines that a transition period is required, 90 days is reasonable

Q CLECS HAVE ARGUED IN OTHER FORUMS THAT A LONG TRANSITION PERIOD IS NEEDED BECAUSE CLECS HAVE ENTERED INTO CONTRACTS WITH CUSTOMERS BASED ON UNE COSTS AND COULD NOT TOLERATE "SUDDEN COST INCREASES" PLEASE ADDRESS THIS ARGUMENT

A First, the FCC's initiated its Triennial Review in December 2001 Consequently, all carriers have been on notice at least for the past two years that some unbundled network elements may be de-listed Carriers have had more than sufficient time to make contingency plans for this eventuality

Second, and more importantly, if this Authority finds that CLECs are not impaired along a route or to a customer location, such a finding means there are alternatives to UNEs available While a carrier may take time to evaluate its options and negotiate terms with other carriers, including the ILEC, a long transition period would only delay the movement of carriers toward the goal of promoting facilities-based competition as rapidly as possible A long transition period would also require ILECs to continue to subsidize competitors in areas in which no impairment exists A more reasonable time frame to allow carriers to make such alternative arrangements is 90 days

V. CONCLUSION

Q ARE YOU SUBMITTING THE FINAL LIST OF ROUTES AND BUILDINGS WHERE YOU CLAIM THE TRIGGERS FOR DEDICATED TRANSPORT OR LOOPS, RESPECTIVELY, HAVE BEEN SATISFIED?

A No We reserve the right to modify the list of locations and routes based on further discovery responses from carriers

Q DOES THIS CONCLUDE YOUR TESTIMONY?

A Yes

Exhibit 1: Carriers classified as wholesalers in analysis of FCC's triggers for high-capacity loops - State of Tennessee

ADELPHIA/TELCOVE
AT&T
ICG TELECOM
LEVEL 3 COMMUNICATIONS
MCI
MEMPHIS NETWORX
TIME WARNER TELECOM
XO COMMUNICATIONS
XSPEDIUS

Exhibit 2: Customer locations in BellSouth territory where FCC's triggers for DS1 loops are met - State of Tennessee

Customer location			Triggers met	
Index	Address	City	Self-provisioning	Wholesale
1	300 E ML KING BLVD	CHATTANOOGA	N/A	YES
2	633 CHESTNUT ST	CHATTANOOGA	N/A	YES
3	8110 CORDOVA RD	CORDOVA	N/A	YES
4	400 W MAIN ST	KNOXVILLE	N/A	YES
5	406 UNION AVE	KNOXVILLE	N/A	YES
6	410 W MAGNOLIA AVE	KNOXVILLE	N/A	YES
7	500 W SUMMIT HILL DR	KNOXVILLE	N/A	YES
8	800 S GAY ST	KNOXVILLE	N/A	YES
9	165 MADISON AVE	MEMPHIS	N/A	YES
10	201 COURT AVE	MEMPHIS	N/A	YES
11	240 S HOLLYWOOD ST	MEMPHIS	N/A	YES
12	2632 JACKSON AVE	MEMPHIS	N/A	YES
13	2650 THOUSAND OAKS BLVD	MEMPHIS	N/A	YES
14	3705 OUTLAND RD	MEMPHIS	N/A	YES
15	3993 CROWFARN DR	MEMPHIS	N/A	YES
16	4960 BLACK RD	MEMPHIS	N/A	YES
17	5100 POPLAR AVE	MEMPHIS	N/A	YES
18	5350 POPLAR AVE	MEMPHIS	N/A	YES
19	65 UNION AVE	MEMPHIS	N/A	YES
20	6625 LENOX PARK DR	MEMPHIS	N/A	YES
21	77 W CAROLINA AVE	MEMPHIS	N/A	YES
22	210 25TH AVE N	NASHVILLE	N/A	YES
23	211 COMMERCE ST	NASHVILLE	N/A	YES
24	2525 PERIMETER PLACE DR	NASHVILLE	N/A	YES
25	2990 SIDCO DR	NASHVILLE	N/A	YES
26	3100 W END AVE	NASHVILLE	N/A	YES
27	315 DEADERICK ST	NASHVILLE	N/A	YES
28	340 HERRON DR	NASHVILLE	N/A	YES
29	460 METROPLEX DR	NASHVILLE	N/A	YES
30	701 BROADWAY	NASHVILLE	N/A	YES
31	801 BROADWAY	NASHVILLE	N/A	YES
32	820 FESSLERS PKWY	NASHVILLE	N/A	YES
33	119 MILAN WAY	OAK RIDGE	N/A	YES

BellSouth Telecommunications, Inc
Tennessee Regulatory Authority
Docket No 03-00527
Exhibit SWP-3

Exhibit 3: Competitive carriers with high-capacity loop facilities to customer locations in BellSouth territory-State of Tennessee

PROPRIETARY INFORMATION

Exhibit 4: Customer locations in BellSouth territory where FCC's triggers for DS3 loops are met - State of Tennessee

Customer location			Triggers met	
Index	Address	City	Self-provisioning	Wholesale
1	300 E ML KING BLVD	CHATTANOOGA	YES	YES
2	633 CHESTNUT ST	CHATTANOOGA	YES	YES
3	745 E 17TH ST	CHATTANOOGA	YES	NO
4	8110 CORDOVA RD	CORDOVA	YES	YES
5	400 W MAIN ST	KNOXVILLE	YES	YES
6	406 UNION AVE	KNOXVILLE	YES	YES
7	410 W MAGNOLIA AVE	KNOXVILLE	YES	YES
8	4605 LYONS VIEW PIKE	KNOXVILLE	YES	NO
9	500 W SUMMIT HILL DR	KNOXVILLE	YES	YES
10	800 S GAY ST	KNOXVILLE	YES	YES
11	201 COURT AVE	MEMPHIS	YES	YES
12	240 S HOLLYWOOD ST	MEMPHIS	YES	YES
13	2632 JACKSON AVE	MEMPHIS	YES	YES
14	3705 OUTLAND RD	MEMPHIS	YES	YES
15	3993 CROWFARN DR	MEMPHIS	YES	YES
16	4960 BLACK RD	MEMPHIS	YES	YES
17	5100 POPLAR AVE	MEMPHIS	YES	YES
18	65 UNION AVE	MEMPHIS	YES	YES
19	6625 LENOX PARK DR	MEMPHIS	YES	YES
20	77 W CAROLINA AVE	MEMPHIS	YES	YES
21	9001 NEW LAWRENCEBURG HWY	MOUNT PLEASANT	YES	NO
22	201 CHURCH ST	NASHVILLE	YES	NO
23	209 10TH AVE S	NASHVILLE	YES	NO
24	210 25TH AVE N	NASHVILLE	YES	YES
25	211 COMMERCE ST	NASHVILLE	YES	YES
26	2525 PERIMETER PLACE DR	NASHVILLE	YES	YES
27	2990 SIDCO DR	NASHVILLE	YES	YES
28	3100 W END AVE	NASHVILLE	YES	YES
29	315 DEADERICK ST	NASHVILLE	YES	YES
30	340 HERRON DR	NASHVILLE	YES	YES
31	460 METROPLEX DR	NASHVILLE	YES	YES
32	505 FESSLERS LN	NASHVILLE	YES	NO
33	701 BROADWAY	NASHVILLE	YES	YES
34	801 BROADWAY	NASHVILLE	YES	YES
35	820 FESSLERS PKWY	NASHVILLE	YES	YES
36	119 MILAN WAY	OAK RIDGE	YES	YES
37	9150 HWY 203	SAVANNAH	YES	NO

Exhibit 5: Customer locations in BellSouth territory where FCC's triggers for dark fiber loops are met - State of Tennessee

Customer location			Triggers met	
Index	Address	City	Self-provisioning	Wholesale
1	300 E ML KING BLVD	CHATTANOOGA	YES	N/A
2	633 CHESTNUT ST	CHATTANOOGA	YES	N/A
3	745 E 17TH ST	CHATTANOOGA	YES	N/A
4	8110 CORDOVA RD	CORDOVA	YES	N/A
5	400 W MAIN ST	KNOXVILLE	YES	N/A
6	406 UNION AVE	KNOXVILLE	YES	N/A
7	410 W MAGNOLIA AVE	KNOXVILLE	YES	N/A
8	4605 LYONS VIEW PIKE	KNOXVILLE	YES	N/A
9	500 W SUMMIT HILL DR	KNOXVILLE	YES	N/A
10	800 S GAY ST	KNOXVILLE	YES	N/A
11	201 COURT AVE	MEMPHIS	YES	N/A
12	240 S HOLLYWOOD ST	MEMPHIS	YES	N/A
13	2632 JACKSON AVE	MEMPHIS	YES	N/A
14	3705 OUTLAND RD	MEMPHIS	YES	N/A
15	3993 CROWFARN DR	MEMPHIS	YES	N/A
16	4960 BLACK RD	MEMPHIS	YES	N/A
17	5100 POPLAR AVE	MEMPHIS	YES	N/A
18	65 UNION AVE	MEMPHIS	YES	N/A
19	6625 LENOX PARK DR	MEMPHIS	YES	N/A
20	77 W CAROLINA AVE	MEMPHIS	YES	N/A
21	9001 NEW LAWRENCEBURG HWY	MOUNT PLEASANT	YES	N/A
22	201 CHURCH ST	NASHVILLE	YES	N/A
23	209 10TH AVE S	NASHVILLE	YES	N/A
24	210 25TH AVE N	NASHVILLE	YES	N/A
25	211 COMMERCE ST	NASHVILLE	YES	N/A
26	2525 PERIMETER PLACE DR	NASHVILLE	YES	N/A
27	2990 SIDCO DR	NASHVILLE	YES	N/A
28	3100 W END AVE	NASHVILLE	YES	N/A
29	315 DEADERICK ST	NASHVILLE	YES	N/A
30	340 HERRON DR	NASHVILLE	YES	N/A
31	460 METROPLEX DR	NASHVILLE	YES	N/A
32	505 FESSLERS LN	NASHVILLE	YES	N/A
33	701 BROADWAY	NASHVILLE	YES	N/A
34	801 BROADWAY	NASHVILLE	YES	N/A
35	820 FESSLERS PKWY	NASHVILLE	YES	N/A
36	119 MILAN WAY	OAK RIDGE	YES	N/A
37	9150 HWY 203	SAVANNAH	YES	N/A

Exhibit 6. Carriers classified as wholesalers in analysis of FCC's triggers for dedicated transport - State of Tennessee

ADELPHIA/TELCOVE
AT&T
KMC TELECOM
MCI
MEMPHIS NETWORK
TIME WARNER TELECOM
XO COMMUNICATIONS

Exhibit 7: Interoffice routes in BellSouth territory where FCC's triggers for DS1 transport are met - State of Tennessee

Route				Triggers met	
Index	CLLI 1	CLLI 2	LATA	Self-provisioning	Wholesale
1	CHTGTNBR	CHTGTNDT	CHATTANOOGA, TN	N/A	YES
2	CHTGTNBR	CHTGTNNS	CHATTANOOGA, TN	N/A	YES
3	CHTGTNDT	CHTGTNNS	CHATTANOOGA, TN	N/A	YES
4	KNVLTNBE	KNVLTNMA	KNOXVILLE, TN	N/A	YES
5	KNVLTNBE	KNVLTNWH	KNOXVILLE, TN	N/A	YES
6	KNVLTNBE	OKRGTNMT	KNOXVILLE, TN	N/A	YES
7	KNVLTNMA	KNVLTNWH	KNOXVILLE, TN	N/A	YES
8	KNVLTNMA	OKRGTNMT	KNOXVILLE, TN	N/A	YES
9	KNVLTNWH	OKRGTNMT	KNOXVILLE, TN	N/A	YES
10	MMPHTNBA	MMPHTNCK	MEMPHIS, TN	N/A	YES
11	MMPHTNBA	MMPHTNCT	MEMPHIS, TN	N/A	YES
12	MMPHTNBA	MMPHTNEL	MEMPHIS, TN	N/A	YES
13	MMPHTNBA	MMPHTNGT	MEMPHIS, TN	N/A	YES
14	MMPHTNBA	MMPHTNMA	MEMPHIS, TN	N/A	YES
15	MMPHTNBA	MMPHTNMT	MEMPHIS, TN	N/A	YES
16	MMPHTNBA	MMPHTNOA	MEMPHIS, TN	N/A	YES
17	MMPHTNBA	MMPHTNSL	MEMPHIS, TN	N/A	YES
18	MMPHTNCK	MMPHTNCT	MEMPHIS, TN	N/A	YES
19	MMPHTNCK	MMPHTNEL	MEMPHIS, TN	N/A	YES
20	MMPHTNCK	MMPHTNGT	MEMPHIS, TN	N/A	YES
21	MMPHTNCK	MMPHTNMA	MEMPHIS, TN	N/A	YES
22	MMPHTNCK	MMPHTNMT	MEMPHIS, TN	N/A	YES
23	MMPHTNCK	MMPHTNOA	MEMPHIS, TN	N/A	YES
24	MMPHTNCK	MMPHTNSL	MEMPHIS, TN	N/A	YES
25	MMPHTNCT	MMPHTNEL	MEMPHIS, TN	N/A	YES
26	MMPHTNCT	MMPHTNGT	MEMPHIS, TN	N/A	YES
27	MMPHTNCT	MMPHTNMA	MEMPHIS, TN	N/A	YES
28	MMPHTNCT	MMPHTNMT	MEMPHIS, TN	N/A	YES
29	MMPHTNCT	MMPHTNOA	MEMPHIS, TN	N/A	YES
30	MMPHTNCT	MMPHTNSL	MEMPHIS, TN	N/A	YES
31	MMPHTNEL	MMPHTNGT	MEMPHIS, TN	N/A	YES
32	MMPHTNEL	MMPHTNMA	MEMPHIS, TN	N/A	YES
33	MMPHTNEL	MMPHTNMT	MEMPHIS, TN	N/A	YES
34	MMPHTNEL	MMPHTNOA	MEMPHIS, TN	N/A	YES
35	MMPHTNEL	MMPHTNSL	MEMPHIS, TN	N/A	YES
36	MMPHTNGT	MMPHTNMA	MEMPHIS, TN	N/A	YES
37	MMPHTNGT	MMPHTNMT	MEMPHIS, TN	N/A	YES
38	MMPHTNGT	MMPHTNOA	MEMPHIS, TN	N/A	YES
39	MMPHTNGT	MMPHTNSL	MEMPHIS, TN	N/A	YES
40	MMPHTNMA	MMPHTNMT	MEMPHIS, TN	N/A	YES
41	MMPHTNMA	MMPHTNOA	MEMPHIS, TN	N/A	YES
42	MMPHTNMA	MMPHTNSL	MEMPHIS, TN	N/A	YES
43	MMPHTNMT	MMPHTNOA	MEMPHIS, TN	N/A	YES
44	MMPHTNMT	MMPHTNSL	MEMPHIS, TN	N/A	YES
45	MMPHTNOA	MMPHTNSL	MEMPHIS, TN	N/A	YES
46	FKLNTNMA	NSVLTNAP	NASHVILLE, TN	N/A	YES
47	FKLNTNMA	NSVLTNBW	NASHVILLE, TN	N/A	YES
48	FKLNTNMA	NSVLTNCH	NASHVILLE, TN	N/A	YES
49	FKLNTNMA	NSVLTNDO	NASHVILLE, TN	N/A	YES
50	FKLNTNMA	NSVLTNMC	NASHVILLE, TN	N/A	YES
51	FKLNTNMA	NSVLTNMT	NASHVILLE, TN	N/A	YES
52	FKLNTNMA	NSVLTNST	NASHVILLE, TN	N/A	YES
53	FKLNTNMA	NSVLTNUN	NASHVILLE, TN	N/A	YES

54	NSVLTNAP	NSVLTNBW	NASHVILLE, TN	N/A	YES
55	NSVLTNAP	NSVLTNCH	NASHVILLE, TN	N/A	YES
56	NSVLTNAP	NSVLTNDO	NASHVILLE, TN	N/A	YES
57	NSVLTNAP	NSVLTNMC	NASHVILLE, TN	N/A	YES
58	NSVLTNAP	NSVLTNMT	NASHVILLE, TN	N/A	YES
59	NSVLTNAP	NSVLTNST	NASHVILLE, TN	N/A	YES
60	NSVLTNAP	NSVLTNUN	NASHVILLE, TN	N/A	YES
61	NSVLTNBW	NSVLTNCH	NASHVILLE, TN	N/A	YES
62	NSVLTNBW	NSVLTNDO	NASHVILLE, TN	N/A	YES
63	NSVLTNBW	NSVLTNMC	NASHVILLE, TN	N/A	YES
64	NSVLTNBW	NSVLTNMT	NASHVILLE, TN	N/A	YES
65	NSVLTNBW	NSVLTNST	NASHVILLE, TN	N/A	YES
66	NSVLTNBW	NSVLTNUN	NASHVILLE, TN	N/A	YES
67	NSVLTNCH	NSVLTNDO	NASHVILLE, TN	N/A	YES
68	NSVLTNCH	NSVLTNMC	NASHVILLE, TN	N/A	YES
69	NSVLTNCH	NSVLTNMT	NASHVILLE, TN	N/A	YES
70	NSVLTNCH	NSVLTNST	NASHVILLE, TN	N/A	YES
71	NSVLTNCH	NSVLTNUN	NASHVILLE, TN	N/A	YES
72	NSVLTNDO	NSVLTNMC	NASHVILLE, TN	N/A	YES
73	NSVLTNDO	NSVLTNMT	NASHVILLE, TN	N/A	YES
74	NSVLTNDO	NSVLTNST	NASHVILLE, TN	N/A	YES
75	NSVLTNDO	NSVLTNUN	NASHVILLE, TN	N/A	YES
76	NSVLTNMC	NSVLTNMT	NASHVILLE, TN	N/A	YES
77	NSVLTNMC	NSVLTNST	NASHVILLE, TN	N/A	YES
78	NSVLTNMC	NSVLTNUN	NASHVILLE, TN	N/A	YES
79	NSVLTNMT	NSVLTNST	NASHVILLE, TN	N/A	YES
80	NSVLTNMT	NSVLTNUN	NASHVILLE, TN	N/A	YES
81	NSVLTNST	NSVLTNUN	NASHVILLE, TN	N/A	YES

BellSouth Telecommunications, Inc
Tennessee Regulatory Authority
Docket No 03-00527
Exhibit SWP-8

Exhibit 8: Competitive carriers with transport facilities on routes between BellSouth wire centers in the same LATA-State of Tennessee

PROPRIETARY INFORMATION

Exhibit 9: Interoffice routes in BellSouth territory where FCC's triggers for DS3 transport are met - State of Tennessee

	Route			Triggers met	
Index	CLLI 1	CLLI 2	LATA	Self-provisioning	Wholesale
1	CHTGTNBR	CHTGTNDT	CHATTANOOGA, TN	YES	YES
2	CHTGTNBR	CHTGTNNS	CHATTANOOGA, TN	YES	YES
3	CHTGTNDT	CHTGTNNS	CHATTANOOGA, TN	YES	YES
4	KNVLTNBE	KNVLTNMA	KNOXVILLE, TN	NO	YES
5	KNVLTNBE	KNVLTNWH	KNOXVILLE, TN	NO	YES
6	KNVLTNBE	OKRGTNMT	KNOXVILLE, TN	NO	YES
7	KNVLTNMA	KNVLTNWH	KNOXVILLE, TN	NO	YES
8	KNVLTNMA	OKRGTNMT	KNOXVILLE, TN	NO	YES
9	KNVLTNWH	OKRGTNMT	KNOXVILLE, TN	NO	YES

Exhibit 10: Interoffice routes in BellSouth territory where FCC's triggers for dark fiber transport are met - State of Tennessee

	Route			Triggers met	
Index	CLLI 1	CLLI 2	LATA	Self-provisioning	Wholesale
1	CHTGTNBR	CHTGTNDT	CHATTANOOGA, TN	YES	YES
2	CHTGTNBR	CHTGTNNS	CHATTANOOGA, TN	YES	YES
3	CHTGTNDT	CHTGTNNS	CHATTANOOGA, TN	YES	YES
4	MMPHTNBA	MMPHTNCK	MEMPHIS, TN	NO	YES
5	MMPHTNBA	MMPHTNCT	MEMPHIS, TN	YES	YES
6	MMPHTNBA	MMPHTNEL	MEMPHIS, TN	YES	YES
7	MMPHTNBA	MMPHTNGT	MEMPHIS, TN	YES	YES
8	MMPHTNBA	MMPHTNMA	MEMPHIS, TN	YES	YES
9	MMPHTNBA	MMPHTNMT	MEMPHIS, TN	YES	YES
10	MMPHTNBA	MMPHTNOA	MEMPHIS, TN	YES	YES
11	MMPHTNBA	MMPHTNSL	MEMPHIS, TN	YES	YES
12	MMPHTNCK	MMPHTNCT	MEMPHIS, TN	NO	YES
13	MMPHTNCK	MMPHTNEL	MEMPHIS, TN	NO	YES
14	MMPHTNCK	MMPHTNGT	MEMPHIS, TN	NO	YES
15	MMPHTNCK	MMPHTNMA	MEMPHIS, TN	NO	YES
16	MMPHTNCK	MMPHTNMT	MEMPHIS, TN	NO	YES
17	MMPHTNCK	MMPHTNOA	MEMPHIS, TN	NO	YES
18	MMPHTNCK	MMPHTNSL	MEMPHIS, TN	NO	YES
19	MMPHTNCT	MMPHTNEL	MEMPHIS, TN	YES	YES
20	MMPHTNCT	MMPHTNGT	MEMPHIS, TN	YES	YES
21	MMPHTNCT	MMPHTNMA	MEMPHIS, TN	YES	YES
22	MMPHTNCT	MMPHTNMT	MEMPHIS, TN	YES	YES
23	MMPHTNCT	MMPHTNOA	MEMPHIS, TN	YES	YES
24	MMPHTNCT	MMPHTNSL	MEMPHIS, TN	YES	YES
25	MMPHTNEL	MMPHTNGT	MEMPHIS, TN	YES	YES
26	MMPHTNEL	MMPHTNMA	MEMPHIS, TN	YES	YES
27	MMPHTNEL	MMPHTNMT	MEMPHIS, TN	YES	YES
28	MMPHTNEL	MMPHTNOA	MEMPHIS, TN	YES	YES
29	MMPHTNEL	MMPHTNSL	MEMPHIS, TN	YES	YES
30	MMPHTNGT	MMPHTNMA	MEMPHIS, TN	YES	YES
31	MMPHTNGT	MMPHTNMT	MEMPHIS, TN	YES	YES
32	MMPHTNGT	MMPHTNOA	MEMPHIS, TN	YES	YES
33	MMPHTNGT	MMPHTNSL	MEMPHIS, TN	YES	YES
34	MMPHTNMA	MMPHTNMT	MEMPHIS, TN	YES	YES
35	MMPHTNMA	MMPHTNOA	MEMPHIS, TN	YES	YES
36	MMPHTNMA	MMPHTNSL	MEMPHIS, TN	YES	YES
37	MMPHTNMT	MMPHTNOA	MEMPHIS, TN	YES	YES
38	MMPHTNMT	MMPHTNSL	MEMPHIS TN	YES	YES
39	MMPHTNOA	MMPHTNSL	MEMPHIS, TN	YES	YES
40	FKLNTNMA	NSVLTNAP	NASHVILLE, TN	NO	YES
41	FKLNTNMA	NSVLTNBW	NASHVILLE, TN	NO	YES
42	FKLNTNMA	NSVLTNCH	NASHVILLE, TN	YES	YES
43	FKLNTNMA	NSVLTNDO	NASHVILLE, TN	YES	YES
44	FKLNTNMA	NSVLTNMC	NASHVILLE, TN	NO	YES
45	FKLNTNMA	NSVLTNMT	NASHVILLE, TN	YES	YES
46	FKLNTNMA	NSVLTNST	NASHVILLE, TN	NO	YES
47	FKLNTNMA	NSVLTNUN	NASHVILLE, TN	YES	YES
48	NSVLTNAP	NSVLTNBW	NASHVILLE, TN	NO	YES
49	NSVLTNAP	NSVLTNCH	NASHVILLE, TN	NO	YES
50	NSVLTNAP	NSVLTNDO	NASHVILLE, TN	NO	YES
51	NSVLTNAP	NSVLTNMC	NASHVILLE, TN	NO	YES
52	NSVLTNAP	NSVLTNMT	NASHVILLE, TN	NO	YES
53	NSVLTNAP	NSVLTNST	NASHVILLE, TN	NO	YES

54	NSVLTNAP	NSVLTNUN	NASHVILLE, TN	NO	YES
55	NSVLTNBW	NSVLTNCH	NASHVILLE, TN	NO	YES
56	NSVLTNBW	NSVLTNDO	NASHVILLE, TN	NO	YES
57	NSVLTNBW	NSVLTNMC	NASHVILLE, TN	NO	YES
58	NSVLTNBW	NSVLTNMT	NASHVILLE, TN	NO	YES
59	NSVLTNBW	NSVLTNST	NASHVILLE, TN	NO	YES
60	NSVLTNBW	NSVLTNUN	NASHVILLE, TN	NO	YES
61	NSVLTNCH	NSVLTNDO	NASHVILLE, TN	YES	YES
62	NSVLTNCH	NSVLTNMC	NASHVILLE, TN	NO	YES
63	NSVLTNCH	NSVLTNMT	NASHVILLE, TN	YES	YES
64	NSVLTNCH	NSVLTNST	NASHVILLE, TN	NO	YES
65	NSVLTNCH	NSVLTNUN	NASHVILLE, TN	YES	YES
66	NSVLTNDO	NSVLTNMC	NASHVILLE, TN	NO	YES
67	NSVLTNDO	NSVLTNMT	NASHVILLE, TN	YES	YES
68	NSVLTNDO	NSVLTNST	NASHVILLE, TN	NO	YES
69	NSVLTNDO	NSVLTNUN	NASHVILLE, TN	YES	YES
70	NSVLTNMC	NSVLTNMT	NASHVILLE, TN	NO	YES
71	NSVLTNMC	NSVLTNST	NASHVILLE, TN	NO	YES
72	NSVLTNMC	NSVLTNUN	NASHVILLE, TN	NO	YES
73	NSVLTNMT	NSVLTNST	NASHVILLE, TN	YES	YES
74	NSVLTNMT	NSVLTNUN	NASHVILLE, TN	YES	YES
75	NSVLTNST	NSVLTNUN	NASHVILLE, TN	YES	YES

Evidence of Willingness to Wholesale Loops

Carrier	Evidence	Source
Adelphia/Telcove	"Local or intercity TelCove can deliver the communications solution that is right for you We are a facilities-based telecommunications provider with an 11-year history of delivering advanced, secure communications over our fiber optic network "	<http //www telcove com/>
	"Our Synchronous Optical Network (SONET) ring architecture connects your business through fiber optic loops, transmitting information bi-directionally, for built-in, protective redundancy "	<http //www telcove com/network htm>
	Nashville is shown on the Network Map as a "Telcove Owned Market"	<http //www telcove com/about/Network%20Map pdf>
AT&T	AT&T Data Services for Service Providers An Overview of AT&T Data Services "Whether you are providing a simple T1 local connection, OC192 (10 Gbps) wavelength service or international FR/ATM, AT&T facilities can enable you to build flexibility, high reliability, performance, and scalability into your service offerings "	<http //www buiness att com/content/datasrvswhlsale_ltr pdf>
	AT&T Wholesale Services AT&T Service for Service Providers "AT&T Voice Services offer a flexible portfolio of local, national and international voice products and services "	<http //www business att com/default/index jsp?pageid=wholesale_data&branchid=wholesale>

	AT&T Wholesale Services AT&T Wholesales Services Portfolio "Your needs for connectivity are met by our comprehensive range of Voice Services, from the basics of outbound and inbound transit (including ISDN) and hubbing services up to advanced levels of carrier support for end-user calling cards, prepaid card services and collect calling AT&T Data Services offer a flexible portfolio of local, national and international data products and services "	<http //www business att com/content/gws_sheet pdf>
ICG Telecom	Special Access "Special Access from ICG Communications offers a dedicated, intralLATA transport service connecting your Point of Presence (POP) to a carrier, POP, or customer designated end-user Special Access can carry voice, data, and/or video traffic at DS-1, DS-3 and OC-N capacities	<http //www icgcomm com/products/carrier/special_access asp>
	ICG's Network "ICG also has a voice network serving California, Colorado, Ohio, Texas and parts of the southeastern United States ICG Markets Alabama Birmingham Georgia Atlanta Kentucky, Louisville North Carolina Charlotte Tennessee Nashville"	<http //www icgcomm com/products/network asp>
Level 3 Communications	(3)Link® Dark Fiber "(3)Link Dark Fiber (Intercity and Metro) gives carriers and service providers the infrastructure required to 'own' a fiber optic network without the burden of network construction (3)Link Dark Fiber service includes optical fiber cable, collocation and running line facility space, power, and operation and maintenance of the network (as well as enhanced services) " U S Metro Features "27 metro markets in North America with more than 130 loops" and "Access to more than 350 strategic 'On-Net' buildings"	<http //www level3 com/56 1 html>

	"Level 3, with $1 3 billion in cash and one of the industry's most advanced, lowest-cost networks Already a large player in wholesale data services, the company previously expressed interest in acquiring Global Crossing, WilTel, and other distressed assets "	Industry Consolidation to Pick Up Speed in 2004 RHK, December 2004
	"Metropolitan ("Metro") Access connects a customer location to the nearest Level 3 Gateway or point of presence (POP) A point of presence could be a building where Level 3 is colocated with another service provider (such as a telephone company), a building with Level 3 equipment, or most often a Level 3 Gateway "	<http //www level3 com/55 7 html>
	Memphis and Nashville are shown on the Network Map as being cities in which Level(3) is currently providing service	<http //www level3 com/57 7 html>
MCI	"As a carrier's carrier, UUNET wants to be your partner in the telecom world of tomorrow "	<http //global mci com/whol esale/services4U/carrier/>
	Global Data Link "International, national and metropolitan managed bandwidth for either standard point to point services, or providing you with a simple upgrade and economy of scale through the channelized point to point and point to multi-point options " Direct Switched Voice Services "Your switch connects to WorldCom's global infrastructure using a dedicated, secure direct line or by linking the building to a WorldCom Metropolitan Area Network "	< http //global mci com/whole sale/ services4U/carrier/carrierbr ochurenew pdf>

	"WorldCom, Inc officially announced its name change back to MCI, with UUNET as the sub-brand for its wholesale services It is targeting, basically, everyone from wholesale to retail, from consumer up through large enterprises "	WorldCom is born again as MCI, and files plan to exit Chapter 11 Current Analysis, April 15, 2003 <http //global mci com/news /presskit/strategy/current pdf >
Memphis Networx	"Memphis Networx, a metro carrier's carrier, plans to offer high-speed data services "	"Memphis Networx Selects Optical Metro Solutions from Nortel Networks", January 22, 2002 <http //www nortelnetworks com/corporate/news/newsreleases/2002a/01_21_02_memphis_networx html>
	"Memphis Networx will provide next-generation network services as a carriers' carrier to retail service providers (for example, competitive local exchange carriers [CLECs], interexchange carriers [IXCs] and Internet service providers [ISPs]) in the Memphis/Shelby County market "	"Memphis Networx- A Public-Private Partnership", Transmission & Distribution World, Dec 18, 2000 < http //tdworld com/ar/power_memphis_networx_publicprivate/>

	"Memphis Networx, LLC is a public-private corporation formed in 1999 to creat a citywide fiber optic network and provide metro access and metro core services that remove the 'last mile' bandwidth bottleneck that persists in the 2nd and 3rd Tier metro space Memphis Networx enables communications providers, through its state-of-the-art DWDM network and world class Technology Center, to supply their customers with the kinds of services and applications that are typically found only in Tier 1 cities Metro access and metro core services include SONET, Ethernet, and Optical Wavelengths to carriers, service providers and building owners "	"Memphis Networx selects ConceptWave to delive OrderCare solution", June 18, 2002 <http //www conceptwave c om/downloads/press2 pdf>
	"Citing the continued telecom recession hammering potential wholesale clients and an increased demand for business data services, Memphis Networx has announced it will roll out ethernet services by year end Networx CEO Mark Ivie says the company will look for partners to provide the service to maintain its carrier's carrier status, but it plans to directly offer the service 'We're still doing what we set out to do which is to provide transport to carriers,' Ivie says 'This is just a natural extension '"	"Memphis Networx considers moving into retail services", Kate Miller, Memphis Business Journal, November 1, 2002 < http //memphis bizjournals c om/memphis/stories/2002/1 1/04/story2 html>
Time Warner	Carriers "Time Warner Telecom is committed to serving the needs of carriers and service providers Our commitment, combined robust network, means you can count on us to provide the communications solutions you need to stay competitive Some of our services for carriers include Dedicated High Capacity Services (DS1/DS3) "	<http //www twtelecom com /default aspx?navId=33&co nfigArgs=src=dctm,doc=09 00bb3f801414b8>
	Regional Networks "Time Warner Telecom is unique in its ownership of "on-net" local and long haul networks Each network is individually designed, and all are equipped to offer and support Dedicated High Capacity service levels for DS-n, OC-n and wavelength capacity "	<http //www twtelecom com /Documents/Resources/PDF /Marketingcollateral/2301R egNet pdf>

	"We have over 17,000 route miles of fiber, predominantly local fiber miles We have over 3,600 buildings on fiber net and can deliver a range of services to those customers that compete with the incumbent regional Bell operating companies "	"Company Interview Michael A Rouleau, Time Warner Telecom Inc " Excerpted from The Wall Street Transcript 30 June 2003
	"Time Warner Telecom is unique in its ownership of "on-net" local and long haul networks Each network is individually designed, and all are equipped to offer and support Dedicated High Capacity service levels for DS-n, OC-n and wavelength capacity "	<http //www twtelecom com /default aspx?navID=33&co nfigARGS=src=dctm,doc=0 900bb3f801414b8>
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	"The carrier also has a significant wholesale business As of April 2003, the company had served customers in 44 local markets and had over 3,500 buildings on-net over half of Time Warner Telecom's revenue came from dedicated transport services In 2002, roughly 45% of the company's revenue came from its top 10 customers, with only WorldCom, a wholesale customer, accounting for more than 10% "	U S CLEC Competitive Analysis, 2003 IDC, June 2003

XO	" the carrier has a wholesale operation that caters mainly to IP carriers XO's fiber facilities cover 63 metro areas On the wholesale side, the company sells intercity wavelength services in addition to its metro wavelength services, as well as wide-area Ethernet services at 10, 100, and 1000 Mbps connection speeds As a facilities-based CLEC, XO remains one of the largest independent telecom providers selling a wide array of retail voice and data services to small and mid-sized business customers, and wholesale services to carriers "	XO – NS Current Analysis October 30, 2003 <currentanalysis com>
	"The second is for Global Crossing to buy at least $70 million in XO access and private line data services over the next five years "	Global Crossing and XO Communications Expand and Extend Their Carrier Partnership <currentanalysis com>
Xspedius	Carrier Solutions "Xspedius Communications offers superior products and services to carrier customers in 36 markets the United States " Special Access "Xspedius Communications Special Access is the perfect alternative for your local access networking needs Our Special Access service provides optimal connectivity to major business districts, interexchange carrier points of presence (POPs), local serving offices (LSOs), carrier hotels and commercial end-user buildings "	<www xspedius com/carrier /index shtml>
	"Special Access works off of our Metro SONET rings and can provide service between a customer location and a network service provider POP or between two service providers "	<www xspedius com/carrier /spacc shtml>

	"Xspedius Fiber Group is a wholly owned subsidiary of Xspedius Communications Each metropolitan area network is strategically designed for optimal connectivity of major Business Districts, Local Serving Offices, Carrier Hotels, and Interexchange Carrier Points-of-Presence (POP) sites "	<http //www xspedius com/ about/affiliates shtml>
	Chattanooga is shown on the Network Map as being a city in which Xspedius has a "metrofiber network"	<http //www xspedius com/images/int_network_map pdf >

Evidence of Willingness to Wholesale Transport

Carrier	Evidence	Source
Adelphia/Telcove	"Local or intercity TelCove can deliver the communications solution that is right for you We are a facilities-based telecommunications provider with an 11-year history of delivering advanced, secure communications over our fiber optic network "	<http //www telcove com/ >
AT&T	"At the heart of AT&T is the world's most reliable, powerful and sophisticated communications network Constantly enhanced, continually monitored, and consistently trusted, AT&T has been setting the standard for communications networking for more than 125 years "	<http //www att com/network/>
	AT&T Data Services for Service Providers An Overview of AT&T Data Services "Dedicated Entrance Facilities (DEF) provide a high capacity, dedicated communication path between a customer's premises and the AT&T Local Network Services (LNS) node, or between a customer's premises and a designated premises "	<http //www buiness att com/content/datasrvswhlsale_ltr pdf>
KMC	"KMC Carrier Transport Service Applications We bring all the pieces together for you Our advanced multi-service broadband network platform is built for the future We layer voice services directly through our #5ESS-2000 Lucent switch and over our local SONET Ring network for greater cost-efficiency, increased reliability, better performance and products that easily accommodate technology advances KMC Carrier Transport Service product family includes a complete line of wholesale applications "	<http //www kmctelecom com/advcomm/services/clearpipe cfm>

	"Among other full-service features, KMC Telecom's collection of wholesale services includes a variety of offerings for the origination and termination of traffic in KMC Telecom cities All services include access and transport of traffic over KMC Telecom's SONET Optical-Fiber Ring "	<http //www kmctelecom com/advcomm/services/clearthrough cfm>
	Chattanooga, Johnson City, Kingsport, and Bristol are shown as "Advanced Communication Service Areas" on the Network Map	<http //www kmctelecom com/maps cfm>
	Chattanooga is shown as a "KMC Fiber Market" on the Network Map Johnson City, Kingsport, and Bristol are shown as "Data Service Markets" on the map	<http //www kmctelecom com/advcomm/images/map_large jpg>
MCI	Global Data Link "International, national and metropolitan managed bandwidth for either standard point to point services, or providing you with a simple upgrade and economy of scale through the channelized point to point and point to multi-point options "Direct Switched Voice Services "Your switch connects to WorldCom's global infrastructure using a dedicated, secure direct line or by linking the building to a WorldCom Metropolitan Area Network "	< http //global mci com/wholesale/ services4U/carrier/carrierbrochurenew pdf>
	"WorldCom, Inc officially announced its name change back to MCI, with UUNET as the sub-brand for its wholesale services It is targeting, basically, everyone from wholesale to retail, from consumer up through large enterprises "	<http //global mci com/news/presskit/strategy/current pdf>
	"As a carrier's carrier, UUNET wants to be your partner in the telecom world of tomorrow "	<http //global mci com/wholesale/services4U/carrier/ >

Memphis Networx	"Memphis Networx, a metro carrier's carrier, plans to offer high-speed data services "	"Memphis Networx Selects Optical Metro Solutions from Nortel Networks", January 22, 2002 <http //www nortelnetworks com/corporate/news/newsreleases/2002a/01_21_02_memphis_networx htm l>
	"Memphis Networx will provide next-generation network services as a carriers' carrier to retail service providers (for example, competitive local exchange carriers [CLECs], interexchange carriers [IXCs] and Internet service providers [ISPs]) in the Memphis/Shelby County market "	"Memphis Networx- A Public-Private Partnership", Transmission & Distribution World, Dec 18, 2000 < http //tdworld com/ar/power_memphis_networx_publicprivate/>
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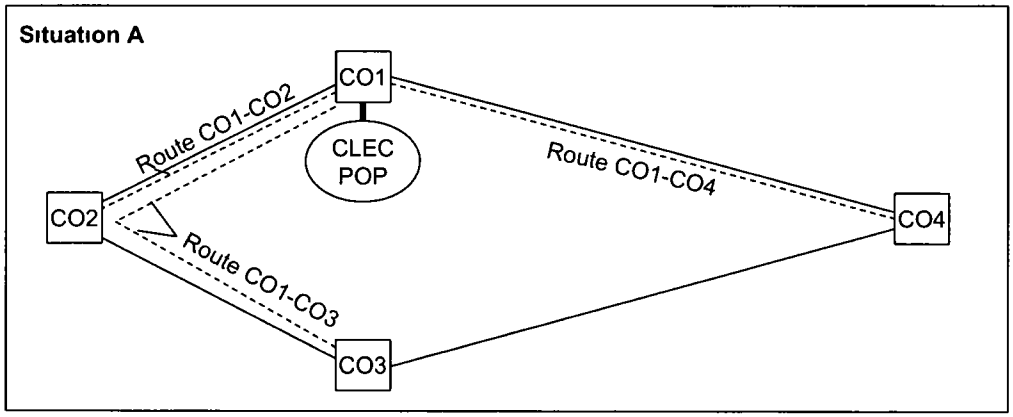
Carriers for which BellSouth Used GeoResults Data for Loops

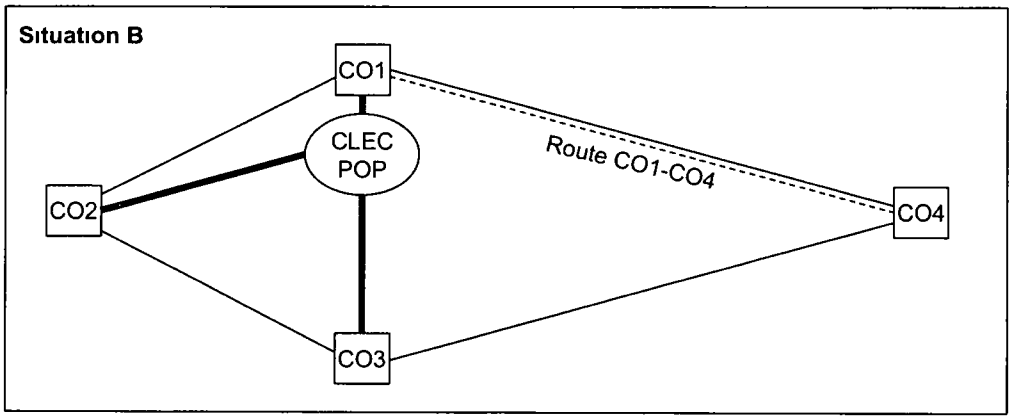
Carrier	Discovery	Use of GeoResults data
Adelphia	Served but responsive information not provided	Only source of data on loop deployment
DSLNet Communications	Not served, Seeking clarification	Only source of data on loop deployment
IDT/Winstar	Not served, Seeking clarification	Only source of data on loop deployment
Knology	Served but responsive information not provided	Only source of data on loop deployment
SBC Communications	Not served, Seeking clarification	Only source of data on loop deployment
Verizon	Served but responsive information not provided	Only source of data on loop deployment
Xspedius	Served but responsive information not provided	Only source of data on loop deployment

Carriers for which BellSouth Supplemented Carrier's Discovery Responses for Transport with BellSouth Internal Data

Carrier	Discovery	Use of BellSouth internal data
Adelphia	Served but responsive information not provided	Only source Fiber-based collocations in BellSouth central offices
Cinergy/Kentucky Data Link	Served but responsive information not provided	Only source Fiber-based collocations in BellSouth central offices
Xspedius	Served but responsive information not provided	Only source Fiber-based collocations in BellSouth central offices
SBC	Not served, seeking clarification	Only source Fiber-based collocations in BellSouth central offices

ENTRANCE FACILITIES AS BUILDING BLOCKS AT CLEC TRANSPORT ROUTES





ILEC interoffice network

Entrance facility

Dedicated transport route purchased from ILEC

CLEC builds 2 new entrance facilities to bypass ILEC on dedicated transport routes

- CLEC deploys alternative transport facilities for routes CO1-CO2, CO1-CO3, and CO2-CO3 (not used)
- CLEC continues to purchase dedicated transport from ILEC on route CO1-CO4