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August 13, 1996

960916-TP

Ms. Blanca Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
Room 110, Easley Building
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Tallahassee, Florida 32399-0850

BY HAND DELIVERY

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Dear Ms. Bayo:

Enclosed is the original and fifteen copies of Petition for Arbitration of American Communications Services, Inc. and American Communications Services of Jacksonville, Inc. and an original and one copy of the Notice of Service of ACSI's First Set of Interrogatories and First Request for Production of Documents to BellSouth.

Please indicate receipt of this document by stamping the enclosed two extra copies of this letter.

Your attention to this filing is appreciated.

Sincerely,

Floyd R. Self

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FRS/alb
Enclosures
cc: James Falvey, Esq.
Brad E. Mutschelknaus, Esq.

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of	)	
	)	
Petition by American Communications	)	
Services, Inc., and American Communications	)	Docket No.
Services of Jacksonville, Inc. for	)	Filed: August 13, 1996
Arbitration with BellSouth	)	
Telecommunications, Inc. pursuant to the	)	
Telecommunications Act of 1996	)	
	)	

PETITION FOR ARBITRATION OF AMERICAN COMMUNICATIONS SERVICES, INC.

I. INTRODUCTION

American Communications Services, Inc. and American Communications Services of Jacksonville, Inc. ("ACSI"), by its undersigned attorneys, pursuant to Section 252(b) of the Communications Act of 1934, as amended (the "Act"), 47 U.S.C. § 252(b), hereby petitions the Florida Public Service Commission ("PSC" or "Commission") to arbitrate the unresolved issues in the interconnection negotiations between ACSI and BellSouth Telecommunications, Inc. ("BellSouth")[1]. Specifically, ACSI requests the Commission to establish cost-based rates for the unbundled network elements about which ACSI and BellSouth (collectively, the "Parties") could not agree according to the statutory guidelines set forth in Section 252(d)(1) of the Act. These rates must be established pursuant to the guidelines adopted by the Federal Communications

[1] As detailed below, ACSI requested interconnection with BellSouth on March 7, 1996. At the initial meeting of the Parties, it was agreed that the negotiations would encompass all states within the BellSouth region. Accordingly, pursuant to Section 252(b) of the Act, this petition is timely.

Commission ("FCC") in its recent *Interconnection Order* implementing Section 251 and 252 of the Act.[2]

In support of this petition, ACSI provides all of the relevant documentation as required by Section 252(b) of the Act,[3] and states as follows:

II. FACTUAL BACKGROUND

1. ACSI is a publicly traded Delaware corporation, having its principal place of business at 131 National Business Parkway, Annapolis Junction, Maryland 20701. ACSI has almost two dozen operating subsidiaries providing or authorized to provide competitive local access and exchange services. ACSI currently has more than 200 employees. ACSI constructed its first network in October, 1994, and currently has 18 operational local fiber optic networks. In addition, ACSI has networks under construction in 16 other locations. ACSI plans to have a total of over 30 local networks constructed by mid-1997, and a total of 50 local networks by mid-1998. ACSI-Jacksonville is incorporated under the laws of the State of Maryland and is a wholly-owned subsidiary of ACSI. An application for certification as an Alternative Local Exchange Company ("ALEC") was filed June 3, 1996 by ACSI-Jacksonville, and is pending action by this Commission in Docket No. 960698-TX.

The names and address of ACSI's representatives to whom all pleadings, notices, orders or other correspondence should be addressed are:

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[2] Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, *First Report and Order*, CC Docket No. 96-98, FCC 96-325 (released August 8, 1996).

[3] ACSI presents in conjunction with this petition testimony from Richard Robertson, ACSI's Executive Vice President - Switched Services (Exhibit "A"); testimony from William Stipe, ACSI's Vice President -- Switched Engineering and Operations (Exhibit "B"); and the other Exhibits referenced herein below.

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2. BellSouth is an incumbent local exchange service provider within Florida. Within its operating territory, BellSouth has at all relevant times been a monopoly provider of such services.

3. BellSouth is and at all material times has been an "incumbent local exchange carrier" ("ILEC") in Florida as defined by the Act. 47 U.S.C. § 251(h).

4. In a letter dated March 6, 1996, ACSI, on behalf of its operating subsidiaries, requested interconnection, service, and unbundled network elements ("ACSI Request") from BellSouth in the State of Florida under Section 251 of the Act. Service of the request was made by overnight delivery and received by BellSouth on March 7, 1996. A true and correct copy of ACSI's request is appended hereto as Exhibit "E."

5. Subsequent to making and receiving the ACSI Request, the Parties have negotiated in an attempt to reach an agreement on the terms, conditions, and rates of the requested information, services, and unbundled elements. The Parties exchanged several draft agreements, held a number of face-to-face meetings, and conducted numerous conference calls.

6. As a result of these negotiations, in which ACSI has consistently conducted itself in good faith, the Parties reached agreement on nearly all issues and executed a contract on July

25, 1996. A copy of the agreement has been, or shortly will be, formally submitted to the PSC for approval pursuant to Section 252(e)(2)(A) of the Act. For the convenience of the PSC, a copy of the agreement has also been appended hereto as Exhibit "F." Exhibit "G," appended hereto, is an overview of the issues upon which agreement was reached during the course of the negotiations.

7. Unfortunately, during the course of the negotiations, the Parties did not reach agreement on all issues. Specifically, the Parties could not achieve consensus on the proper pricing for three unbundled products, albeit the Parties reached agreement on the terms and conditions associated with those products. The three products upon which prices were not agreed to are unbundled exchange access loop ("Unbundled Loop"), the cross-connect function for linking the Unbundled Loop to the central office or ACSI collocated equipment ("Loop Cross-Connect"), and the channelization or multiplexing function for the Unbundled Loop (including the central office interface) ("Loop Channelization").[4]

III. JURISDICTION OF THE PSC

8. Under Section 252 of the Act, parties to a negotiation for interconnection, service, or unbundled elements within a particular state have the right to petition the respective state commission for arbitration of any open issues whenever negotiations between them fail to yield an agreement. 47 U.S.C. § 252(b). Either Party may seek such arbitration during the period

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[4] When the interconnection agreement was executed, the Parties also were unable to agree on rates applicable to the provision of unbundled ports. Since that time, ACSI opted to agree to BellSouth's proposed pricing and not subject the issue of unbundled port rates for state commission arbitration.

between the 135th day and the 160th day after the date the ILEC received the request for negotiation. *Id.* Because BellSouth received the ACSI Request on March 7, 1996, the window for requesting arbitration began on July 20, 1996 and ends on August 14, 1996. Accordingly, this Petition is being filed within the time period established by the Act.

9. Given the specific areas in which the Parties failed to reach agreement, ACSI seeks arbitration of the rates for (1) Unbundled Loops, (2) Loop Cross-Connects, and (3) Loop Channelization.

IV. POSITION OF THE PARTIES

10. Pursuant to Sections 252(b)(2)(i) and (ii) of the Act, 47 U.S.C. §§ 252(b)(2)(i) and (ii), the following is ACSI's position on each of the unresolved issues. In addition, ACSI states the position of BellSouth on each issue as it is understood by ACSI. To the extent ACSI inaccurately reports BellSouth's position, ACSI expects BellSouth will clarify its position and the basis therefor in its response pursuant to Section 252(b)(3) of the Act.

A. Pricing of Loops and Related Unbundled Elements

1. ACSI's Position

11. With regard to the pricing of each of the unbundled network elements at issue, ACSI's position is the same: Total Element Long Run Incremental Costs ("TELRIC") form the proper cost-basis under Section 251(d)(1) of the Act for the development of rates for unbundled network elements. The relevant statutory standard requires that rates must be "based on cost" and "*may* include a reasonable profit." 47 U.S.C. § 251(d)(1) (emphasis added).

12. The FCC's *Interconnection Order* confirms the position taken by ACSI during the negotiations. In its decision, the FCC established the costing methodology to be used in arbitrations establishing rates under Section 251(d)(1) -- TELRIC.[5] As determined by the FCC, states are to set prices for interconnection and network elements at TELRIC plus a "reasonable share of forward-looking joint and common costs." Until such time as the states have TELRIC studies at their disposal, they may utilize the relevant default proxies adopted by the FCC. If a default proxy is to be used, the state's decision, ACSI submits, must be based on the best information regarding TELRIC that is available.

13. In Exhibit "H" appended hereto, ACSI sets forth its initial proposed interim rates for the unbundled elements identified above. BellSouth has not provided ACSI with any TELRIC (or TSLRIC[6]) studies. Accordingly, ACSI developed these rates based on the best information publicly available on the TELRIC of providing the unbundled elements at issue in the State of Florida. This information has been developed using publicly available data and the Hatfield Model which calculates an upper bound on TSLRIC for unbundled network elements within each state. ACSI expects to obtain cost and competitive rate information from BellSouth through discovery in this arbitration proceeding -- to the extent such data exists -- and reserves its right to modify its proposals based upon any information received in discovery. If TELRIC studies have not been completed by BellSouth, then the PSC should order BellSouth to complete such studies and propose TELRIC-based rates within sixty (60) days from the filing of this petition.

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[5] As the FCC notes, TELRIC is another name for what are often called Total Service Long Run Incremental Costs.

[6] Total Service Long Run Incremental Cost.

In the event that BellSouth produces clear and convincing evidence of an inability to complete TELRIC cost studies within this timeframe, then ACSI requests that the PSC prescribe interim rates to be replaced by TELRIC-based rates within six (6) months of the date hereof.

14. Section 252(b) and circumstances required this petition to be filed almost simultaneously with the release of the FCC *Interconnection Order*. Although ACSI has striven to reflect herein the basic tenets of that pivotal decision, ACSI reserves the right to modify its position based upon a more comprehensive review of the *Interconnection Order*.

2. BellSouth's Position

15. BellSouth has proposed the prices for the unbundled network elements at issue as set forth in Exhibit "I" appended hereto. BellSouth's position during the negotiations was that negotiated rates need not be cost-based. Accordingly, ACSI cannot state with any degree of certainty what BellSouth believes rates consistent with the Section 251(d)(1) standard and the FCC's *Interconnection Order* would be.

V. ARGUMENT

A. Applicable Standards

16. This arbitration must be resolved by the standards established in Section 252(c) of the 1996 Act, 47 U.S.C. § 252(c), and the rules adopted by the FCC in its *Interconnection Order*. Section 252(c) requires a state commission resolving open issues through arbitration to:

> (1) ensure that such resolution and conditions meet the requirements of section 251, including the regulations prescribed by the Commission pursuant to section 251 (*e.g.*, interconnection, pricing guidelines, unbundled network elements, telephone number portability);
>
> (2) establish any rates for interconnection, services, or network elements according to [section 252(d)]; and

(3) provide a schedule for implementation of the terms and conditions by the parties to the agreement.[7]

17. Accordingly, the PSC must make an affirmative determination that the rates it prescribes in this arbitration proceeding are consistent with Section 251 and meet the pricing standards established in Section 252(d)(1) and the FCC's *Interconnection Order*. Section 251(c) governs the obligations of an ILEC to offer, *inter alia*, interconnection to the facilities of other telecommunications carriers and access to unbundled elements of its network. ILECs must offer interconnection and unbundled elements to other telecommunications carriers on rates, terms and conditions that are "just, reasonable and nondiscriminatory."[8] The PSC, therefore, must evaluate whether the prices proposed by the Parties are just and reasonable and whether they are discriminatory.

B. The Unbundled Loop and Related Network Elements Must Be Made Available at Non-Discriminatory TELRIC Ra

18. Section 252(d) -- which applies specifically to arbitrations conducted before state regulatory commissions -- amplifies and reinforces Section 251's requirements. Section 252(d)(1) requires that a state commission's determination of the rates for unbundled elements shall be "based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the . . . unbundled network element" and "*may* include a reasonable profit." 47 U.S.C. § 252(d)(1) (emphasis added). Significantly, Section 252(d)(1) precludes the establishment of loop rates based upon traditional regulatory pricing principles, including

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[7] 47 U.S.C. § 252(c).

[8] *Id.* §§ 251(c)(2)(D); 251(c)(3); 251(c)(6).

application of embedded cost or fully distributed cost methodologies. Instead, an incremental cost approach is required.

19. On August 1, 1996, the Federal Communications Commission adopted rules which implement the interconnection provisions of Sections 251 and 252. Those rules, which apply to this arbitration proceeding, require rates for interconnection to be equal to TELRIC plus a reasonable share of forward-looking joint and common costs. Where TELRIC information is unavailable, the FCC has established rate ranges within which and rate ceilings below which prices for rate elements must be set. Because the *Interconnection Order* was just released, ACSI reserves the right to supplement this petition once it has held the opportunity to comprehensively review the text of the federal rules and the *Interconnection Order*.

20. In addition to being required by the Act and the FCC's *Interconnection Order*, TELRIC-based pricing is the most economically efficient standard for determining rates for unbundled network elements. As explained in the attached testimony of Dr. Marvin H. Kahn,[9] prices in a competitive market are based on forward-looking, market-oriented costs. In order for regulators to replicate this pricing for unbundled network elements (which are not subject to competitive pressures), rates should be developed using the total element long run incremental cost methodology (TELRIC), plus a competitive-based markup to permit recovery of forward-looking, efficiently incurred joint and common costs. This approach will encourage an efficient level of entry in telecommunications markets, promote the efficient production of services, lead to competitively determined end user prices, and guard against anticompetitive behavior by incumbent local exchange carriers. ACSI submits that under the Act, BellSouth has the burden

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[9] Attached as Exhibit C.

of establishing what its TELRIC is for each of the network elements ACSI has requested, and BellSouth should be required to submit TELRIC cost studies as promptly as possible, but in any event no later than 60 days from the date of this Petition.

21. BellSouth has not provided ACSI with TELRIC studies and has insisted in the negotiations that it need not propose TELRIC-based rates. Therefore, in the absence of TELRIC data, ACSI has used the best available alternative to develop its proposed rates. That alternative uses the updated Hatfield Model[10] -- which Dr. Kahn has closely reviewed and concurs in the methodology thereof -- to estimate an upper bound for TELRIC data. This model, which is still being refined, produces TELRIC data by population density zones for each state. Dr. Kahn has analyzed the results of the Hatfield Model, and recommends that, until complete TELRIC data is available, this data be used as an upper bound for the TELRIC of the elements at issue.

22. In order to estimate a suitable mark-up to recover joint and common costs, the Commission should use a competitive surrogate as an upper limit on such costs. The mark-up that the LEC itself finds acceptable in a competitive market, such as, for example Centrex, is an appropriate standard to apply to the LEC's network elements. Use of such a surrogate captures a competitive outcome in the pricing of ILEC network elements.

23. ACSI submits that the foregoing alternative may be relied upon by the Commission, in conjunction with the default ranges established in the FCC's *Interconnection Order*, in the absence of adequate TELRIC studies. See 47 U.S.C. § 252(b)(4). The Commission should set rates for an interim period while TELRIC studies are being completed and reviewed by the Parties

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[10] Version 2.2, Release 1, by Hatfield Associates.

and the Commission. Once such rates have been developed, they should immediately apply to ACSI for local loops and related unbundled elements.[11]

VI. PROCEDURAL MATTERS

24. Section 252(b)(4)(c) requires that the PSC render a decision in this proceeding not later than nine months after ACSI submitted its request for negotiations to BellSouth, *i.e.*, by December 7. In order to allow for the most expeditious conduct of this arbitration, ACSI respectfully requests that the PSC convene a status conference, as promptly as possible, to establish a procedural schedule for discovery requests and the conduct of a hearing in this matter.

25. In order to give the Commission the benefit of the most complete record as possible, attached at Exhibit "J" is a copy of ACSI's initial set of interrogatories and document requests addressed to BellSouth and served on BellSouth with this petition. ACSI requests that BellSouth answer these interrogatories and produce all documents requested within the time allowed by the Commission's rule or earlier as may be directed by the Commission. ACSI reserves the right to request additional documents or to promulgate additional interrogatories after it has had an opportunity to review the FCC's *Interconnection Order* and BellSouth's response to these requests.

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[11] As explained previously, ACSI believes such rates should be submitted within 60 days so that they may be evaluated within the statutory timeframe. In the event TELRIC studies are not available, the Commission should order them to be supplied no later than six months from the date hereof.

VII. CONCLUSION

WHEREFORE, for the foregoing reasons, the PSC should conclude that the rates for Unbundled Loops, Loop Cross-Connect, and Loop Channelization, proposed by ACSI are consistent with Section 252(d)(1) of the Act. Accordingly, the PSC should require BellSouth to offer those unbundled elements at the rates set forth in Appendix H.

Respectfully submitted

AMERICAN COMMUNICATIONS SERVICES, INC.

OF COUNSEL:

By: _____

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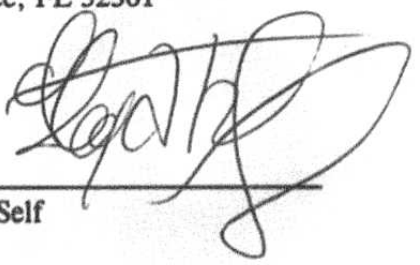
Its Attorneys

Date: August 13, 1996

CERTIFICATE OF SERVICE

I hereby certify that on this 13th day of August, 1996, a copy of the foregoing Petition for Arbitration was served upon the following persons in such a manner that it will be received on the same day the Petition is filed with the Commission.

Mary Jo Peed
c/o Nancy H. Sims
BellSouth Telecommunications, Inc.
150 S. Monroe Street, Suite 400
Tallahassee, FL 32301



Floyd R. Self

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EXHIBIT LIST

DIRECT TESTIMONY

OF

RICHARD ROBERTSON

ON BEHALF OF

AMERICAN COMMUNICATIONS SERVICES, INC.

DIRECT TESTIMONY OF

RICHARD ROBERTSON

I. BACKGROUND AND QUALIFICATIONS

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

A. My name is Richard Robertson. I am the Executive Vice President/General Manager -Switched Services of American Communications Services, Inc. ("ACSI"). My business address is 131 National Business Parkway, Suite 100, Annapolis Junction, Maryland 20701.

Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE AND BACKGROUND.

A. I joined ACSI in April 1996 and serve as Executive Vice President/General Manager - Switched Services. Prior to joining ACSI, I worked for BellSouth for 16 years and, since from 1991 to 1996, I directed marketing activities for its $4.0 billion network interconnection business. In that role, my responsibilities included negotiating interconnection agreements with competitive local exchange carriers ("CLECs"). I was responsible for development and implementation of BellSouth's advanced intelligent network (AIN) services for the interconnection market and also formulated the company's plan for and entry into the customer premise equipment (CPE) market in the mid-1980s, leading that unit to achieve over $100 million in sales in its first year of operation. In other assignments during these 28 years, my experience included outside plant, manufacturing, finance, purchasing, strategy development and

R&D positions with Western Electric, Bellcore, and the U.S. Army. I have a bachelor's degree in electrical engineering from Virginia Tech and an MBA from the University of Virginia.

Q. PLEASE BRIEFLY DESCRIBE THE OPERATIONS OF ACSI AND ITS OPERATING SUBSIDIARIES.

A. ACSI is a competitive local exchange carrier focusing primarily on markets in the South and Southwest. ACSI is a publicly-traded Delaware corporation, traded on the NASDAQ Market under the symbol "ACNS". ACSI, through its operating subsidiaries, has already constructed and is successfully operating digital fiber optic networks and offering dedicated services in several states. ACSI has eighteen operational networks[1] and an additional six networks under construction.[2] ACSI affiliates are currently certificated to provide local exchange telecommunications services in Alabama, Georgia, Maryland, Nevada, Tennessee and Texas, and dedicated telecommunications services in Alabama, Arkansas, Georgia, Kentucky, Maryland, Nevada, New Mexico, South Carolina, Tennessee and Texas. ACSI subsidiaries have also applied for authority to provide switched and/or dedicated local exchange telecommunications services[3] in Arizona, Arkansas, Colorado, Florida,

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[1] ACSI's operational networks are located in the following cities: Columbus, Georgia; Louisville and Lexington, Kentucky; Jackson, Mississippi; Little Rock, Arkansas; Fort Worth, Irving and El Paso, Texas; Tucson, Arizona; Greenville, Columbia, Spartanburg and Charleston, South Carolina; Albuquerque, New Mexico; Birmingham, Mobile and Montgomery, Alabama; and Las Vegas, Nevada.

[2] In addition, ACSI expects the following networks to be operational by October 1996: Baton Rouge, Louisiana; Amarillo and Corpus Christi, Texas; Chattanooga, Tennessee; Colorado Springs, Colorado; and Central Maryland (Washington-Baltimore Corridor).

[3] In those states in which ACSI affiliates have not yet sought dedicated private line services, those services have additionally been requested.

Kansas, Louisiana, Mississippi, Missouri, Nevada, New Mexico, Oklahoma, South Carolina, and Virginia.

Q. WILL ACSI INVEST SIGNIFICANTLY IN THIS STATE?

Yes.

Q. CAN YOU PROVIDE AN ESTIMATE OF ACSI'S PROPOSED INVESTMENT IN THIS STATE?

As a facilities-based carrier, ACSI will spend tens of millions of dollars in implementing our business plan in-state. In addition, we will be adding a significant number of employees in this state in order to begin offering switched services.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE ANY STATE PUBLIC UTILITY COMMISSION?

A. Yes. I testified before the Alabama PSC on April 10, 1996 in connection with ACSI's application for switched services authority there.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to explain:

1) why unbundled loops are critical to the development of local competition;

2) why this Commission must price local loops based on Total Element Long Run Incremental Cost ("TELRIC"), not only

to comply with applicable federal law, but also in order to maximize economic efficiency and promote local competition; and

3) how proposed pricing for BellSouth's simple unbundled loops is: a) anticompetitive, in that it will artificially drive up CLEC costs and could eliminate the development of facilities-based competition; and c) represents pricing for a *service*, as opposed to an *unbundled element*, and one which provides significantly more capability than ACSI needs in a simple unbundled loop.

Q. AS A THRESHOLD MATTER, WHAT INCREMENTAL COST STANDARD MUST THE COMMISSION APPLY?

A. As Dr. Kahn will discuss at greater length in his testimony, Total Element Long Run Incremental Cost ("TELRIC") is the standard adopted by the FCC in implementing the Telecommunications Act of 1996 ("1996 Act"). As noted in the FCC's August 1, 1996, news release, TELRIC costs are the same as Total Service Long Run Incremental Costs ("TSLRIC").

III. BRIEF HISTORY OF NEGOTIATIONS WITH BELLSOUTH

Q. PLEASE BRIEFLY DESCRIBE YOUR NEGOTIATIONS WITH BELLSOUTH.

A. ACSI's initial request for interconnection negotiations was received by BellSouth on March 7, 1996. On July 25, 1996, ACSI signed an interconnection agreement with BellSouth covering almost all of the key interconnection issues.

Q. WHAT ISSUES BETWEEN ACSI AND BELLSOUTH HAVE BEEN LEFT UNRESOLVED?

A. The critical issue of the pricing of unbundled loops. ACSI requested incremental cost-based pricing of unbundled loops, relying upon publicly available information gleaned from the Hatfield Study discussed in Dr. Kahn's testimony. While the parties agreed that unbundled loops should be made available, and on the general terms and conditions which should apply to them, BellSouth would not agree to TELRIC-based pricing.

Q. PLEASE DESCRIBE THE UNBUNDLED LOOPS YOU REQUIRE AT THIS TIME.

A. The access line portion of local exchange service is comprised of two key components: the ***loop***, providing transmission between the customer and the LEC central office, and to the ***port***, the interface to the switch which provides the capability to originate and terminate calls. ACSI is requesting only the loop element at this time. Unbundled loops are critical to ensuring that ACSI and other CLECs can serve a geographically dispersed customer base. ***Physically*** unbundled loops are worthless to ACSI and other CLECs if the ***pricing*** is not also unbundled, and prices are set on an economically viable basis based on the direct forward-looking costs of providing the loop.

Specifically, ACSI requests in this arbitration that the Commission require BellSouth to make available at TELRIC-based pricing (further discussed below and in Dr. Marvin Kahn's testimony) 2-wire analog voice grade loops ("simple loops"), as well as the additional classes of loops discussed below. These and other requested loops are defined in further detail in ACSI's interconnection agreement with

BellSouth.[4] ACSI specifically requested that unbundled loops be made available at prices, including both recurring and nonrecurring charges, based on TSLRIC cost. BellSouth responded by offering pricing at levels set for special access which, as discussed below, ACSI considers to be categorically unacceptable. Certainly, as the FCC's recent decision on interconnection makes plain, such pricing is inconsistent with the 1996 Act. Although ACSI was able to come to terms with BellSouth, through good faith negotiations, on most interconnection issues, it became clear that BellSouth's insistence on inflated special access pricing for the loop element would require arbitration by the Commission.

IV. TELRIC-BASED UNBUNDLED LOOPS ARE CRITICAL TO THE DEVELOPMENT OF LOCAL COMPETITION

Q. WHY ARE UNBUNDLED LOOPS PRICED AT TELRIC-BASED RATES CRITICAL TO THE DEVELOPMENT OF LOCAL COMPETITION?

A. The ubiquitous local network in place today is a national asset developed over the course of a century by incumbent LECs ("ILECs") with ratepayer dollars. This national asset was developed by ILECs with the myriad benefits of their government-sanctioned monopoly franchises, including access to rights-of-way, building access, a guaranteed revenue stream, and, most fundamentally, protection from all competition. This monopoly franchise system made sense at a time when technology limited the number of participants in the local exchange marketplace. With the development of advanced switching technology, however, we can now introduce competition -- the preferred American market structure paradigm -- into the local exchange market.

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[4] *Interconnection Agreement Between ACSI and BellSouth*, Attachment C-2.

While CLECs are rapidly building networks in dense, urban areas where it currently makes economic sense to do so (just as the current incumbents initiated their networks in urban areas, and eventually forfeited the less profitable outlying areas to the independents), it may never make economic sense to overbuild the entire ubiquitous ILEC network. Moreover, the availability of unbundled loops where CLECs may eventually build is critical to ensuring the CLECs' ability to compete immediately while their networks are only partially completed.

Accordingly, the U.S. Congress and the FCC, in order to ensure that the benefits of competition spread beyond large customers and business centers, have mandated the unbundling of the "local loop," often referred to as the "last mile" from the LEC central office to the customer premises. Even in urban areas, CLEC networks do not pass by every building, and unbundled loops are therefore required to expand CLECs' urban customer base, as well.

Q. DOES BELLSOUTH CURRENTLY HAVE A MONOPOLY OVER THIS "LAST MILE" OF THE LOCAL NETWORK?

A. Yes. As further discussed in Dr. Kahn's testimony, the reason the U.S. Congress and the FCC have required incremental cost-based pricing is because the "local loop" is a monopoly bottleneck element. BellSouth continues to have monopoly control over the "last mile" of the telecommunications network. Facilities-based local connections between most end-users and the BellSouth central offices will for some time to come remain the exclusive province of BellSouth. This monopoly results from the fact that this loop network consists mostly of transmission facilities carrying small volumes of traffic, spread over wide geographic areas. The "last mile" loop network, therefore,

is an essential bottleneck facility for any potential provider of competitive local exchange service.

Q. WHY WILL IT BE IMPOSSIBLE FOR ANY COMPANY TO REPLICATE THE LOCAL LOOP IN THE NEAR TERM?

A. As a threshold matter, the reason Congress and the FCC have mandated TELRIC-based unbundled loops is because there is no alternative to the ILEC local loop available *today*. Because Congress has determined that local competition should be implemented now, the question of whether the local loop can be duplicated five, ten, or twenty-five years from now is not relevant. Nonetheless, the reason it is unlikely that the local loop will be replicated even in the foreseeable future is that CLECs do not share the incumbents' advantages. Not only is it currently infeasible, but it is economically inefficient for CLECs to duplicate the ubiquitous network built over the course of the entire century by incumbents. New entrants would find it prohibitively expensive to recreate the ubiquitous local loop. This is true whether new entrants use current technology or alternative -- and as yet not widely deployed -- telephone technology such as wireless loops or cable television plant. This is in part because new entrants have difficulty obtaining public and private rights-of-way, franchises, and building access on the same terms as incumbent LECs enjoy. Accordingly, if the local loop is not unbundled at TELRIC-based rates, customers will be denied the benefits of local competition.

Q. HOW WILL UNBUNDLED LOOPS PRICED AT TELRIC-BASED RATES OPEN UP THIS FINAL BOTTLENECK?

A. Unbundled loops, if appropriately priced based on TELRIC in accordance with federal statutory and regulatory guidelines, will provide access to an essential bottleneck facility controlled by BellSouth. TELRIC-based rates are not only federally mandated, but are the only rates that will permit economically viable competition to spread to ***all*** customers, regardless of whether they live in the city, the suburbs, or the country.

Q. WHY IS IT IMPORTANT THAT NEW ENTRANTS BE PERMITTED TO COMPETE BEYOND THE RANGE OF THEIR CURRENT NETWORKS?

A. There are a number of reasons why competition should not remain limited. First, the benefits of competition should be permitted to spread to all customers throughout BellSouth operating territory. Second, ACSI and other new entrants are facing a daunting competitor in BellSouth, which already has dramatic competitive advantages: a nearly 100% market share in switched services, a customer relationship with every customer in their market, extensive marketing data on those customers, a ubiquitous network, the benefits of its historical monopoly franchise, and widespread name recognition.

The Commission is charged under the 1996 Act with ensuring that BellSouth cannot perpetuate its overwhelming competitive advantage by drastically limiting the potential serving area of CLECs to a discrete geographic area. Part of ACSI's interest in unbundled loops stems from the fact that many customers have multiple locations. In order for CLECs to compete for these dispersed customers, unbundled loops will be required to complement CLEC facilities. (Ironically, CLECs will be forced to become "cream-skimmers" of more lucrative, lower service cost areas and customers, a pejorative label often pinned on CLECs by LECs, if unbundled loops are

not available at economically viable prices.) In short, if ACSI and other CLECs are not permitted to compete ***everywhere*** through TELRIC-based loops, they may not, as a practical matter, be able to compete ***anywhere***.

V. UNBUNDLED LOOPS MUST BE PRICED AT TELRIC-BASED RATES UNDER THE TELECOMMUNICATIONS ACT OF 1996

Q. PLEASE EXPLAIN YOUR UNDERSTANDING OF THE UNBUNDLED ELEMENT PRICING REQUIREMENTS OF THE TELECOMMUNICATIONS ACT OF 1996.

A. The Telecommunications Act of 1996 and the rules issued in Docket 96-98 at the FCC greatly simplify this Commission's task in the arbitration of pricing unbundled loops. Although I am not a lawyer, the plain meaning of Section 252(d)(1) of the Telecommunications Act of 1996 requires that pricing for unbundled elements should be based on the cost, without reference to rate-of-return regulation, of the unbundled network element, must be nondiscriminatory, and ***may*** include a reasonable profit. At its recent meeting on August 1, 1996, the FCC correctly interpreted this language to require that unbundled element rates must not only be nondiscriminatory, but must also be based on Total Element Long Run Incremental Cost ("TELRIC"). Dr. Kahn's testimony will go into greater detail as to the appropriate economic analysis to arrive at the appropriate rates for unbundled elements. Dr. Kahn will also explain why the FCC's pricing standard is not only the law of the land, but the only economically efficient means to determine the costs of unbundled elements.

Q. AS A BUSINESSMAN, WHY DO YOU BELIEVE IT IS NECESSARY FOR THE COMMISSION TO ENSURE THAT UNBUNDLED ELEMENT PRICES ARE NOT EXCESSIVE?

A. In the simplest terms, if the Commission were to allow BellSouth to charge non-TELRIC based rates for unbundled loops, new entrants such as ACSI would not be able to compete. Local competition promises to bring -- and in many ways already has succeeded in bringing -- lower prices, higher quality service, and increased innovation statewide. If the Commission overestimates the appropriate price of unbundled loops, new facilities-based entrants will not succeed in entering the market, the BellSouth monopoly will remain intact, and the benefits of competition will not be realized.

VI. BELLSOUTH HAS INAPPROPRIATELY PRICED UNBUNDLED LOOPS AS SPECIAL ACCESS SERVICES

Q. HOW HAS BELLSOUTH ESTABLISHED ITS PROPOSED UNBUNDLED LOOP RATES?

A. Since a full explanation was never given by BellSouth, I cannot be certain. However, it appears that BellSouth treated the unbundled loop ***facility*** much the same as it would a special access ***service***, and then incorrectly priced them in a similar fashion.

Q. WHY DOES THE SPECIAL ACCESS PRICING OFFERED BY BELLSOUTH SUGGEST A FUNDAMENTAL MISUNDERSTANDING BY BELLSOUTH OF THE ENTIRE CONCEPT OF UNBUNDLING?

A. Special access-like pricing is wrongheaded in several respects. Simple unbundled loops are technically very different from the more sophisticated special access service.

Because of these technical differences, ACSI has asked to buy, in effect, the chassis for a Chevy Cavalier and BellSouth offered us a fully assembled Cadillac, at Cadillac prices. In other words, ACSI asked for an ***element*** of a relatively simple service. While BellSouth will provide this simple service element, it quoted a price for a complete ***service***, and a relatively sophisticated service at that.

Q. HOW IS SPECIAL ACCESS SERVICE DIFFERENT THAN A SIMPLE UNBUNDLED LOOP?

A. For the time being, I would like to focus on the difference between special access ***service*** and a simple unbundled loop ***element***. Special access entails a number of sophisticated specifications that a simple unbundled loop does not meet, and that ACSI does not require. Special access is a digital service; the requested simple loops are analog. Moreover, when ACSI requests simple unbundled copper loops, it does not need several elements included in the digital special access service. Instead, ACSI needs only the copper loop element, not the entire service.

Q. WHAT DO YOU MEAN WHEN YOU SAY THAT BELLSOUTH MISUNDERSTANDS THE ENTIRE CONCEPT OF UNBUNDLING?

A. ACSI, as a facilities-based provider of switched services, can provide many basic network elements without BellSouth. Accordingly, when it orders an "***unbundled***" element of the kind that BellSouth must provide under the Telecommunications Act of 1996, it is ordering an ***element*** of BellSouth's network—the simple unbundled loop—and not a BellSouth ***service***, such as the special access service offered by BellSouth. Exhibit A to my testimony is a chart demonstrating several BellSouth bundled network ***services*** with their associated basic network ***elements***. This chart

demonstrates the distinction between a ***service*** and an ***unbundled element*** and makes it clear that what BellSouth is offering, both physically and from a pricing perspective, is a service and not an unbundled element. The chart at Exhibit A lists on the left-hand side BellSouth's services and under "Unbundled Basic Network Elements," the elements that constitute each service. BellSouth proposes to provide ACSI with the Digital Private Line (56 Ub/s) bundled network service. ACSI, however, only required the cooper loop element for most of its applications, with few exceptions. BellSouth is attempting to add in loop conditioning, A/D conversion and multiplexing elements that ACSI does not need.

Q. CAN YOU PROVIDE FURTHER DETAIL AS TO HOW THE SERVICE OFFERED BY BELLSOUTH DIFFERS FROM THE UNBUNDLED ELEMENT REQUESTED BY ACSI?

A. Yes. BellSouth proposes to provide 56 kb/s digital special access as its "unbundled loop." This is certainly not what BellSouth uses to reach its typical business customers. This service is different from simple unbundled loops in terms of capability, in terms of the provisioning required, and, not surprisingly, in terms of price. BellSouth's pricing suggests that it is offering to provision a whole new end-to-end special access line; all that ACSI requests is, in its simplest terms, moving BellSouth's existing copper loop facility from its current connection to BellSouth's switch to its new connection to ACSI's node. Because this is a key distinction, ACSI also offers the testimony of Mr. William Stipe to expand on this distinction and to provide further background on key technical points.

VII. UNBUNDLED LOOPS PRICED AT BELLSOUTH'S PROPOSED SPECIAL ACCESS RATES, OR ANY OTHER RATE NOT BASED ON TELRIC, WOULD MAKE IT IMPOSSIBLE FOR ACSI TO COMPETE

Q. AS A BUSINESSMAN WITH ALMOST THIRTY YEARS EXPERIENCE IN THE INDUSTRY, IS IT CLEAR TO YOU THAT BELLSOUTH'S SPECIAL ACCESS PRICING IS GROSSLY INFLATED?

A. Yes. Although ACSI witness Dr. Kahn discusses the appropriate basis for setting unbundled element rates, the excessiveness of BellSouth's proposed rates can be quickly surmised from a comparison with existing BellSouth and other rates, including existing BellSouth tariffed rates for comparable services or facilities, and unbundled loop rates from other states. This is true of both the nonrecurring and recurring charges for BellSouth special access rates.

Q. ARE OTHER PROXIES AVAILABLE TO SUGGEST THAT BELLSOUTH'S RECURRING UNBUNDLED LOOP RATES ARE ALSO OUT-OF-LINE?

A. Yes. In fact, unbundled loop rates are already in place in several states which demonstrate that BellSouth's special access recurring charges are substantially out-of-line with TELRIC-based rates. In Michigan, for example, the Commission set an interim rate for a simple business loop of $8.00 based on an incremental cost study in that range.[5] In Connecticut, Southern New England Telephone was ordered to provide a range of business unbundled loop rates beginning at $10.18 for "metro" business loops. (These and other rates are grouped in four geographic zones, as they

[5] *In re Application of City Signal*, Case No. U-10647, Opinion and Order at 35, 103 (Feb. 23, 1995).

should be, as I will discuss at greater length below.)[6] In Illinois, Ameritech agreed with MFS to the following schedule of unbundled loop rates:[7]

Monthly Rates			
Loop Type		Access Areas[8]	
	A	B	C
Analog 2W	$6.95	$11.10	$13.60
Analog 4W	$13.90	$22.20	$27.20
ADSL 2W/HDSL 2W	$6.95	$11.10	$13.60
ADSL 4W/HDSL 4W	$13.90	$22.20	$27.20
BRI ISDN	$6.95	$11.10	$13.60
PBX Ground Start Coin	$6.95	$11.60	$14.10
Coin	$6.95	$11.60	$14.10
Electronic Key Line	$6.95	$11.60	$14.10

In California, Pacific Bell agreed to a basic business loop (including the EUCL) of $12.50 for Zone 1 of three rate zones.[9] These rates from other states provide a

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[6] *Application of the Southern New England Telephone Company for Approval to Offer Unbundled Loops, Ports and Associated Interconnection Arrangements*, Docket No. 95-06-17, Decision at 84 (Dec. 20, 1995).

[7] *Interconnection Agreement Under Sections 251 and 252 of the Telecommunications Act of 1996 by and between Ameritech Information Industry Services and MFS Intelnet of Illinois* (May 17, 1996).

[8] "Access Area" is as defined in Ameritech's applicable tariffs for business and residential Exchange Line Services.

[9] *Co-Carrier Interconnection Agreement between Pacific Bell and MFS*, filed by Advice Letter No. 17879, at 42 (Nov. 20, 1995).

series of proxies for recurring unbundled loop charges that the Commission might consider while state-specific TELRIC-based prices are being developed.

Q. IS IT POSSIBLE THAT THE TELRIC OF UNBUNDLED LOOPS WILL PROVE TO BE LOWER THAN THE RATES ESTABLISHED IN THESE OTHER STATES?

A. Yes. Under the Telecommunications Act of 1996 and the FCC's rules, the Commission must adopt TELRIC-based rates. Once these rates are adopted, they should be available to ACSI. These should be completed swiftly because otherwise the market signals will continue to be distorted and competition could be harmed.

Q. IS IT POSSIBLE THAT BELLSOUTH'S SPECIAL ACCESS PRICING COULD LEAD TO A COST-PRICE SQUEEZE?

A. Yes. Although Dr. Kahn will be more prepared to describe this in economic terms, what this means to me as a businessman is that I have to buy a number of bottleneck services from BellSouth at the wholesale level, such as number portability, intermediate transit, directory services, unbundled loops, cross-connects, and in the future, other unbundled elements. I then must turn around and compete with BellSouth at the retail level. By pricing its wholesale services, and particularly unbundled loops, at an exorbitant rate -- and one which greatly exceeds the cost-based rate which BellSouth effectively charges itself -- and then lowering its retail rates, BellSouth could easily "squeeze" any profit margin that ACSI might have hoped to obtain. To the same end, BellSouth has begun to request additional pricing flexibility and off-tariff contracting authority for switched services in certain states to permit it to lower its rates to end users, perhaps to fully effect this squeeze.

While a price squeeze might involve a number of bottleneck elements that CLECs must purchase from BellSouth, the unbundled loop is a critical element in this potential price squeeze. To protect against such a price squeeze, the Commission should adhere to the TELRIC-based rates required by Congress and the FCC, and supported in this proceeding by the testimony of Dr. Kahn.

Q. ARE THERE OTHER PROBLEMS WITH THE UNBUNDLED LOOP PRICING PROPOSED BY BELLSOUTH?

A. Yes. BellSouth offered ACSI a single geographically-averaged rate for all unbundled loops, whereas the cost of such facilities can vary greatly depending upon population density and other factors. Generally speaking, loop costs go down as the population density of a service area increases. ACSI should only be charged the TELRIC cost to BellSouth of providing loops in discrete service areas. This is the only way ACSI can hope to have a reasonably level playing field with BellSouth in competing for customers in the particular market areas in which we will compete with each other.

Moreover, this is the only way the Commission can comply with the FCC's requirement of TELRIC-based rates. Accordingly, the Commission should order BellSouth to conduct TELRIC cost studies that take into account density and distance. (As noted below, different categories of loops will likewise reflect unique cost characteristics. BellSouth TELRIC cost studies, in addition to including density and distance sensitive rate categories, should provide separate rates for different categories of loops.)

Q. IS THERE ANY PRECEDENT FOR THIS TYPE OF PRICING STRUCTURE?

A. Yes. In fact, many of the rates I quoted above, including those of Ameritech, SNET, and Pacific Bell, are broken out in three or four density and/or distance-based categories. The FCC has also recognized this phenomenon when it permitted ILECs to adopt zone density pricing for special access services.[10] The FCC has required TELRIC-based pricing for unbundled elements. If the Commission fails to break unbundled loop rates into density-based categories, rates will be significantly below cost for loops in certain areas (most likely the sparsely populated areas where BellSouth does not face competition), and well above cost in other areas (namely, the urban centers where competition will develop first).

VIII. BELLSOUTH'S PROPOSED NONRECURRING CHARGES FOR AN UNBUNDLED LOOP PRESENT AN INSURMOUNTABLE BARRIER TO ENTRY.

Q. DOES ACSI ALSO OBJECT TO BELLSOUTH'S PROPOSED NONRECURRING CHARGES FOR UNBUNDLED LOOPS?

A. Absolutely. BellSouth has proposed a nonrecurring charge for simple unbundled loops of approximately $140, which again is similar to the charge imposed for special access services. This rate is excessive in light of the technical differences between provisioning special access loops and unbundled loops as described by ACSI witness Mr. William Stipe. But it is also excessive when compared, for example, to the nonrecurring charge for services, such as Centrex-type services or basic business lines, currently tariffed by BellSouth. The basic business line offered by BellSouth, for example, is by definition a combination of unbundled loops and other unbundled

[10] *Expanded Interconnection with Local Telephone Company Facilities*, Report and Order and Notice of Proposed Rulemaking, 7 FCC Rcd 7369, 7454 (1992).

elements, yet basic business line nonrecurring charges are drastically lower (less than one third of the BellSouth recommended charge in most states) than the nonrecurring unbundled loop rates proposed by BellSouth. This makes BellSouth's nonrecurring charge pricing proposal blatantly discriminatory.

Q. WOULD SUCH INFLATED NONRECURRING CHARGES FOR INSTALLATION OF UNBUNDLED LOOPS IMPAIR ACSI'S ABILITY TO COMPETE?

A. ACSI would have to pass such costs along to its customers. If installation charges are unreasonably high -- as proposed by BellSouth -- then end users will not be inclined to switch from their existing BellSouth service to ACSI's local services. Thus, such unreasonably high up-front charges are inherently anti-competitive. It was for just this reason that regulators set PIC change charges in the long distance business in the low $5 range years ago. The same considerations apply here.

Q. HOW THEN SHOULD NONRECURRING CHARGES BE ESTABLISHED?

A. The Commission should, at a minimum, set a ceiling on unbundled loop nonrecurring charges at the current tariffed rate applicable to basic business lines. This is not to say that the TELRIC-based price might not turn out to be still lower, as discussed in Dr. Kahn's testimony. BellSouth's inflated pricing proposal for nonrecurring costs is nothing more than a transparent attempt to increase costs for its CLEC competitors in order to thwart the development of completion.

IX. ACSI REQUESTS INCREMENTAL COST-BASED UNBUNDLED 2- AND 4-WIRE ANALOG AND DIGITAL LOOPS

Q. PLEASE DESCRIBE THE ADDITIONAL LOOPS ACSI REQUESTS, IN ADDITION TO SIMPLE UNBUNDLED LOOPS.

A. While much of my testimony has focused on 2-wire analog loops, the simple loops required for competition for less sophisticated end users, ACSI also is requesting additional loop types be priced based on the same TELRIC standard required by the FCC. These additional loop types are as follows: (1) 4-wire analog voice grade loops; (2) 2-wire ISDN digital grade links; (3) 2-wire ADSL-compatible loop; (4) 2-wire HDSL-compatible loop; and (5) 4-wire HDSL-compatible loop. These loops will enable ACSI to meet the needs of more sophisticated end users that require advanced digital technology.

Q. WHY ARE THESE ADDITIONAL LOOPS CRITICAL TO ACSI AND TO THE DEVELOPMENT OF COMPETITION?

A. If ACSI is limited to simple loops, its ability to serve sophisticated end users will be limited. For example, sophisticated business customers increasingly demand services such as ISDN. In order to provide ISDN to customers located off of ACSI's network, ACSI must have access to ISDN digital loops. ISDN simply cannot be offered using two-wire analog loops. Moreover, PBX and key systems require 4-wire loops. ACSI must not be precluded from offering service to customers demanding these types of services. Accordingly, the Commission should require BellSouth to provide these as separate unbundled loops at TELRIC pricing in order to permit ACSI to compete and to encourage the development of local competition.

Q. DO THE SAME PRICING REQUIREMENTS APPLY FOR THESE LOOPS?

A. Yes. While the TELRIC of providing these loops may be incrementally higher than that of the simple 2-wire analog loop, the same arguments apply with respect to how these types of loops should be priced as I have discussed with respect to the simple unbundled loops: the 1996 Act and the FCC have required pricing based on TELRIC; ACSI will be caught in a price squeeze without TELRIC-based pricing; ACSI will not be able to compete for these customers without such pricing; and withholding such pricing will only delay the advent of widespread local competition and the attendant benefits of lower prices, increased quality services, and increased innovation.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

EXHIBIT A

Bundled Network Services	Unbundled Basic Network Elements								
	Copper Loop	Loop Conditioning	A/D Conversion	Multiplex	Switch Port	DTMF Signaling	Call Proc. Software	Trunk Signal-MF	Trunk Signal-SS7
Centrex Line	●				●	●	●	▲	▲
Switched Access (e.g., FG D)					●		●		
Special Access	●	●	●	●					
Analog DID Trunk	●				●	●	●		
Business Line (1FB)	●				●	●			
Digital Private Line (56 kb/s)	●	●	●	●					

● Element necessary to provide the service.

▲ This element or other element necessary to provide the service.

VERIFICATION

STATE OF MARYLAND)
)
COUNTY OF ANNE ARUNDEL)

ss

Richard Robertson, being first duly sworn, deposes and states that he is Executive Vice President – Switched Services for American Communications Services, Inc., the Petitioner herein, and is authorized to make this verification; that he has read the foregoing Testimony and knows the contents thereof, and that the same is true to the best of his knowledge, information and belief.

Richard Robertson

Subscribed and sworn to before me on the 8th day of August, 1996.

Notary Public

My Commission Expires:

CHARLES H.N. KALLENBACH
Notary Public, State of Maryland
Qualification Anne Arundel County
Commission Expires 5/16/00

(SEAL)

DIRECT TESTIMONY

OF

C. WILLIAM STIPE III

ON BEHALF OF

AMERICAN COMMUNICATIONS SERVICES, INC.

DIRECT TESTIMONY OF

C. WILLIAM STIPE, III

I. BACKGROUND AND QUALIFICATIONS

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

A. My name is C. William Stipe III and I am Vice President – Switched Engineering and Operations. My business address is 131 National Business Parkway, Suite 100, Annapolis Junction, Maryland 20701.

Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE AND BACKGROUND.

A. I joined ACSI in 1996 and serve as Vice President – Switched Engineering and Operations. Prior to joining ACSI, I had twenty-four years of experience in the telecommunications industry working for Bell Atlantic Corporation. I have held a number of positions with Bell Atlantic, and most recently, since 1994, as Director – Financial Systems. From 1991 to 1994, I served as Director – Product Profitability and Transfer Pricing and operated and enhanced a Product Profitability reporting system. I also developed and implemented a Transfer Pricing process for Line of Business financial reporting. From 1987 to 1991, I was the Director – Customer Business Services, responsible for pricing and costing multi-year service contracts in competitive proposals to Bell Atlantic's largest commercial and government customers. From 1972 to 1987, I held a variety of engineering and management positions of increasing responsibility. I received my Bachelor of Science in Electrical Engineering from Virginia Tech in 1972, and my M.B.A. from Virginia Commonwealth University in 1984.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to provide technical background to the testimony filed by other ACSI witnesses. Specifically, I will describe: a) from a technical standpoint, what is (and is not) required to unbundle a local loop; and, b) the technical differences between the simple unbundled loop requested by ACSI and the special access type services upon which many ILECs seem to be basing their proposed unbundled loop pricing.

Q. DO BELLSOUTH'S NON-RECURRING CHARGES FOR THE UNBUNDLED LOOP SEEM REASONABLE FOR THE WORK REQUIRED?

A. They may be reasonable if the expectation is that a new facility must be designed and built for each request for service of that type of facility. They are very unreasonable when all ACSI desires is that the customer's existing service just be unbundled and the existing copper loop be connected to ACSI.

Q. WHAT IS THE PHYSICAL WORK REQUIRED TO ACHIEVE THE UNBUNDLING YOU DESIRE?

A. The physical work required to achieve the unbundling of the local loop should be clearly understood and should not be exaggerated. It is merely removing the wire cross-connect in the BellSouth office which connects the loop facility to the central office and replacing it with one to ACSI's collocated equipment interface. In other

words, unbundling the local loop does not require the installation of an entirely new loop.

Q. HOW DOES THIS COMPARE TO THE SPECIAL ACCESS SERVICE UPON WHICH BELLSOUTH APPEARS TO HAVE BASED ITS UNBUNDLED LOOP PRICING?

A. BellSouth's special access service is not an unbundled loop at all. BellSouth has offered an existing tariff for a special access service instead of unbundling its loop plant as required by the FCC.

Q. WHAT ARE THE PHYSICAL CHARACTERISTICS OF SPECIAL ACCESS SERVICE?

A. It is a digital 64 kilobit channel, capable of transmitting voice or data or a combination of the two with the appropriate customer-provided terminal equipment.

Q. IS THIS THE FACILITY BELLSOUTH USES TO PROVIDE LOCAL EXCHANGE SERVICE TO ITS CUSTOMERS?

A. Not at all. The vast majority of BellSouth's network access lines use ordinary two wire cable facilities. Most of those have no active or passive electrical endorsement at all. Some (probably less than 20%) require passive induction coils, commonly called loop coils, for customers beyond 18 kft from BellSouth's switching office and an even smaller percentage (probably less than 5%) require electronics to extend the switches signaling capability for loops whose resistance exceed 1300 or 1500 ohms. I can only estimate these percentages at this time because only BellSouth has the information that would be required to calculate precise percentages.

Q. DOES BELLSOUTH SERVE ALL OF ITS NETWORK ACCESS LINES SERVICE VIA THE COPPER LOOP FACILITIES YOU HAVE DESCRIBED?

A. No. Some percentage is served via pair gain devices such as digital subscriber loop carrier ("DLC"). Again, I do not have access to BellSouth data on the amount of such facilities in its plant, but I would be surprised if it is more than 15 percent of the total.

Q. CAN YOU DESCRIBE THIS DIGITAL LOOP CARRIER?

A. Yes. It is digital multiplexing equipment which creates voice grade equivalent facilities in multiples of 24 channel DS-1 facilities which can ride over either optical or conditioned copper facilities and is returned to an analog state in the BellSouth loop plant near (typically less than 12KF or 900 ohms) the BellSouth network access line customer.

Q. HOW IS THE BELLSOUTH NETWORK ACCESS LINE SERVICE CONNECTED TO ITS CUSTOMER FROM THE REMOTE DLC TERMINAL EQUIPMENT?

A. It is connected to a copper facility just like the one I described earlier. I should explain that the use of DLC is not driven by the need to provide a digital capability to the customer, but by the economic trade offs of expanding copper loop facilities and its supporting conduit and pole line structures versus the cost of the DLC. The customer receives the same 3KHz voice compatible service either way.

Q. YOU MEAN THAT BELLSOUTH HAS PRICED THE UNBUNDLED LOOP AS A DIGITAL SERVICE THAT PROVIDES 64 KBITS OF CAPACITY WHILE IT

USES ANALOG COPPER VOICE GRADE PAIRS TO PROVIDE ITS OWN LOOP SERVICES?

A. Exactly.

Q. WHAT SORT OF PROBLEMS DOES THIS CREATE FOR ACSI IN ATTEMPTING TO COMPETE WITH BELLSOUTH FOR CUSTOMERS?

A. It causes ACSI multiple problems. The most obvious problem is cost, which Mr. Richard Robertson has addressed in his Testimony.

Both the recurring and non-recurring charges are set to recover costs which ACSI will not cause BellSouth to incur. This in turn, will artificially increase ACSI's rates for both installation and service, making it exceedingly difficult to compete effectively.

Q. DOES ACSI HAVE ANY NEED FOR THE TYPE OF FACILITY BELLSOUTH OFFERED AS AN "UNBUNDLED LOOP"?

A. Yes, but only in instances where it desires to provide data and other specifically designed services to its customers. It does not need this sophisticated facility to provide most basic local exchange services, which it expects to be the majority of its service over BellSouth's bottleneck facilities.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

TESTIMONY OF

MARVIN H. KAHN

ON BEHALF OF

AMERICAN COMMUNICATIONS SERVICES, INC.

AUGUST 1996

TESTIMONY OF

DR. MARVIN H. KAHN

I. QUALIFICATIONS

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

A. My name is Marvin H. Kahn. I am a Senior Economist and a founding principal of Exeter Associates, Inc. Our offices are located at 12510 Prosperity Drive, Silver Spring, Maryland 20904.

Q. PLEASE REVIEW YOUR BACKGROUND AND QUALIFICATIONS.

A. I am an economist specializing in public utility regulation, energy, communications and antitrust analysis. My primary research interest is in the application of microeconomic principles to public policy issues. Over the last several years, my interests have turned most specifically to matters regarding the regulation of firms operating simultaneously in competitive and non-competitive markets. Particular issues addressed include the unbundling of services, the effects of imposing line of business restrictions on regulated firms, assessments of alternative regulatory structures, and matters regarding cost allocation and rate design.

In addition to my consulting experiences, I taught economics or lectured at the University of Tennessee, the University of Missouri in St. Louis, Washington University in St. Louis, at Merrimac College and at The Johns Hopkins University. I served as a senior economist with the Institute of Defense Analysis and the Mitre Corporation, both not-for-profit Federal Contract Research Centers in the Washington, D. C. metropolitan area. I also served as a senior staff economist with an Ad Hoc

Committee of the U.S. House Committee on Currency and Banking, focusing on energy and employment issues.

I am a graduate of Ohio Northern University and hold a Ph.D. in Economics from Washington University in St. Louis.

Q HAVE YOU TESTIFIED BEFORE REGULATORY AGENCIES ON MATTERS DEALING WITH TELECOMMUNICATIONS?

A. Yes. I have served as an expert witness on matters regarding telecommunications before commissions in over 20 jurisdictions in this country and Canada. I have also undertaken research and prepared reports on ratemaking issues for the U.S. Postal Service, the National Association of State Utility Consumer Advocates (NASUCA), the Federal Communications Commission (FCC) and the National Regulatory Research Institute (NRRI).

Q. HAVE YOU TESTIFIED ON ISSUES RELATED TO LOCAL COMPETITION?

A. Yes. I have testified on local competition issues in California, Delaware, Kentucky, Pennsylvania, and West Virginia. Directly or indirectly, all of these testimonies involved the issue of appropriate pricing for unbundled telecommunications network elements. A copy of my resume listing my prior testimonies and reports is attached.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been asked by American Communications Services, Inc. (ACSI) to address the economic and ratemaking principles that underlie the pricing of unbundled network elements. Specifically, I have been asked to address the appropriate methodology for pricing unbundled local loops, one that is consistent with the Telecommunications Act of 1996 (1996 Act or Act) and with the promotion of meaningful and effective competition in the market for local exchange services.

Q. WHAT OBJECTIVES ARE IMPORTANT IN DETERMINING THE APPROPRIATE RATES FOR NETWORK ELEMENTS?

A. The 1996 Act established a vehicle to allow meaningful and effective competition to develop in the markets for local exchange services. Currently in the telephone industry, competition does not prevail. The incumbent local exchange carriers (ILECs), including BellSouth Telecommunications, Inc. (BellSouth), still hold a monopoly or near monopoly on most of their telecommunications services and elements; thus, regulatory oversight is still required to ensure the competitive outcome. Where competition prevails, market forces naturally drive prices toward cost and the result is economic efficiency. Hence, a key objective of any pricing policy is to obtain the competitive outcome.

Adherence to economic pricing principles is important in achieving the competitive outcome. The methodology used to determine the price ILECs charge for use of their facilities must send the correct price signals, encourage the entry of efficient competitors, promote efficient make-buy decisions, and allow consumers to benefit from an increase in competitive activity, including lower retail prices and a diversity of service choices.

Q. WHAT ARE YOUR RECOMMENDATIONS REGARDING THE APPROPRIATE METHODOLOGY FOR DEVELOPING RATES FOR UNBUNDLED ELEMENTS?

A. Prices in a competitive market are based on forward-looking, market-oriented costs. To achieve this competitive market outcome, prices for network elements should be developed based on two criteria. The first is a measure of forward-looking, direct costs. The total service long run incremental cost (TSLRIC) method is, thus, an appropriate standard for achieving the desired results. The second input is a mark-up over TSLRIC to permit recovery of forward-looking, efficiently incurred joint and common costs. As I describe below, I propose that this mark-up not be based on the ILEC's accounting records, but rather limited to what the ILEC elects by its own activities in competitive markets. This is the best approach for ensuring the efficient level of entry, efficient production of end use services, competitively determined end use prices and the avoidance of anticompetitive behavior by ILECs. Since the mark-up is limited to that which does prevail in the ILECs' more competitive markets, it is reasonable by market standards.

Under the 1996 Act, determinations by a state commission of the rate for interconnection and network elements are just and reasonable if the rate is based on cost (determined without reference to a rate-of-return or other rate-based proceeding).[1] The rate may include a reasonable profit.[2] A TSLRIC-based rate is a cost-based rate which is determined without reference to a rate-or-return or other rate-based proceeding. A mark-up over direct cost limited to a level determined by competitive

[1] Section 252(d)(1)(A).

[2] Section 252(d)(1)(B).

market forces permits a reasonable profit. Thus, the approach outlined above is both economically sound and satisfies the pricing standards of the Act.

In addition, the rates charged for network elements and bundled services must be priced in a manner that prevents uncompetitive price squeeze. Price squeeze occurs whenever the combined price of the unbundled components and bottleneck services (such as number portability and directory assistance) equals or exceeds the price of the bundled function to the end user. While price squeeze is a matter of competitive concern, pricing of bundled services and functions is not addressed in this testimony.

In summary, this approach is consistent with the FCC's ruling on interconnection interpreting Section 252(d)(1) of the 1996 Act. As of this writing, the FCC order in Docket No. 96-98 is not available. However, the press release issued on August 1, 1996 states that the FCC has ruled that a cost-based pricing methodology based on forward-looking economic costs (specifically TSLRIC) is most consistent with the goals of the Act. Because the TSLRIC studies are for network elements, the FCC calls them Total Element Long Run Incremental Costs (TELRIC). Under the Order, prices are to be set at TELRIC plus a "reasonable share of forward-looking joint and common costs" (p. 2). Section IV of my testimony discusses the mark-up in greater detail.

Q. HOW IS YOUR ANALYSIS AND RECOMMENDATION AFFECTED BY THE FCC'S RECENTLY ANNOUNCED DECISION IN ITS DOCKET 96-98?

A. The FCC's press release made clear that it has taken two actions with respect to the pricing of unbundled network elements. First, the FCC required that arbitrated rates be based on TELRICs. In addition, the FCC established default proxies to be used on an interim basis absent the necessary TELRIC cost information. Naturally, both of these actions are directly relevant to my analysis and testimony. I intend to revise and

update my testimony, as appropriate, after I review the FCC decision and any BellSouth TELRIC/TSLRIC and other relevant data provided.

Q. WHAT RATES DO YOU RECOMMEND FOR UNBUNDLED LOOPS?

A. BellSouth did not provide cost studies to ACSI during negotiations. Therefore, BellSouth's version of TELRIC or TSLRIC for network elements and data necessary to develop a cost-based, competitive mark-up are not available. In the absence of such data, I recommend using the best cost information currently available to the extent it is also consistent with the approach outlined above.

Q. WHAT IS THE BEST COST-BASED ALTERNATIVE AVAILABLE?

A. The best TSLRIC alternative (at this time) for estimating reasonable TSLRIC data uses the updated Hatfield Model.[3] This model produces TSLRIC data by population density zone (six density zones) for each state. The model is forward looking and takes into consideration population demographics, geology, network architecture and technology. The cost estimates for the areas to be served by ACSI are provided in Exhibit D of ACSI's Petition. BellSouth has not provided cost studies which could be used to determine or evaluate TSLRIC estimates or a competitive mark-up. In the absence of BellSouth sponsored TELRIC studies completed within two months, I recommend setting interim rates based on the TSLRIC estimates developed in the Hatfield Model. Further, the Commission should order BellSouth to provide the information necessary to estimate the mark-up on BellSouth's more competitive services and to provide BellSouth cost studies or other data which the Commission determines to be necessary to evaluate and verify the Model's TSLRIC estimates. The

[3] Version 2.2, Release 1, by Hatfield Associates, Inc., dated May 30, 1996, is the most current version available at this time, although it is my understanding that an update is due shortly.

in achieving those goals. Section IV discusses the appropriate cost-based pricing methodology for achieving the competitive outcome and explains why a TSLRIC methodology best satisfies the criteria for efficient pricing. BellSouth has not provided any cost studies or estimates of cost. Section V compares the theoretical pricing methodology discussed in Section VI with the proxy cost model developed by Hatfield Associates, Inc. to estimate TSLRIC for network elements.

III. EFFICIENCY GOALS

Q. WHAT OBJECTIVES ARE IMPORTANT IN DETERMINING THE APPROPRIATE PRICES FOR NETWORK ELEMENTS?

A. A key objective of the 1996 Act is a structure that allows the entry of both facilities-based and resale carriers into the local service market to promote effective competition. The pricing of unbundled network elements is one of the critical components of any open market policy, as reflected in new Sections 251(c)(3) and 252(d)(1) of the Communications Act of 1934 (the Act) adopted by the 1996 Act. With this in mind, the goal should be to structure a competitive outcome. A competitive outcome requires efficiency in production and pricing. Efficient pricing, in turn, requires that price reflect the cost of the good or service in question which means that rational choices by producers and consumers are encouraged. Production, entry and consumption decisions are each influenced by pricing, or at least potentially so. Only when prices reflect costs will the market yield the optimal quantity or combination of those goods and services valued by society at the minimum resource cost to society. Adherence to economic costing principles is important in achieving the competitive outcome and requires the use of reasonable, accurate measures of cost.

Q. WHAT EFFICIENCY RESULTS CAN BE ANTICIPATED FROM A PRICING POLICY CONSISTENT WITH COMPETITIVELY FUNCTIONING MARKETS?

A. In a market structured so that no one firm can dictate price or quantity, the market yields important efficiencies. Relevant aspects of these efficiencies are referred to as operational and allocative.

Operational efficiencies result when the lowest cost method of production is selected. Competition acts to ensure this result, as entry and exit occur freely. New

entrants are not required to use the same technology as does the incumbent, but are free to select among all available technologies and adopt lower cost methods of production. As market price is often forced downward with an increase in supply and, in particular, with an increase in lower cost supply, incumbents are forced to become more efficient, lose market share or cease production altogether.

Allocative efficiencies result when resources are channeled into the production of those goods and services that are valued more highly than are the resources consumed in the production process. As long as market price covers the additional cost of production, the unit will be produced in a competitive market. Since resources are limited, it is in society's interest that resources are used in a manner that maximizes the value of that produced from those resources. A competitive market allocates resources efficiently, i.e., to the goods and services valued most highly.

Q. WILL THE EFFICIENCIES JUST DESCRIBED INURE TO THE BENEFIT OF CONSUMERS?

A. There is no question that meaningful competition will create benefits for consumers. What is less clear, unfortunately, is when or even whether the successful emergence of competition can be expected in the various markets for local services. There are generally two factors to consider.

First, it must be recognized that properties which allow the ILECs' monopoly control to remain may delay the competitive entry for some network elements. The Commission should establish rates to allow the benefits of a competitive outcome to be realized by consumers well before full facilities-based competition emerges for all elements and in all areas of the local service market. Otherwise, the benefits of competition could be delayed indefinitely given the tremendous practical and economic

obstacles with replicating more than a negligible portion of the incumbent LEC's network.

Second, the Commission pricing rules must guard against anticompetitive pricing behavior by the ILEC. This is assured if a competitive norm or competitive outcome serves as the basis for pricing all non-competitive network elements. For instance, if the competitive outcome is emulated, the relationship between price and cost will be the same for competitive and non-competitive elements alike. Further, through the application of nondiscrimination obligations and imputation principles, the ILEC will "pay" the same for all non-competitive network elements set by tariff or arbitration as its competitors. Under these conditions, price squeezes and other forms of anti-competitive conduct will be deterred.

In short, the pricing policy designed to promote competition must recognize that competition is not likely to evolve evenly or with equal success for all network elements or in all areas of the state. The policy should be designed to provide the benefits of competition in the end use market to consumers, even before the successful emergence of that competition. In fact, the policy should be structured to create these benefits in the end use market for consumers, even if competition for each network element never emerges.

Q. WHY IS A TOTAL SERVICE LONG RUN INCREMENTAL COST METHODOLOGY BETTER SUITED THAN OTHER COSTING METHODOLOGIES TO PROMOTING COMPETITION?

A. Prices should be set to recover incremental, forward-looking costs, not the firm's historically incurred embedded costs or revenue requirements. Pricing based on TSLRIC results in several market benefits. First, entrants have a continuous stream of make-buy decisions. Prices based on forward-looking cost will provide the correct

signal on which to base decisions regarding facilities based investment and market entry. Second, cost-based pricing identifies the low cost supplier in any market, affecting decisions among alternative providers of a given product or service. Finally, cost-based prices permit efficient decisions in choosing among different goods.

Pricing based on embedded costs or revenue requirements cannot provide these benefits. Further, such pricing requires that the firm has -- and that it exercises -- a certain degree of market power. Market power permits the ILEC to engage in anticompetitive conduct by allocating costs to non-competitive network elements. This will provide a "cost basis" to raise the prices for those non-competitive network elements, removing the need to recover these costs from competitive network elements.

Q. TO WHAT EXTENT IS UNBUNDLING OF NETWORK ELEMENTS NECESSARY FOR THE EFFICIENCY GOALS TO BE MET?

A. Without the availability of unbundled network elements, entry into the local exchange market is severely restricted and in some circumstances would be impossible. It is for this reason that the Act specifically requires incumbents to provide nondiscriminatory access to network elements on an unbundled basis at any technically feasible point.[4] Further, to facilitate competition, network elements must be available in a manner such that new entrants are not forced to take and pay for elements that are not needed by that entrant in the provision of the local service, and are not denied access to key elements needed to ensure quality provision on a par with the ILEC's services. If new entrants are forced to buy unneeded elements in order to get others (if elements are not sufficiently unbundled), they will incur unnecessary costs which will deter efficient entry. Similarly, if access is denied to certain elements needed to ensure equal quality service, efficient entry will be deterred. The Act not only requires access to

[4] Section 251(c)(3).

unbundled elements, it requires that unbundled elements be available in a manner that allows requesting carriers to choose the desired combination of those elements to provide the services they choose to the extent technically feasible.[5]

The network elements at issue in this arbitration are loops. The loop is the component of local service, i.e., the circuit or channel, by which the LEC provides transport between the end user premise and the LEC wire center. These communications channels or circuits may be provided as 2-wire or 4-wire copper pairs, as radio frequencies or as channels on a high-capacity feeder/distribution facility.

Further unbundling, for example, unbundling at the sub-loop level, is technically feasible, albeit ACSI is not asking for such further unbundling at this time. The FCC has concluded that unbundling of local loops is feasible[6] and that, tentatively, further unbundling of the local loop should be required.[7] In addition, the FCC has identified local and tandem switches (including all software features provided by switches) as one of seven separate unbundled network elements; and, apparently, left additional unbundling requirements up to the states.[8] Competition is enhanced by allowing the degree of unbundling requested by ACSI.

Q. DOES COMPETITION REQUIRE THE AVAILABILITY OF UNBUNDLED LOOPS AT COST-BASED RATES?

A. Yes. Physical replication of the loop by facilities-based carriers could not occur in the relatively near future; such massive investment would take time, if it occurred at all.

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[5] Ibid.

[6] Press Release, August 1, 1996. The Commission identified a minimum of seven network elements, including the local loop.

[7] Notice of Proposed Rulemaking, CC Docket No. 96-98, ¶97.

[8] Press Release, August 1, 1996.

Currently, BellSouth has a virtual monopoly on loop elements, which, in turn, are necessary for facilities-based competition to occur. Without access to the unbundled loop, and specifically access at economically feasible rates, entry will not occur and the objective of promoting efficient facilities-based entry will not be met. Lack of access to unbundled loops at cost-based rates would perpetuate the entry barriers in the local exchange market. Such entry barriers are inefficient from an economic perspective and clearly inconsistent with the 1996 Act.

IV. APPROPRIATE METHODOLOGY FOR PRICING UNBUNDLED ELEMENTS

Q. WHAT IS THE APPROPRIATE METHODOLOGY FOR ACHIEVING THE EFFICIENCY GOALS DESCRIBED IN SECTION III OF YOUR TESTIMONY?

A. Rates based on a TSLRIC methodology give the appropriate signals to carriers and consumers, ensure efficient entry into the market, and promote efficient utilization of the telecommunications network. As pointed out above (Section III), in a competitive market, prices are driven toward market-oriented, incremental costs over the long term. Thus, the rates for unbundled network elements should be based on a long run incremental cost methodology. TSLRIC is just such a cost methodology.

Q. WHAT IS MEANT BY TSLRIC?

A. As the FCC in its Notice of Proposed Rulemaking[9] points out, parties sometimes assign (or appear to assign) different meanings to the term TSLRIC. Generally, however, the TSLRIC of an unbundled network element is the sum of the costs added (or avoided) by a decision to supply (discontinue) all of the demand for an element, assuming that the carrier continued to provide its other network elements, services and functionalities.

A number of states have adopted this approach as the standard for costing local service and network elements.[10] In some instances, this same costing approach has been adopted, though a different name is used. For instance, the Illinois Commission has adopted this type of costing approach, referring to it as Long Run Service

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[9] CC Docket No. 96-98, in the matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996.

[10] Notice of Proposed Rulemaking, FCC 96-182, CC Docket No. 96-98, paragraph 127.

Incremental Cost, or LRSIC.[11] Some, including the FCC, have suggested t' at when applying the principle to network elements rather than services, it should be described as the Total Elemen t Long Run Incremental Cost, or TELRIC.[12] This rose may go by several other nam es.

Q. WHY IS TSLRIC THE PROPER MEASURE OF THE COST OF NETWORK ELEMENTS?

A. Using TSLRIC will result in prices for network elements reflecting forward-looking, efficiently incurred costs. It is appropriate that the TSLRIC be forward looking. Efficient decisions regarding market entry, exit and expansion are based on forward-looking comparisons of expected revenues and expected costs. For correct price signals to promote efficient market activity, forward-looking costs should be used.

The appropriate cost study is long run in nature, i.e., it is based on a time horizon long enough to allow entry or exit to occur and/or for substantial changes in capacity or technology to occur. All costs affected by any of these decisions (entry, exit, capacity expansion or technology adoption) are variable. A properly structured incremental cost study should therefore include forward-looking capital costs, and the preponderance of all expenses should be viewed as variable, i.e., joint and common costs should amount to a relatively small fraction of total costs.

The relevant increment of demand to estimate network element costs is the total demand by all users, including the incumbent. Hence, the "total service" (or total element) designation. ILECs realize economies of scale. Focusing on any volume of

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[11] Ibid.

[12] As noted above, the FCC has used the TELRIC terminology in describing a TSLRIC methodology applied to unbundled network elements in the Press Release dated August 1, 1996.

output smaller than the total volume realized may result in higher per unit costs than are actually realized.

Further, the incremental cost calculation is intended to capture the added cost from producing or the cost avoided from discontinuing the service, assuming all other ILEC outputs remain unchanged. The incremental cost of a port is calculated assuming no change in the volume of loops, and the incremental cost of loops is calculated assuming no change in the volume of ports. Since all else is held constant, the calculations focus exclusively on the cost of the unbundled network element.

Q. PLEASE EXPLAIN THE ECONOMIC CIRCUMSTANCES WHICH GOVERN THE NEED FOR A MARK-UP OVER DIRECT COSTS.

A. In economic terms, when a firm is characterized by economies of scale or scope, its cost structure is such that incremental costs will generally be less than average costs. Thus, even in a highly competitive market, the price charged by firms with this cost structure will exceed the marginal or incremental costs, if the firm is to recover its costs in total, i.e., if the firm is to remain in business. It is generally accepted that the telephone industry is characterized by scale and scope economies. This will lead to various costs being joint and common. Therefore, the total costs of the firm operating in this industry will exceed the direct costs, and the rates charged must generally exceed the sum of the direct costs. This is true whether the services or network elements in question are competitive or monopolistic.

Q. WHY IS A LIMIT TO THE MARK-UP APPLIED TO NETWORK ELEMENTS APPROPRIATE?

A. There are at least four reasons why a limit to the mark-up should be applied. First, by applying the competitive mark-up to all elements, non-competitive elements are treated as if they were competitive. This allows the benefits of competition to be realized

even before actual competition emerges. This also keeps the ILEC from using revenues from non-competitive elements to finance strategic pricing responses in competitive markets.

Second, this produces non-discriminatory rates, consistent with the requirements of the Act. Sections 251 and 252 require that rates for interconnection and network elements be cost-based and non-discriminatory. Discrimination results whenever price differentials are not cost-based, that is, whenever mark-ups differ.

Third, by not limiting the mark-up, the ILEC is able to recover a large, if not virtually unlimited, volume of shared and common costs in prices charged for monopoly elements. As such, it has no incentive to accurately classify costs as direct as opposed to shared or common in TSLRIC studies. Misclassifying costs as shared or common will reduce price floors and maximize pricing flexibility, improving the ILEC's position in competitive markets without any change in the level of costs incurred. On the other hand, if the extent to which monopoly service elements can bear a mark-up is limited, there is less opportunity to recover these costs through pricing of monopoly services and there is less incentive to misassign these costs as shared or common. To be sure, the ILEC can still misassign costs and can still reduce prices selectively. However, the ability to recover the costs misassigned is substantially limited and, therefore, the incentive to do so is reduced. The result is a general incentive to increase the proportion of costs subject to direct attribution. Further, putting shared and common costs at risk by limiting the mark-up will also provide the ILEC with greater operational incentives to minimize these shared and common costs.

Finally, this will limit the prices that ILEC can charge competitors. The ILEC has a clear incentive to charge competitors high prices. High prices provide a

financial advantage to ILECs by increasing their margins relative to their competitors. Limiting the mark-up to the competitive norm establishes a reasonable mark-up, while minimizing overcharging.

Q. HOW DO YOU PROPOSE THAT THE RELEVANT MARK-UP FOR NETWORK ELEMENTS BE ESTABLISHED?

A. A mark-up over direct costs is appropriate to recover forward-looking joint and common costs. Since a competitive environment would limit the mark-up to a level needed to fully recover only efficiently incurred, forward-looking joint and common costs, it would be reasonable that the mark-up be limited to (1) an amount no greater than the ratio of efficiently incurred joint and common costs to direct costs, or (2) that realized on BellSouth's competitive services, whichever is lower. To do otherwise will allow the ILEC to recover monopoly rents by overpricing these essential, monopoly network elements.

A primary issue with regard to the provision of network elements is the "make-buy" decision. Many of the potential entrants have the option of either functioning as a reseller (buying unbundled components from the LECs) or, alternatively, becoming a facilities-based provider (using their own network). Setting the mark-up at other than what would be expected to exist in a competitive market could well result in incorrect price signals and inefficient investment. Because the goal, however, is to promote efficient entry through proper pricing policy, restricting that mark-up to the competitive market norm, appears to be an appropriate economic and regulatory policy.

Q. HOW WOULD THE MARK-UP ON COMPETITIVE SERVICES BE DETERMINED OR MEASURED?

A. The purpose of the mark-up is to capture the competitive outcome in the pricing of network elements. By mark-up, I mean the difference between the rate charged for an element (or service) and the TSLRIC of the element (or service). The determination of a mark-up should be based on comparable, competitive transactions and it must recognize that the tariff rate is not always the relevant figure to use.

BellSouth's services are subject to various degrees of market competition. The intent here is to identify the mark-up consistent with an actively competitive market. Consequently, the focus should be on those elements or services provided by BellSouth that are subject to more competition, rather than an average of all services provided. Services subject to a greater degree of competition (than basic local exchange or even MTS services) include, for example, Centrex, and 800 service.

Further, it must be recognized that rates established historically have been designed to allow BellSouth to fully recover its revenue requirement. Rates for many of the services that are less elastic have been set at levels necessary to accomplish this recovery. If competition successfully emerges in these markets, rates for many of these services are likely to fall. Consequently, in the interest of capturing a competitively inspired mark-up, it is inappropriate to take the average of all services, but instead the focus should be on competitive market operations and the market pricing of BellSouth's more competitive activities, i.e., on the revenues realized under specific market-type contracts negotiated by BellSouth.

Q. YOU INDICATED THAT TARIFFS MAY NOT ALWAYS BE THE RELEVANT SOURCE OF PRICING INFORMATION. WHY IS THAT?

A. The ILECs typically have had contracting capability for some time now. This allows an ILEC to price off-tariff in especially competitive market conditions. With this, rates covered by contracts can be at discounts off of the tariffed rate.

Q. IS THERE ANY EVIDENCE ON THE EXTENT OF THE MARK-UP NECESSARY TO RECOVER EFFICIENTLY INCURRED JOINT AND COMMON COSTS?

A. While none has been presented by BellSouth in the context of negotiations, other available data point to a mark-up in the 10-15 percent range. However, an analysis of BellSouth's data would be needed to determine the appropriate mark-up for BellSouth.

Q. ON WHAT DO YOU BASE THE INFORMATION REGARDING OTHER AVAILABLE DATA?

A. I have performed an analysis of the more competitive contracts for two ILECs in California. An analysis of contracts entered into by GTE and Pacific Bell in California for their competitive Centrex offering points to mark-ups of up to 15 percent. Comparing the Centrex contract revenues with Pacific Bell's estimate of TSLRIC (as filed with the California Commission in the cost study proceedings) provides a median mark-up of approximately 15 percent. The mark-ups obtained by GTE were generally lower.[13]

[13] R.93-04-003, I.93-04-002, Rebuttal Testimony of Dr. Marvin H. Kahn (Revised), July 25, 1996, Tables III and IV.

Q. DOESN'T ALLOWING A MARK-UP ON ESSENTIAL MONOPOLY ELEMENTS PROVIDE BELLSOUTH AN ADVANTAGE OVER ANY ENTRANT THAT MUST TAKE SERVICE FROM BELLSOUTH TO COMPETE?

A. In part, it may. The mark-up provides BellSouth a cash flow from any profit that may be realized. On the other hand, it is for reasons such as this that I am suggesting that the mark-up be restricted to no more than a competitively determined level. In this manner, whatever profit realized is no more than what could be expected from a competitive activity.

Q. IS YOUR PROPOSED APPROACH TO PRICING NETWORK ELEMENTS CONSISTENT WITH THE 1996 ACT?

A. Yes. Section 251(c)(3) requires that incumbent LECs provide "non-discriminatory access to network elements on an unbundled basis ... on rates, terms and conditions that are just, reasonable and non-discriminatory." Section 252(d)(1)(B) provides that determinations by a state commission are just and reasonable if those rates are:

(i) based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element (whichever is applicable);

(ii) nondiscriminatory; and

(iii) may include a reasonable profit.

These conditions clearly proscribe the use of the embedded or fully-allocated cost methodology of traditional regulation, which is based on the historical and actual costs incurred, in setting cost-based rates for network elements. A long-run incremental cost methodology does not rely on historical, embedded costs and is, therefore, consistent with the Act. In addition, rates based on a competitive mark-up are nondiscriminatory;

reassured by Section 252(i) of the Act which requires an ILEC to make available any interconnection, service or network element provided under any agreement approved by a state commission on the same terms and conditions. With my proposal, competitive and non-competitive elements are each priced according to identical standards.

Q. UNDER SECTION 252(d)(1)(B) OF THE ACT, A COST-BASED RATE FOR NETWORK ELEMENTS MAY INCLUDE A REASONABLE PROFIT. IS YOUR APPROACH CONSISTENT WITH THIS PROVISION?

A. Yes. The Act does not define "reasonable profit." However, few would disagree that a mark-up over direct costs equal to that which would prevail in a competitive market is reasonable. In a competitive market, the achievable mark-up over cost will be disciplined by competition in the market and held to a reasonable level. Attempts to maintain excessive mark-ups over price will invite entry into a competitive market, driving prices down and reducing mark-ups or profits to what economists sometimes call a normal level. Restricting the mark-up on monopoly elements to a competitive level ensures that the element will earn only a normal profit and that the mark-up will not exceed a reasonable level.

Q. IS A LONG RUN INCREMENTAL COST APPROACH CONSISTENT WITH THE FCC ORDER ON INTERCONNECTION?

A. Yes. The FCC press release regarding Docket No. 96-98 indicates that the FCC has adopted a TSLRIC or long run incremental cost-based methodology. The FCC's press release uses the term "Total Element Long Run Incremental Cost," instead of Total Service Long Run Incremental Cost, but the methodology is the forward-looking, incremental cost methodology of TSLRIC.[14]

[14] FCC, NEWS, Report No. DC 96-75, Action In Docket Case, August 1, 1996.

Q. WHAT ARE NON-RECURRING CHARGES?

A. Non-recurring charges (NRCs) are the charges which an ILEC assesses to recover the one-time or non-recurring costs associated with establishing, moving and/or changing the service received by a particular customer. Typically, NRCs consist of multiple elements which include charges for activities such as service orders, central office line connections and premise visits.

Q. HOW SHOULD THE NON-RECURRING COSTS ASSOCIATED WITH ESTABLISHING, MOVING OR CHANGING THE SERVICE RECEIVED BY A CUSTOMER OF ACSI OR ANOTHER COMPETITOR BE RECOVERED BY BELLSOUTH?

A. The NRCs which BellSouth is allowed to charge ACSI to establish, move, or change service for a customer of ACSI should not exceed the charges which would apply if BellSouth was establishing, moving or changing service for a customer which it was serving directly. Moreover, the NRCs assessed should be limited to only the charges applicable to those activities specifically required by ACSI or another competitor.

Q. CAN YOU PROVIDE EXAMPLES OF THE TYPES OF NRCS WHICH SHOULD APPLY BASED ON NRCS ASSESSED TODAY?

A. Yes. One example of a situation where BellSouth would assess NRCs today would involve the situation where ACSI requests that service be established to a new customer which is not currently served by BellSouth. In that case, ACSI is effectively acting as the customer's agent and the NRCs which apply should be the same as those which apply if the customer was connecting directly to BellSouth. This might include service order and central office line connection or similar charges. Of course, if ACSI will be responsible for activities at the customer's premises, BellSouth should not be entitled to assess premise visit charges for that purpose.

A second example of a situation where NRCs could apply would involve an existing customer of BellSouth changing to a new location. In this case, the only non-recurring costs involved would be those associated with changing the cross-connect from BellSouth's switch to ACSI's node. In situations such as this, the appropriate NRC would be comparable to the NRC which applies when customers switch from US BellSouth to ACSI. If BellSouth does not have a specific NRC in place for changing local service providers, an appropriate level for the NRC would be the secondary service charge applicable to a new customer or a customer move to a new location.

Q. YOU INDICATED PREVIOUSLY THAT THE NRCS ASSESSED TO ACSI SHOULD NOT EXCEED THE CHARGES WHICH WOULD APPLY IF THE LEC WAS PERFORMING THE NON-RECURRING ACTIVITY FOR ITS OWN DIRECT CUSTOMER. WOULD THAT CHARGE NECESSARILY BE THE SAME THAT BELLSOUTH CHARGES ITS OWN CUSTOMER?

A. No. In developing their NRCs, ILECs often include the costs of sales and marketing activities which are not directly attributable to establishing service to a customer and setting up the necessary customer records. Instead, these costs are associated with marketing additional "value-added" services. ACSI and other competitors will be responsible for and will incur their own costs to market value-added services to their customers. Therefore, to the extent that costs for these types of sales and marketing activities have been included in BellSouth's NRCs, ACSI and other competitors should receive a discount to exclude these costs.

V. DEVELOPMENT OF COST-BASED RATES IN THE ABSENCE OF BELLSOUTH DATA

Q. HAS BELLSOUTH PROVIDED TSLRIC STUDIES TO USE TO DEVELOP COST-BASED PRICES FOR UNBUNDLED NETWORK ELEMENTS?

A. No. BellSouth has not provided cost-studies which could be used to determine reliable TSLRIC estimates. Thus, it was necessary to turn to alternative sources of cost information to develop cost-based rates.

Q. WHAT SOURCE OF DATA DID YOU USE AS AN ALTERNATIVE?

A. I would use TSLRIC estimates developed by Hatfield Associates, Inc. (Hatfield Model) to set rates for these elements on an interim basis. The Hatfield Model is a widely known model of network costs. In addition, the model is based on publicly available data, which allows it to be subject to detailed review and analysis, and updated when appropriate.

Q. DOES THE HATFIELD MODEL PERMIT THE CALCULATION OF TSLRICS THAT ARE CONSISTENT WITH YOUR PROPOSED APPROACH?

A. Yes. The model uses a TSLRIC methodology that is forward-looking, and includes the entire demand for each network element. The TSLRIC measure used in the model is based on the costs of an efficient, cost-minimizing entrant into the local service market.[15] The model assumes (1) a high quality network that incorporates copper distribution loops with copper and fiber feeder, digital switching, SS7 signaling and all fiber interoffice transport; (?) network capacity sufficient to serve all narrow band switched and dedicated local demand, intraLATA toll and access service demand in the region examined; and (3) the provision of all basic network elements needed for local service. In addition, the model reflects ILEC specific geographic and demographic

[15] That is, the costs of assets that are optimally configured, sized and operated.

differences that may affect cost. A summary of TSLRIC pricing rules and standards employed in the model is provided in Exhibit D of the ACSI Petition.

We relied upon Hatfield Version 2.2, Release 1. This is the most recent version of the model. The numeric results of the Hatfield Model Version 2.2,[16] Release 1, most recently submitted to the FCC are also presented in Exhibit D.

Q. GENERALLY, HOW IS THE HATFIELD MODEL CONDUCTED?

A. The Hatfield Model (HM) is primarily an engineering model, which is used to design a local network subject to various rules and constraints. The network is designed to meet demands for local and toll services, including both switched and dedicated access. The end product of this analysis can be costs for individual services or, as is the case here, cost by network element.

The Hatfield Model is based in part on the Benchmark Cost Model (BCM). The BCM is a costing technique initially developed by two ILECs (NYNEX and US West) in cooperation with two IXCs (MCI and Sprint). The purpose of the BCM was to estimate the cost of local service in greater detail, i.e., in smaller geographic areas, than had been done to date. The intent was to focus on geographic areas where costs were fairly homogeneous across the entire area. Census block groups were selected for this purpose.

One of the strengths of the Hatfield Model was its reliance on the detailed census block data included in the BCM. This information can be drawn upon to obtain cost estimates not only at the census block group, but can also be aggregated to obtain cost estimates at the wire center level, the LATA, the state, across regions and nationwide. In addition, other aggregations, such as by "density zones" are also possible. Finally, these data are based on census blocks nationwide, which permits direct comparisons of

[16] Ex parte presentation of AT&T Corp. in FCC Docket No. 96-98, dated July 3, 1996.

costs across companies within a state, as well as across states. The information presented in Version 2.2, Release 1 is based on BellSouth's operation and is displayed by density zone.

Q. ARE THERE ANY CHARACTERISTICS SPECIFIC TO THE HATFIELD MODEL THAT DISTINGUISH IT FROM ILEC CONDUCTED TSLRIC STUDIES WITH WHICH YOU ARE FAMILIAR?

A. Yes. As indicated, the Hatfield Model represents an attempt to construct the cost of a local network for the provision of local and toll narrowband services. In this manner, the model focuses on the minimum cost, most efficient network for that limited purpose, rather than the cost incurred based upon the infrastructure currently in place by the ILECs for whatever combination of commercial interests may be driving that entity.[17] For instance, while the model assumes fiber facilities are used in both the interoffice and feeder network, it is premised on only copper facilities used in the loop distribution system.[18] In this manner, the costing procedures in the Hatfield Model do not require cost allocations to deal with those network facilities which are not needed to provide local service, but which are necessary to provide various strategic services such as high-speed data or video.

The Hatfield Model is driven by current demand levels for local and toll services. The network is sized to meet both local and toll requirements for business and residential customers (including second line residential demands), plus the growth of these services over time. In this manner, a network is modeled that is efficiently sized to meet the demands of these customers, but not the demands for other strategic

[17] Hatfield Model, Version 2.2, Release 1, Documentation, May 16, 1996, page 2.

[18] Id., page 3.

services whose evolvement is both risky and possibly distant. Spare capacity is required in this analysis but not to meet potential strategic service demands.

As noted, the Hatfield Model draws from the BCM census block data base. This sets it apart from the typical ILEC TSLRIC study, which tends to be both state and purpose specific. By that, I mean that the cost studies are developed individually for each state and based upon the specific requirements at hand. Cost studies may be developed at the wire center level, at other times by exchange, or at other times utilizing statewide averages. Therefore, comparisons of costs across these studies, as well as across space and time, are most difficult. With the Hatfield Model, such comparisons are both possible and, in fact, are promoted by the study authors.

Q. THE HATFIELD MODEL HAS BEEN CRITICIZED AS PROVIDING INEFFICIENT OR INACCURATE ESTIMATES OF COSTS FOR LESS DENSELY POPULATED AREAS. HOW HAVE YOU DEALT WITH THIS?

A. For the purposes at hand, that criticism is not limiting.

One of the difficulties in any technique that draws on data that is widely applicable is that the accuracy of the analysis in any individual specific circumstance may be limited. The inaccuracies or inefficiencies of the calculation procedure are typically greatest the further one goes from the median, or average, of the distribution of outcomes. With regard to the data used in the Hatfield Model, the inaccuracies in the calculation procedure have been claimed to exist primarily with regard to cost estimates in census block groups with the lowest population densities. While there may be a large number of such census block groups, they tend to include but a small portion of the total number of subscribers and therefore have a limited impact on the calculated results. More importantly, for the purposes at hand, our data requirements do not focus on the costs in these tail blocks of the distribution, but rather for those

geographic areas that are among the more densely populated. Consequently, to the extent that the criticisms are accurate, they have little impact on the cost information that we are drawing upon.

Q. HAVE YOU ANALYZED THE HATFIELD MODEL AND ITS UNDERLYING ASSUMPTIONS?

A. Yes. At this juncture, I have reviewed the model and its assumptions in order to gain a complete understanding of its construction and its operations. In this manner, I have been able to identify the differences between the Hatfield Model's approach to obtaining cost estimates and those typically used by ILECs in their study procedures. As indicated earlier, BellSouth has not provided any TSLRIC information to this point. It is my expectation that such information will be forthcoming and a detailed review of that analysis will be conducted.

Q. HOW CAN THE OUTPUTS OF THE HATFIELD MODEL BE USED TO SET RATES FOR UNBUNDLED LOOPS AND PORTS?

A. The outputs of the Hatfield Model are TSLRIC estimates. These estimates should be marked up by an appropriate factor for the recovery of efficiently incurred shared and common costs. The appropriate mark-up can be estimated either through a detailed examination of BellSouth's costs or, alternatively, as I have suggested in Section IV, by assessing the mark-up which BellSouth has elected in the context of pricing its most competitive service offerings.

The difficulty faced by the Commission in either of these instances is that the data necessary to construct the mark-up are within BellSouth's control. Consequently, the ability to calculate this mark-up must await the availability and the examination of those data. It is my understanding that ACSI is seeking those data through discovery.

Q. IN THE EVENT THAT THE NECESSARY DATA TO EFFICIENTLY ESTIMATE AN APPROPRIATE MARK-UP IS NOT AVAILABLE, WHAT ARE YOUR RECOMMENDATIONS?

A. Since the information necessary is within the control of BellSouth, it is my recommendation that a default mark-up be established that increases the likelihood that the necessary information would become available. Simply stated, I would recommend that no mark-up be established unless or until the information necessary to construct the appropriate mark-up has been made available for review.

Q. ARE THERE ANY ADDITIONAL ISSUES RELATED TO THE HATFIELD MODEL WHICH SHOULD BE BROUGHT TO THE ARBITER'S ATTENTION AT THIS TIME?

A. Yes, there is one. It should be noted that the Hatfield Model is being updated and the results of this update will be available soon. When those results are available, the information included in Exhibit D and Exhibit H (ACSI's proposed rates) of ACSI's Petition will be updated.

Q. YOU NOTED THAT BELLSOUTH DID NOT PROVIDE ITS TSLRIC FOR YOUR REVIEW. IF THAT WERE TO BE MADE AVAILABLE ON A TIMELY BASIS, WOULD YOU USE THE RESULTS OF THAT ANALYSIS IN PLACE OF THE HATFIELD MODEL?

A. That is not clear. It is my understanding that ACSI is requesting copies of BellSouth's TSLRIC studies. Upon receipt of that cost study information on a timely basis, it will be reviewed and a decision will be made as to its applicability in terms of establishing rates in this proceeding. At that time, I will comment on whether this BellSouth's study should be adopted, modified and adopted, or simply rejected. At this juncture, I offer no observation.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

VERIFICATION

STATE OF MARYLAND)
) ss
COUNTY OF ANNE ARUNDEL)

Marvin H. Kahn, being first duly sworn, deposes and states that he is a founding principal of Exeter Associates, Inc. and is authorized to make this verification; that he has read the foregoing Testimony and knows the contents thereof, and that the same is true to the best of his knowledge, information and belief.

Marvin H Kahn

Marvin H. Kahn

Subscribed and sworn to before me on the 8th day of August, 1996.

Notary Public

My Commission Expires:

CHARLES H.N. KALLENBACH
Notary Public, State of Maryland
Qualification Anne Arundel County
Commission Expires 5/16/00

(SEAL)

Documentation of the:

HATFIELD MODEL

Version 2.2
Release 1

Prepared for:

AT&T CORP.

and

MCI TELECOMMUNICATIONS CORPORATION

by

Hatfield Associates, Inc.
International Telecommunications Consultants
737 29th Street, Suite 200
Boulder, Colorado 80303

May 16, 1996

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I. OVERVIEW

This document describes the "Hatfield Model Version 2.2, Release 1", a flexible tool for estimating the economic costs of providing telephone service to business and residence users throughout the United States. Hatfield Associates, Inc. ("Hatfield Associates" or "HAI") developed this model at the request of AT&T Corp. ("AT&T") and MCI Telecommunications Corporation ("MCI"). This Hatfield Model (called, variously, "the Hatfield Model," "the Model" or "HM") builds upon modeling work that Hatfield Associates performed previously for AT&T and MCI.[1] It uses certain outputs from the Benchmark Cost Model ("BCM") developed by Sprint, NYNEX, MCI and US West ("the Joint Sponsors") to calculate required loop investments.[2] HAI's goal in both these efforts was to model the economic costs of all narrowband local telephone services provided to business and residence customers, including access services provided to interexchange carriers ("IXCs").[3] In addition to computing efficient total network costs, the model computes the economic costs of the individual network elements that are used to provide narrowband telephone services.

The HM develops estimates of economic costs through an engineering model designed to specify the network structure that can provide most efficiently the required telephone services to all customers. As such, it conforms to the Total Service Long Run Incremental Cost ("TSLRIC") pricing rules and standards delineated in Appendix 1 to this document. The HM adopts realistic, but conservative, assumptions concerning the factors influencing prospective network costs to ensure that its economic cost estimates are reasonable and reflective of efficient local exchange carrier ("LEC") construction planning processes.

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1 While most recently, Version 2.1 of the Hatfield Model was presented to the Commission by MCI in, "The Cost of Basic Network Elements: Theory, Modeling and Practice," March 29, 1996, there are several earlier versions. The original Hatfield Model (Version 1.1), was sponsored by MCI in 1994 to gauge the subsidy associated with universal service. This model costed residential access to the first point of switching, local usage, touch tone, white pages listings and access to 911, operator and directory assistance service. The model assumed a scorched earth approach, no direct interoffice trunking and homogeneous population density zones. This model evolved in two directions. Version 2.0, which costed all local services, was introduced in a Maryland price cap proceeding in late 1995. Version 1.2 was also introduced in late 1995 in Pennsylvania to gauge universal service subsidy needs. In Version 1.2, the scorched earth approach was replaced with a scorched node approach using outputs from the Benchmark Cost Model ("BCM") to size loop plant requirements.

2 Users must obtain the BCM from the Joint Spnsors in order to use it as an input to the HM.

3 The specific network that the model costs is one that is capable of carrying all switched voice/narrowband telephone services that are offered within an exchange area. To the extent that the network elements used to provide these services are also capable of providing other services (e.g., ISDN, special access, or private line services), their costs are estimated as well.

The Hatfield Model is flexible. It uses public information made available from the Federal Communications Commission ("the Commission") and industry publications for its basic input data. In addition, the HM will easily accept substitute proprietary or company-specific information. Users may apply the HM to any LEC or geographic area, because the necessary inputs are publicly available. The HM's table driven structure and the nature of its output reports, facilitate a variety of flexible uses of the model.

The sections that follow provide a more detailed discussion of the HM's structure, processes and operations. In particular, this document describes only the portions of the model that address the cost of the local network and its individual elements. This document does not address Universal Service or subsidy issues. Section II describes the HM and its potential applications. Section III documents in detail the Model's inputs and processes used to determine the most efficient network structure that will serve the required level of customer demand and describes the derivation of unbundled network element TSLRICs from this optimized network model. Section IV displays some numeric results derived by the Model.

II. GENERAL DESCRIPTION OF THE HATFIELD MODEL AND ITS POTENTIAL APPLICATIONS

The Hatfield Model develops estimates of the economic costs (TSLRIC) of providing local telephone services by determining the specifications of a local network, using most efficient practices and best forward-looking technologies, to meet the total demand for local narrowband telephone services. By doing this, the model simulates the construction and operations decision-making of an efficient local service provider that must create and operate a new network to meet current and reasonably forecasted demand levels for narrowband telephone services. In simulating the construction of these hypothetical networks, the model incorporates realistic assumptions concerning the LECs' ability to adopt and implement efficient, cost minimizing production techniques.

A. EFFICIENT FORWARD-LOOKING PRODUCTION

As required by TSLRIC study principles, the Hatfield Model assumes that the LEC acts as an efficient, cost minimizing producer of basic telephone services and makes rational, forward-looking investment decisions over a long-run planning horizon. The HM assumes that all plant related investments and expenses are variable. The Model optimizes these investments and expenses by configuring the least-cost network required to serve existing demand, subject to constraints reflecting a conservative assessment of the LECs' ability to change some of the underlying physical characteristics of their embedded networks.

B. ADOPTION OF APPROPRIATE TECHNOLOGIES

The technologies considered in the Model are forward-looking. As such, they are those an efficient LEC would adopt if it were to begin today to rebuild its telephone

service network from the bottom up. For outside plant calculations, a technology mix composed of a digital loop carrier, copper distribution and feeder plant and optical fiber feeder plant is assumed. The HM does not consider hybrid coaxial cable because there is a continuing controversy over whether it is the least-cost technology for providing narrowband service. Wireless technologies are also excluded because, though promising, they are not yet a proven or generally available primary local service alternative that is a quality or economic substitute for wireline local service. The particular architecture chosen for a serving area reflects an assessment of the least-cost method of providing telephone service to a serving area. For example, the feeder and distribution plant sizing algorithms choose the minimum quantity and size of cables to meet total demand and reflect the tapering of feeder cable segments as routes extend away from the wire center.

Switching cost calculations in the model use digital switching and current demand characteristics. Switching capacities are consistent with those of present generation digital switches, such as AT&T's 5ESS® and the Northern Telecom DMS-100®. The HM assumes that the LECs have deployed fully SS7 signaling capabilities throughout the local exchange network.

C. FIXED WIRE CENTER LOCATIONS

The HM is a "scorched node" study because it uses the Benchmark Cost Model ("BCM") loop investment assumption that treats the LECs' current wire center locations as "fixed" nodes in a reconstructed local network. Because this approach does not allow for relocating wire centers to minimize the total cost of providing telephone service, this assumption creates an upward bias in the model's estimates of local service costs.

D. EXISTING GEOGRAPHY AND CHARACTER OF DEMAND

The Hatfield Model considers only those investments required to support the efficient provision of traditional narrowband telephone services. The Model does not cost out speculative investments to accommodate provision of broadband services or potential demand stimulation from possible enhanced service applications. Nor does the Model inflate demand estimates to account for overbuilt official networks.

The HM incorporates demand for both business and residence service, including second residence lines, through adjustments to BCM line counts of households by Census Block Group ("CBG"). By engineering the network so that current demand only partially fills its capacity, the Model accommodates growth in the demand for such services, including all basic network functions underlying local telephone service. The HM sets these network fill factors at levels an efficient local service provider would expect to achieve. The HM varies network fill factors by population density zone, an assumption that accommodates cost differences resulting from differences in rates of population growth across density zones. The HM does not use current LEC network fill factors because such factors reflect LEC inefficiencies (induced for example, by overbuilding to accommodate plans to enter new markets).

The Hatfield Model meets additional design criteria by providing a flexible, generic structure for estimating company-specific TSLRICs for basic telephone services and for unbundled network elements that the LEC may supply to its carrier customers. The specific inputs used to drive the present model are uniformly available for all companies and study areas and can be modified easily to reflect any other forward-looking, company-specific or proprietary information a user may wish to use. Required inputs derived from the BCM and underlying demand measures are now available for all study areas. Residence and business line counts and information concerning current period expenses and costs, are directly available for all companies that file ARMIS reports. Though the exact prices LECs paid for particular capital goods are generally proprietary, the HM obtains information concerning prevailing prices for outside plant and switching facilities through public industry sources. Finally, the best practices and economic principles on which the model rests transcend company boundaries.

E. POTENTIAL APPLICATIONS OF THE HATFIELD MODEL

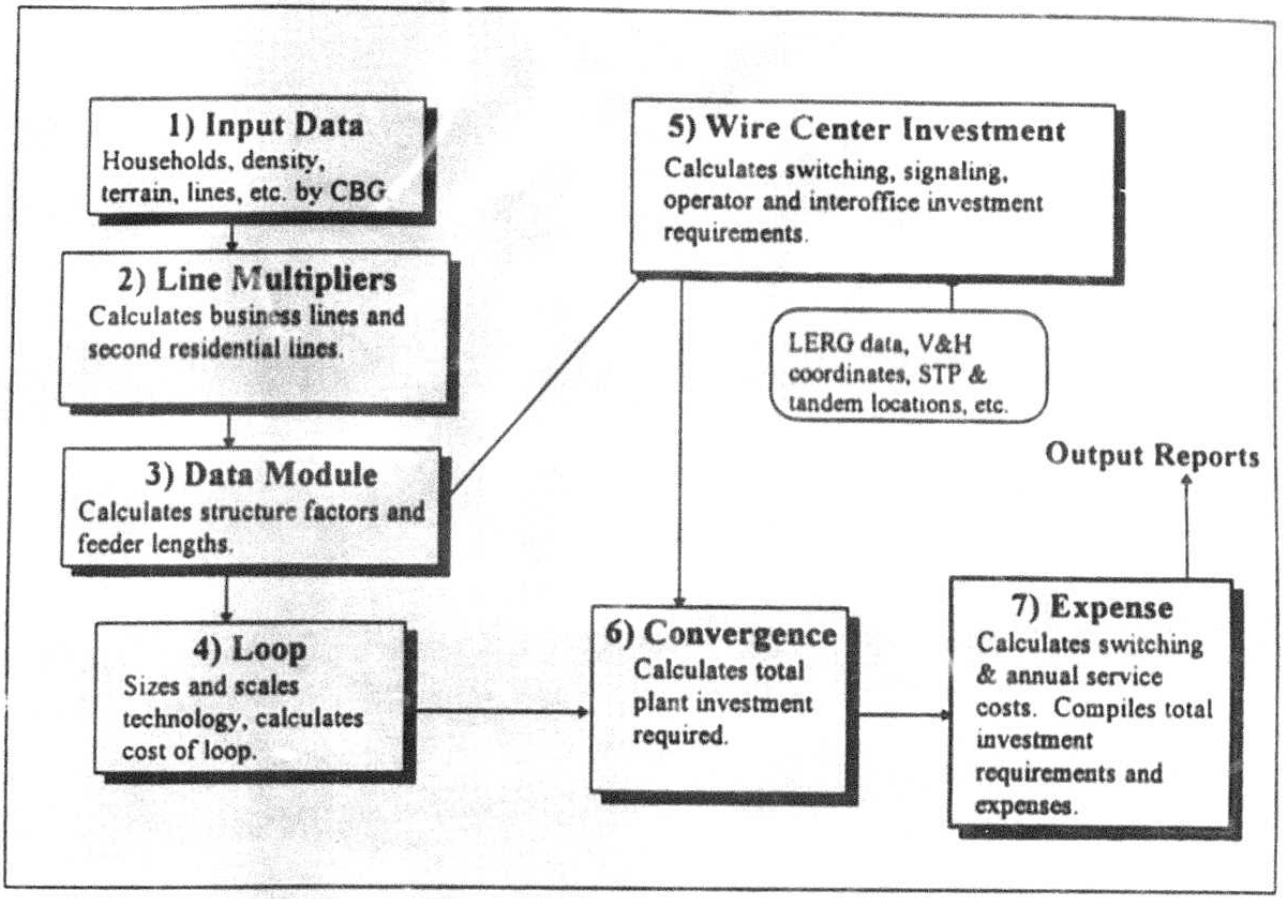
The Hatfield Model can be used for a variety of applications for which TSLRIC estimates are required. The Model's primary application is to develop estimates of the TSLRIC and local access of unbundled network elements and interconnection services that compose local exchange service. The Model may also be used to assess economic subsidy requirements by identifying those areas in which the TSLRIC of basic local service exceeds the tariffed rate for that service and by quantifying any resultant economic shortfall.

III. STRUCTURE OF THE MODEL

A. OVERVIEW OF MODEL ORGANIZATION

The Hatfield Model contains seven functional modules. It uses output from three components of the BCM to determine loop investment. It couples this with its own modules to produce the wire center and outside plan investments necessary to provide switching, signaling, operator and trunking functions -- along with their required support expenses. Figure 1 shows the relationships among these modules. An overview of each component module follows.

Figure 1 **Hatfield Model Organization Flow Chart**



1. Input Data

There are two categories of raw data upon which the Hatfield model relies. They are CBGs (based on Census Bureau statistics) and wire center specific data (based on Local Exchange Routing Guide ("LERG") data).[4]

The specific CBG data used by the model are: 1) number of households; 2) CBG land area in square miles; 3) position relative to nearest wire center; and 4) local geological factors including rock depth, rock hardness, water table and surface texture. The current locations of individual wire centers and their particular technical specifications (as reported in the LERG) are also entered as variables into the cost model.

[4] "Local Exchange Routing Guide," Bellcore 1995. Users must obtain these data from Bellcore.

2. Line Multiplier

Since the model calculates all network costs on a per line basis, it must first calculate the number of second residential, business, public and special access lines within each CBG. Because the U.S. Census Bureau collects only household data and the FCC's Statistics of Communication Common Carrier or ARMIS 43-08 reports line data aggregated across all services, the model must apply multiplier factors to account for these additional access lines.

This calculation is based upon two assumptions: 1) multipliers must be greater than zero; and 2) increases in population density result in higher ratios of residence second lines and business lines to the number of households. Thus, the outputs of the Line Multiplier Module are estimates of total lines in a CBG and a table of line totals and line multipliers for six different population density ranges. Population density is measured by households per square mile and is broken into six categories: 0-5, 5-200, 200-650, 650-850, 850-2,550 and greater than 2,550 households per square mile. Labeling for these density zones is given in Table 1.

Table 1 Density Zone Households Per Square Mile

Density Zone	Households/Sq. Mile
1	0-5
2	5-200
3	200-650
4	650-850
5	850-2550
6	> 2550

3. Data Module

The Data Module calculates so-called "structure factors" for distribution and feeder cable plant that take into account the degree of difficulty associated with placing and installing cable under varying terrain and population density conditions. The module uses CBG data and line multipliers to first determine the quantity and type of outside plant required based on spatial geometry, density and distance of the CBG from the wire center. The HM also incorporates the particular geologic characteristics of each CBG (such as rock hardness, soil type, surface texture and water table depth) into its structure factors.

4. Loop Module

The Loop Module uses the structure factors calculated in the Data Module and estimates cable investments per unit length to determine the total required loop investment per CBG. To determine the full network loop investment, the module selects copper feeder technology for CBGs with loops less than 12,000 feet and selects fiber feeder technology for CBGs with loops longer than 12,000 feet. The module then determines the

size of copper or fiber cable required to serve each CBG, given prescribed fill levels and population density. Once the module has determined the required type and size cable, the Loop Module calculates the necessary total distribution, feeder and supporting structure investment using the Data Module's structure factors.

5. Wire Center Module

The Wire Center Module is a Hatfield extension to the BCM. It calculates wire center and interoffice facilities investments on a per line basis. This module quantifies investments associated with end office switches, trunks, signaling links, wire centers, signal transfer points ("STPs"), tandems (including operator tandems) and operator positions. The module uses the CBG household and line multipliers and the location of wire centers as detailed in the LERG to determine required switching capacities and interoffice investments.

In keeping with TSLRIC principles, the model determines network capacity sufficient to serve all demand in its service area. The HM derives its switch investment estimates by using both typical per-line prices paid for by Bell Operating Companies, GTE and other independents,[5] and from Table 2.10 of the FCC's Statistics of Communications Common Carriers, which provides the average number of access lines served by a LEC switch.

6. Convergence Module

The Convergence Module combines output of the Loop Module (loop installation, material and structural investments) with the Wire Center Module (per-line wire center and interoffice investments). The convergence module reports by density ranges the number of lines by type, number of households and investment in categories such as distribution, feeder, switching, tandems, trunks, etc.

7. Expense Module

The Expense Module uses output from the Convergence Module to determine efficient annual capital carrying costs for the investments needed to build up a local telecommunications network that reflects TSLRIC principles. This module uses investment, revenue and expense data that are available from LEC annual ARMIS reports and depreciation factors by plant category and it is capable of using individual LEC's levels of financial leverage and cost of debt and equity.

The Expense Module also calculates support expenses based on certain ratios between these expense items and the investments they support.

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[5] See *U.S. Central Office Equipment Market -- 1994*, McGraw-Hill.

B. INPUT DATA FILE

1. Overview

The purpose of the data input or "Input Data" file is to incorporate into the HM objective publicly reported and company neutral topographical data and demographic statistics for use throughout the model. These data are derived from U.S. Census Bureau STF3 data, NECA Tariff 4 CLLI data,[6] and USGS Satellite Survey Data.[7] In addition, the Joint Sponsors used "ARC INFO" and "Map Info" software to translate the government data into parameters that match the BCMs input needs.[8]

2. Description of Inputs and Assumptions

In addition to three cells designated to identify a specific serving area (wire center or CLLI, company and CBG number), there are a total of eleven elements that are collected in the BCM Input Data File. They are:

Measurements of Distance to Centroid, Quadrant, Omega and Alpha[9] – These variables locate the CBG with respect to the wire center. There are four quadrants surrounding a wire center. The Alpha and Omega values are angles used to determine feeder and distribution lengths. Omega is the angle that determines in which quadrant of the serving area the CBG falls. Alpha is the angle between the line directly linking the wire center and the center of the CBG and the link followed by the main feeder route serving the CBGs quadrant. The Data Module will use these measurements to determine the feeder, sub-feeder and distribution lengths. The Loop Module uses these values to compute material and placement investment and to share feeder investment among the several CBGs served by a common feeder route. The Joint Sponsors used "ARC INFO" and other software to map CBGs to the nearest wire center and to determine these geometric parameters.[10]

Geographic Information – As part of the Input Data File, the BCM uses total CBG household counts and areas obtained from census data. The HM uses these values to calculate population density. The Data Module identifies the six zones of population density.

Terrain Variables – The model incorporates terrain variables extracted from USGS Satellite Survey data. These include water table depth, depth to bedrock, bedrock hardness and surface texture. In the Data Module, these variables help to determine additional cost

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6 Common Language® Location Identifier. Common Language® is a trademark of Bell Communications Research.

7 CC Docket 80-286, Joint Sponsors, December 1, 1995 filing, at IV-7, IV-8.

8 CC Docket 80-286, Joint Sponsors, December 1, 1995 filing, at IV-7, IV-8.

9 CC Docket 80-286, Joint Sponsors, December 1, 1995 filing, at IV-10 through IV-12.

10 CC Docket 80-286, Joint Sponsors, December 1, 1995 filing, at IV-10 through IV-12.

factors for installing different types of cable. Some of the variables are quantitative (Rock Depth and Water Table Depth), while others are qualitative (Rock Hardness and Surface Texture). The Data Module assigns numeric values to this qualitative data.

Table 2 below presents the minimum and maximum values for these data from the first 200 CBGs reported for Colorado to illustrate the range and type of the geological variables.

Table 2 Variable from the BCM Input Data File and High and Low Values Surveyed from First 200 CBGs in Colorado

Variable	Column	Data Type	High	Low
Centroid Distance	G	Quantitative	104472.61	143.59
Totai Households	H	Quantitative	1215.00	29.00
Area	I	Quantitative	569.78	0.06
Density	J	Quantitative	9098.91	0.09
Rock Depth	K	Quantitative	60.00	11.20
Rock Hardness	L	Textual	HARD	SOFT
Surface Texture	M	Textual	*	*
Water Table Depth	N	Quantitative	6.00	4.11
*There are nearly 200 different surface texture types assigned values of 1 or 0.				

3. Description of Module Outputs and Connection to Next Module

The BCM Input Data File, with the line counts substituted for household counts, serves as the input file for the BCM Data Module. In addition, it functions as a repository of essential data that all the subsequent modules draw upon to calculate network investments, including the Line Multiplier Module, the BCM Loop Module and Wire Center Investment Module.

C. LINE MULTIPLIER MODULE

1. Overview

A key feature of the Hatfield Model is that it takes into account all significant sources of demand for loop facilities, including residence, business, public and special access lines, rather than focusing strictly on primary residential access line demand as the BCM does. The Line Multiplier Module makes this extension to the BCM. As shown in Figure 1, this module calculates total access line counts for each CBG and provides these data to the BCM's Data Module.

The HM incorporates all access line demand to account for any potential the scale or scope economies associated with the provision of both residence and non-residence services. As a result, the Hatfield Model can provide reasonable estimates of business loop investment.

2. Description of Inputs and Assumptions

The Line Multiplier module uses access line demand data from the Operating Data Reports, ARMIS 43-08, submitted to the FCC's Common Carrier Bureau on an annual basis by all Tier 1 LECs.[11] The HM developers obtained these data from Table III ("Access Lines in Service") of those carriers' 1994 ARMIS 43-08 reports and entered it into the model without any adjustments. The HM includes the following company-wide data for each of the LECs.[12]

- Residential access lines, including analog and digital. These totals include all residential switched access lines, including flat rate (1FR) and measured rate (1MR) service.[13]
- Business access lines, including analog single line, analog multiline and digital. These totals include flat rate business (1MB) and measured rate business (1MR) single lines, PBX trunks, Centrex lines, hotel/motel LD trunks and multi-line semi-public lines.[14]
- Special access lines, including analog and remote digital. These totals include dedicated lines connecting end users' premises to an interexchange carrier point of presence, but do not include intraLATA private lines.[15]
- Public access lines, that is, lines associated with coin (public and semi-public) payphones, excluding customer owned pay telephones ("COPT").[16]

As explained below, the module's algorithms map the data to individual CBGs. This requires certain inputs from the Data Module, namely a listing of each CBG (identified by CLLI code of the wire center, company name and CBG code) and its associated household count. This module draws these parameters from the input Data file.

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11 See Reporting Requirements for Certain Class A and Tier 1 Telephone Companies (Parts 31, 43, 67 and 69 of the FCC's Rules), CC Docket No. 86-182, 2 FCC Rcd 5770 (1987) (ARMIS Order), modified on recon., 3 FCC Rcd 5375 (1988). Tier 1 LECs are those with more than $100 million in annual revenues from regulated services and includes over 50 carriers.

12 These LECs include the seven RBOCs, GTE California and GTE Texas.

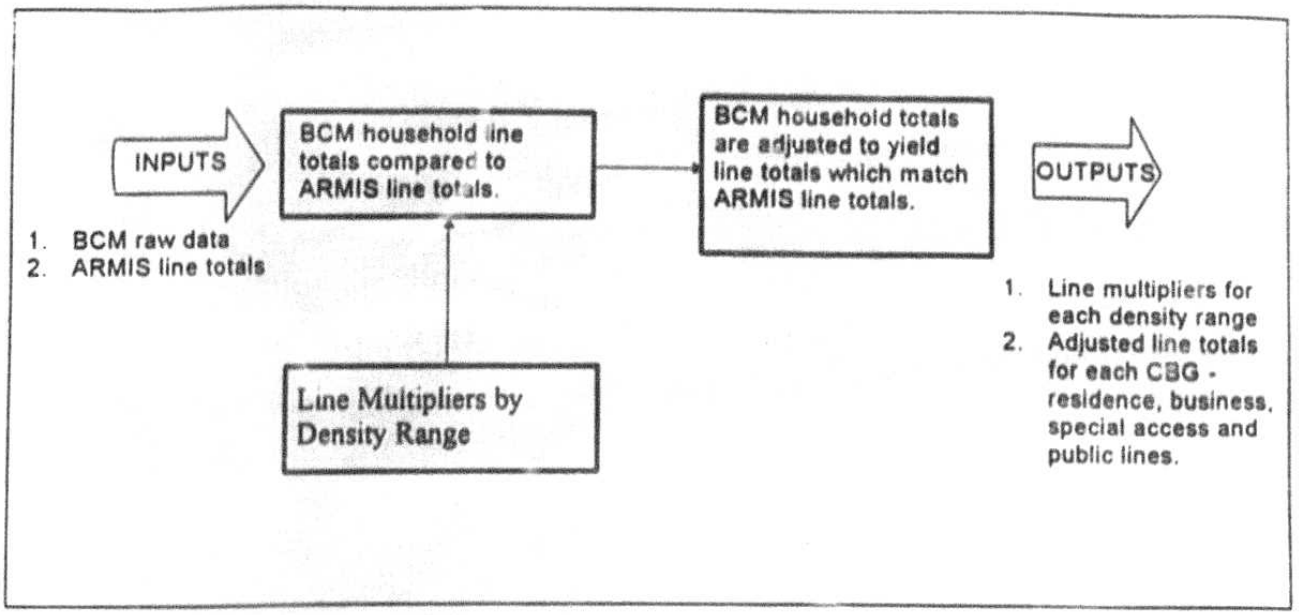
13 Revision of ARMIS USOA Report (FCC Report 43-02) for Tier 1 Telephone Companies and Annual Report Form M, AAD 92-46, DA 92-1405, released October 16, 1992, Appendix C, at FCC Report 43-08 - Report Definition for Table S-3, page 2.

14 *Id.* at FCC Report 43-08 - Report Definition for Table S-3, pages 1-2.

15 *Id.* at FCC Report 43-08 - Report Definition for Table S-3, pages 2-3.

16 *Id.* at FCC Report 43-08 - Report Definition for Table S-3, page 2.

Figure 2 Line Multiplier



3. Explanation of Key Algorithms

The Hatfield Model, like the BCM, uses the CBG as a basic unit of analysis. Therefore, to take into account sources of access line demand other than residence service, the Model must estimate the demand for such services; e.g., business, special access and public access lines, within each CBG. This data is not provided publicly by the LECs, although they do possess service-specific demand data at a wire center level. Rather, the LECs allege that these data are proprietary (e.g., for competitive Centrex services). Thus they are not currently available for incorporation into the HM.[17]

As an alternative, the Line Multiplier Module uses a consistent method to translate the ARMIS access line data that LECs report on a territory-wide basis into service-specific access line counts on a CBG basis. The module performs this translation separately for each service category (residence, business, special access and public access line). In each case, the total number of lines reported for the service category are assigned to specific CBG based upon explicit, user-modifiable assumptions regarding how demand for the service varies by Density Zone.

[17] Curiously, some RBOCs, notably the Southwestern Bell companies, formerly published this information for use by their interexchange carrier customers, but the practice has apparently been discontinued. See SWB, *Interexchange Customer Information Handbook*, Volume IV (End Office Profile), 1987.

The first step of the Line Multiplier Module's algorithms is to assign a primary residence access line to each household identified in the CBG data provided by the Data Module.[18] The remaining residence access lines (i.e., the total ARMIS residence line count for the given LEC minus the household count), as well as the lines associated with each of the other service categories, are then assigned to individual CBGs based on a set of "line multiplier" factors (see Figure 2). Table 3 below illustrates representative line multiplier values.

Table 3 Illustrative Line Multipliers

Density Zone	Total Multiplier	Two-Line Households	Business Line	Special Access	Public Access
1	1.045	0.00	0.02	0.025	0.000
2	1.118	0.02	0.05	0.038	0.010
3	1.296	0.04	0.20	0.045	0.011
4	1.479	0.06	0.35	0.055	0.014
5	1.622	0.10	0.44	0.063	0.019
6	2.106	0.30	0.70	0.080	0.026

Specifically, the Line Multiplier Module uses an iterative process to estimate the demand within each CBG for lines associated with each of the four service categories. In the initial calculation, the HM assigns each CBG a line count for each service category (e.g., business access lines) by multiplying the household totals in each CBG by the initial user-specified line multipliers. For example, if the household count for a particular CBG in Density Zone 3 is 100 and the Additional Lines multiplier is 0.04 (see Table 3), then the HM assigns 4 = 100 x 0.04 additional lines to that CBG. The module then compares total line count for all CBGs to the service category's line count reported in ARMIS. If the totals within a service category fail to reconcile within $\pm$ 0.5%, then the module adjusts the multiplier factors upward or downward and the totals are recalculated. This process continues until the totals for each service category are within a $\pm$ 0.5% tolerance range.

The module contains an Iteration Macro to automatically adjust the line multipliers; alternatively, the module also allows for a manual adjustment. In either case, the module applies the same basic constraints, namely that the multipliers must be non-negative and increase monotonically with increasing population density. These rules reflect a presumption that sparsely populated areas will tend to have fewer business and second residential lines in proportion to household count than will more densely populated areas. Although specific CBGs may exhibit exceptions from this trend, at higher levels of aggregation (e.g., the wire center or LATA level), the mix of services will progressively approach the total company mix reported in the ARMIS data.

[18] Some additional lines are added to reflect growth in primary residence access line demand due to net gains in households that occurred between the 1990 time frame of CBG household data collected by the U.S. Census and the 1994 time frame of the FCC ARMIS data.

The line multipliers are user-specified inputs. Therefore, users can adjust them to reflect LEC-supplied data on service penetration levels by density zone (if such data becomes available), tested for sensitivity effects, or otherwise modified at the discretion of the model user

4. The Modeling of Business Loop Lengths

LECs have asserted that business lines typically have shorter loop lengths than residence lines and therefore should have lower average loop investment costs. Although the BCM algorithms used to determine loop distance make no explicit distinction between residence and business (and other non-residence) loops, the Line Multiplier Module allows for such distinctions. By using business line multipliers that increase the proportion of business lines assigned to the higher density zones, the average loop investment for business lines will reflect both the shorter feeder distances required to serve CBGs in more densely populated areas and the shorter distribution distances that characterize the more compact CBGs found in denser areas.

In the rural zones where CBGs encompass larger geographic areas, the BCM's assumption of uniformly distributed customer locations may overstate somewhat the distribution lengths and associated investment costs for business lines, especially because business locations are likely concentrated nearer the center of the CBG. However, the BCM independently calculates feeder and sub-feeder distances; hence, any possible overstatement of distribution lengths for business lines will not affect these calculations. Accordingly, the sizing of feeder cables and associated support structure will also be unaffected by any overstatement of business lines' distribution distances, so the Model will capture accurately any scale or scope economies engendered by carriers' provision of multiple access line services.

5. Description of Module Outputs and Connection to Next Module

The primary output from the Line Multiplier Module is the Input Data File modified with additional residential, business, special access and public lines. Both the Data Module and the Wire Center Module use these data.

D. DATA MODULE

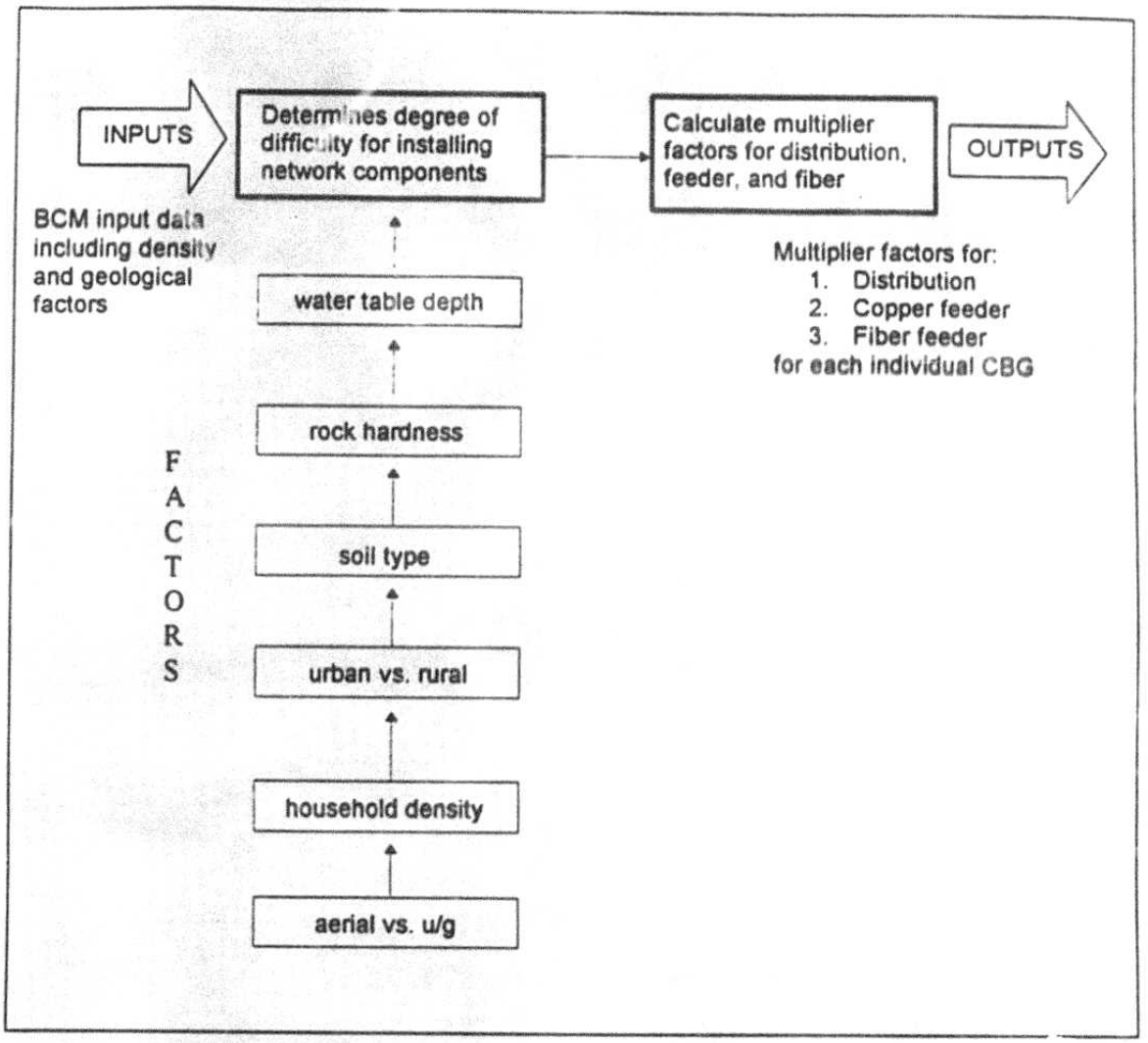
1. Overview

The Data Module is the first module of the BCM. The input for the Data Module is the BCM Input Data File. The results from the Data Module, in turn, are the input to the Loop Module. The Hatfield Model inserts the Line Multiplier Module before the two, but its output does not affect the operation of the Data Module. The BCM developers have designed the Data Module to accomplish two functions:

- Calculate lengths for the feeder, sub-feeder (if required) and distribution portions of the loop.
- Determine the appropriate cost structure multipliers to each of the loop segments (feeder, sub-feeder and distribution) to reflect the costs of conduits, innerduct, poles, etc., as well as the capitalized costs of cable placement.

The HM generally uses the structure cost values which the Data Module produces, with one exception. Because the BCM appears to understate the distribution structure costs in sparsely populated areas the HM selectively increases this value in certain low density CBGs.

Figure 3 Data Module



2. Description of Inputs and Assumptions

The Data Module bases its loop length calculations on a number of important assumptions adopted by the BCM's developers. They include the following:

- Feeder cable extends from the wire center to the edge of the CBG.
- There are four main feeder routes that leave each wire center with sub-feeder routes placed at 90 degree angles from the main feeder routes.
- Households are distributed evenly throughout a CBG.
- Distribution cables must extend from the edge of the CBG to each customer premises.

- Four equal-length distribution legs are used to serve each CBG. The size of the CBG determines the length of each leg.

3. Explanation of Key Algorithms

The Data Module calculates loop distances and structure costs. The following describes these key loop calculations.

a) Calculating Segment Lengths

To calculate the lengths of feeder segments in the network, the BCM employs trigonometric functions to create a right triangle -- one side being the airline distance from wire center to the center of the CBG, a second side being the feeder route and the final side the sub-feeder. The Joint Sponsors describe this in their December 1, 1995, filing.[19]

Main Feeder Distance -- The BCM Input Data File gives the CBG centroid distance and the appropriate angle. The Data Module calculates the main feeder distance.

Sub-feeder Distance -- The BCM assumes that all CBGs are square and calculates the length of one side of the CBG as the square root of the CBG area. The BCM then determines if sub-feeder is necessary. If the sub-feeder length is less than half of the CBG side, a portion of the CBG overlaps the main feeder and the model sets the sub-feeder length at zero.[20]

Distribution Distance -- The BCM uses other geometric relationships to calculate distribution distances. The distribution distance is the average distance between a household and the center of the CBG. Implicit in this calculation are assumptions that: 1) households are uniformly distributed in the CBG, 2) the CBGs are square, 3) the feeder plant ends at the edge of the CBG and 4) the average distribution plant length equals to the sum of the average horizontal distance of distribution plant and the average vertical distance of distribution plant. The module calculates the average distribution distance within one CBG as 0.75 of the length of one side of the CBG.[21] Because populations tend to cluster in towns and subdivisions, the BCM assumption of uniform population distribution tends to overstate distribution distance and thus the required loop investment.

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19 FCC 80-286, Joint Sponsors, December 1, 1995 filing, Attachment 4 at IV-10-12.

20 The main feeder distance will be overstated whenever the CBG boundary crosses the Main Feeder route, since the algorithm does not subtract the portion of the calculated Main Feeder that extends beyond the intersection of the CBG, whereas the Distribution calculation assumes that the Main Feeder ends at the edge of the CBG. Because the larger CBGs found in low density areas are more likely to cross the Main Feeder route, loop costs will tend to be somewhat overstated in low density zones.

21 FCC 80-286, Joint Sponsors, December 1, 1995 filing, Attachment 4 at IV-14.

b) Structure Multipliers

A variety of demographic and geological factors affect the choice of loop plant, as well as the costs of initial placement. These include the population density, the nature of the soil and the prevailing water table depth. The Data Module calculates the effects of these terrain variables as "structure multipliers." These multipliers also incorporate the material costs of poles, conduit, inner ducts and other structure. The Data Module calculates separate structure factors for placing copper distribution cable, copper feeder, and fiber feeder.

The formulas associated with these cost multipliers use a set of look-up tables. There are a total of 54 of these weighted cost factors which range from a magnitude of 0.233 (the multiplier for distribution plant in rural areas with the lowest household density and with "normal" surface texture) to 11.5456 (the multiplier for fiber plant in urban areas with the greatest household density and the hardest surface texture). To derive the weighted cost factor table, the Data Module matches all the terrain variables to a cost for using different types of cable and multiplies them together (see Figure 3 for a presentation of the logic used to generate these cost structure factors). The module derives these weighted cost factors from 24 "unweighted" cost multipliers. Four tables are generated: Urban Copper Cable, Rural Copper Cable, Urban Fiber and Rural Fiber.

Table 4 shows the cost multipliers for copper feeder and copper distribution in density zones 5 and 6. The BCM developers define these as "urban" density zones.

Table 4 Urban Copper Cable Cost Multiplier

Structure	Underground Cost Factor	Aerial Cost Factor
Rock "Hard"	1.53	0.69
Rock "Soft	1.22	0.48
Rock Normal	1.11	0.48

Table 5 shows the corresponding multipliers in the four lowest density zones.

Table 5 Rural Copper Cable Cost Multiplier

Structure	Underground Cost Factor	Aerial Cost Factor
Rock "Hard"	0.66	0.80
Rock "Soft	0.35	0.54
Rock Normal	0.21	0.44

Table 6 contains the multipliers for fiber feeder in density zones 5 and 6 and Table 7 shows the fiber multipliers for the rural zones 1 through 4.

Table 6 Urban Fiber Cable Cost Multiplier

Structure	Underground Cost Factor	Aerial Cost Factor
Rock "Hard"	9.02	3.50
Rock "Soft	7.22	2.50
Rock Normal	6.56	2.50

Table 7 Rural Fiber Cable Cost Multiplier

Structure	Underground Cost Factor	Aerial Cost Factor
Rock "Hard"	3.00	4.25
Rock "Soft	1.45	2.90
Rock Normal	1.02	2.30

The module then weights the values in these tables by the underground/aerial ratios for distribution cable (always copper), copper feeder and fiber feeder. The "mix" of these architectures varies by density zone (see below).

Table 8 Distribution (Copper) UG/Aerial Mix

Density	UG %	Aerial %
1	90	10
2	80	20
3	70	30
4	65	35
5	60	40
6	50	50

Table 9 Copper Feeder UG/Aerial Mix

Density	UG %	Aerial %
1	60	40
2	65	35
3	70	30
4	80	20
5	90	10
6	100	0

Table 10 Fiber Feeder UG/Aerial Mix

Density	UG %	Aerial %
1	60	40
2	65	35
3	70	30
4	80	20
5	90	10
6	100	0

The formulas in the Data Module are relatively simple references to the look-up tables. However, the module does make several preliminary calculations.

A general description of several of the more important of these preliminary calculations follows.

Density -- In order to determine cost factors, the Data Module places CBGs into one of six density zones. The HM designates the top two density zones as "urban" within which the model applies a 1.28 cost multiplier to account for the higher costs associated with placing plant in urban areas. In addition, density zones determine the aerial/underground mix of copper and fiber cable.

Surface Texture Indicators -- The original data from the USGS Satellite Survey data is qualitative in nature (e.g., clay loam). The surface texture definitions lead to a binary indicator in the Data Module: a "1" indicates an additional cost and a "0" indicates no additional cost.

Copper Depth Condition -- The Data Module assumes a value of 24 inches for the normal placement depth for buried/underground copper cable. The Data Module matches this assumption with the original input variables of rock depth, rock hardness and surface texture for all CBGs. The BCM calculates values from 1 to 3 based on the expense of placing copper cable in that specific CBG. A value of "1" is the most expensive.

Fiber Depth Condition -- Similar to copper depth, fiber depth determines the costs associated with placing fiber given the specific terrain characteristics of each CBG. The BCM uses a value of 36 inches fo. the normal placement depth of buried/underground fiber. This function also produces a value from 1 to 3. A value of "1" is the most expensive.

Ultimately, the "Cost Factor Table" (which incorporates all geographic factors, except for the water table depth) drives Data Module outputs. If the water table depth is less than 3 feet, the value that the model derives from the cost factor table is multiplied by 1.3.

			Factor
Urban	6	Rock H	1.42
		Rock S	1.09
		Normal	1.02
Urban	5	Rock H	1.19
		Rock S	0.92
		Normal	0.86
Rural	4	Rock H	0.71
		Rock S	0.42
		Normal	0.29
Rural	3	Rock H	0.70
		Rock S	0.41
		Normal	0.28
Rural	2	Rock H	0.69
		Rock S	0.39
		Normal	0.26
Rural	1	Rock H	0.67
		Rock S	0.37
		Normal	0.23

Table 12 Cost Factor Table For Feeder

Cable	Area	Density Zone	Terrain	Factor
Copper	Urban	6	Rock H	1.96
			Rock S	1.56
			Normal	1.42
Copper	Urban	5	Rock H	1.45
			Rock S	1.15
			Normal	1.05
Cooper	Rural	4	Rock H	0.69
			Rock S	0.39
			Normal	0.26
Copper	Rural	3	Rock H	0.70
			Rock S	0.41
			Normal	0.28
Copper	Rural	2	Rock H	0.71
			Rock S	0.42
			Normal	0.29
Copper	Rural	1	Rock H	0.72
			Rock S	0.43
			Normal	0.30
Fiber	Urban	6	Rock H	11.55
			Rock S	9.24
			Normal	8.40
Fiber	Urban	5	Rock H	8.47
			Rock S	6.75
			Normal	6.15
Fiber	Rural	4	Rock H	3.25
			Rock S	1.74
			Normal	1.28
Fiber	Rural	3	Rock H	3.38
			Rock S	1.89
			Normal	1.40
Fiber	Rural	2	Rock H	3.44
			Rock S	1.96
			Normal	1.47
Fiber	Rural	1	Rock H	3.50
			Rock S	2.03
			Normal	1.53

4. Outputs

The Data Module creates outputs that are used by the Loop Module. The following describes these outputs and indicates whether it is used in calculating the network cable lengths (for feeder, sub-feeder and distribution lengths) or terrain effects (cost multipliers). Other data transferred from the Data Module to the Loop Module are company name, wire center identification (CLLI code), block group number, quadrant, total households and density.

Table 13 New Data for Loop Module

Category	Column	Function
B	E	Cable lengths
A Feeder Portion	F	Cable lengths
Distribution Distance	G	Cable lengths
Distribution Cable Multiplier	J	Terrain effects
Copper Feeder Cable Multiplier	K	Terrain effects
Fiber Multiplier	L	Terrain effects
B Segment distance	M	Cable lengths

E. LOOP MODULE

1. Overview

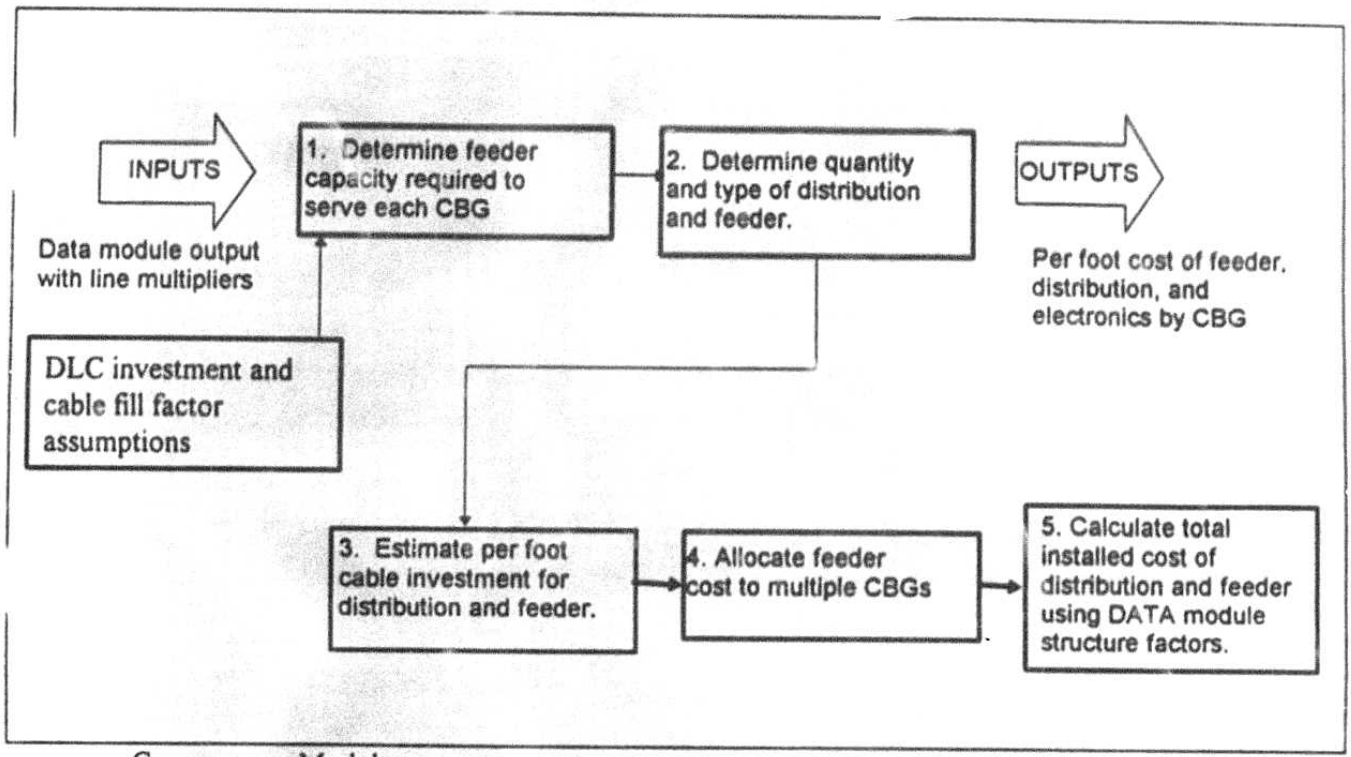
The Loop Module is the third of the four BCM modules. It produces the total loop facilities' investment estimate for the HM. The Loop Module employs a "bottoms-up" network design process that uses forward-looking loop plant engineering and planning practices, the best publicly available information on component prices and installation costs and least-cost cable sizing algorithms to estimate outside plant investment costs appropriate to a TSLRIC analysis. There have been no changes to the BCM algorithms in either the Data Module or the Loop Module.

However, as explained in more detail below, the Model does adjust structure multipliers to achieve more realistic costs for structure investment in low density areas than those generated by the BCM. In addition, recognizing all significant sources of access line demand in the Loop Multiplier Module results in a more realistic modeling of the overall scale of the local exchange network used by a multi-service provider than does the BCM (which sizes the network to accommodate only demand for primary residence lines).

As illustrated in Figure 1, this Module is positioned between the Data Module and the Convergence Module. The Data Module supplies the Loop Module with the calculated lengths for feeder, sub-feeder and distribution for each CBG, plus the structure

factors that represent the costs of conduit, poles and other supporting investment. After the Loop Module sizes the required outside plant facilities and estimates the loop investment costs associated with each CBG, this information is forwarded to the

Figure 4 Loop Module



Convergence Module.

2. Description of Inputs and Assumptions

There are two broad categories of inputs and assumptions in the Loop Module. In the first category are the loop length and structure cost inputs derived from calculations performed in the Data Module. The second category includes parameters that are used in the Loop Module, but may be adjusted by the model user. These include the cable and digital loop carrier ("DLC") equipment fill factors, DLC investments per access line and vendor discounts for copper cable, fiber cable and DLC electronics.

a) Inputs derived from the Data Module

The following outputs from the Data Module are used as inputs by the Loop Module:

"B," "A," and Distribution Distance -- These are the feeder, sub-feeder and distribution lengths calculated for each CBG.

Distribution Cable Multiplier, Feeder Cable Multiplier and Fiber Multiplier -- These are the cable multipliers reflecting aerial/underground plant mixes and CBG-specific demographic and terrain cost factors.

B Segment Distance -- These data express the main feeder distance ("B") for each CBG in terms of its incremental distance from the CBG served by that feeder that is the next closest to the wire center (the "segment" length). The formula used to develop B segment length first matches the CBG with all others served by the same wire center and are within the same quadrant (i.e., on the same main feeder route). It then calculates the B segment length for each CBG by subtracting from its total B length the next highest total B length, which is associated with the next CBG moving inward toward the wire center. Segmentation of the main feeder in this way is necessary for the Loop Module to simulate the tapering requirements for cable facilities along the feeder route (i.e., to size the feeder segments closest to the central office switch to carry the capacity of CBGs locates further out along the feeder route).

b) User Specified Inputs

Because the Loop Module simulates the "bottoms up" development of a network, it requires numerous inputs specifying the type and purchase price for local network components (e.g., copper and fiber cable or electronics), plus certain network parameters (e.g., plant utilization or "fill" levels). While the actual prices paid for these components and their network characteristics may vary from carrier to carrier, HAI has developed a set of standard input values, based on public data sources and the informed judgments of its engineers and other industry experts. In those cases where reliable public data were not available or a range of possible values was indicated, we have chosen values that are likely to be conservative, in the sense that they will produce cost estimates that are likely to be higher than those from a strict least-cost, forward-looking view of outside plant costs. The standard input values applied to the Loop Module are detailed below.

c) Distribution Plant

Network Interface Device ("NID") -- The BCM does not include a NID in its calculations. The Hatfield Model adds this investment in the Convergence Module as discussed below.

Drop Wire -- The BCM also does not compute a subscriber drop investment. This is added in the Hatfield Model's Convergence Module and is discussed in the corresponding section below.

Terminal/splice -- The terminal and associated splice connect the subscriber drop to the distribution cable. The BCM does not include this investment. The Hatfield Model adds these values in the Convergence Module, as described later in this document.

Serving Area Interface ("SAI") -- This is the interface between the feeder cable and each distribution cable. It consists of a cabinet, including suitable physical mounting and a

simple passive cross connect in the case of copper feeder, or an optical multiplexer and cross connects in the case of optical feeder. BCM does not include this investment, but it is added by the Hatfield Model, as is discussed in the Convergence Module section below

Mix of aerial and underground plant for distribution -- Distribution cables typically fan out from the feeder network at one or more cross-connect points and run down individual streets within a defined area. Distribution plant may be aerial (carried on telephone poles) or placed underground (either simply buried in a trench or placed in conduit). We have used the same mix of aerial and underground distribution plant as is used in the BCM (see Table 14 below). These values presumably reflect the engineering expertise of the participating LECs: NYNEX, US West and Sprint.

Table 14 Distribution Plant, UG/Aerial Mix

Density Zone	UG %	Aerial %
1	90	10
2	80	20
3	70	30
4	65	35
5	60	40
6	50	50

Unit Costs for Distribution Cable-- HAI has not altered the unit cost values provided by the Joint Sponsors for the BCM. As shown in Table 15, the Loop Model selects from unit (per foot) costs for 11 discrete sizes of copper distribution cable, ranging from 50 to 3600 wire pairs. These costs are based upon information provided by cable vendors. All copper cable is 24 gauge. Aerial cable costs represent non-armored cable, with both aluminum and plastic jacketing. Buried cable costs are for armored, single jacket filled cable.[22]

[22] CC Docket 80-286, Joint Sponsors, December 1, 1995 filing, at IV-5.

Table 15 **Distribution Cable Unit Costs**

	Cost ($ per foot)	
Cable Size	Underground	Aerial
3600	22.20	21.90
3000	18.80	18.50
2400	14.30	14.10
1800	12.44	12.24
1200	10.68	10.00
900	7.82	7.51
600	7.13	7.05
400	4.56	4.62
200	2.36	2.33
100	1.26	1.27
50	0.68	0.57

Fill Factors for Distribution Cable -- The Loop Module also accepts user inputs regarding the level of plant utilization or "fill" for distribution and feeder cable facilities. A cable fill factor represents the ratio of working lines (measured in terms of voice grade equivalent channels or copper wire pairs) to installed line capacity. Cable fills are always less than 1.0 in practice, with some spare cable facilities required to accommodate line administration, defective pairs and cable "breakage" effects. [23] It is also appropriate for cable fill factors to allow for some additional spare capacity for future growth, to the extent that the service provider's overall costs are reduced by installing this "extra" plant in advance of demand, due to economies in installation (e.g., trenching) and the discrete sizing of cables.

However, the cable fills in current LEC networks are likely to understate plant utilization relative to efficient, forward-looking provisioning practices for narrowband telephony. This is because embedded fills may reflect loop plant installed to pursue existing competitive and/or non-regulated services (e.g., Centrex) and/or new market opportunities (e.g., broadband services or enhanced services). The distribution cable fill factors selected by the BCM's Joint Sponsors, which range from 0.25 to 0.45 in the three lowest density zones, appear to reflect precisely these types of strategic plant deployments and therefore have been revised upward by HAI (see Table 16 below).

[23] "Breakage" refers to wire pairs that become unusable in cable segments due to the splicing of different cable sizes along a tapered cable route.

Table 16 Cable Fill Factors

Density Zone	Feeder	Distribution
1	0.65	0.50
2	0.75	0.55
3	0.80	0.60
4	0.80	0.65
5	0.80	0.70
6	0.80	0.75

d) Feeder Plant

Feeder cables extend from the wire center to one or more points where they are cross-connected to the distribution network.[24] Depending on required feeder capacity, distance or economics may dictate that feeder be provisioned using various sizes of copper cabling, or "DLC" systems. The Loop Module assumes that a CBG will be served with fiber-fed DLC equipment whenever the total loop length (including distribution) exceeds 12,000 feet. For shorter loop lengths, baseband copper feeder is assumed.

Use of a 12,000 foot loop distance threshold for copper vs. fiber feeder deployment -- The Joint Sponsors of the BCM implemented the 12,000 foot copper/fiber breakpoint so that it is effectively "locked" and unalterable by users. This 12,000 foot breakpoint assumption appears to be supported by other input cost assumptions of the BCM.

Fill Factors for Feeder Cable -- Similar to the fill factors for distribution cable (see above), these factors represent the ratio of working lines to installed lines. HAI has used the values that were developed by the BCM Joint Sponsors without adjustment (see Table 16, above).

Unit Costs for Feeder Cable -- HAI has not altered the unit cost values provided by the Joint Sponsors for the BCM. As shown in Table 17, the Loop Model selects from unit (per foot) costs for 11 discrete sizes of copper feeder cable, ranging from 100 to 4200 wire pairs. These costs rely upon information provided by cable vendors. All copper cable is 24 gauge. Aerial cable costs represent non-armored cable, with both aluminum and plastic jacketing. Buried cable costs are for armored, single jacket filled cable.

[24] Under the Bellcore Standard Serving Area Concept ("SAC") planning guidelines used by many LECs, the points of connection between feeder and distribution are referred to as Serving Area Interfaces ("SAIs").

Table 17 Copper Feeder Cable Unit Costs

Cable Size	Cost ($ per foot) Underground	Aerial
4200	25.70	25.40
3600	22.20	21.90
3000	18.80	18.50
2400	14.30	14.10
1800	12.44	12.24
1200	10.68	10.00
900	7.82	7.51
600	7.13	7.05
400	4.56	4.62
200	2.36	2.33
100	1.26	1.27

Nine sizes of fiber feeder cable may be used, ranging from 12 to 144 strand cable. The unit costs for each size are shown in Table 18, which assume the same armoring and jacketing as for copper feeder cable.[25]

Table 18 Fiber Feeder Cable Unit Costs

Cable Size	Cost ($ per foot) Underground	Aerial
144	5.56	5.24
96	3.80	3.53
72	2.84	2.65
60	2.41	2.23
48	1.98	1.84
36	1.60	1.46
24	1.18	1.05
18	0.98	0.85
12	0.79	0.66

DLC Equipment Costs per Access Line -- The Loop Module employs two types of DLC equipment for loop runs over 12,000 feet. The first is designated "SLC" (after the AT&T trademark) and the second is designated "AFC" (for the name of its manufacturer, Advanced Fiber Communications). The Loop Module selects AFC technology for use in the lowest density zone, where the feeder runs are the longest, and SLC systems for use in all other density zones.

[25] CC Docket 80-286, Joint Sponsors, December 1, 1995 filing, at IV-5.

The investments associated with DLC equipment are developed using several inputs (see Table 19), for which HAI has developed standard values. The Loop Module specifies a per-line investment cost for each of the two DLC equipment types and requires a separate discount factor for each type. The default values used in the BCM for the list price per-line investments for SLC and AFC are $500 and $550, respectively, with assumed discounts off of list of 10%. These values overstate significantly the investments for DLC equipment because of the much higher discounts that are typically available to LECs for such network equipment. The corresponding HAI assumptions are list price of $250 and $500 per line, with discounts of 40% and 25%. We have carried forward the Joint Sponsors' use of 0.80 fill factors for both types of DLC equipment. The rationale for the selection of these values follows:

Table 19 DLC Inputs

User Input	HAI Values
Fill Factor for AFC Electronics	.80
Fill Factor for SLC Electronics	.80
SLC Cost per Access Line	$250
AFC Cost per Access Line	$500
SLC Electronics Discount %	40%
AFC Electronics Discount %	25%

For point comparisons with known prices indicate that the list price and discount factor for SLC equipment have been set at levels that produce a realistic estimate of the per-line SLC prices actually paid by LECs. An RBOC engineer responsible for the procurement and acceptance testing of TR-303-compatible DLC equipment has for example, informed HAI that his company pays approximately $135 per line for this equipment from AT&T. Using HAI's list price and discount assumptions for SLC produce a $150 investment per line. Dividing by the 0.8 fill factor yields a total investment per working line of $187.50. This total per-line cost includes both material investment and engineering and installation costs. No attempt is made here to separate these costs because they are capitalized along with the equipment investment.

The AFC input assumptions have also been revised to produce a realistic estimate of the prices actually confronting LECs. The AFC input assumptions of $500 per line at a 25% discount and 0.8 fill factor yield a net effective investment per line of $468.75. Calculations based on published equipment configurations and prices show that these estimates are reasonable.[26] HAI estimates a typical undiscounted price per line of about $400. If one assumes a conservative typical discount of 15%, the per-line investment is

[26] Advanced Fiber Communications.

$320. The net effective investment of $468.75 thus allows for $148.75 (38% of the equipment investment) per line for engineering and installation. This assumption is consistent with that for the higher density DLC equipment described above. As before, no attempt is made to separate installation and engineering costs because both are capitalized along with the equipment investment.

The Loop Module's sizing of DLC equipment is consistent with TSLRIC principles (see Appendix 1), because it results in sufficient capacity in the network to serve the specified total demand level. Because DLC investments can be increased incrementally, the module does not need to allow for equipped but unused DLC subscriber interfaces. Consequently, the standard DLC equipment fill values of 0.80 for both SLC and AFC technology are reasonable and the total investments per working line of $187.50 for SLC and $468.75 for AFC accommodate properly the equipment investment as well the associated engineering and installation.

Mix of aerial and underground plant for feeder -- Like distribution facilities, feeder may be installed as aerial or underground plant. We have used the mix of aerial and underground feeder plant developed by the Joint Sponsors of the BCM (see Table 20 below). The same mix applies to both copper and fiber feeder.

Table 20 **Copper and Fiber Feeder Plant, UG/Aerial Mix**

Density Zone	UG %	Aerial %
1	60	40
2	65	35
3	70	30
4	80	20
5	90	10
6	100	0

3. Explanation of Key Algorithms

The Loop Module's algorithms perform several main tasks:

- Selecting copper vs. fiber-fed DLC feeder technology to serve each CBG, based on the 12,000 foot copper/fiber loop feeder breakpoint.
- Sizing main feeder segments to accommodate the cumulative capacity requirements along the route.
- Determining the type and quantity of feeder facilities and distribution cables to meet each CBG's capacity requirements.
- Applying unit investment costs and structure factors to the appropriately-sized cables and DLC equipment to cost out the total loop plant.

Each of these steps is explained below:

Feeder Technology Section Based on 12,000 Foot Decision Rule -- If the total loop distance to the CBG (including feeder, sub-feeder and the averaged distribution length) exceeds 12,000 feet, fiber-fed DLC systems are selected, otherwise copper feeder cables are used. In those cases where DLC systems are chosen, the SLC equipment is selected unless the CBG is classified as Density Zone 1, in which case the AFC equipment is used.

Sizing Main Feeder Segments to Reflect Cumulative Capacity Requirements Along the Route ("Tapering") -- After the choice of copper or fiber feeder technology has been determined for each CBG, the Loop Module must size each main feeder segment to have sufficient capacity to meet the traffic demand of CBGs farther out along the main feeder segment. A key feature of the Loop Module is its ability to reflect the provision of a hybrid combination of fiber and copper facilities along a feeder route, as may occur when multiple CBGs are served by a common route. The module does this by assigning a "Segment Type 2" and "Segment Type 3" to CBGs whose main feeder segments contain multiple technologies. A CBG will have a "Segment Type 2" if another CBG further out along the main feeder route employs a single main feeder technology different from its own. It will have "Segment Type 3" if CBGs further out along the feeder route employed two feeder technologies different from its own.

For example, as illustrated below in Table 21, if the first CBG in a sequence of 3 CBGs. CBG 1 is served by a copper main feeder segment and if CBGs 2 and 3 are served by SLC, then the Segment Type 2 for CBG 1 would be SLC. In this case, CBGs 2 and 3 would not have a Segment Type 2. If in the above example, CBG 3 was served by AFC, then CBG 1 would have a third Segment Type -- AFC. Furthermore, CBG 2 would have a Segment Type 2 of AFC and CBG 3 would have only a Segment Type 1 -- AFC.

Table 21 Main Feeder Segment Types for CBGs in the Same Quadrant

Office	Quadrant	Block Group Seqnc. #	Segment Type 1	Segment Type 2	Segment Type 3
ABCDSTMA	1	1	Copper	SLC	--
ABCDSTMA	1	2	SLC	--	--
ABCDSTMA	1	3	SLC	--	--
ABCDSTMA	2	1	Copper	SLC	AFC
ABCDSTMA	2	2	SLC	AFC	--
ABCDSTMA	2	3	AFC	--	--

The BCM then assigns to each CBG an aggregate number of households for each main feeder technology, again for the purpose of calculating the capacity requirements of each main feeder segment. For example, as illustrated below in Table 22, the number of households "on copper" for the first CBG in a sequence of three CBGs that are all served by copper would be the total number of households in the three CBGs. The number of

households on copper for the second CBG would be equal to its households plus those in the third CBG.

Returning to our first example where CBG 1, CBG 2 and CBG 3 were served by copper, SLC and AFC respectively, the households on copper for the first CBG would equal the number of households in CBG 1, the households on SLC for CBG 1 would equal the number of households in CBG 2 and the households on AFC for CBG 1 would equal the number of households in CBG 3.

Table 22 Main Feeder Segment Types and Household Count for CBGs in the Same Quadrant

Segment Type 1	Households in the CBG	Segment Type 2	Segment Type 3	HH on Copper	HH on SLC	HH on AFC
Copper	250	--	--	400	--	--
Copper	100	--	--	150	--	--
Copper	50	--	--	50	--	--
Copper	300	SLC	AFC	300	150	100
SLC	150	AFC	--	--	150	100
AFC	100	--	--	--	--	100

Determining the type and quantity of feeder facilities and distribution cables to meet each CBG's capacity requirements -- Once the household totals for each main feeder technology have been calculated, the Loop Module uses this information to calculate the number and size of copper feeder pairs required by each CBG and the number and size of SLC and AFC fibers as well. In the case of CBGs served by copper main feeder, it divides the number of households on copper by the feeder fill factor appropriate to the CBG's household density.

For example, a CBG with 6,000 households on copper and a household density of 1,000 households per square mile would, applying the Loop Module's default fill factors, have a feeder fill factor of 0.8 and thus require 7,500 copper feeder pairs. In the case of copper plant, the Loop Module then translates the capacity requirements for each CBG into the number of maximum size cables that would be employed (4200 pair for copper feeder) and the minimum cable size necessary to carry any remaining fraction of total capacity.

Sub-feeder and distribution cables are selected using the same method, placing the minimum quantity and size of cables out of the available discrete cable types to accommodate demand. However, sub-feeder and distribution facilities are required to carry only the traffic of their associated CBGs. Therefore, their capacity requirements are calculated on the basis of the number of households in each particular CBG as opposed to the total households served by that CBG's main feeder segment.

Applying unit investment costs and structure factors to calculate total loop plant investment costs -- After the Loop Module has determined the number and size of all loop components in the network, it calculates the total loop investment costs. The Loop Module costs out the network sheet by matching the calculated copper and fiber cable sizes with per foot plant costs for copper feeder, copper distribution and fiber. The investment costs for other plant types are calculated using the same basic method. Because main feeder segments typically serve multiple CBGs along the feeder route, formulas assign the feeder segment costs to each associated CBG and then to each household using the "Segment Type" and "Household Count" variable described above.

After these investments have been determined, structure cost factors (i.e., the Distribution Cable Multiplier, Feeder Cable Multiplier and Fiber Multiplier) are applied. As explained earlier, different structure factors apply to each combination of plant type (Aerial or Underground), Density Zone and terrain type.

For example, the cable structure percentage for a CBG that was served by cable feeder but which had a Segment Type 2 of SLC and a Segment Type 3 of AFC — meaning that other CBGs further out along the main feeder route are served by SLC and AFC feeder — would be 80%, while the SLC Structure percentage and AFC Structure percentage would be 10% each. The copper factor for that CBG would then be weighted by 80% and the fiber factor would be weighted by 20%. These weighted factors are multiplied by the corresponding copper and fiber feeder investments and the results are summed. The structure factors for distribution cable are similarly weighted and applied to develop the total investment costs for distribution including structure.

4. Description of Model Outputs and Connection to Next Module

The Loop Module produces total investment costs by CBG for distribution cable, associated structure, feeder cable and electronics and a total of all these loop investment costs. The Loop Module then feeds this Total Loop Cost, plus Loop Cost per Household, Household Density Range and average Total Loop Length for each CBG to the Convergence Module, which combines them with switching, signaling and transmission investments.

F. WIRE CENTER INVESTMENT MODULE

1. Overview

This Module produces network investments at the wire center, interoffice transport, signaling and operator systems levels in the following categories:

Switching and wire center investment -- This category includes investment in local and tandem switches, along with associated investments in wire center facilities, including buildings, land and power systems and distributing frames.

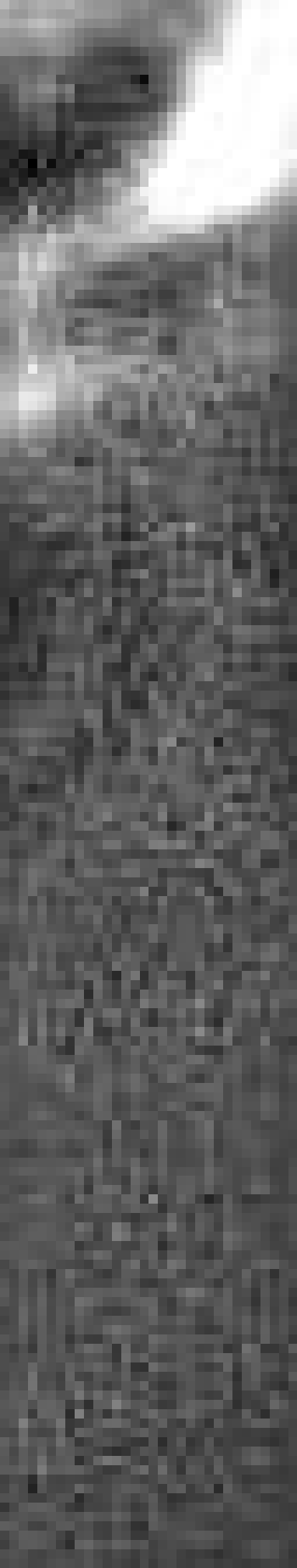
Signaling network investment -- This includes investment in Signal Transfer Points, Service Control Points ("SCPs") and signaling links.

Transport investment -- This category consists of investment in transmission systems supporting local interoffice (tandem and direct) trunking, intraLATA toll facilities (tandem and direct) and access facilities (tandem and direct). The model also separately calculates investment in operator trunks.

Operator Systems Investment -- This includes investments in operator systems positions.

The Wire Center Investment Module, as shown in Figure 1, contributes wire center-related investments to the Convergence Module, which in turn combines these with loop-related investments for application to the Expense Module.

The Wire Center Investment Module adds several network components to the modeling process that are omitted from the BCM. The BCM estimates only end office switching investment and does not address complete wire center investments that would include tandem switching, transport, signaling and operator services investments. Furthermore, the BCM estimates monthly costs by multiplying loop and switching investment per line by a single constant and does not allow the user to vary capital or expense factors to reflect the values pertaining to a specific company or study area.



busy hour call attempts ("BHCA") per residential subscriber and 3.5 BHCA per business line, each with an average holding time of 150 seconds. Other inputs, which also may be changed by the user, specify the fraction of interoffice traffic, the fraction of traffic that flows to operator services, the local fraction of overall traffic, as well as the breakdowns of direct-routed and tandem-routed local, intraLATA toll and access traffic. The default values for these parameters are as follows:

Interoffice fraction of total traffic	0.65
Local fraction of total traffic	0.75[28]
Operator services fraction of total traffic	0.02
Tandem-routed fraction of local interoffice traffic	0.40
Tandem routed fraction of intraLATA toll traffic	0.20
Tandem-routed fraction of access traffic	0.20

These values were determined from conversations with AT&T and MCI representatives, as well as from publicly-available studies of usage produced by LECs.

3. Explanation of Key Algorithms

The following sections describe the key algorithms used to generate investments associated with switching, wire centers, interoffice transport, signaling and operator systems functions.

a) Switching investment calculations

The Wire Center Module computes investment per line for end office and operator tandem switching, by separately developing the wire center investments required for each switch in the modeled network.

The Module assigns at least one end office switch to each wire center. It sizes switches in the wire center by adding up all the lines in the CBG's served by the wire center and then compares this line total to the maximum allowable switch line size. This parameter is user-adjustable, but set at 100,000 lines with a fill factor of 0.80, yielding a maximum effective switch line size of 80,000. The model will equip the wire center with a single switch if the number of switched access lines served by the wire center is no greater than 80,000, using the default assumptions. In general, a switch may serve any line count between zero and 80,000. Thus, if a wire center serves 90,000 lines, the model will compute the investment required for two 45,000 line switches[29]. The wire center module also compares the BHCA produced by the mix of lines served by each switch with a user-

[28] The fraction of local traffic is determined by Dial Equipment Minutes ("DEM") statistics reported by each carrier to the FCC; the typical value of this fraction is approximately 0.75.

[29] If multiple switches are required in the wire center, they are sized equally to allow growth on both switches.

adjustable processor capacity (set at 1,000,000 BHCA) to determine whether the switch is line-limited or processor limited.

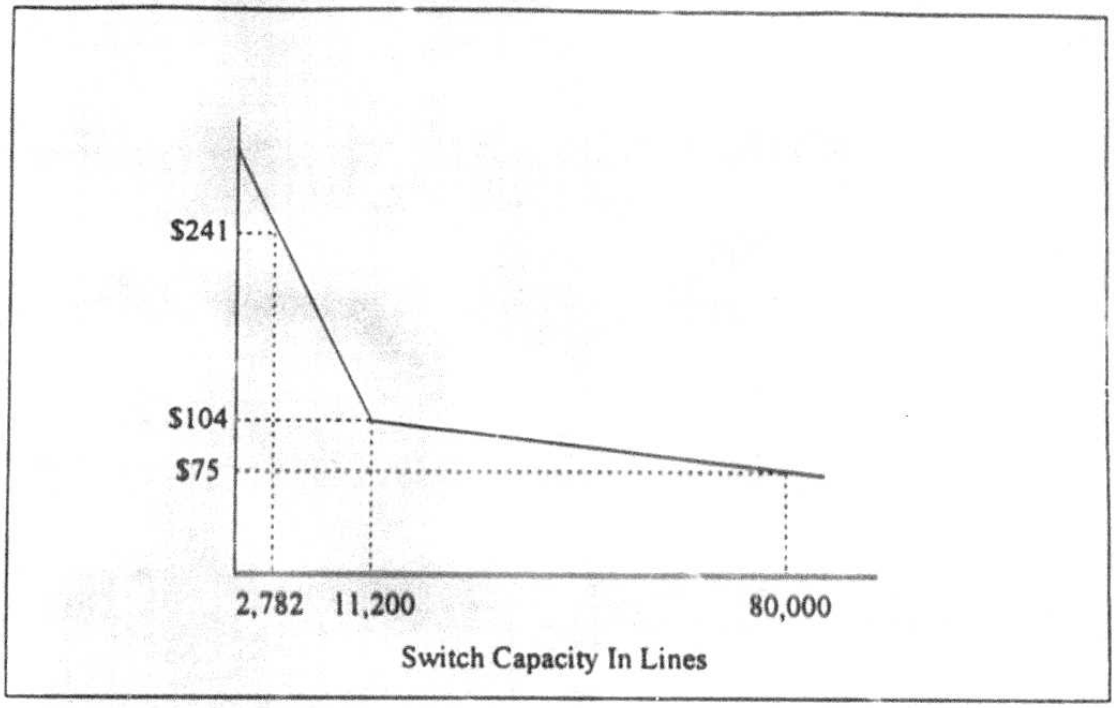
End office switches may exhaust their capacity by running out of processor capacity, exceeding port limits, or by exceeding traffic (switching matrix) capacity. Typically, they are limited by processor capacity or by line port capacity. While processor capacity requirements are typically stated in terms of the effective number of BHCA that a processor configuration may handle, the processor is also affected by use of rates custom calling features, the need for processing SS7 messages and other processing tasks. Including both a processor limit and a port limit allows the model to consider the overall switch capacity in practical terms. The model's specific default values were set according to the engineering judgment of the Hatfield Model developers and are based on practical values for current end office switches.

Once the model determines the end-office switch line size, it obtains the investment per line from an investment function that relates per-line switching investment to switch line size. The data to define this function were obtained from a publicly-available study of the central office equipment market published annually by McGraw-Hill.[30] This study shows the average investment per new line of digital switching paid by BOCs to be $104 and by independents to be $241 in 1994. The model combined these figures with average BOC (11,200) and independent (2,761) switch line sizes derived from data published in the FCC's Statistics of Communications Common Carriers, along with information on much larger switches obtained from switch manufacturers to develop the complete investment function.[31] Figure 6 shows the resulting investment curve.

30 Northern Business Information study: *U.S. Central Office Equipment Market -- 1994*, McGraw-Hill.

31 Federal Communications Commission, *Statistics of Communications Common Carriers*, Tables 2.3 and 2.4 1994 edition.

Figure 6 Switching Investment Function



The wire center module uses existing tandem locations for computing interoffice transmission distances. These tandem locations are obtained from the LERG data. Tandem and operator tandem switching investment are computed according to assumptions contained in an AT&T report on interexchange capacity expansion costs filed at the FCC.[32] The investment calculation assigns a price to switch "common equipment," switching matrix and control structure and adds to these amounts the investment in trunk interfaces. The numbers of trunks and their related investments, are derived from the transport calculations described below.

Wire center investments required to support end office and tandem switches are based on HAI assumptions about the size of room required to house a switch (for end offices, this size varies according to the line sizes of the switch), construction costs, lot sizes, land acquisition costs and investment in power systems and distributing frames.

The model computes required wire center investments separately for each switch. For wire centers housing multiple end office switches, the wire center investment calculation adds switch rooms to house each additional switch. Tandem wire center

32 AT&T, "An updated study of AT&T's Competitors' Capacity to Absorb Rapid Demand Growth", filed with the FCC in CC Docket No. 79-252, April 24,1995 ("AT&T Capacity Cost Study")

calculations assume the maximum switch room size, power and distributing frame investments. Tandem switches also include a separate land investment.

b) Transport calculations

Transport calculations are driven primarily by the traffic and routing assumptions listed above, along with the total mix of access lines served by each switch. The model determines the overall breakdown of traffic per subscriber according to the traffic assumptions and computes the numbers of trunks required to carry the traffic. These calculations are based on the fractions of total traffic assumed for interoffice, local direct routing, local tandem routing, intraLATA direct and tandem routing and access direct and tandem routing. These traffic fractions are applied to the total traffic generated in each wire center according to the mix of business and residential lines and appropriate per-line offer load assumptions. These trunk loading assumptions include a maximum trunk utilization of 27.5 CCS, which is user-adjustable.[33]

Tandem transport distances are computed from existing wire center and tandem locations. The model conservatively assumes rectilinear routing. It does this by adding the north-south and east-west distances between end offices and their homed tandem locations to produce the overall facilities distance. This is superior to calculating the airline distance between the endpoints because facilities routes usually follow streets and highways that typically are oriented in north-south and east-west directions. The resulting distances are somewhat greater than they would be if calculated as airline mileage.

Direct-route distances for local, intraLATA and access traffic are set as user-definable inputs. It is not possible to compute these values from wire center locations, because actual exchange area definitions determine which routes will carry local versus intraLATA toll traffic. Because interexchange carrier points of presence ("POPs") are not available for entry into the model to compute access route distances, the default distances for direct transport are 10 miles for local direct routes, 25 miles for intraLATA direct routes and 25 miles for access facilities. These route distance assumptions are developed from conversations with AT&T and MCI representatives who have studied publicly-available LEC documentation.

Transport investment is based on a user-defined per-channel-mile figure. The default value is $30 per DS0 channel mile. This is computed based on a 15-mile transmission facility consisting of a 144-fiber cable installed in conduit at a total cost per foot of $14. Terminal equipment is assumed to have a 4 DS-3 capacity with an installed investment of $52,000 per end. This fiber and installation investment is based on BCM fiber assumptions. The terminal equipment investment derives from pricing and installation assumptions for a fully-equipped AT&T (now Lucent Technologies) DDM-

[33] The 27.5 CCS value is based on an AT&T estimate of maximum per trunk usage one can expect on typical size trunk group. See, AT&T Capacity Cost Study.

1000 180 Mbps optical multiplexer. The specific assumptions are that the multiplexer investment is $42,000 and installation is $10,000.

c) Signaling network calculations

The Wire Center Module uses existing switch and STP locations for computing signaling link distances. The model uses the STP pair locations in each LATA, as reported in the LERG and computes the total link distance to each switch as the sum of the distances from each wire center to each STP location. Routing is again rectilinear as described for transport calculations. The investment per link-mile is assumed to be the same $30 per DS0 channel-mile figure discussed earlier. The latter value is appropriate because signaling links typically share transmission routes carrying common and dedicated transport trunks.

The model always equips at least two signaling links per switch. It also computes SS7 message traffic according to the call traffic assumptions described earlier. User inputs define the number of ISUP ("ISDN User Part") messages, along with the message length, required for interoffice call control. Default values are six messages per interoffice call attempt with twenty-five octets per message. These values are those assumed in the AT&T capacity cost study.[34]

Other inputs define the number and length of TCAP ("Transaction Capabilities Applications Part") messages required for database lookups, along with the percentage of calls requiring TCAP message generation. Default values, also obtained from the AT&T capacity cost study, are two messages per transaction, at 100 octets per message and 10% of all traffic requiring TCAP generation. If the message traffic from a given switch exceeds the link capacity (also user-adjustable and set at 56 kbps and 40% occupancy as default values), the model will add links to carry the computed message load. The total link distance calculation includes all the links required by a given switch.

Signal transfer point capacity is expressed as the total number of signaling links each STP in a pair can terminate (default value is 720 with an 80% fill factor). The investment per pair is set at $5 million and may also be changed by the user. These default values derive from the AT&T capacity cost study.

Service control point ("SCP") investment is expressed in terms of dollars of investment per transaction per second. The transaction calculation is based on the fraction of calls requiring TCAP message generation and the total TCAP message rate in each LATA considered by the model is used to determine the total SCP investment. The

[34] See, AT&T Capacity Cost Study.

default SCP investment is $20,000 per transaction per second and is based on a number reported in the AT&T capacity cost study.[35]

d) Operator systems calculations

Operator tandem and trunk requirements are based on the operator traffic fraction inserted by the user into the model and on the overall maximum trunk value of 27.5 CCS discussed above. Operator tandem investment assumptions are the same as for local tandems. The Model assumes that subscriber databases required for operator services are included in overall operator tandem common equipment investment of $1 million. This is the same value assumed for local tandem common equipment that was derived from the AT&T capital cost study.

Operator positions are assumed to be based on current personal computer terminal technology. The default operator position investment is $3500 to purchase a high quality personal computer terminal with a suitable interface to the operator tandem. The total investment is based on the engineering judgment of the Hatfield Model developers. The Model includes assumptions for maximum operator "occupancy" expressed in CCS. The default assumption is that each position can be in service 27.5/36 of each hour. This value is related to the maximum trunk occupancy assumption described above. Also because many operator services traditionally handled by human operators may now be served by announcement sets and voice response systems, the model includes a "human intervention" factor that reflects the fraction of calls that require human operator assistance. The default factor is 10, which is believed to be a conservative estimate. (A factor of ten implies that one out of ten calls will require human intervention).

G. CONVERGENCE MODULE

The Convergence Module combines the loop investment produced by the BCM with the wire center, switching, transport, signaling and operator systems investments calculated by the wire center investment module. The output of the Convergence Module is the complete collection of network investments for use by the expense module.

There are, as noted elsewhere in this document, several loop components missing from the BCM, most notably serving area interfaces (SAIs), the interface between feeder and distribution cables, terminals or pedestals and associated distribution cable splices, the interfaces between distribution cables and subscriber drops, along with associated splices required to tap into the distribution cables, the drops extending to each customer's premises and the network interface device ("NID") that marks the boundary between the customer's inside wiring and the network.

[35] See, AT&T Capacity Cost Study.

The convergence module adds these components to the loop investment produced by the BCM. The NID, drop and terminal/splice values are added for each line directly. The values used, which are user-adjustable, are: $30 for the NID, obtained from discussions with subject-matter experts; $40 for the drop, taken from the NET Incremental Cost Study;[36] and $35 for the terminal and splice, based on the engineering judgment of the model developers.

The SAI investments depend on whether copper or fiber feeder cable is used the particular CBG. If the feeder cable is copper, the SAI is a simple cross-connect arrangement, whose investment is obtained from a table listing SAI installed prices by total lines served. For optical feeder cable, the SAI consists of an optical multiplexer with an associated cross-connect, cabinet, powering arrangement and prepared site.

The BCM "structure" investment for distribution and feeder facilities are of particular interest. The BCM developers use the term "structure" to refer to investment in poles, conduit and the necessary installation labor to place aerial and underground cable.

Structure investment may be shared among utilities, typically local exchange carriers, cable television operators and electric companies. To the extent that more than one utility may place cables in common trenches, conduits, or on common poles, it is appropriate to share the costs of these structural items among them. The Convergence Module thus separately reports the structure investment to the Expense Module, where the user may select the fraction of distribution and feeder structure investment to be assigned to telephone service.

H. EXPENSE MODULE

1. Overview

The Expense Module provides per-line and per-month cost summaries for each Basic Network Function ("BNF") by calculating capital carrying cost, operating expenses, network operation expense and attributable support expenses for each of eleven unbundled network functions, plus public telephone terminal equipment.

The Expense Module uses the output of the Convergence Module to capitalize the investments needed for each BNF, reflecting TSLRIC principles as presented in Appendix 1. The module requires investment, revenue and expense data reported by individual LECs in their annual ARMIS reports. The Module's other required inputs are data on individual carrier (debt-equity ratio, cost of debt and cost of equity) capital structure parameters.

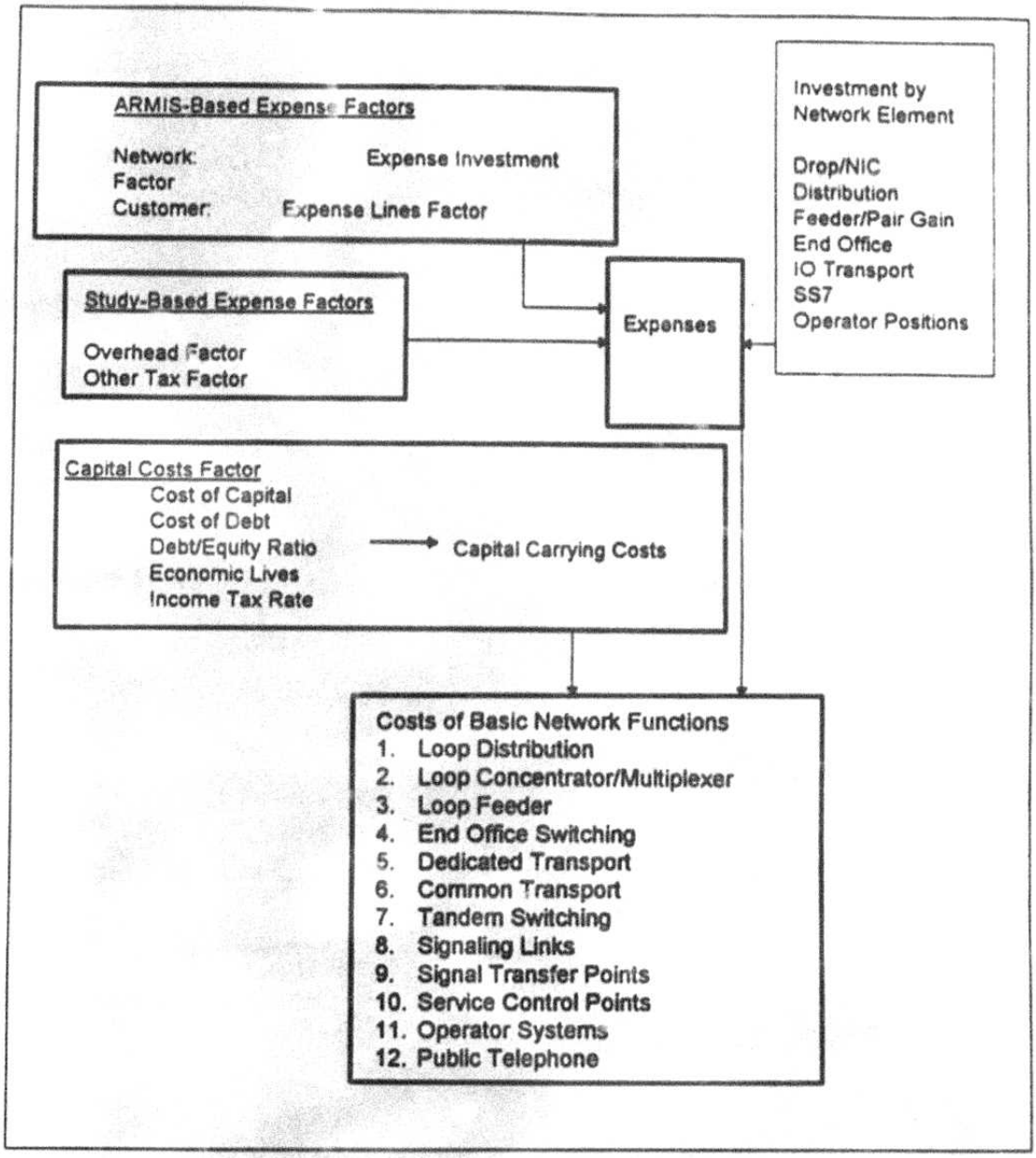
[36] 1993 New Hampshire Incremental Cost Study

The Expense Module uses these data to calculate operational expense ratios using the comparable plant specific and network operations expenses and investments, along with the LEC's leverage, revenues, tax rate, cost of debt and equity and economic service lives for various types of network equipment[37].

This section will describe the inputs and assumptions of the Expense Module, including Convergence Module inputs, ARMIS data, capital structure parameters and expense factors built into the module. It will also explain the key algorithms used to determine capital costs and operating expenses.

[37] Note that the Expense Module does not use these historical data on embedded expenses as direct elements of LEC TSLRIC. Rather, it develops efficient, forward-looking values for these expenses that are extrapolated from relationships that may have existed historically.

Figure 7 Expense Module



2. Description of Inputs and Assumptions

a) Convergence Module Outputs

The primary input to the Expense Module is the Convergence Module output which outlines the investments required to "build up" a virtual telephone network for the area or carrier under study. These investments include the hardware, software, engineering and installation of the network elements. They are sorted by household

density range. The Convergence Module produces investments in the following categories:

- Distribution (aerial and underground copper cable and associated structure)
- Feeder (aerial and underground fiber and copper feeder cable and associated structure)
- Switching (end office and local tandem switching investment)
- Wire center (end office wire center and local tandem wire center investment)
- Operator services (operator tandem switching, tandem wire center, trunks and operator positions)
- Transport (common and dedicated)
- STPs
- SCPs
- Signaling links
- Drop investment per line
- NID investment per line
- Terminal and splice investment

In addition, the Convergence Module output sheet summarizes line and trunk counts, tandem routing fractions, DEM units and utilization ratios. Line counts include residential, business, special access and public access lines.

b) ARMIS Data

The ARMIS data used in the Expense Module includes investment and operating expenses and revenues for a given carrier and state. This data is used to derive the total investments, expenses and revenues for each BNF. The investment, expense and revenue categories are listed below and described in detail in the Key Algorithms section.

(1) plant specific operations

- general support - land, buildings, vehicles, furniture, office equipment and other equipment
- wire center switching - analog and digital electronic switching, operator systems
- wire center transmission - circuit equipment, transmission
- information origination and termination - station apparatus, customer premises wiring, public telephone, terminal equipment

- cable and wire facilities - poles, cable, conduit

(2) plant non-specific operations

- provisioning
- power
- plant operations
- network administration
- testing
- engineering
- access expenses

In addition, ARMIS data includes local network service revenues by the following categories:

- Access Revenue - end user, switched and special access revenue
- Basic Service Revenue
- Long Distance Network Revenue

c) Capital Structure Parameters

The Expense Module requires carrier-specific capital structure parameters to calculate the carrier's Weighted Average Cost of Capital ("WACC"), which is a discount factor used to calculate capitalized costs of BNFs. Parameters required are debt-equity ratio, cost of debt and cost of equity.

d) Factors Built Into the Expense Module

The module uses a number of ratios and factors to calculate monthly per-line loop and annual switching costs. These factors are explained in detail in the Key Algorithms section.

COST OF CAPITAL INPUTS

Debt %	0.6182	
Cost of Debt	0.0746	0.046
Equity %	0.3818	
Cost of Equity	0.1125	0.043
Overall Cost of Capital		**8.91%**
Weighted Equity Percent	0.4822	

variable support factor		0.010	
other taxes factor		0.050	
operating state and local income tax factor		0.010	
uncollectibles factor		0.021	*calculated input*
billing/bill inquiry per line per month	$	1.22	
directory listing per line per month	$	0.15	
service order processing fraction of 6623		0.346	
alternative CO switching factor		0.027	
EO traffic-sensitive fraction		0.700	
per-line monthly LNP cost	$	0.25	
tandem-routed toll fraction		0.200	
tandem-routed local fraction		0.400	*from Convergence Module*
interoffice local fraction		0.650	
State	Massachusetts		
Company	NEW ENGLAND TEL CO - MA		
DS-0/DS-1 crossover		9.00	
DS-1/DS-3 crossover		9.00	
Distribution structure fraction assigned to telephone		1.00	
Feeder structure fraction assigned to telephone		1.00	

Local call completion fraction		0.70
Total local calls attempted		11,203,803,000
Total intraLATA calls completed		1,274,618,000
Total interLATA calls completed		
intrastate		273,655,000
interstate		1,505,021,000
Total local calls completed		7,842,662,100
Total completed local interoffice calls		2,204,785,738

model specific data

ECONOMIC LIFE & TAX INPUTS

tax rate	0.40
economic life	years
loop distribution	24
loop feeder	28
loop concentrator	10
end office switching	20
wire center	
tandem switching	15
operator investment	13
transport facilities	17
STP	14
SCP	14
links	14
public telephones	9
general support	18

3. Explanation of Key Algorithms

The Expense Module is driven primarily by the calculated annual capital cost and operating expenses of the carrier(s) under study. All costs are summarized for each of the eleven BNFs. The algorithms used to determine these amounts are described below.

a) Capital Costs

The model calculates annual capital cost for each BNF based on the net plant investment, the expected depreciable life, the return on the net asset and the grossed-up income tax on the return of the net asset. The model assumes straight-line depreciation and assumes that cash flows are in arrears (i.e. return from assets, tax gross-ups and depreciation are applied at the end of each year).

The discount rate ("WACC") used in capitalizing annual capital costs is based on the capital structure and the cost of debt and equity for the given entity.

The model calculates the investments required for each BNF. The model then determines the appropriate life of these investments based on the economic life spans for each of the basic network elements.

Once the element's life span has been determined, annual depreciation amounts are calculated (total investment ÷ depreciable life in years) and summarized over the discounting period to determine the annual accumulated depreciation (annual depreciation x equipment life service years). The annual accumulated depreciation is then subtracted from the total investment to determine the Annual Net Asset Amounts.

The return amount from the assets are then calculated by multiplying the Annual Net Asset by the return component of the cost of capital ("WACC"). Then the annual tax gross-up is determined by applying the nominal tax rate to the return amount [((nominal tax rate of 40%) * percent equity * return amount)/(1- nominal tax rate)].

The Total Annual Return is the sum of the annual accumulated depreciation, return on assets and tax gross-up amounts. The Total Annual Return is then discounted over the expected life period to determine the Net Present Value ("NPV") of the Annual Returns.

The last step in the algorithm is to calculate the Levelized Capital Cost and spread this cost over the different density ranges based on the proportion of the total investment associated with that particular density range. This done by dividing the NPV by the Present Value Factor ("PVF"). The PVF equals the sum of the discount factors for each of the years of the equipment's depreciable life. Because the depreciable life varies by network equipment category, it may easily be changed by the user.

The capital cost as a percent of the investment is computed by dividing the Levelized Capital Cost by the total investment.

b) Operating Expenses - General

Operating expenses are derived based on historic expense factors calculated from balance sheet and expense account information reported in each carrier's ARMIS report. These expense factors are applied to the investments developed by the Hatfield Model to arrive at associated operating expense amounts.

For expenses driven by their associated capital investments, these capital investments are used as the basis for expense factor calculations. Other expenses, such as network operations, vary directly with the number of lines provisioned rather than with capital investment. Thus, expense for these elements are driven by the number of access lines supported. Uncollectables, sales and marketing factors are calculated as percentages of revenues.

The Model includes two types of operating expenses: network-related and non-network-related. The Expense Module relies on historical data from ARMIS reports filed by the company under study to develop factors that can be applied to the investment outputs of the model to estimate network-related and non-network-related operating expenses in the Hatfield Model.

c) Network-Related Expenses and Expense Factors

The Expense Module assigns network-related expenses to each of eleven Basic Network Functions ("BNFs") plus public telephone terminal equipment. The module also assigns the cost of capital, expenses, total investment and attributable support expense to each BNF.

These operating expenses are added to the annual capital cost derived from the NPV to determine the total Expense Summary for each BNF. Each network-related expense is described below:

Network Support -- This category includes the expenses associated with motor vehicles, aircraft, special purpose vehicles, garage and other work equipment.

Central Office Switching -- This includes end office and tandem switching as well as equipment expenses.

Central Office Transmission -- This includes circuit equipment expenses applied to transport investment.

Cable and Wire -- This category includes expenses associated with poles, aerial cable, underground/buried cable and conduit systems. This expense varies directly with capital investment.

Network Operations -- The Network Operations category includes power, provisioning, engineering and network administration expenses.

d) Non-Network-Related Operating Expenses and Expense Factors

The Expense Module assigns non-network related expenses to each density range based on its proportion to total expenses in each category. Each of these expenses is described below:

Variable support -- Historical variable support expenses for LECs are substantially higher than those of similar service industries operating in more competitive environments. Based on studies of these variable support expenses in competitive industries such as the interexchange industry, the model applies a conservative ten percent (10%) variable support factor. Furthermore, it was verified that the support expenses captured by this factor are genuinely variable with operational scale. A regression analysis

was undertaken utilizing 1995 ARMIS 43-02 Holding Company data. This analysis regressed Corporate Operations expense (the dependent variable) as a function of revenues (a surrogate for total costs) less Corporate Operations expense (the independent variable). This analysis demonstrated that fixed support expenses were not statistically significantly different from zero; and that a fixed percentage amount for variable support expense was appropriate.

General Support Equipment -- The Investment Module calculates investments for furniture, office equipment and general purpose computers. The Model uses actual 1994 company investments to determine the ratio of investments in the above categories to total investment. The ratio is then multiplied by the total local service investment estimated by the Model and treats the result as an additional investment needed to provide local service. The recurring costs of these items are then calculated in the same way as recurring costs for investment categories estimated directly by the investment module of the Model.

e) Revenues

The only clearly used revenue figure is that for calculating the uncollectables factor. This factor is a ratio of uncollectable expense to adjusted net revenue.

4. Outputs of the Expense Module

Results of the Expense Module are displayed in a series of reports which depict detailed investments and expenses for each BNF for each density range, summarized investments and expenses for all BNFs, unit costs by BNF and total annual and monthly network costs. These are presented in Section IV, below.

Basic Network Function (BNF) outputs

The Hatfield Model produces cost estimates for eleven Basic Network Functions ("BNFs"), plus public telephone terminal equipment. These BNFs represent an unbundling of the local exchange network into discrete functions, which can be used singly or in combination to furnish services. The BNFs are described below and their inter-relationships are illustrated in Figure 7.

1. *Loop Distribution* -- The individual communications channel to the customer premises originating from the DLC remote terminal or SAI and terminating at the first point of termination at the customer's premises. In the Hatfield Model, this BNF also includes the investments in NID, drop and terminal/splice.

2. *Loop Concentrator/Multiplexer* -- The DLC remote terminal at which individual subscriber traffic is multiplexed/de-multiplexed and connected to loop distribution for

termination at the customer's premise. The Hatfield Model DLC equipment investment in this BNF.

3. *Loop Feeder* -- The facilities on which subscriber traffic is carried from the line side of the wire center switch to the Loop Concentration facility. The BNF includes copper feeder and fiber feeder cable, plus associated structure investments (poles, conduits, etc.)

4. *End Office Switching* -- The facility which provides the functionality required to connect appropriate lines or trunks to and from a desired communications path at the first point of switching. This functionality include such things as testing, translation and routing. As modeled in the Hatfield Model, this BNF includes the end office switching machine investments and associated wire center costs, including distributing frames, power and land and building investments.

5. *Operator Systems* -- The systems that provide for the processing and recording of special toll calls, public telephone toll calls and other types of calls requiring operator assistance, as well as Directory Assistance. The investments identified in the Hatfield Model for the Operator Systems BNF include the operator positions (e.g., personal computers), operator tandem investments (including required subscriber databases), wire center and operator trunks.

6. *Dedicated Transport* -- The full period, bandwidth specific interoffice transmission path between LEC wire centers or between LEC wire centers and an IXC Point of Presence ("POP"). It provides the ability to send individual and/or multiplexed switched and special services traffic between wire centers. Interoffice transport investments that provide dedicated transport are assigned to this BNF.

7. *Common Transport* -- A switched trunk between two switching systems on which traffic is commingled to include traffic to and from multiple IXCs, as well as LEC traffic. These trunks may originate at an end office and terminate at a tandem switch, or at another end office. Interoffice transport investments that provide common transport are assigned to this BNF.

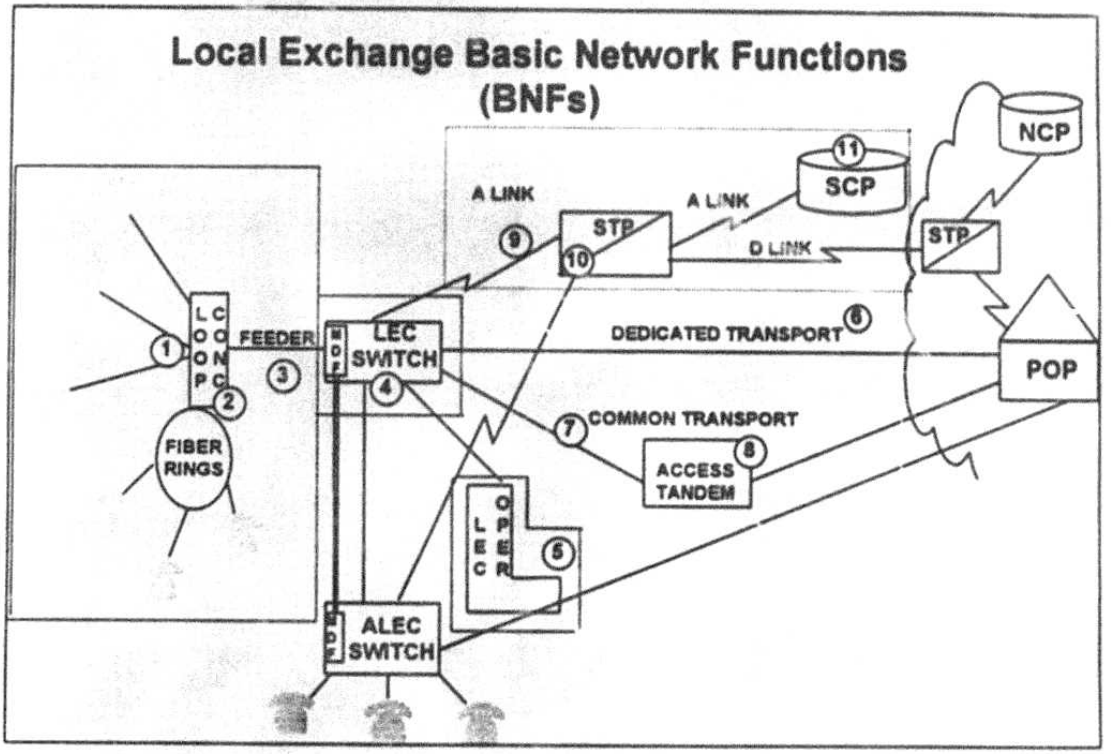
8. *Tandem Switching* -- The facility that provides the function of connecting trunks to trunks for the purpose of completing inter-switch calls. Similar types of investments as are included in the End Office Switching BNF are also reflected in the Tandem Switching BNF.

9. *Signaling Links* -- Transmission facilities in a signaling network which carry all out-of-band signaling traffic between the switches and STPs, between STPs and between STPs and SCPs. Signaling link investment is developed by the Hatfield Model and assigned to this BNF.

10. *Signal Transfer Point ("STP")* -- This facility provides the function of routing TCAP and ISUP messages between network nodes (end offices, tandems and SCPs). The Model estimates STP investment and assigns it to this BNF.

11. *Service Control Point ("SCP")* -- The node in the signaling network to which requests for service handling information (e.g., translations for local number portability), are directed and processed. The SCP contains service logic and customer specific information required to process individual requests. Estimated SCP investment is assigned to this BNF.

Figure 8 Local Exchange Basic Network Functions



IV. ILLUSTRATIVE MODEL RESULTS

A. OVERVIEW

This section displays illustrative outputs of the HM. The main outputs exhibited are the TSLRICs of the eleven BNFs, the unit volumes of these BNFs and the monthly TSLRIC per unit of these BNFs. These outputs are further disaggregated across density zones for the loop BNFs.

The unit TSLRIC of the BNFs are then processed to develop an estimate of the unit TSLRIC of the collection of these BNFs that comprise switched local service and carrier access service.

There are several reasons why a TSLRIC for switched local service plus carrier access is not the simple sum of the complete collection of BNFs. This is due largely to the fact that the LEC's network TSLRICs also include the costs of providing narrowband special access loops and the interoffice transport associated with these dedicated loops. Thus, while all of the local switching TSLRIC, all of the common transport and tandem switching TSLRICs and all of the signaling and operator systems TSLRICs are properly attributable to switched service; only a portion of the loop and dedicated transport TSLRICs are so attributable.

Outputs from the Line Multiplier Module and the Wire Center Module are used to determine the portions of loop costs and dedicated transport costs that are attributable to nonswitched local services. The remaining costs that are associated with switched service TSLRIC are then displayed.

B. ILLUSTRATIVE OUTPUT

Table 23 displays illustrative results from the HM for Pacific Bell-California.

Table 23 Unit Cost by Network Element -- Pacific Bell - California

Loop Elements	0 - 5 hh/mi2	5 - 200 hh/mi	200 -650 hh/mi	650 - 850 hh/mi2	850 - 2550 hh/mi2	> 2550 hh/mi2	Totals
Loop Distribution							
Annual Cost	$42,069,613	$170,326,755	$117,488,134	$41,617,759	$365,365,318	$545,637,407	$1,282,504,986
Units	109,113	1,288,296	1,451,816	584,063	5,367,413	8,634,088	17,434,788
Unit Cost/month	$32.13	$11.02	$6.74	$5.94	$5.67	$5.27	$6.13
Loop Concentration							
Annual Cost	$11,970,421	$63,182,353	$54,420,087	$18,399,339	$120,085,198	$103,851,184	$371,908,583
Units	109,113	1,288,296	1,451,816	584,063	5,367,413	8,634,088	17,434,788
Unit Cost/month	$9.14	$4.09	$3.12	$2.63	$1.86	$1.00	$1.78
Loop Feeder							
Annual Cost	$2,085,245	$5,030,115	$5,331,057	$2,615,247	$47,277,814	$94,858,571	$157,198,050
Units	109,113	1,288,296	1,451,816	584,063	5,367,413	8,634,088	17,434,788
Unit Cost/month	$1.59	$0.33	$0.31	$0.37	$0.73	$0.92	$0.75
Total Loop							
Annual Cost	$56,125,280	$238,539,223	$177,239,278	$62,632,345	$532,728,330	$744,347,163	$1,811,611,619
Units	109,113	1,288,296	1,451,816	584,063	5,367,413	8,634,088	17,434,788
Unit Cost/month	$42.86	$15.43	$10.17	$8.94	$8.27	$7.18	$8.66
Total Lines	109,113	1,288,296	1,451,816	584,063	5,367,413	8,634,088	17,434,788

Table 23 (continued) Unit Cost by Network Element -- Pacific Bell - California

	Annual Cost	Units		Unit Cost	
End office switching	$655,911,223				
1. Port	$196,773,367	14,947,269	Switched lines	$1.10	per line/month
2. Usage	$459,137,856	238,082,755,975	Minutes	$0.00193	per minute
Signaling network	$44,560,625				
1. Links	$810,305		Link	$43.68	per link per month
2. STP	$33,216,716	178,488,411,302	TCAP+ISUP messages	$0.00019	per message
3. SCP	$10,533,603	12,052,424,400	TCAP messages	$0.00087	per message
Transport network					
1. Dedicated	$761,329,168	3,559,399	Trunks	$427.79	per DS-1 equivalent/month
Switched	$229,267,234	1,071,880	Trunks	$0.00177	per minute
Special	$532,061,934	2,487,519	Trunks	10,044	Trunk-minutes/month
2. Common	$64,108,935	55,739,855,180	Minutes	$0.00173	per minute per leg (orig or term)
3. Tandem switch	$109,328,741	30,459,521,088	Minutes	$0.00359	per minute
Operator systems	$15,296,019				
Total	$3,290,378,539				
Total cost per switched line	$14.89	per line/month			

C. DISCUSSION

Examination of these numeric results suggests that the derivation of the cost of tandem switching should be reviewed. This is because the reported unit cost of tandem switching exceeds the unit cost of end office switching. If revisions to the model are necessary to address properly this issue, this modeling will be updated.

In addition, one of the strengths of this model is its flexible ability to accept newly available data and/or modeling logic flows. As a result, as additional data become available, or new modeling demands are identified, HAI will enhance this tool.

Appendix 1

PRINCIPLES TO GUIDE STUDIES OF LOCAL EXCHANGE TOTAL SERVICE LONG-RUN INCREMENTAL COST (TSLRIC)

1. **TSLRIC measures only the long-run costs of providing the element in question.**
   Costs must be measured over a sufficiently long period of time so that any element-specific costs become variable.

2. **TSLRIC measures only the *forward-looking* costs of providing the element in question.**
   TSLRIC must measure forward-looking costs, not historic, embedded or book costs. Economic costs are forward-looking and are based on the most efficient generally available technology.

3. **TSLRIC is based on the costs that an *efficient, cost-minimizing* competitor would incur -- i.e., the costs of assets that are optimally configured, sized and operated.**
   Proper measures of TSLRIC must exclude the costs of inefficient design or operations, because those costs cannot be recovered in competitive markets and would weaken incentives for LECs to operate efficiently.

4. **TSLRIC includes only the *additional* costs of providing the particular network element(s), holding constant the supplier's output of all other items.**
   TSLRIC includes only those added costs that are attributable to production of the network element(s). Costs that are properly attributable to *other* outputs of the LEC, or costs that are fixed and shared with other network elements so that they would be incurred even if the network element(s) were not supplied, are excluded from TSLRIC.

5. **TSLRIC is based on the entire demand of *all* uses and users of a network element.**
   TSLRIC includes the economic costs of serving the total demand of all uses and users of a network element, including the demand of the supplying LEC.

6. **TSLRIC should reflect any significant geographic cost differences.**
   TSLRIC estimates should reflect any significant geographic differences in cost, to the extent that these cost differences are reliably measurable.

Definitions of the above cost terms are supplied in Appendix 2 to this document.

Appendix 2

GLOSSARY OF COST TERMS

Forward-looking costs: Costs that an efficient, prospective entrant would consider in investing in an industry, because the entry, exit and expansion decisions of such firms are based on expected costs and revenues.

Joint costs: Costs that derive from the joint production of products in fixed proportions.

Common costs: Costs which must be incurred if any of the firm's products are produced, but are unattributable to individual products on any cost-causative basis. It is a useful convention to limit the term to overhead costs.

Shared costs: Fixed costs that are incurred in the production of a specific subset, or various subgroupings, of all the products of a firm.

Stand-alone costs: Economic costs of producing a product or group of products in isolation from all other products (i.e., on a stand-alone basis).

Embedded costs: Costs of operations that are recorded on the firm's current accounting books.

Fully distributed costs ("FDC"): Cost per unit of output of a product, including directly attributable costs and an allocation of common or shared costs. The allocation of common costs among products is not based on cost causation and is inherently arbitrary.

Overheads: Costs incurred that are involved only indirectly in the production of outputs. Some overhead costs may be fixed and unattributable. Others may be vary with the firm's scale and thus be causatively attributable to the production of particular products.

Contribution: Amounts that, on a forward-looking basis, represent the difference between revenues and TSLRIC for a particular product or group of products. These amounts are intended to "contribute" to the recovery of the firm's common costs and shared-fixed costs.

Residual costs: Costs that represent the difference between the firm's current revenue requirement and the sum of the TSLRICs of all of its regulated services.

Update of the:

HATFIELD MODEL

Version 2.2
Release 1

Prepared for:

AT&T CORP.

and

MCI TELECOMMUNICATIONS CORPORATION

by

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I. OVERVIEW

This document describes the several updates that Hatfield Associates, Inc. ("HAI") have performed to the "Hatfield Model Version 2.2, Release 1" ("HM"), since it was first released on May 16, 1996.[1] In addition, this document provides illustrative numeric upper bound estimates for 49 state jurisdictions of the Total Service Long Run Incremental Costs ("TSLRICs") for each of the eleven Basic Network Functions ("BNFs") used to provide narrowband local telephone services.[2] Finally, this document places these numeric results in context to other TSLRIC results produced by earlier versions of the HM, as well as in context to "TSLRIC" estimates that may have been proffered in other regulatory proceedings.[3] In particular, these other estimates may not be commensurable with the TSLRIC estimates of the eleven BNFs measured here. Often, these other estimates have attempted to cost more limited (or more expansive) definitions of the local network, or only subsets of the services (e.g., residential "universal service") that the local network is used to provide.

II. MODIFICATIONS TO THE MODEL

A. LOGIC MODIFICATIONS

As indicated in the May 16th documentation, the HM has now been updated to better reflect the scalability of tandem switch processors, the possible location of tandem switches in the same buildings as end office switches, and the use of partitioned switches to provide both end office and tandem switching functions from the same machine.[4] With these updates, the model's estimates for tandem switching TSLRICs display a more normal relationship to the cost of end office switching.[5]

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1 As discussed in the documentation that accompanied the May 16, 1996 release, the HM is a flexible tool for estimating the economic costs of providing telephone service to business and residence users throughout the United State constructed by HAI for AT&T Corp. ("AT&T") and MCI Telecommunications Corporation ("MCI").

2 These eleven BNFs exhaust all of the network functions used to provide narrowband local service, intraLATA toll service, and carrier access service. For a fuller description of these BNFs and the services that they can be used to provide, see the May 16th documentation.

3 HAI is unaware of any other TSLRIC model of unbundled local network elements that has been submitted in CC Docket No. 96-98.

4 Many tandem switches are not stand-alone switching machines, but are partitioned end office switches.

5 Because this modification reduced the cost of tandem switching, the model's computations of optimal use levels and costs of common and dedicated transport were affected as well.

In addition to updating the tandem switching logic, HAI, has used new information to adjust the assumed length of dedicated transport legs for local, toll and access service to reflect more accurately the typical distances of these circuits. Adjustments have also been performed to capture more accurately the portion of interoffice local traffic that is direct-trunked and the portion of local traffic that is intraoffice.

B. DATA MODIFICATIONS

An update to the input data used in these model runs was to substitute 1995 ARMIS data (filed April 1, 1996) for the older 1994 ARMIS data that were used in the May 16th release. These new data generally affect the model's calculations because of the very substantial growth in customer access lines that the local exchange carriers ("LECs") reported in 1995.

III. ILLUSTRATIVE MODEL RESULTS

A. DESCRIPTION

The tables accompanying this document display numeric TSLRIC estimates for all eleven BNFs that comprise the LECs' local networks. In addition to these TSLRIC estimates, the number of units of each BNF produced is displayed along with the BNF's TSLRIC on a per-unit basis. In addition, the model computes the per unit TSLRIC for the bundle of all eleven switched network BNFs.

These numeric results are displayed for the major LEC in each of 48 state jurisdictions plus the District of Columbia. The major LEC is typically the Bell Operating Company in all states except Connecticut, in which it is Southern New England Telephone. Results are not available for Alaska or Hawaii.

The cost modeling for each LEC/Jurisdiction was performed in exactly the same fashion. The only source of difference in each LEC/Jurisdiction's TSLRIC calculations was the differences in the values of the demographic, geological, network structure and customer demand input data that were used to characterize each LEC/Jurisdiction. As discussed further below, although running the model identically across all states may limit its ability to capture any idiosyncratic characteristics of each LEC/Jurisdiction, it provides a benchmark for comparing how the uncustomized model operates on a national basis.

B. DISCUSSION

These numeric outputs from the HM accord well with other analyses of network element TSLRICs. As with any model of this type, however, there are likely to be additional useful refinements to the model or its inputs.

In particular, adjustments to the model's initial estimates for the TSLRICs of end office switching in Nebraska, signaling links in Delaware, and common transport in the District of Columbia may be appropriate. The extreme values for these variables in these jurisdictions may be the result of data errors in the location or number of certain switches, or in demand. Similarly, it is known that consistency problems may exist with certain data describing U S West's network and demands. This is due to the substantial number of exchanges that U S West has divested over the past several years. As a result, it is unclear whether the data used to characterize several U S West jurisdictions are used consistently.[6] HAI will investigate all of these issues and any others that may arise, and make adjustments, where found appropriate.

IV. CONTEXT WITH OTHER MODELING

As indicated earlier, the numeric results presented with this document provide a nationwide illustration of conservative upper bound TSLRIC values generated by the HM using publicly available demographic, geological, network and demand data -- without any customization to reflect unique characteristics of particular LEC/Jurisdictions. To the extent these data are insufficient to describe all of the rich differences between different states, more detailed, state-specific restrictions should be incorporated into the HM. Because the LECs predominantly are in control of such data, their cooperation in making these data publicly available will be extremely important to help improve modeling accuracy. Because these "national" TSLRIC estimates provide only upper bound figures for actual TSLRIC levels, the incorporation of better state/LEC-specific data should cause these estimates to converge downward towards even more accurate values.

A. WITH OTHER "HATFIELD" MODELS

As described in the May 16th documentation of the HM, Version 2.2 is based on different data from earlier versions, and may model different characteristics of local exchange networks and services. In particular, Version 2.2 uses newer 1995 data on customer demand for lines and minutes and on LEC network topologies. This version also incorporates updated methodologies for computing "structure" costs associated with the placement of outside plant. But most importantly, different versions of the HM were designed to accomplish different tasks.[7] Most typically, previous versions of the HM were designed to be used in state or federal regulatory proceedings to identify the costs of

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[6] Because the exchanges that U S West divested were generally their highest cost exchanges, lack of appropriate adjustment for these sales may bias upward the estimates of certain U S West TSLRICs. In addition, these divestitures will cause the network structure assumed by the model (e.g., location of served CBGs, switches, etc.) to change, thus changing other costs estimates.

[7] See, page 1, footnote 1 of the May 16 document for an outline of the differences between the various previous versions of the HM.

"basic local service" or to size subsidies that may be required to ensure "universal" service. As such, these versions appropriately may not have modeled the costs of providing intraLATA toll service, carrier access service, or operator services. The network architectures and requirements for switching, transport and signaling for such services may differ as well. These purposes are in contrast to the purpose of Version 2.2, which is to cost the eleven unbundled local network elements. For these reasons, it may be difficult (and potentially fruitless) to compare numerical results generated by this model with those generated by previous versions.

B. WITH OTHER "TSLRIC" RESULTS

Similarly, it may be difficult to concord these results with "TSLRIC" results from other parties' models proffered in regulatory proceedings. This may be because the parties submitting such results may have different definitions for TSLRIC. In particular, the HM assumes TSLRICs that are characterized by:

- The new construction of a high quality network that incorporates copper distribution loops with copper or fiber feeder, digital switching, SS7 signaling, and all fiber interoffice transport. Other available estimates of LEC costs may assume a lower quality network, (e.g., loaded copper loops, mix of analog and digital switching, MF signaling, copper/coax/microwave interoffice transport).

- The construction of a network with the capacity to serve all narrowband switched and dedicated (residence and business) local, intraLATA toll and access service demand in the examined region. Some parties' estimates of TSLRIC may cost a network that provides only a subset of these services -- while other parties' estimates may include costs of over-built networks capable of providing video services or long distance services in addition to narrowband local services.

- The HM estimates TSLRICs consistently for the full set of eleven BNFs that comprise the LEC's complete set of unbundled switched network elements. Other models may estimate TSLRIC for only an individual BNF, or for a small group of BNFs. In addition, these other models may not define BNFs in identical fashion to HM definitions (e.g., they may fail to define a BNF to include the normal costs of installation, provisioning, maintenance, and interconnection to adjacent BNFs).[8]

In sum, unless these other estimates of TSLRIC are performed with respect to same definition of BNFs, are costed using the same methodology, and are based on the same model data inputs, the numeric results from this HM should not be expected to accord precisely with other figures existing in regulatory records.

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[8] In addition, confusion may result when a cost estimate is termed to be a "TSLRIC" cost estimate, but in actuality includes only costs that would be included in a LRIC estimate.

V. SUMMARY

The HM develops estimates of economic costs through an engineering model designed to specify the network structure that can provide most efficiently narrowband local telephone services to all customers. As such, it conforms to TSLRIC costing rules and standards. The HM adopts realistic, but conservative, assumptions concerning the factors influencing prospective network costs to ensure that its economic cost estimates are reasonable and reflective of efficient LEC construction planning processes. Because of the conservative nature of its assumptions, the HM estimates establish a reliable upper bound to the true TSLRICs of these LEC network elements.

The Hatfield Model is flexible. It uses public information, but may accept substitute proprietary or company-specific information. Based purely on nationally available public information, it produces TSLRIC results that are very reasonable. But, the incorporation of richer, state-specific data or modeling logic will likely reveal even more economical network architectures to serve customer demand. Because of this, efforts should be made to secure this extra information. As such better data or improved logic become available, HAI will update this model to incorporate these advances.

COST OF NETWORK ELEMENTS

Florida *BELLSOUTH TELECOMM INC - FL*

Loop elements	0 - 5 hh/mi2	5 - 200 hh/mi2	200 - 650 hh/mi2	650 - 850 hh/mi2	850 - 2550 hh/mi2	> 2550 hh/mi2	Totals
Loop Distribution							
Annual Cost	$6,775,543	$69,573,963	$71,901,633	$35,493,143	$233,544,875	$139,804,153	$557,093,310
Unit Cost/month	$39.29	$13.52	$9.05	$7.91	$7.39	$6.69	$7.93
Loop Concentration							
Annual Cost	$1,598,132	$22,093,236	$30,141,507	$15,014,162	$79,443,016	$30,129,796	$178,419,850
Unit Cost/month	$9.27	$4.29	$3.79	$3.35	$2.51	$1.44	$2.54
Loop Feeder							
Annual Cost	$371,138	$2,370,907	$2,433,758	$1,405,871	$19,305,733	$15,593,545	$41,480,952
Unit Cost/month	$2.15	$0.46	$0.31	$0.31	$0.61	$0.75	$0.59
Total Loop							
Annual Cost	$8,744,813	$94,038,106	$104,476,898	$51,913,176	$332,293,625	$185,527,494	$776,994,112
Unit Cost/month	$50.71	$18.26	$13.15	$11.57	$10.51	$8.88	$11.06
Total lines	14,371	428,765	662,269	373,941	2,634,437	1,741,046	5,854,829
Lines served by Digital Loop Carrier	14,370	413,738	556,984	279,301	1,465,700	560,502	3,290,595

	Annual Cost	Units		Unit Cost	
End office switching	$254,184,988				
1. Port	$76,255,497	5,439,537	Switched lines	$1.17	per line/month
2. Usage	$177,929,492	93,536,345,969	Minutes	$0.0019	per minute
Signaling network elements	$31,406,206				
1. Links	$155,600	498	Links	$26.04	per link/month
2. STP	$27,617,885	69,726,028,861	TCAP+ISUP messages	$0.0004	per message
3. SCP	$3,632,722	4,977,664,600	TCAP messages	$0.0007	per message
Transport network elements					
1. Dedicated	$168,967,942	817,179	Trunks	$17.23	per DS-0 equivalent/month
Switched	$83,098,070	401,887	Trunks	$0.0017	per minute
Special	$85,869,872	415,292	Trunks		
2. Common	$11,096,014	6,712,943,744	Minutes	$0.0017	per minute per leg (orig or term)
3. Tandem switch	$7,098,363	5,741,842,366	Minutes	$0.0012	per minute
Operator systems	$8,252,847				
Total	$1,207,049,495				

Total cost of switched network elements $17.11 per line/month

AT&T

295 North Maple Avenue
Basking Ridge, NJ 07920

July 3, 1996

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, NW - Room 222
Washington, DC 20554

RE: Ex Parte Presentation
CC Docket No. 96-98

Dear Mr. Caton:

AT&T and MCI are submitting outputs from the Hatfield Model, Version 2.2, Release 1 with the weighted average cost of capital set to 10%. This figure is derived from an assumption that the LECs' cost of embedded debt is 7.7%, their cost of equity is 11.9%, and their capital structure is split 45%/55% between debt and equity. AT&T and MCI believe that the LECs' actual cost of capital is no higher than 10%. Thus, TSLRIC estimates from the Hatfield Model, Version 2.2 run with a 10% cost of capital may provide more useful upper bound estimates of TSLRICs than the results filed by AT&T with its Reply Comments in this Docket on May 30, 1996 that incorporated costs of capital in the 8.5% to 9.0% range, depending on the jurisdiction.

In addition, to facilitate further analyses of the Hatfield Model's results, AT&T and MCI are submitting electronic copies of the model's Expense Modules for all 49 jurisdictions analyzed in AT&T's Reply Comments. As a further aid, AT&T and MCI are submitting electronic copies of the Commission's already publicly available ARMIS and DEM data that are inputs into the Model for each of these 49 jurisdictions. These submissions are being made at the Commission staff's request.

Two copies of this Notice are being submitted to the Secretary of the FCC in accordance with Section 1.1206(a)(1) of the Commission's rules. Also submitted are copies of the unit cost output sheets, a CD-ROM of the Expense Modules, and a diskette containing the ARMIS and DEM data. Copies of these electronic media are available from ITS.

Sincerely,

Richard N. Clarke

Richard N. Clarke

Attachments

COST OF NETWORK ELEMENTS

Florida *BELLSOUTH TELECOMM INC - FL*

Loop elements	0 - 5 hh/mi2	5 - 200 hh/mi2	200 - 650 hh/mi2	650 - 850 hh/mi2	850 - 2550 hh/mi2	> 2550 hh/mi2	Totals
Loop Distribution							
Annual Cost	$7,143,484	$72,132,753	$73,769,675	$36,332,790	$238,653,967	$142,584,890	$0
Unit Cost/month	$41.42	$14.02	$9.28	$8.10	$7.55	$6.62	$0.00
Loop Concentration							
Annual Cost	$1,659,702	$22,875,874	$31,178,190	$15,521,415	$82,074,689	$31,094,011	$0
Unit Cost/month	$9.62	$4.45	$3.92	$3.46	$2.60	$1.49	$0.00
Loop Feeder							
Annual Cost	$390,001	$2,490,464	$2,567,508	$1,490,589	$20,447,645	$16,581,155	$0
Unit Cost/month	$2.26	$0.48	$0.32	$0.33	$0.65	$0.79	$0.00
Total Loop							
Annual Cost	$9,193,187	$97,499,091	$107,515,373	$53,344,794	$341,176,301	$190,260,055	$0
Unit Cost/month	$53.31	$18.95	$13.53	$11.89	$10.79	$9.11	$0.00
Total lines	14,371	428,765	662,269	373,941	2,634,437	1,741,046	-
Lines served by Digital Loop Carrier	14,370	413,738	556,984	279,301	1,465,700	580,502	-

	Annual Cost	Units		Unit Cost	
End office switching	$266,706,211				
1. Port	$80,011,863	5,439,537	Switched lines	$1.23	per line/month
2. Usage	$186,694,347	93,536,345,969	Minutes	$0.0020	per minute
Signaling network elements	$32,732,637				
1. Links	$162,172	498	Links	$27.14	per link/month
2. STP	$28,784,317	3,465,676,197	TCAP+ISUP messages	$0.0083	per message
3. SCP	$3,786,149	201,149,200	TCAP messages	$0.0188	per message
Transport network elements					
1. Dedicated	$176,157,331	818,105	Trunks	$17.94	per DS-0 equivalent/month
Switched	$86,735,109	402,813	Trunks	$0.0018	per minute
Special	$89,422,222	415,292	Trunks		
2. Common	$11,557,760	6,712,943,744	Minutes	$0.0018	per minute per leg (orig or term)
3. Tandem switch	$7,355,596	5,764,161,131	Minutes	$0.0013	per minute
Operator systems	$8,525,753				
Total	$1,248,765,964				

Total cost of switched network elements $17.71 per line/month

ACSI American Communications Services, Inc.

131 National Business Parkway, Suite 100
Annapolis Junction, Maryland 20701
(301) 617-4200 • FAX (301) 617-4279

March 6, 1996
Via Overnight Delivery

Mr. Joe Baker
Vice President, Sales
BellSouth Corporation
4429 SCB
975 West Peachtree, N.E.
Atlanta, Georgia 30375

Re: ***Co-Carrier Interconnection Agreement(s)***

Dear Mr. Baker:

I am the authorized representative of American Communications Services, Inc. and its operating subsidiaries (collectively, ACSI). ACSI is a telecommunications carrier, which currently provides telecommunications services or constructing networks in ten states, including South Carolina, Kentucky, Alabama, Georgia and Mississippi. Pursuant to Sections 251-252 of the Communications Act of 1934, as amended (Communications Act), as of the date of your receipt of this letter, I am hereby requesting that BellSouth Corporation, on behalf of Southern Bell and South Central Bell, its operating subsidiaries (collectively, BellSouth), immediately commence negotiations intended to result in the execution of a nondiscriminatory agreement of interconnection with ACSI, consistent with the provisions of Sections 251, 252 and 271 of the Communications Act. In addition, ACSI proposes that the parties enter into a second agreement enabling ACSI to resell your company's local exchange services at rates which are discounted to reflect avoided costs.

The newly enacted Telecommunications Act of 1996 creates several new sections of the Communications Act which obligate incumbent local exchange carriers (ILECs) to negotiate in good faith the terms and conditions upon which they will interconnect their local networks with those of other interested telecommunications carriers. 47 U.S.C. § 251(c)(1). We expect negotiations to begin promptly. ACSI is entitled to seek arbitration of open issues by the South Carolina, Kentucky, Alabama, Georgia, Alabama and Mississippi PSCs, beginning 135 days from the date hereof. Thus, it is necessary to quickly agree on a schedule of meetings which will give both sides a fair opportunity to attempt to reach agreement on all issues well in advance of that date.

New Section 251 imposes a general duty on ILECs to provide interconnection (A) for the transmission and routing of telephone exchange service and exchange access, (B) at any technically feasible point within the ILEC's network, (C) that is at least equal in quality to that

provided by the ILEC to itself, its affiliates or any other party to which the ILEC provides interconnection, and (D) at rates, terms and conditions which are just, reasonable and nondiscriminatory. 47 U.S.C. § 251(c)(2). ILECs also have a duty to provide nondiscriminatory access to network elements on an unbundled basis at any technically feasible point, 47 U.S.C. § 251(c)(3), to offer its local telephone services for resale at wholesale rates, 47 U.S.C. § 251(c)(4), and to facilitate collocation of equipment necessary for interconnection or access to unbundled network elements. 47 U.S.C. § 251(c)(6).

ILECs (and other local exchange carriers) also have a legal duty (1) not to prohibit or unduly restrict resale of their services, (2) to provide number portability, (3) to provide dialing parity and nondiscriminatory access to telephone numbers, operator services, directory assistance and directory listings, (4) to afford access to the poles, ducts, conduit and rights-of-way, and (5) to establish reciprocal compensation arrangements for the transport and termination of telecommunications. 47 U.S.C. § 251(b).

In addition, Bell Operating Companies (BOCs) must offer terms and conditions for interconnection which satisfy a prescribed 14-point checklist before they may obtain authority to provide interLATA services within their operating territories. 47 U.S.C. § 271. In addition to the obligations discussed above, BOCs must offer interconnection which includes each of the following:

- local loop transmission from the central office to the customer's premises, unbundled from local switches, or other services;
- local switching, unbundled from transport, local loop transmission, or other services;
- nondiscriminatory access to 911 and E911 services, directory assistance services and operator services;
- white pages directory listings;
- nondiscriminatory assignment of telephone numbers;
- nondiscriminatory access to data bases and associated signaling necessary for call routing or completion; and
- interim number portability through remote call forwarding, direct inward dialing trunks or other comparable arrangements.

47 U.S.C. § 271(c)(2)(B). Specific procedures for the negotiation of interconnection arrangements between ILECs and other telecommunications carries are prescribed in new Section 252 of the Communications Act. 47 U.S.C. § 252.

ACSI has prepared a model co-carrier agreement, which incorporates many of the terms and conditions of interconnection required of ILECs under the newly revised Communications Act, as well as many of those required for BOCs to meet the requirements for in-region provision of interLATA telecommunications services. Please inform me of your company's designated point of contact on this issue and I will forward a copy of our proposed agreement within a week. The ACSI model co-carrier agreement is intended as a baseline for discussion and not as a final agreement in itself. Obviously, this is a new and swiftly evolving area for all concerned. Thus, ACSI specifically reserves the right to request additional or modified arrangements as negotiations proceed.

ACSI is hopeful that the parties can reach a mutually satisfactory agreement on these matters. However, you should be aware that the framework for interconnection is largely mandated by statute, as is the requirement that the terms be just, reasonable and nondiscriminatory, and that ILEC rates for these services be cost-based. If necessary, ACSI fully intends to enforce its rights to obtain interconnection which satisfies both the letter and purposes of the Telecommunications Act of 1996.

Please contact me at 301-617-4215 no later than March 11, 1996, to begin our discussions concerning both the co-carrier and resale agreements. I propose that an initial meeting of our negotiating teams be scheduled for March 22, 1996, at the offices of Kelley Drye & Warren, 1200 Nineteenth Street, NW, Suite 500, in Washington, D.C. We already have assembled a team of technical, financial and legal experts to conduct the negotiations. We look forward to meeting with your representatives to work out the details.

Very truly yours,

Riley M. Murphy
Executive Vice President
and General Counsel

BEM/jdl

cc: Fred Monacelli
Director, Access Customer Sales
350 One Chase Corporate Drive
Birmingham, Alabama 35244

Brad Mutschelknaus
Terry Barnich
Scott Layman
Russell B. Shetterly
L. Craig Dowdy
John Selent
Bob Richard
Mark Herbert

BELLSOUTH

BellSouth Telecommunications, Inc. 404 529-8322
Suite 4429
675 West Peachtree Street
Atlanta, Georgia 30375

Joseph M. Baker
Sales Vice President – Interconnection

March 11, 1996

Ms. Riley M. Murphy
Executive Vice President
and General Counsel
American Communications Services, Inc.
131 National Business Parkway, Suite 100
Annapolis Junction, Maryland 20701

Dear Ms. Murphy:

Thank you for your March 6, 1996, letter requesting negotiations between ACSI and BellSouth regarding interconnection and the resale of local exchange service. BellSouth has been negotiating many of the issues that you describe in your letter with other carriers, and we look forward to similar discussions with ACSI.

In your letter you suggest a possible meeting on March 22, 1996. Some of the members of our BellSouth regional negotiating team have a conflict on that date. If acceptable to ACSI, I would propose an initial conference call to discuss the various issues broadly, and subsequent to that call, schedule a meeting. In this manner, we can be assured that BellSouth will have the appropriate participants. If this is acceptable to ACSI, please have someone on your staff contact Bob Scheye, 404 420-8327, to set up a call.

I look forward to reaching an agreement with ACSI on these issues in the near future.

Sincerely,

J.M. Baker

cc: Fred Monacelli
Scott Schaefer
Bob Scheye

INTERCONNECTION AGREEMENT BETWEEN ACSI AND BELLSOUTH

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INTERCONNECTION AGREEMENT
BETWEEN ACSI AND BELLSOUTH COMMUNICATIONS

Pursuant to this Interconnection Agreement (Agreement), American Communication Services, Inc. on behalf of its local exchange operating subsidiaries identified on Attachment A as it shall be amended from time to time (collectively "ACSI"), and BellSouth Telecommunications, Inc. (BellSouth) (collectively, "the Parties") agree to extend certain interconnection arrangements to one another within each LATA in which they both operate. This Agreement is an integrated package that reflects a balancing of interests critical to the Parties which the Parties believe is not inconsistent with Sections 251, 252 and 271 of the Telecommunications Act of 1996.

I. RECITALS AND PRINCIPLES

WHEREAS, BellSouth is an incumbent local exchange telecommunications company (ILEC) authorized to provide telecommunications services in the states of Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee; and

WHEREAS, ACSI is a competitive local exchange telecommunications company (CLEC) which is authorized or plans to become authorized to provide local telecommunications services in Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, South Carolina and Tennessee; and

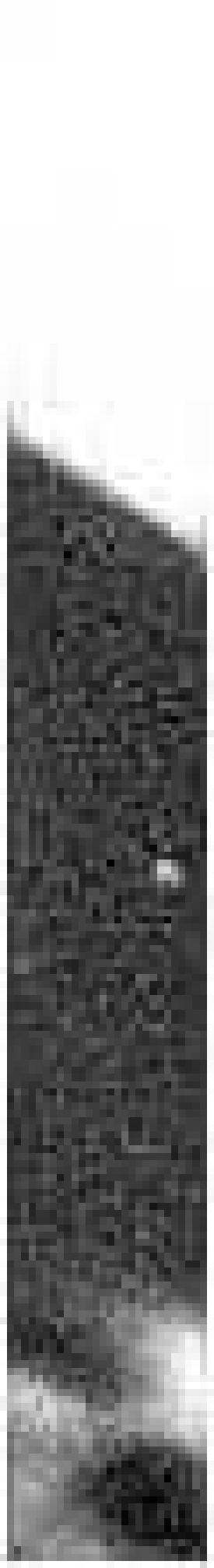
WHEREAS, the interconnection and interoperability of the Parties' respective local networks is required to facilitate the introduction of local exchange service competition and fulfill the objectives of the Telecommunications Act of 1996 (Telecommunications Act); and

WHEREAS, universal connectivity and interoperability between competing telecommunications carriers is necessary for the termination of traffic on each carrier's network; and

WHEREAS, the Parties intend that BellSouth should unbundle certain basic network elements and make them available for purchase by ACSI; and

WHEREAS, the Parties agree that this Agreement shall be filed with the appropriate state commissions in compliance with Section 252 of the Telecommunications Act;

NOW, THEREFORE, in consideration of the mutual provisions contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, ACSI and BellSouth hereby covenant and agree as follows:



A. **General Requirements**

A.1 The Parties hereto mutually understand and agree that the array of network elements is steadily evolving and expanding. The initial set of network elements and attendant services to be made available by BellSouth hereunder is included as Attachment C hereto. Network elements will be provided subject to the rules, terms and conditions expressed in this Article and in Attachment C. It is understood, however, and mutually agreed that either Party may add network elements to the listing contained in Attachment C as the BellSouth network changes or additional network elements are identified. It is especially acknowledged, without limitation, that the list of network elements may be expanded by either Party to include network elements identified in relevant FCC or state commission regulations or orders, or made available by BellSouth to other telecommunications carriers pursuant to other interconnection agreements. The addition or inclusion of additional network elements shall be made in accordance with subsection IV.I hereof.

A.2 Without limitation, BellSouth agrees to provide ACSI access to all network elements identified in Attachment C hereto. Wherever technically feasible, interconnection shall be offered at the line and/or trunk side of each discrete network element. It is agreed that interconnection will be made available by BellSouth to ACSI at any technically feasible point. BellSouth must implement physical and logical interconnection points consistent with generally accepted industry standards.

A.3 Initial pricing of network elements is included in Attachment C hereto, provided the Parties hereby agree that ACSI will petition for state commission arbitration to establish initial pricing of both nonrecurring and recurring charges applicable to the provision of unbundled loops, cross connections, loop channelization, unbundled ports, and associated facilities and services. In addition, the initial pricing may be revised by mutual agreement or at ACSI's election pursuant to Article XXII hereof.

A.4 It is agreed that ACSI may combine network elements purchased hereunder as required to provide any local, toll or access service.

B. **Interconnection with Network Elements**

B.1 Interconnection shall be achieved via collocation arrangements ACSI shall maintain at a BellSouth wire center or other BellSouth network point.

B.2 At ACSI's discretion, each unbundled loop or port element shall be delivered to the ACSI collocation arrangement over an individual 2-wire hand-off, in multiples of 24 over a digital DS-1 hand-off in any

combination or order ACSI may specify, in multiples of 672 over a digital DS-3 hand-off in any combination or order ACSI may specify, or through other technically feasible and economically comparable hand-off arrangements requested by ACSI. Economically comparable as used in this section refers to an economically comparable effect upon ACSI and is not meant to ensure an equivalent revenue stream or contribution level to BellSouth.

B.3 BellSouth will permit ACSI to collocate DLC systems in conjunction with collocation arrangements ACSI maintains at a BellSouth wire center, for the purpose of interconnecting to unbundled loop elements. ACSI will have the option of purchasing BellSouth unbundled transport (at any transmission level) between placed equipment and the ACSI network.

B.4 ACSI shall access BellSouth's unbundled loops via collocation at the BellSouth wire center where those elements exist. Each loop or port shall be delivered to ACSI's collocation by means of a cross connection.

B.5 BellSouth shall provide ACSI access to its unbundled loops at each of BellSouth's Wire Centers. In addition, if ACSI requests one or more loops serviced by Integrated Digital Loop Carrier or Remote Switching technology deployed as a loop concentrator, BellSouth shall, where available, move the requested loop(s) to a spare, existing physical loop. If, however, no spare physical loop is available, BellSouth shall within forty-eight (48) hours of ACSI's request notify ACSI of the lack of available facilities. ACSI may then, at its discretion, make a network element request for BellSouth to provide the unbundled loop through the demultiplexing of the integrated digitized loop(s).

B.6 Where BellSouth utilizes digital loop carrier (DLC) technology to provision the loop element of an unbundled exchange service to an end user customer who subsequently determines to assign the loop element to ACSI and receive Exchange Service from ACSI via such loop, BellSouth shall deliver such loop to ACSI on an unintegrated basis, pursuant to ACSI's chosen hand-off architecture, without a degradation of end user service or feature availability.

B.7 Except as otherwise specified herein, all dedicated transport-based features, functions, service attributes, grades-of-service, install, maintenance, and repair intervals which apply to BellSouth's bundled local exchange service shall apply to unbundled loops.

B.8 Except as otherwise specified herein, all switch-based features, functions, service attributes, grades-of-service, and install, maintenance, and repair intervals which apply to BellSouth's bundled local exchange service shall apply to unbundled ports.

B.9 BellSouth will permit any customer to convert its bundled local service to an unbundled element or service and assign such unbundled element or service to ACSI, with no penalties, rollover, termination or conversion charges to ACSI or the customer, except as specifically provided in Attachment C-2 hereto or pursuant to the terms of a specific customer service agreement (unless superseded by government action).

B.10 BellSouth will permit ACSI to collocate remote switching modules and associated equipment in conjunction with collocation arrangements ACSI maintains at a BellSouth wire center, for the purpose of interconnecting to unbundled loop or link elements.

B.11 When available to any other telecommunications carrier or other customer, BellSouth shall provide ACSI with an appropriate on-line electronic file transfer arrangement by which ACSI may place, verify, and receive confirmation on orders for unbundled elements, and issue and track trouble-ticket and repair requests associated with unbundled elements. In the interim, batch file arrangements specified in BellSouth's current Facilities Based Carrier Operating Guide (FBOG) shall apply. BellSouth shall provide ACSI with the ability to order any defined network element using OBF or other mutually agreed upon ordering/provisioning codes.

B.12 It is expressly agreed that interconnection will be afforded equally regardless of the transmission medium selected by the interconnector, *i.e.*, digital or analog loops, conditioned circuits, ISDN, SONET, wherever present in BellSouth's network, so that networks and applications can evolve unencumbered by the available degree of interconnectivity.

B.13 Wherever technically feasible, it is expressly agreed and understood that BellSouth will provide interconnection on the line side and/or trunk side of each unbundled Network Element. Where interconnection is ordered to the line side of a Network Element, interconnection shall be on a hard-wired (not software driven) basis.

B.14 The Parties shall attempt in good faith to mutually devise and implement a means to extend the unbundled loop sufficient to enable ACSI to use a collocation arrangement at one BellSouth location (*e.g.*, tandem switch) to obtain access to the unbundled loop(s) at another such BellSouth location over BellSouth facilities.

B.15. BellSouth shall develop a process to identify the carrier for each unbundled loop and establish automated intercompany referral and/or call hand-off processes. In addition, BellSouth will not in any way hinder ACSI from deploying modern DLC equipment (TR303) throughout the unbundled loop/transport network.

C.1 ACSI shall place orders for unbundled loops (and other network elements) through completion and submission of the Service Order form specified in the FBOG. The installation time intervals which shall apply thereto are as expressed in subsection IV.D hereafter.

C.2 Order processing for unbundled loops shall be mechanized, in a form substantially similar to that currently used for the ordering of special access services. Automated interfaces shall be provided into a centralized operations support systems database for determining service availability on loops (*e.g.*, ISCON), confirmation of order acceptance and ongoing order status. If made available by BellSouth to any other telecommunications carrier, automated interfaces shall be provided in a centralized operations support systems database for installation scheduling, confirmation of circuit assignments and completion confirmation.

C.3 Particular combinations of elements, hereafter referred to as combinations, identified and described by ACSI can be ordered and provisioned as combinations, and not require the enumeration of each element within that combination in each provisioning order, consistent with OBF or other mutually agreed upon procedures.

C.4 Appropriate ordering/provisioning codes will be established for each identified combination, consistent with OBF or other mutually agreed upon procedures.

C.5 When combinations are ordered where the elements are currently interconnected and functional, those elements will remain interconnected and functional (except for the integrated SLC).

C.6 When the open network access platform is available, BellSouth will provide ACSI with the ability to have the BellSouth end office AIN triggers initiated via an appropriate service order from ACSI.

C.7 ACSI and BellSouth will negotiate in good faith to create a mutually acceptable standard service order/disconnect order format, consistent with OBF or other mutually agreed upon procedures.

C.8 BellSouth shall exercise best efforts to provide ACSI with the "real time" ability to schedule installation appointments with the customer on-line and access to BellSouth's schedule availability beginning in the second calendar quarter of 1997. In the interim, BellSouth will install unbundled loops and other network elements by the Customer Desired Due Date (CDDD) where facilities permit.

C.9 When available to any other telecommunications carrier or other customer, BellSouth shall provide "real time" response for firm order confirmation, due date availability/scheduling, dispatch required or not, identify line option availability by Local Service Office (LSO) (such as digital copper, copper analog, ISDN), completion with all service order and time and cost related fees, rejections/errors on service order data element(s), jeopardies against the due date, missed appointments, additional order charges (construction charges), order status, validate street address detail, and electronic notification of the local line options that were provisioned. This applies to all types of service orders and all network elements.

C.10 The Parties will negotiate in good faith to establish expedite and escalation procedures for ordering and provisioning, including establishment of a process for ACSI to request the expedite an order on a customer's behalf.

D. Conversion of Exchange Service to Network Elements

D.1 Installation intervals must be established to ensure that service can be established via unbundled loops in an equivalent timeframe as BellSouth provides services to its own customers, as measured from the date upon which BellSouth receives the order to the date of customer delivery.

D.2 On each unbundled network element order in a wire center, ACSI and BellSouth will agree on a cutover time at least 48 hours before that cutover time. The cutover time will be defined as a 30-minute window within which both the ACSI and BellSouth personnel will make telephone contact to complete the cutover.

D.3 Within the appointed 30-minute cutover time, the ACSI contact will call the BellSouth contact designated to perform cross-connection work and when the BellSouth contact is reached in that interval, such work will be promptly performed.

D.4 If the ACSI contact fails to call or is not ready within the appointed interval and if ACSI has not called to reschedule the work at least two (2) hours prior to the start of the interval, BellSouth and ACSI will reschedule the work order.

D.5 If the BellSouth contact is not available or not ready at any time during the 30-minute interval, ACSI and BellSouth will reschedule and BellSouth will waive the non-recurring charge for the unbundled elements scheduled for that interval.

D.6 The standard time expected from disconnection of a live Exchange Service to the connection of the unbundled element to the ACSI collocation arrangement is 5 minutes. If BellSouth causes an Exchange Service to be out of service due solely to its failure for more than 15 minutes, BellSouth will waive the non-recurring charge for that unbundled element.

D.7 If unusual or unexpected circumstances prolong or extend the time required to accomplish the coordinated cut-over, the Party responsible for such circumstances is responsible for the reasonable labor charges of the other Party. Delays caused by the customer are the responsibility of ACSI.

D.8 If ACSI has ordered Service Provider Number Portability (SPNP) as part of an unbundled loop installation, BellSouth will coordinate implementation of SPNP with the loop installation.

D.9 The conversion/installation time intervals which shall apply to unbundled loops and other network elements shall be as expressed herein.

E. Service Quality

E.1 At a minimum, the service quality of leased network elements should match that of BellSouth's own elements and conform to all Bellcore and ANSI requirements applicable to the type of service being provided. In addition, BellSouth will provide maintenance services on network elements purchased by ACSI which are timely, consistent and at parity with that provided when such elements are used for its own purposes.

E.2 Maintenance support shall be available 7 days a week, 24 hours a day. Provisioning support shall be available at the same times at which BellSouth installs its own bundled local exchange services.

E.3 Installation and service intervals shall be the same as when BellSouth provisions such network elements for use by itself, its affiliates or its own retail customers.

E.4 In facility and power outage situations, BellSouth agrees to provide network elements leased by ACSI the same priority for maintenance and restoration as similar elements used by BellSouth for itself or its affiliates.

E.5 The Parties agree that all interconnection arrangements and services will at a minimum be subject to technical standards which are equal to those that BellSouth affords to itself, other LECs or other telecommunications carriers. This must, at a minimum, include parity in:

- Port features
- Treatment during overflow/congestion conditions
- Equipment/interface protection
- Power redundancy
- Sufficient spare facilities to ensure provisioning, repair, performance and availability
- Mediation functions
- Standard interfaces
- Real time control over switch traffic parameters
- Real time access to integrated test functionality
- Real time access to performance monitoring and alarm data

F. Network Information Exchange

F.1 BellSouth shall provide ACSI with information sufficient to determine an end user's existing service and feature configurations.

F.2 BellSouth agrees to provide ACSI with all necessary engineering information regarding all unbundled network elements and combinations thereof, including information normally provided on records such as the detailed design layout records (DLR) for unbundled loops and circuits.

F.3 BellSouth shall provide information to ACSI on a continuing basis required to keep ACSI apprised of engineering changes associated with BellSouth's network elements and its deployment of new technologies.

F.4 BellSouth shall provide ACSI with a detailed description of the criteria and procedures used for handling facility and power outages.

F.5 Where permitted by law, BellSouth will make available to ACSI electronic (magnetic tape and/or diskette) and hard copies of its Master Street Address Guide (MSAG), and any regular updates thereof.

F.6 BellSouth will provide ACSI with access to a listing and description of all services and features available down to street address detail, including: Type of Class 5 switch by CLLI, line features availability by LSO, and service availability by LSO, as well as the data elements required by BellSouth to provision all such services and features.

G. Maintenance and Trouble Resolution

G.1 BellSouth shall provide automated interfaces to ACSI for field dispatch scheduling, status of repairs and confirmation of repair completion. The mean time to repair unbundled loops shall be equivalent to the mean time to repair reported by BellSouth for its retail customers.

G.2 Service centers shall be established by both Parties to handle service issues, escalations, resolution of billing issues and other administrative problems. Automated interfaces (such as the carrier gateway) shall be provided into a centralized customer support systems databases for access to services and features purchased by ACSI from BellSouth.

G.3 The Parties agree to establish a real time automated industry standard electronic interface (EBI) to perform the following functions:

- Trouble Entry
- Obtain Trouble Report Status
- Obtain Estimated Time To Repair (ETTR) and ILEC Ticket Number
- Trouble Escalation
- Network Surveillance - Performance Monitoring (*i.e.*, proactive notification of "auto detects" on network outages)

G.4 The Parties agree to adopt a process for the efficient management of misdirected service calls.

G.5 BellSouth will establish and staff a Maintenance Center to act as ACSI's single point of contact for all maintenance functions which will operate on a 24 hour a day, 7 days a week basis.

G.6 All trouble shooting will be performed by BellSouth and BellSouth will be responsible for the reported trouble until turned back to ACSI.

G.7 The Parties agree to establish an escalation process for resolving maintenance troubles.

G.8 BellSouth shall perform Mechanized Loop Tests (Quick Test) at the request of ACSI while ACSI is on line.

G.9 BellSouth shall provide progress status reports sufficient to enable ACSI to provide end user customers with detailed information and an estimated time to repair (ETTR).

G.10 BellSouth will close all trouble reports with ACSI. ACSI will close all trouble reports with the end user.

G.11 BellSouth will not undertake any work at an end user's request for which ACSI would be charged without obtaining the prior approval of ACSI. This includes authorizations by ACSI if a dispatch is required to the customer premises as well as verification of actual work completed.

G.12 All Auto/Subscriber Line Tests (ALIT/SLIT) tests performed on ACSI customers that result in a failure will be reported to ACSI.

G.13 ACSI will coordinate dispatches to the customer premise. This includes redispatches for customer access not available.

G.14 BellSouth will ensure that all applicable alarm systems that support ACSI customers are operational and the supporting databases are accurate so that equipment that is in alarm will be properly identified. BellSouth will respond to ACSI customer alarms consistent with how and when they respond to alarms for their own customers.

G.15 Nondiscriminatory emergency restoration and disaster recovery plans will be developed consistent with TSR essential line procedures. The plans should outline methods for the restoration of each central office in the local network provider territory as well as contain site specific restoration alternatives which can be implemented based on the magnitude of the disaster. Each plan should incorporate at a minimum the following elements:

a. A BellSouth single point of contact which shall be:
   - Responsible for notification of the ACSI work center
   - Responsible for the initiation of BellSouth's restoration plan
   - Responsible for status and problem resolution during the entire restoration process

b. A restoration equipment dispatch plan which will establish a:
   - Documented procedure on how equipment will be dispatched to the restoration site
   - Estimated maximum time for the restoration equipment to arrive on site

c. Prior notification, with the option to influence the decision of any scheduled maintenance activity performed by the local supplier that may be service affecting to ACSI local customers (*i.e.*, cable throws, power tests, *etc.*).

H. Billing for Network Elements

H.1 BellSouth will bill all unbundled elements and associated services purchased by ACSI (either directly or by previous assignment by a customer) on no more than two (2) consolidated statements per Point of Interconnection (POI) with sufficient billing detail to enable ACSI to reasonably audit such charges.

H.2 Invoices must be presented monthly in a Carrier Access Billing Systems (CABS) and/or Customer Record Information System (CRIS) format in order to facilitate standard industry auditing practices. ACSI and

BellSouth will agree on the flow and format of CARE records for correct provisioning and billing to IXCs.

I. Addition of Network Elements

ACSI may request that BellSouth allow purchase and interconnection of additional Network Elements (including, without limitation, sub-loop unbundling and databases not otherwise discussed herein) at any time by making a demand in writing including a proposed revised Attachment C. BellSouth will respond in writing within thirty (30) days of receipt of such a request, and either accept or reject the service request. BellSouth may not refuse to make the requested Network Element available if its availability is required by FCC or state commission requirements, the Network Element is provided to any other telecommunications carrier, or interconnection is technically feasible and failure to obtain access to such Network Element might impair the ability of ACSI to provide telecommunications services. Pricing of such additional elements shall be provided within forty-five (45) days of receipt of the request for service, and shall be in accordance with the requirements of 47 U.S.C. § 252(d)(1). BellSouth will exercise best efforts to accomplish actual interconnection and provision of service within ninety (90) days of receipt of the service request.

V. LOCAL TRAFFIC INTERCONNECTION ARRANGEMENTS

A. Types of Local Traffic to Be Exchanged

The Parties agree to provide the necessary facilities and equipment to allow for the exchange of the following types of traffic between BellSouth and ACSI:

A.1 Local Exchange: Local traffic to be terminated on each party's local network so that customers of either party have the ability to reach customers of the other party without the use of access codes.

A.2 Exchange Access: The offering of access to telephone exchange services or facilities-based origination and termination of intraLATA or interLATA toll services.

A.3 IXC Transit: BellSouth shall provide intermediary network access service between ACSI and any IXC for the purpose of completing interLATA or intraLATA toll traffic.

A.4 Other Transit Functions: The Parties shall provide intermediary tandem switching and transport services for the other Party's connection of its end user to a local end user of other CLECs, other ILECs, and wireless telecommunications providers, which are connected to such Party's network.

A.5 Intelligent Network and Network Surveillance: BellSouth shall provide open logical interconnection points to an AIN/IN interface in their network. BellSouth must also provide access to monitoring, surveillance and other fraud control functions in its network.

A.6 Other Services: BellSouth shall provide connection and call routing for 911, directory assistance, and operator assistance services.

B. Designated Points of Interconnection

The Parties shall designate Points of Interconnection (POIs) on each other's networks. ACSI shall at a minimum designate a POI at each BellSouth access tandem serving the local calling area of the exchanges being served by ACSI. ACSI may designate additional POIs within a BellSouth local calling area and BellSouth will not unreasonably refuse to interconnect at each such designated POI. BellSouth may designate a POI at one or more of ACSI's local switching centers within each LATA in which ACSI is providing local service. If no ACSI local switching center is located within such LATA, the Parties will arrange a POI at a mutually agreed point within such LATA. ACSI will not unreasonably refuse to interconnect at a POI designated by BellSouth.

B.1 Interconnection will be available at any technically feasible point that is used in the transmission of voice, data or other types of traffic.

B.2 Reciprocal connectivity shall be established at each and every BellSouth access tandem within the local calling area ACSI desires to serve for interconnection to those end offices that subtend the access tandem. At its discretion, ACSI may elect to interconnect directly at any BellSouth end offices for interconnection to end users served by that end office. Such interconnecting facilities shall conform, at a minimum, to the telecommunications industry standard of DS-1 pursuant to Bellcore Standard No. TR-NWT-00499. Signal transfer point, Signaling System 7 (SS7) connectivity is required at each interconnection point where available. BellSouth will provide out-of-band signaling using Common Channel Signaling Access Capability where technically and economically feasible, in accordance with the technical specifications set forth in the BellSouth Guidelines to Technical Publication, TR-TSV-000905. The Parties agree that their facilities shall provide the necessary on-hook, off-hook answer and disconnect supervision, and shall hand off calling party number ID where technically feasible.

B.3 In accordance with Section V.C hereafter, collocation arrangements will be established which are suitable for use in ACSI/BellSouth local interconnection and ACSI access to unbundled BellSouth network components. Allowable collocation equipment includes transmission and concentrating equipment.

B.4 In accordance with Section V.D hereafter, the Parties agree to establish trunk groups such that each Party provides a reciprocal of each trunk group established by the other Party. The Parties agree to install efficient and sufficient facilities to carry traffic (1) to route calls originating on its network and terminating on the other carrier's network to its POI, and (2) to route calls originating on the other local exchange carrier's network, but terminating on its network from that carrier's POI, and will work cooperatively to ensure such. Notwithstanding the foregoing, each Party may construct its network, including the interconnecting facilities, to achieve optimum cost effectiveness and network efficiency.

B.5 Each Party shall be responsible for routing calls to the POI for termination via the other's facilities. Each Party shall bear its own costs related to installation at the POI. ACSI may establish POIs on the BellSouth network via a negotiated expanded interconnection arrangement or via leased transport between the ACSI network and the BellSouth access tandem. BellSouth may establish POIs on the ACSI network via an expanded interconnection arrangement at the ACSI local switching center or via leased transport between an ACSI expanded interconnect arrangement and an ACSI local switching center.

B.6 Either Party may use the POI for the interconnection of other types of services, such as toll services, subject to the applicable rates for such interconnection.

B.7 BellSouth may not impose any restrictions on traffic types delivered to or from the POI(s). Notwithstanding the foregoing, the Parties hereto agree that no interexchange access services traffic will be exchanged as local traffic hereunder.

B.8 Once traffic is delivered to the POI, it is the terminating carrier's responsibility to terminate the traffic to its end users. Calls should be terminated using the same network, ensuring the same quality of service, as the carrier provides its own customers.

B.9 There will no re-arrangement, reconfiguration, disconnect, or other non-recurring fees associated with the initial reconfiguration of each carrier's existing traffic exchange arrangements upon execution of this agreement.

B.10 BellSouth will absorb any applicable nonrecurring charges incurred by ACSI as a result of network redesigns/reconfigurations initiated by BellSouth to its own network.

C.1 The Parties agree that there are three appropriate methods of interconnecting facilities: (1) virtual collocation where physical collocation is not practical for technical reasons, because of space limitations or at the option of the Party requesting interconnection; (2) physical collocation; and (3) interconnection via purchase of facilities from either party by the other party. Rates and charges for collocation are set forth in Attachment C-1 hereto and applicable provisions of BellSouth's access service tariffs.

C.2 Each Party hereto at its election shall have the sole right and discretion to specify any one of the following methods for interconnection at the POI:

a. a meet in a manhole or other appropriate junction point inside, near to, or just outside the wire center designated as the POI, in which case the Party requesting interconnection shall additionally have the sole right and discretion to effect such meet by leasing from a third party, fiber facilities into the POI meet junction point (*i.e.*, virtual collocation);

b. a collocation facility which it maintains at the other Party's POI wire center (*i.e.*, physical collocation);

c. a collocation facility maintained at the POI wire center by a third party with whom the Party requesting interconnection has contracted for such purpose; or

d. a digital transport facility(ies) leased from the other Party hereto under the most favorable contract or tariff terms offered, where such facility(ies) extends to the POI from some second point designated by the Party requesting interconnection.

The Party requesting interconnection may, upon 60 days' advance written notice to the other Party, change from one of the interconnection methods specified above to another of the networks specified above. A mutually acceptable certified vendor for the installation of physical collocation equipment can be employed by the Party making the change to implement such changes, in which case no conversion or rollover charges will be assessed by the other party.

C.3 Existing ACSI special access collocation arrangements with BellSouth shall be available for use by ACSI in the provision of switched services hereunder at no additional charge to ACSI.

C.4 ACSI may at its option replace current virtual collocation arrangements at any location with physical collocation arrangements. The Parties agree

that no termination penalties or liabilities will apply to the termination of existing virtual collocation arrangements. A certified vendor for the installation of physical collocation equipment can be employed by the Party making the change to implement such a replacement, in which case no conversion, installation or non-recurring charges will be assessed by the other Party.

D. Trunking and Signaling

D.1 a. The Party receiving traffic for termination can elect to receive the traffic in one of two ways: (a) over separate trunks for local and non-local; or (b) on combined trunks; provided that separate trunk groups shall be utilized where the delivering party is unable to furnish an auditable percent local usage (PLU) factor to the party receiving the traffic on a quarterly basis.

b. If direct end office trunking with combined trunks is used, the Parties will work cooperatively to develop a procedure for accurately determining the amount of interLATA access traffic for proper application of switched access charges.

D.2 Trunking shall be available to any switching center designated by either carrier: including end offices, access tandems, 911 routing switches, directory assistance/operator services switches, or any other feasible point in the network. The Parties shall have the option for either one-way or two-way trunking. Directionality in this case refers to the traffic flowing between two networks, not to the logical or physical configuration of the trunk. All trunks should be configured two-way for testing purposes only.

D.3 Trunking can be established to tandems or end offices or a combination as mutually agreed. Normally, trunking will be at the DS-1 level. On a trunk group specific basis, the Parties may agree to establish trunking at higher (*e.g.*, DS-3) levels. Initial trunking will be established between the ACSI local switching centers and the BellSouth access tandems. The Parties will utilize direct end office trunking under the following conditions:

a. BellSouth tandem exhaust - If a BellSouth access tandem to which ACSI is interconnected is unable to, or is forecasted to be unable to, support additional traffic loads for any period of time, the Parties will mutually agree on an end office trunking plan that will alleviate the tandem capacity shortage and ensure completion of traffic between ACSI and BellSouth subscribers.

b. Traffic volumes - The Parties shall install and retain direct end office trunking sufficient to handle actual or reasonably forecast traffic volumes, whichever is greater, between an ACSI local switching center and a BellSouth and office where traffic between such points exceeds or is forecast to exceed 125,000 minutes of local traffic per month. The Parties will install additional capacity between such points when overflow traffic between the ACSI switching center and BellSouth access tandem exceeds or is forecast to exceed 125,000 minutes of local traffic per month.

c. Mutual agreement - The Parties may install direct end office trunking upon mutual agreement in the absence of conditions (a) or (b) above and agreement will not unreasonably be withheld.

D.4 The Parties will provide Common Channel Signaling (CCS) to one another, where and as available, at no charge, in conjunction with all POI trunk groups. The Parties will cooperate in the exchange of Transaction Capabilities Application Part (TCAP) messages to facilitate full inter-operability of CCS-based features between their respective networks, including all CLASS features and functions, to the extent each carrier offers such features and functions to its own end users. All CCS signaling parameters will be provided including calling party number (CPN), originating line information (OLI) calling party category, charge number, *etc.* All privacy indicators will be honored. Where available, network signaling information such as Carrier Identification Parameter (CCS platform) and CIC/OZZ information (non-CCS environment) will be provided wherever such information is needed for call routing or billing. The Parties will follow all Ordering and Billing Forum (OBF) adopted standards pertaining to CIC/OZZ codes. Where CCS is not available, in-band multi-frequency (MF) wink start E&M channel associated signaling will be provided. Such MF arrangements will require a separate trunk group between ACSI's switch and one specified BellSouth switch.

D.5 ACSI shall establish CCS interconnection with BellSouth signal transfer points (STPs) in each LATA, either directly or via an intermediary STP provider.

D.6 ACSI may opt at any time to terminate to BellSouth some or all local exchange traffic and intraLATA toll traffic originating on its network, together with switched access traffic, via Feature Group A, B, C or D Switched Access services which ACSI may otherwise purchase from BellSouth, subject to the rates, terms and conditions specified in BellSouth's applicable switched access tariffs. At no time shall ACSI be required to route outbound traffic via facilities for which a full retail or end user toll charge would be assessed when parallel FG-A, FG-B, FG-C,

or FG-D routing, or routing via a different carrier exists which is capable of carrying and completing said traffic at more favorable rates.

D.7 The Parties will cooperate to jointly plan for the deployment of intercompany 64 Kbps per second clear channel capability.

D.8 Service arrangements hereunder shall be engineered to an objective, consistent P.01 or better grade of service at the peak busy hour.

D.9 The Parties shall periodically exchange technical descriptions and trunk/traffic forecasts of their interconnection and traffic requirements in sufficient detail to assure traffic completion to and from all customers within the appropriate calling areas.

D.10 BellSouth shall deliver intraLATA traffic originating from its subscribers and terminating to ACSI's subscribers via a trunk group using facilities leased from ACSI on mutually agreeable terms.

D.11 BellSouth will provide interconnection to and from intelligent network, signaling, monitoring, surveillance and fraud control points.

D.12 BellSouth shall provide and implement all mandatory industry standard SS7 parameters as well as procedures that are defined in the applicable Bellcore standards, even if today's services do not specifically require these features. These functions shall include:

a. All functions of the ISUP, TCAP, SCCP, and MTP as specified in relevant Bellcore specifications.

b. All functions of the OMAP, including MTP Routing Verification Test (MRVT) and SCCP Routing Verification Test (SRVT).

D.13 BellSouth shall provide a signaling link which consists of a 56 kbps transmission path or other rates as defined by ANSI standards between ACSI designated Signaling Points of Interconnection (SPOIs), satisfying an appropriate requirement for physical diversity.

D.14 The Parties shall meet or exceed SS7 performance objectives as described in Bellcore TR-905 section 7, and MTP and SCCP performance as specified by ANSI.

D.15 Either Party shall have the option for Multi-Frequency (MF) signaling, but only when either party does not have the technical capability to provide SS7 facilities.

D.16 Other Signaling Requirements:

a. CIP shall be provided (CIC within the SS7 call set-up signaling protocol) at tariffed charges.

b. All mandatory SS7 signaling parameters must be provided including Calling Party Number (CPN). All privacy indicators must be honored.

c. The Parties must provide Signaling System 7 (SS7) to one another.

E. Network Management

E.1 The Parties agree to work cooperatively to install and maintain reliable interconnected telecommunications networks, including but not limited to, the exchange of appropriate information concerning network changes that affect services to the other Party, maintenance contact numbers and escalation procedures.

E.2 The interconnection of all networks will be based upon accepted industry/national guidelines for transmission standards and traffic blocking criteria.

E.3 The Parties will work cooperatively to apply sound network management principles by invoking appropriate network management controls (*e.g.*, call gapping) to alleviate or prevent network congestion.

E.4 The Parties will cooperate to determine the performance of their respective networks and will implement joint management controls to further overall service integrity.

E.5 The Parties will jointly develop and agree on a Joint Interconnection Grooming Plan prescribing standards to ensure that traffic exchanged over the POI trunk groups experiences a consistent P.01 or better grade of service peak busy hour, and other appropriate, relevant industry-accepted quality, reliability and availability standards. Such plan shall also include mutually agreed upon standards for the configuration of segregated POI trunk groups. In addition, the plan shall also include standards and procedures for notification of trunk disconnections and discoveries of trunk disconnections. Neither Party shall be expected to maintain active status for a trunk disconnected by the other Party for an extended or indefinite period of time. The Parties will use their best collective good faith efforts to complete and agree on a Joint Interconnection Grooming Plan within 90 days following execution of this agreement.

E.6 BellSouth will establish and adhere to industry standard intervals for the delivery of FOCs, DLRs and facilities. Such intervals need to ensure that facilities are provisioned in time frames and according to standards that meet or exceed those that BellSouth provides to itself for its own network

and end users. Intervals should not exceed the Customer Designated Date (CDD).

E.7 Upon request, BellSouth will provide ACSI with access to the BellSouth maintenance and trouble report systems including the following systems and/or functionality:

- Trouble reporting/dispatch capability - access must be real time
- Repair status/confirmation; maintenance/trouble report systems
- Planned/unplanned outage reports (where available to any other telecommunications carrier)

E.8 Each Party has the duty to alert the other to any network events that can result or has resulted in service interruption, blocked calls, or changes in network performance, on a real time basis.

E.9 BellSouth will adopt any multi-ILEC trouble management procedures and escalation processes developed by the NOF.

E.10 The Parties will work cooperatively to plan and implement coordinated repair procedures for the local interconnection trunks and facilities to ensure trouble reports are resolved in a timely and appropriate manner.

E.11 The Parties will provide each other with a trouble reporting number that is readily accessible and available 24 hours a day, 7 days a week. In addition, the Parties will provide each other test-line numbers and access to test lines.

E.12 The quality of interconnection services should be no less than that provided by BellSouth for its own services.

E.13 Installation and restoration of interconnection circuits by BellSouth for ACSI will be given equal priority as is given by BellSouth to similar services performed by BellSouth for any other telecommunications carrier.

E.14 The time interval for installation of POIs by BellSouth will be negotiated on an ICB basis, subject to an agreement that installation of such POI's will be completed within a target of sixty (60) calendar days.

E.15 Completion confirmation shall be provided to ensure that all necessary translation work is completed on newly installed facilities.

E.16 The Parties shall periodically exchange technical descriptions and forecasts of their interconnection and traffic requirements in sufficient detail to assure traffic completion to and from all customers within the appropriate calling areas.

E.17 BellSouth will provide and update an electronic copy of their Switch Network ID Database with a complete list of features and functions by switch, i.e., NPA/NXXs, rate centers, *etc.*

F. Local Number Assignment

ACSI will assign telephone numbers to its customers using at least one NXX per BellSouth tariffed local exchange metropolitan area; provided, that sufficient quantities of numbering resources are made available to ACSI.

G. Cross-Connection to Other Collocators

Where one Party collocates in the wire center of the other Party, the Party operating the wire center shall allow the Party collocated at the wire center to directly interconnect to any other entity which maintains a collocation facility at that same wire center. The Party operating the wire center shall enable such interconnection by effecting a cross-connection between those collocation facilities, as jointly directed by the Party collocated at the wire center and the other collocated entity. For each such cross-connection, the Party operating the wire center shall charge the otherwise applicable standard tariff or contract special access cross-connect rate to the collocated Party. No other charges shall apply for such cross-connection. ACSI reserves its right to petition for state commission arbitration of the pricing of such cross-connections.

VI. LOCAL TRAFFIC EXCHANGE

A. Exchange of Traffic

The Parties agree for the purpose of this Agreement only that local interconnection is defined as the delivery of local traffic to be terminated on each party's local network so that customers of either party have the ability to reach customers of the other party, without the use of any access code or delay in the processing of the call. The Parties further agree that the exchange of traffic on BellSouth's Extended Area Service (EAS) shall be considered local traffic and compensation for the termination of such traffic shall be pursuant to the terms of this section.

B. Compensation

With the exception of the local traffic specifically identified in subsection (C) hereafter, each party agrees to terminate local traffic originated and routed to it by the other party. The Parties agree that BellSouth will track the usage for both companies for the period of the Agreement. BellSouth will provide copies of such usage reports to ACSI on a monthly basis. For purposes of this Agreement, the Parties agree that there will be no cash compensation exchanged by the parties

during the term of this Agreement unless the difference in minutes of use for terminating local traffic exceeds 2 million minutes per state on a monthly basis. In such an event, the Parties will thereafter negotiate the specifics of a traffic exchange agreement which will apply on a going-forward basis.

C. Transit Traffic

If either party provides intermediary tandem switching and transport services for the other party's connection of its end user to a local end user of: (1) a CLEC other than ACSI; (2) an ILEC other than BellSouth; or (3) another telecommunications company such as a wireless telecommunications service provider, the party performing the intermediary function will bill a $0.002 per minute charge. However, BellSouth agrees that ACSI may cross-connect directly to such third Parties at the POI. In such an event, tariffed cross-connection non-recurring charges will apply, and no transitting charge will apply.

VII. MEET-POINT BILLING ARRANGEMENTS

Both Parties hereto provide interexchange access transport services to IXCs and other access service customers. Pursuant to the terms of this Agreement, ACSI will interconnect at selected BellSouth switches of its choosing for the purposes of providing certain Switched Access Services. On such occasions, a portion of the access transport service will be provided by each of the Parties hereto. This section establishes arrangements intended to enable each of the Parties hereto to serve and bill their mutual Switched Access Service customers, on an accurate and timely basis. The arrangements discussed in this section apply to the provision of both interLATA and intraLATA Switched Access Services. It is understood and agreed that ACSI is not obligated to provide any of its Switched Access Service(s) through any specific access tandem switch or access tandem provider, and may at its sole discretion, with due notice to those affected, modify its serving arrangements on its own initiative.

A. Applicability of OBF Guidelines

Meet-point billing (MPB) arrangements shall be established between the Parties to enable ACSI to provide, at its option, Switched Access Services to third Parties via specified LEC switches, in accordance with the Meet-Point Billing guidelines adopted by and contained in the Ordering and Billing Forum's MECAB and MECOD documents, except as modified herein. These arrangements are intended to be used to provide Switched Access Service that originates and/or terminates on an ACSI-provided Exchange Service, where the transport component of the Switched Access Service is routed through specified BellSouth switches.

B. Meet-Point Interconnection

B.1 The Parties shall establish MPB arrangements in each LATA or locality where switched services are provided by ACSI, between the correspondingly identified Rating Point/Switch pairs. BellSouth shall provide homing/subtending access tandem arrangements through the same (or a closely proximate) switching entity used for access services to BellSouth's end users. This does not foreclose the possibility that other mutually agreeable arrangements may be utilized by mutual agreement of the Parties where appropriate.

B.2 At ACSI's discretion, interconnection for the MPB arrangement shall be established at the POI as described hereafter, at a collocation facility maintained by ACSI or an affiliate of ACSI at specified BellSouth switches, or at any point mutually agreed to by the Parties, consistent with the terms and conditions herein.

B.3 Two-way meet point trunks which are separate from the local interconnection trunk groups will be established to enable ACSI and BellSouth to provide Exchange Access Services to IXCs via a BellSouth Central Office. No Party shall charge the other any amount for any meet point facilities unless one Party is ordering trunks from the other.

B.4 Common Channel Signaling (CCS) shall be utilized in conjunction with meet-point billing arrangements to the extent such signaling is technically compatible with and economically reasonable to provide through the BellSouth switch, except that MF signaling shall be used on a separate trunk group for originating FGD access to Exchange Access Customers that uses the MF FGD signaling protocol. The Parties may establish CCIS interconnection either directly or through a third party.

B.5 ACSI may establish CCS interconnections either directly or through a third-party. The Parties will exchange TCAP messages to facilitate full interoperability of CCIS-based features between their respective networks, including all CLASS features and functions to its own end users. The Parties will provide all CCIS signaling, Billing Number, originating line information (OLI) and any other such similar service. For terminating FGD, BellSouth will pass CPN if it receives CPN from FGD carriers. All privacy indicators will be honored. Where available, network signaling information, such as Transit Network Selection (TNS) parameter (CCIS platform) and OZZ/CIC information (non-CCIS environment) will be provided whenever such information is needed for call routing or billing. The Parties will follow all OBF adopted standards pertaining to TNS and OZZ/CIC codes.

B.6 All originating Toll Free Service calls for which BellSouth performs the Service Switching Point (SSP) function (*e.g.*, performs the database query) shall be delivered by ACSI using GR-394 format over a trunk group designated for Toll Free Service. Carrier Code "0110" and Circuit Code of "08" shall be used for all such calls. In the event ACSI becomes a toll free service provider, BellSouth shall deliver traffic using the GR-394 format over a trunk group designated for Toll Free Service.

B.7 All originating Toll Free Service calls for which ACSI performs the SSP function, if delivered to BellSouth, shall be delivered by ACSI using GR-394 format over the meet point trunk group for calls destined to IXCs, or shall be delivered by ACSI using GR-317 format over the Local Interconnection Trunk Group for calls destined to end offices that directly subtend BellSouth access tandems.

B.8 Originating Feature Group B calls shall be delivered to BellSouth's tandem using the interLATA trunk groups.

C. Tariffs

ACSI and BellSouth will use their best reasonable efforts, individually and collectively, to maintain provisions in their respective federal and state access tariffs sufficient to reflect this MPB arrangement, including appropriate MPB percentages consistent with applicable industry standard practice and in accordance with Section VII.F hereafter.

D. Billing and Data Exchange

D.1 Each Party shall implement the "Multiple Bill/Multiple Tariff" option in order to bill an IXC for the portion of the jointly provided telecommunications service provided by that Party. For all traffic carried over the MPB arrangement, each Party shall only bill the rate elements identified for it in this Agreement. For transport elements subject to billing percentages, each Party shall utilize the billing percentages discussed in Section III.C preceding and Section VII.F hereafter. The actual rate values for each element shall be the rates contained in that Party's own effective federal and state access tariffs. The Parties shall utilize complementary monthly billing periods for meet-point billing.

D.2 BellSouth may charge the IXC for use of the entrance facility, the tandem switching and the mutually agreed portion of non-interconnection transport charges. BellSouth will not include an element for the Residual Interconnection Charge (RIC) and ACSI will be entitled to bill and collect the appropriate RIC and/or any other applicable rate elements.

D.3 Each party will provide to the other access records sufficient to enable billing to the IXCs. Records shall be provided in the Exchange Message Record format, Bellcore Standard BR 010-200-010, as amended.

D.4 BellSouth shall provide to ACSI the billing name, billing address, and CIC of the IXCs and copies of relevant IXC Access Service Requests (ASRs), in order to comply with the MPB notification process as outlined in the MECAB document, on an electronic medium basis using the EMR format.

D.5 BellSouth shall provide ACSI, on a daily basis, switched access detail usage data (EMR Category 1101XX records) on magnetic tape or via electronic file transfer using EMR format, for calls from IXCs that have transitted BellSouth's tandems and terminated to ACSI's switching center(s).

D.6 ACSI shall provide BellSouth, on a monthly basis, switched access summary usage data (EMR Category 1150XX records) on magnetic tape or via electronic file transfer using EMR format, for calls to IXCs which originate at ACSI's switching center(s).

D.7 The Parties will exchange test files to support the initial implementation of the meet point billing processes provided for in this Agreement. Exchange of test data will commence one week after AMA certification begins. These data shall be actual recorded usage records.

D.8 Each Party shall coordinate and exchange the billing account reference (BAR) and billing account cross reference (BACR) numbers for the MPB Service. Each Party shall notify the other if the level of billing or other BAR/BACR elements change, resulting in a new BAR/BACR number.

D.9 If access usage data is not processed and delivered by either Party and sent to the other in a timely manner and in turn such other Party is unable to bill the IXC, the delivering Party will be held liable for the amount of lost billing.

D.10 Errors may be discovered by ACSI, the IXC or BellSouth. Both BellSouth and ACSI agree to provide the other Party with notification of any discovered errors within seven (7) business days of the discovery. In the event of a loss of data, both Parties shall cooperate to reconstruct the lost data and if such reconstruction is not possible, shall accept a reasonable estimate of the lost data based upon three (3) to twelve (12) months of prior usage data.

D.11 The Parties shall not charge one another for the services rendered or information provided pursuant to this Section VII of this Agreement.

E. **Toll Free IXC Traffic**

MPB will apply for all traffic bearing the 800, 888, or any other non-geographic NPA which may be likewise designated for such traffic in the future, where the responsible party is an IXC. In those situations where the responsible party for such traffic is a LEC, full switched access rates will apply.

F. **MPB Billing Percentages**

The MPB billing percentage for each ACSI Rating Point shall be calculated according to the following formulas:

In any service jointly provided by BellSouth and ACSI for which meet point billing arrangements are adopted, the meet point billing percentages shall be based on the relative distances (*i.e.*, airline mileage) between the meet point and the two rating points as follows:

$$\text{ACSI percentage} = \frac{a}{(a+b)} \qquad \text{BellSouth percentage} = \frac{b}{(a+b)}$$

where "a" is the airline mileage between the relevant ACSI rating point (*e.g.*, serving switch) and the meet point and "b" is the airline mileage between the BellSouth rating point and the meet point.

G. **Special Arrangements**

G.1 In a few instances, the involvement of yet a third provider of switched access may be needed for particular traffic. For purposes of customer billing, when three or more LECs are involved in the transmission of a particular message, the intermediate carriers will have no rating point, and the relevant mileage measurement is between the two end points.

G.2 In the case of IXC traffic terminating to ACSI ported numbers, the Parties will, unless IXC actual minutes of use can be measured, account for access revenue on a state-by-state basis by using verifiable BellSouth/ACSI interstate and intrastate minutes of use reported on the applicable ARMIS report at the total IXC access rates applicable to BellSouth less the BellSouth/ACSI meet point access minutes at the meet point billing access rates applicable to BellSouth, with no other subtractions.

G.3 If either Party provides intermediary functions for network access service connection between an IXC and another Party, each Party will provide their own network access services to the IXC on a meet-point basis. The meet-point billing arrangement will be through the multiple bill. Each Party will bill its own network access services rates to the IXC with the

exception of the residual interconnection charge. Each Party shall bill 50% of its residual interconnection charges in such case.

VIII. TOLL TRAFFIC INTERCONNECTION

A. The delivery of interexchange toll traffic by a Party to the other Party shall be reciprocal and compensation will be mutual. For terminating its toll traffic on the other Party's network, each Party will pay the other Party's tariffed terminating switched access rate, inclusive of the interconnection charge and the carrier common line rate elements of the switched access rate. The Parties agree that their terminating switched rate shall be the rate in effect when the traffic is terminated.

B. For originating and terminating interexchange toll traffic, each Party shall pay the other Party's tariffed switched network access service rate elements. Said rate elements shall be as set out in the Parties' respective access services tariffs as those tariffs are amended from time to time during the term of this Agreement. The appropriate charges will be determined by the routing of the call. If ACSI is the BellSouth end user's presubscribed interexchange carrier or if the BellSouth end user uses ACSI as an interexchange carrier on a 10XXX basis, BellSouth will charge ACSI the appropriate tariff charges for originating network access services. If BellSouth is serving as the ACSI end user's presubscribed interexchange carrier or if the ACSI end user uses BellSouth as an interexchange carrier on a 10XXX basis, ACSI will charge BellSouth the appropriate BellSouth tariff charges for originating network access services.

IX. NUMBER RESOURCE ARRANGEMENTS

A. Nothing in this Agreement shall be construed to in any manner limit or otherwise adversely impact either Party's right to request and be assigned any North American Numbering Plan (NANP) number resources including, but not limited to, central office (NXX) codes pursuant to the Central Office Code Assignment Guidelines (last published by the Industry Numbering Committee (INC) as INC 95-0407-008, Revision 4/7/95, formerly ICCF 93-0729-010), or to independently, and in a technically compatible manner, establish and publish in any and all switched telecommunications industry routing and rating databases, by tariff or otherwise, Rate Centers Rating Points, destination switching entity/office and routing/tandem information corresponding to such NXX codes.

B. During any period under this Agreement in which it serves as the NANP administrator for its territory, BellSouth shall ensure that ACSI has nondiscriminatory access to telephone numbers for assignment to its telephone exchange service customers, and will assist ACSI in applying for NXX codes for its use in providing local exchange services. BellSouth shall provide numbering

resources pursuant to the Bellcore Guidelines Regarding Number Assignment. ACSI agrees that it will complete the NXX code application in accordance with Industry Carriers Compatibility Forum, Central Office Code Assignment Guidelines, ICCF 93-0729-010.

C. If during the term of this Agreement BellSouth is no longer the NANP administrator, the Parties agree to comply with the guidelines, plan or rules adopted pursuant to 47 U.S.C. § 251(e).

D. It shall be the responsibility of each Party to program and update its switches and network systems pursuant to the local exchange routing guide (LERG) and other switched telecommunications industry guidelines to recognize and route traffic to the other Party's assigned NXX codes using that party's preferred routing at all times. Neither Party shall impose any fees or charges whatsoever on the other Party for such activities, except as expressly defined in this Agreement.

E. Each Party shall be responsible for notifying its customers of any changes in dialing arrangements due to NPA exhaustion. Neither party shall be obligated to adopt the specific end user dialing plan of the other.

F. Administration and assignment of numbers will be moved to a neutral third party in the future. In the interim, while BellSouth is still administering numbering, the following will apply:

1. BellSouth will assign NXXs to ACSI on a nondiscriminatory basis and on the same basis as to itself.

2. Testing and loading of ACSI's NXXs' should be the same as BellSouth's own.

3. BellSouth shall not discriminate in the allocation of the number and types of NXXs assigned to ACSI.

4. BellSouth will load NXXs according to industry guidelines, including the terminating LATA in which the NXXs/rate centers are located.

5. BellSouth will supply ACSI with copies of its Local Calling Area Boundary Guide, including all updates thereto.

X. ACCESS TO POLES, DUCTS, CONDUIT AND RIGHTS OF WAY

A. BellSouth agrees to provide to ACSI, pursuant to 47 U.S.C. § 224, as amended by the Telecommunications Act nondiscriminatory access to any pole, duct, conduit, and right-of-way owned or controlled by BellSouth. The Parties agree to negotiate in good faith to establish rates, terms and conditions applicable to

ACSI's access to poles, ducts, conduit and rights-of-way owned and controlled by BellSouth, and modify, if necessary, existing arrangements by October 1, 1996, in a manner consistent with the requirements of the Telecommunications Act.

XI. ANCILLARY SERVICES AND PLATFORM ARRANGEMENTS

A. 800 Traffic

A.1 BellSouth agrees to compensate ACSI, pursuant to ACSI's published originating switched access charges, including the database query charge, for the origination of 800 and 888 traffic (combined "800") terminated to BellSouth.

A.2 ACSI will provide to BellSouth the appropriate records necessary for BellSouth to bill BellSouth's intraLATA 800 customers. The records provided by ACSI will be in a standard EMR format for a fee, paid by BellSouth to ACSI, of $0.015 per record.

A.3 If ACSI provides 800 services to its end users during the term of this Agreement, it agrees to compensate BellSouth, pursuant to BellSouth's originating switched access charges, including the database query charge, for the origination of 800 traffic terminated to ACSI. BellSouth agrees to provide ACSI the appropriate records for ACSI to bill its 800 customers. The records provided will be in a standard EMR format for a fee, paid by ACSI to BellSouth, of $0.015 per record.

A.4 If during the term of this Agreement, BellSouth is permitted to provide interLATA 800 services, BellSouth will compensate ACSI for the origination of such traffic in accordance with the above.

A.5 If ACSI utilizes BellSouth's 800 database for query purposes only, the rates and charges shall be as set forth in the applicable BellSouth Access Services Tariff, as said tariff is amended from time to time during the term of this Agreement.

A.6 Should ACSI require 800 access ten digit screening service from BellSouth, it shall have signaling transfer points connecting directly to BellSouth's local or regional signaling transfer point for service control point database query information. ACSI shall utilize SS7 Signaling links, ports and usage from BellSouth's interstate access services tariff. 800 access ten digit screening service is an originating service that is provided via 800 switched access service trunk groups from BellSouth's SSP equipped end office or access tandem providing an IXC identification function and delivery of call to the IXC based on the dialed ten digit

number. The rates and charges for said services shall be as set forth in the applicable BellSouth access services tariff as said tariff is amended from time to time during the term of this Agreement.

B. 911/E-911

B.1 The Parties agree to interconnect with each other to provide Basic 911 and E-911 emergency calling services consistent with the terms of Attachment C-9 hereto.

B.2 For Basic 911 service, BellSouth will provide to ACSI a list consisting of each municipality in each state that subscribes to Basic 911 service. The list will also provide, if known, the E-911 conversion date for each municipality and, for network routing purposes, a ten-digit directory number representing the appropriate emergency answering position for each municipality subscribing to 911 . ACSI will arrange to accept 911 calls from its end users in municipalities that subscribe to Basic 911 service and translate the 911 call to the appropriate 10-digit directory number as stated on the list provided by BellSouth. ACSI will route that call to BellSouth at the appropriate tandem or end office . When a municipality converts to E-911 service, ACSI shall discontinue the Basic 911 procedures and begin the E-911 procedures, set forth in subsection B.4 below.

B.3 For E-911 service, ACSI shall install a minimum of two dedicated trunks originating form ACSI's serving wire center and terminating to the appropriate E-911 tandem. The dedicated trunks shall be, at minimum, DS0 level trunks configured either as a 2 wire analog interface or as part of a digital (1.544 Mb/s) interface. Either configuration shall use CAMA type signaling with MF pulsing that will deliver automatic number identification (ANI) with the voice portion of the call. If the user interface is digital, MF pulses, as well as other AC signals, shall be encoded per the U-255 Law convention. ACSI will provide BellSouth daily updates to the E-911 database.

B.4 If a municipality has converted to E-911 service, ACSI will forward 911 calls to the appropriate E-911 tandem, along with ANI, based upon the current E-911 end office to tandem homing arrangement as provided by BellSouth. If the E-911 tandem trunks are not available, ACSI will alternatively route the call to a designated 7-digit local number residing in the appropriate PSAP. This call will be transported over BellSouth's interoffice network and will not carry the ANI of the calling party.

B.5 BellSouth will provide ACSI with an electronic interface from which ACSI may input and update subscriber records in the E-911 database.

BellSouth shall also provide ACSI with an automated interface to access its Automatic Location Identification (ALI) database.

B.6 BellSouth and ACSI agree that the practices and procedures contained in the E-911 Local Exchange Carrier Guide For Facility-Based Providers (LEC Carrier Guide) shall determine the appropriate procedures and practices of the Parties as to the provision of 911/E-911 Access. The LEC Carrier Guide shall at a minimum include, or BellSouth shall separately provide, 911 database update procedures and 911 trunk restoration procedures.

B.7 If ACSI requires transport to the BellSouth 911 tandem, ACSI may, at ACSI's option, purchase such transport from BellSouth at rates set forth in either BellSouth's intrastate switched access services tariff or intrastate special access services tariff.

B.8 BellSouth and ACSI will cooperatively arrange meetings to answer any technical questions that municipal or county coordinators may have regarding the 9-1-1/E-911 portions of this Agreement.

B.9 Where BellSouth is responsible for maintenance of the E-911 database and can be compensated for maintaining ACSI's information by the municipality, BellSouth shall seek such compensation. BellSouth may seek compensation for its costs from ACSI only if and to the extent BellSouth is unable to obtain such compensation from the municipality.

B.10 Nothing herein shall be construed to prevent ACSI from opting to route Basic 911 and E-911 calls to an alternative emergency call service bureau, to provide such services itself, or to route such calls directly to a Public Safety Answering Point (PSAP).

C. <u>Provision of Operator Services</u>

C.1 BellSouth will offer to ACSI Operator Call Processing Access Service BLV/BLVI Service and Directory Assistance Access Services. Rates, terms and conditions are set forth in section VI.F for BLV/BLVI Service, Attachment C-11 for Directory Assistance Access Services, and Attachment C-10 for Operator Call Processing Access Services. Each such attachment is incorporated herein by this reference.

C.2 BellSouth also will offer to ACSI CMDS Hosting and the Non Sent Paid Report System pursuant to the terms and conditions set forth in Attachment C-12 and Attachment C-13, incorporated herein by this reference.

D. Transfer of Service Announcements

When an end user customer changes from BellSouth to ACSI, or from ACSI to BellSouth, and does not retain its original telephone number, the Party formerly providing service to the end user will provide a transfer of service announcement on the abandoned telephone number. Each Party will provide this referral service at no charge to the other Party. This announcement will provide details on the new number to be dialed to reach this customer.

E. Coordinated Repair Calls

ACSI and BellSouth will employ the following procedures for handling misdirected repair calls:

E.1 ACSI and BellSouth will educate their respective customers as to the correct telephone numbers to call in order to access their respective repair bureaus.

E.2 To the extent the correct provider can be determined, misdirected repair calls will be referred to the proper provider of local exchange service in a courteous manner, at no charge, and the end user will be provided the correct contact telephone number. In responding to repair calls, neither Party shall make disparaging remarks about each other, nor shall they use these repair calls as the basis for internal referrals or to solicit customers to market services. Either Party shall respond with accurate information in answering customer questions.

E.3 ACSI and BellSouth shall provide their respective repair contact numbers to one another on a reciprocal basis.

F. Busy Line Verification and Interrupt

F.1 Description

a. Each Party shall establish procedures whereby its operator bureau will coordinate with the operator bureau of the other Party in order to provide Busy Line Verification (BLV) and Busy Line Verification and Interrupt (BLVI) services on calls between their respective end users.

b. ACSI will route BLV and BLVI traffic to the BellSouth access tandem.

F.2 Compensation

Each Party shall charge the other Party for BLV and BLVI at the effective rates contained in BellSouth's applicable Local Interconnection Services Tariff(s).

G. Directory Assistance (DA)

G.1 Description

At ACSI's request, BellSouth will:

a. Provide to ACSI, over TOPs trunks, unbranded (or ACSI-branded, where available) directory assistance service which is comparable in every way to the directory assistance service BellSouth makes available to interexchange carriers.

b. In conjunction with subparagraph (a) above, provide caller optional directory assistance call completion service which is comparable in every way to the directory assistance call completion service BellSouth generally makes available to its end users, to the extent BellSouth generally offers such service to its end users.

c. BellSouth will provide ACSI operators on-line access to BellSouth's DA database.

G.2 Compensation

Initial rates, terms and conditions for DA Services shall be as provided in Attachment C-11 hereto.

H. Directory Listings and Directory Distribution

H.1 Subject to the execution of an agreement between BellSouth's affiliate, BellSouth Advertising and Publishing Co. (BAPCO), and ACSI in a form substantially similar to that attached as Attachment C-8, (1) ACSI's customers' primary listings shall be included in the appropriate white page (resident and business) listings or alphabetical directories, as well as the directory assistance database, (2) ACSI's business subscribers' listings will be included in all appropriate yellow pages or classified directories, and (3) copies of directories shall be delivered to ACSI's customers; all without charge.

H.2 BellSouth shall provide ACSI with a magnetic tape or computer disk containing the proper format to employ in submitting directory listings

Land daily updates. ACSI shall provide BellSouth with its directory listings and daily updates to those listings (including new, changed and deleted listings) in a mutually acceptable format. BellSouth shall include ACSI's customers in the directory assistance database associated with the areas in which ACSI provides exchange services within the same time frame as BellSouth includes its own customers in such databases.

H.3 BellSouth and its Affiliates will afford ACSI's directory listings information the same level of confidentiality which BellSouth affords its own directory listing information, and BellSouth shall ensure that access to ACSI's customer proprietary confidential directory information will be limited solely to those employees who immediately supervise or are directly involved in the processing and publishing of listings and directory delivery. BellSouth will not use ACSI's directory listings for the marketing of BellSouth's telecommunications services.

I. Access to Signaling and Signaling Databases

I.1 BellSouth will offer to ACSI use of its SS7 signaling network and signaling databases on an unbundled basis at the rates included in Attachment C-5 hereto. Signaling functionality will be available with both A-link and B-link connectivity.

I.2 BellSouth agrees to input NXX assigned to ACSI into the Local Exchange Routing Guide (LERG).

I.3 BellSouth will enter ACSI line information into its Line Information Database (LIDB) pursuant to the terms and conditions contained in Attachment C-6 hereto, incorporated herein by this reference. Entry of line information into LIDB will enable ACSI's end users to participate or not participate in alternate billing arrangements such as collect or third number billed calls.

I.4 BellSouth will provide ACSI with access to LIDB for call and card validation purposes pursuant to an Agreement substantially in the form of Attachment C-7 hereto, as amended hereafter to include unbundled local loops.

I.5 If ACSI utilizes BellSouth's 800 database for query purposes only applicable BellSouth tariffed rates will apply.

XII. TELEPHONE NUMBER PORTABILITY ARRANGEMENTS

A. The Parties agree to provide interim Service Provider Number Portability (SPNP) on a reciprocal basis between their networks to enable their end user customers to utilize telephone numbers associated with an Exchange Service provided by one

Party, in conjunction with an Exchange Service provided by the other Party, upon the coordinated or simultaneous termination of the first Exchange Service and activation of the second Exchange Service. The Parties shall provide reciprocal SPNP immediately upon execution of this Agreement via remote call forwarding (RCF) or Direct Inward Dialing (DID). SPNP shall operate as follows:

A.1 An end user customer of Party A elects to become an end user customer of Party B. The end user customer elects to utilize the original telephone number(s) corresponding to the Exchange Service(s) it previously received from Party A, in conjunction with the Exchange Service(s) it will now receive from Party B. Upon receipt of a service order assigning the number to Party B, Party A will implement an arrangement whereby all calls to the original telephone number(s) will be forwarded to a new telephone number(s) designated by Party B within the same access where the original NXX code is used. Party A will route the forwarded traffic to Party B over the appropriate trunk groups, as if the call had originated on Party A's network.

A.2 Party B will become the customer of record for the original Party A telephone numbers subject to the SPNP arrangements. Party A will provide Party B a single consolidated master billing statement for all collect, calling card, and third-number billed calls associated with those numbers, with subaccount detail by retained number. Such billing statement shall be delivered via either electronic data transfer, daily magnetic tape, or monthly magnetic tape (for which option there shall be no charge). Party A shall provide to Party B the EMR detail records associated with the calls on the master billing statement.

A.3 Party A will cancel line-based calling cards and will, as directed by Party B, update its Line Information Database (LIDB) listings for retained numbers, subject to RCF, and restrict or cancel calling cards associated with those forwarded numbers, as directed by Party B, subject to execution of an LIDB storage agreement in substantially the form attached hereto.

A.4 Within two (2) business days of receiving notification from the end user customer, Party B shall notify Party A of the customer's termination of service with Party B, and shall further notify Party A as to that customer's instructions regarding its telephone number(s). Party A will reinstate service to that customer, cancel the SPNP arrangements for that customer's telephone number(s), or redirect the SPNP arrangement pursuant to the customer's instructions at that time.

B. SPNP-RCF is a telecommunications service whereby a call dialed to an SPNP-RCF equipped telephone number, is automatically forwarded to an assigned seven or ten digit telephone number within the local calling area as defined in Section A3 of the BellSouth General Subscriber Service Tariff. The forwarded-to number is specified by ACSI or BellSouth, as appropriate. Where technologically feasible, the forwarding party will provide identification of the originating telephone number, via SS7 signaling, to the receiving party. Neither party guarantees, however, identification of the originating telephone number to the SPNP-RCF end user. SPNP-RCF provides a single call path for the forwarding of no more than one simultaneous call to the receiving party's specified forwarded-to number. Additional call paths for the forwarding of multiple simultaneous calls are available on a per path basis and are in addition to the rate for SPNP-RCF service.

C. The Parties shall provide RCF arrangements to each other at identical monthly rates. Recurring charges shall not exceed the actual cost of providing the service. There shall be no SPNP-RCF non-recurring charges. Until otherwise verified by reliable cost studies, actual cost for recurring charges are as stipulated in Attachment D hereto. The Parties agree that Article XXII of this Agreement shall apply to the rates, terms and conditions for SPNP-RCF arrangements.

D. SPNP-DID service provides trunk side access to end office switches for direct inward dialing to the other Party's premises equipment from the telecommunications network to lines associated with the other Party's switching equipment and must be provided on all trunks in a group arranged for inward service. A SPNP-DID trunk termination, provided with SS7 signaling only, applies for each trunk voice grade equivalent. In addition, direct facilities are required from the end office where a ported number resides to the end office serving the ported end user customer. Transport mileage will be calculated as the airline distance between the end office where the number is ported and the POI using the V&H coordinate method. SPNP-DID must be established with a minimum configuration of two channels and one unassigned telephone number per switch, per arrangement for control purposes. Transport facilities arranged for SPNP-DID may not be mixed with any other type of trunk group, with no outgoing calls placed over said facilities. SPNP-DID will be provided only where such facilities are available and where the switching equipment of the ordering party is properly equipped. Where SPNP-DID service is required from more than one wire center or from separate trunk groups within the same wire center, such service provided from each wire center or each trunk group within the same wire center shall be considered a separate service. Only customer dialed sent paid calls will be completed to the first number of a SPNP-DID number group, however, there are no restrictions on calls completed to other numbers of a SPNP-DID number group.

E. The Parties hereby agree to negotiate in good faith to establish the recurring and non-recurring charges, if any, for SPNP-DID. For this purpose, BellSouth shall

provide ACSI with its relevant cost studies, subject to applicable non-disclosure obligations. The Parties agree that Article XXII of this Agreement shall apply to the rates, terms and conditions of SPNP-DID arrangements. Until such permanent charges are established, the Parties agree that the rates contained in Attachment E hereof (hereinafter the "Interim SPNP-DID Rates") will apply.

F. Each Party is responsible for obtaining authorization from the end user for the handling of the disconnection of the end user's service, the provision of new local service and the provision of SPNP services. Each Party is responsible for coordinating the provision of service with the other to assure that its switch is capable of accepting SPNP ported traffic. Each Party is responsible for providing equipment and facilities that are compatible with the other's service parameters, interfaces, equipment and facilities and is required to provide sufficient terminating facilities and services at the terminating end of an SPNP call to adequately handle all traffic to that location and is solely responsible to ensure that its facilities, equipment and services do not interfere with or impair any facility, equipment, or service of the other Party or any of its end users.

G. Each Party is responsible for providing an appropriate intercept announcement service for any telephone numbers subscribed to SPNP services for which it is not presently providing local exchange service or terminating to an end user. Where either Party chooses to disconnect or terminate any SPNP service, that Party is responsible for designating the preferred standard type of announcement to be provided.

H. Each Party will be the other's Party's single point of contact for all repair calls on behalf of each Party's end user. Each Party reserves the right to contact the other Party's customers, if deemed necessary, for maintenance purposes.

I. The Parties will migrate from RCF or DID to Permanent Number Portability (PNP) as soon as practically possible, without interruption of service (to the degree possible) to their respective customers.

J. Under either an SPNP or PNP arrangement, ACSI and BellSouth will implement a process to coordinate Telephone Numbers Portability (TNP) cut-overs with Unbundled loop conversions (as described in Section IV of this Agreement).

K. The quality of service of calls to ported numbers should be identical to the quality of service of the calls to non-ported numbers.

L. If the FCC or a state commission issues regulations pursuant to 47 U.S.C. § 251 to require number portability in a manner or at rates different than that provided pursuant to this subsection, the Parties agree to revise this Agreement as necessary to fully comply with those requirements.

XIII. DISCONNECTION OF CUSTOMERS

A. BellSouth shall accept any requests from ACSI to disconnect the service of an existing BellSouth end user, except for BellSouth public and semipublic telephone service which service is subject to effective contracts with location providers. BellSouth will not require end user confirmation prior to disconnecting the end user's service. BellSouth will accept a request directly from an end user for conversion of the end user's service from ACSI to BellSouth or will accept a request from another CLEC for conversion of the SPNP service associated with an end user's service charge from ACSI to the CLEC. BellSouth will notify ACSI that such a request has been processed. This Article shall be subject to Section 258(a) and (b) of the Telecommunications Act which prohibits illegal changes of carrier selections and assesses liability for such changes, and any change of service verification procedures which may be promulgated by the FCC. ACSI and BellSouth shall each execute a blanket letter of authorization for each state substantially in the form attached as Attachment F hereto with respect to customer disconnections. The Parties shall each be entitled to adopt their own internal processes for verification of customer authorization of disconnection of service; provided, however, that such processes shall comply with applicable state and federal law and until superseded shall be deemed adequate for purposes of this Agreement if such processes comply with FCC guidelines applicable to Presubscribed Interexchange Carriers (PIC) changes.

B. If either Party determines that an unauthorized change in local service provider has occurred, such Party shall reestablish service with the appropriate local service provider as requested by the end user and will assess the other Party an Unauthorized Change Charge of $19.41 per line. The appropriate nonrecurring charges to reestablish the customer's service with the appropriate local service provider will also be assessed to the other Party because of the unauthorized change. These charges shall be adjusted if such Party provides satisfactory proof of authorization.

C. If BellSouth accepts an order placed by itself or another CLEC (or local reseller) to disconnect the SPNP to an ACSI end user, BellSouth shall notify ACSI of the change within three (3) days thereof.

XIV. RESALE OF BELLSOUTH LOCAL EXCHANGE SERVICES

BellSouth hereby agrees that ACSI may at any time during the term of this Agreement elect to resell BellSouth's local exchange services under the terms and conditions of any local services resale agreement reached between BellSouth and any other telecommunications carrier. ACSI may select any such resale agreement at any time prior to the expiration of this Agreement.

XV. RESPONSIBILITIES OF THE PARTIES

A. BellSouth and ACSI agree to treat each other fairly, non-discriminatorily, and equally for all items included in this Agreement or related to the support of items included in this Agreement.

B. ACSI and BellSouth will work cooperatively to minimize fraud associated with third-number billed calls, calling card calls, or any other services related to this Agreement. The Parties fraud minimization procedures are to be cost effective and implemented so as not to unduly burden or harm one Party as compared to the other.

C. ACSI and BellSouth agree to promptly exchange all necessary records for the proper billing of all traffic.

D. ACSI and BellSouth will review engineering requirements on a quarterly basis and establish forecasts for trunk utilization, POI trunks, MPB arrangements, E-911, EISCC facility requirements, quantities of DNCF, loops and other services provided under this Agreement. New trunk groups will be implemented as dictated by engineering requirements for both BellSouth and ACSI. BellSouth and ACSI are required to provide each other the proper call information (*e.g.*, originated call party number and destination call party number) to enable each company to bill in a complete and timely manner.

E. The Parties will cooperate by exchanging technical information in order to identify and explore potential solutions to enable ACSI to establish unique rate centers, or to assign a single NXX code across multiple rate centers.

F. ACSI and BellSouth will work jointly and cooperatively in developing and implementing common manual and/or electronic interfaces (including, for example, data elements, data format, and data transmission) from which to place service orders and trouble reports involving the provision of loops, DNCF, directory assistance, directory listings, E-911, and other services included in this Agreement. To the extent reasonable, ACSI and BellSouth will utilize the standards established by industry fora, such as OBF.

G. BellSouth will support ACSI requests related to central office (NXX) code administration and assignments in an effective and timely manner. ACSI and BellSouth will comply with code administration requirements as prescribed by the FCC, the state commissions, and accepted industry guidelines.

H. BellSouth shall not impose a cross-connect fee on ACSI where ACSI accesses 911 or E-911, reciprocal traffic exchange trunks, and network platform services, through a collocation arrangement at the BellSouth Wire Center.

I. Notwithstanding any other provision of this Agreement, it is mutually understood and agreed that both Parties hereto reserve the right to establish each of the following, consistent with generally accepted industry standards.

1. Rate centers (location and area within)

2. Points of interchange (including meet points)

3. Switching entity designation and supporting data (including inbound route choice)

   a. end office

   b. homing/homed to tandem

4. Association of routing point(s) with end offices, POIs, *etc.*

5. Published rate center and locality designations.

XVI. NETWORK DESIGN AND MANAGEMENT

A. The Parties agree to work cooperatively to install and maintain reliable interconnected telecommunications networks, including but not limited to, maintenance contact numbers and escalation procedures. BellSouth agrees to provide public notice of changes in the information necessary for the transmission and routing of services using its local exchange facilities or networks, as well as of any other changes that would affect the interoperability of those facilities and networks.

B. The interconnection of all networks will be based upon accepted industry/national guidelines for transmission standards and traffic blocking criteria.

C. The Parties will work cooperatively to apply sound network management principles by invoking appropriate network management controls to alleviate or prevent network congestion.

D. For network expansion, the Parties agree to review engineering requirements on a quarterly basis and establish forecasts for trunk utilization. New trunk groups will be added as reasonably warranted.

E. ACSI and BellSouth will exchange appropriate information (*e.g.*, maintenance contact numbers, network information, information required to comply with law enforcement and other security agencies of the Government) to achieve desired reliability. In addition, ACSI and BellSouth will cooperatively plan and implement coordinated repair procedures to ensure customer trouble reports are resolved in a timely and appropriate manner.

XVII. TERM

A. The term of this Agreement shall be two years, beginning September 1, 1996.

B. The Parties agree that by no later than September 1, 1997, they shall commence negotiations with regard to the terms, conditions and prices of local interconnection to be effective beginning September 1, 1998.

C. If, within 90 days of commencing the negotiation referred to in Section XVII.B above, the Parties are unable to satisfactorily negotiate new local interconnection terms, conditions and prices, either Party may petition the state commission to establish appropriate local interconnection arrangements pursuant to 47 U.S.C. 252. The Parties agree that, in such event, they shall encourage the Commission to issue its order regarding the appropriate local interconnection arrangements no later than July 1, 1998. The Parties further agree that in the event the Commission does not issue its order prior to July 1, 1998 or if the Parties continue beyond September 1, 1998 to negotiate the local interconnection arrangements without Commission intervention, the terms, conditions and prices ultimately ordered by the Commission, or negotiated by the Parties, will be effective retroactive to September 1, 1998. Until the revised local interconnection arrangements become effective, the Parties shall continue to exchange traffic pursuant to the terms and conditions of this Agreement.

D. The Parties agree that (1) if the FCC or a state commission or other state or local body having jurisdiction over the subject matter of this Agreement finds that the terms of this Agreement are inconsistent in one or more material respects with any of its or their respective decisions, rules or regulations promulgated, or (2) if an FCC or state commission order or requirement has the effect of preempting any term of this Agreement, then in the event of the occurrence of (1) or (2) the Parties shall immediately commence good faith negotiations to conform this Agreement with any such decision, rule, regulation or preemption. The revised agreement shall have an effective date that coincides with the effective date of the original FCC or state commission action giving rise to such negotiations. The Parties agree that the rates, terms and conditions of any new agreement shall not be applied retroactively to any period prior to such effective date.

XVIII. IMPLEMENTATION OF AGREEMENT

The Parties agree that within 30 days of the execution of this Agreement they will adopt a schedule for the implementation of this Agreement. The schedule shall state with specificity, ordering, testing, and full operational time frames. The

implementation shall be attached to this Agreement as an addendum and specifically incorporated herein by this reference.

XIX. UNIVERSAL SERVICE

The Parties acknowledge that BellSouth will guarantee the provision of universal service as the carrier-of-last-resort throughout its territory in Florida until January 1, 1998 without contribution from ACSI.

XX. FORCE MAJEURE

Neither Party shall be responsible for delays or failures in performance resulting from acts or occurrences beyond the reasonable control of such Party, regardless of whether such delays or failures in performance were foreseen or foreseeable as of the date of this Agreement including, without limitation: fire, explosion, power failure, acts of God, war, revolution, civil commotion, or acts of public enemies; any law, order, regulation, ordinance or requirement of any government or legal body; or labor unrest, including, without limitation, strikes, slowdowns, picketing or boycotts; or delays caused by the other Party or by other service or equipment vendors; or any other circumstances beyond the Party's reasonable control. In such event the Party affected shall, upon giving prompt notice to the other Party, be excused from such performance on a day-today basis to the extent of such interference (and the other Party shall likewise be excused from performance of its obligations on a day-for-day basis to the extent such Party's obligations relate to the performance so interfered with). The affected Party shall use its best efforts to avoid or remove the cause of nonperformance and both Parties shall proceed to perform with dispatch once the causes are removed or cease.

XXI. LIABILITY AND INDEMNIFICATION

A. Liability Cap.

1. With respect to any claim or suit, whether based in contract, tort or any other theory of legal liability, by ACSI, any ACSI customer or by any other person or entity, for damages associated with any of the services provided by BellSouth pursuant to or in connection with this Agreement, including but not limited to the installation, provision, preemption, termination, maintenance, repair or restoration of service, and subject to the provisions of the remainder of this Article, BellSouth's liability shall be limited to an amount equal to the proportionate charge for the service provided pursuant to this Agreement for the period during which the service was affected. Notwithstanding the foregoing, claims for damages by ACSI, any ACSI customer or any other person or entity resulting from the gross negligence or willful misconduct of

BellSouth and claims for damages by ACSI resulting from the failure of BellSouth to honor in one or more material respects any one or more of the material provisions of this Agreement shall not be subject to such limitation of liability.

2. With respect to any claim or suit, whether based in contract, tort or any other theory of legal liability, by BellSouth, any BellSouth customer or by any other person or entity, for damages associated with any of the services provided by ACSI pursuant to or in connection with this Agreement, including but not limited to the installation, provision, preemption, termination, maintenance, repair or restoration of service, and subject to the provisions of the remainder of this Article, ACSI's liability shall be limited to an amount equal to the proportionate charge for the service provided pursuant to this Agreement for the period during which the service was affected. Notwithstanding the foregoing, claims for damages by BellSouth, any BellSouth customer or any other person or entity resulting from the gross negligence or willful misconduct of ACSI and claims for damages by BellSouth resulting from the failure of ACSI to honor in one or more material respects any one or more of the material provisions of this Agreement shall not be subject to such limitation of liability.

B. Neither Party shall be liable for any act or omission of any other telecommunications company to the extent such other telecommunications company provides a portion of a service.

C. Neither Party shall be liable for damages to the other Party's terminal location, POI or the other Party's customers' premises resulting form the furnishing of a service, including but not limited to the installation and removal of equipment and associated wiring, except to the extent the damage is caused by such Party's gross negligence or willful misconduct.

D. Notwithstanding subsection A, the Party providing services under this Agreement, its affiliates and its parent company shall be indemnified, defended and held harmless by the Party receiving such services against any claim, loss or damage arising from the receiving Party's use of the services provided under this Agreement, involving: (1) claims for libel, slander, invasion of privacy or copyright infringement arising from the content of the receiving Party's own communications; (2) any claim, loss or damage claimed by the receiving Party's customer(s) arising from such customer's use of any service, including 911/E-911, that the customer has obtained from the receiving Party and that the receiving Party has obtained from the supplying Party under this Agreement; or (3) all other claims arising out of an act or omission of the receiving Party in the course of using services provided pursuant to this Agreement. Notwithstanding the foregoing, to the extent that a claim, loss or damage is caused by the gross negligence or willful misconduct of a supplying Party, the receiving Party shall

have no obligation to indemnify, defined and hold harmless the supplying Party hereunder.

E. Neither Party guarantees or makes any warranty with respect to its services when used in an explosive atmosphere. Notwithstanding subsection A, each Party shall be indemnified, defended and held harmless by the other Party or the other Party's customer from any and all claims by any person relating to the other Party or the other Party's customer's use of services so provided.

F. No license under patents (other than the limited license to use in the course of using a service provided pursuant to this Agreement) is granted by one Party to the other or shall be implied or arise by estoppel, with respect to any service offered pursuant to this Agreement. Notwithstanding subsection A, the Party providing a service pursuant to this Agreement will defend the Party receiving such service against claims of patent infringement arising solely from the use by the receiving Party of such service and will indemnify the receiving Party for any damages awarded based solely on such claims. Such indemnification shall not, however, extend to claims for patent infringement to the extent the alleged infringement results from:

1. Modification of the service by someone other than the providing Party and/or its subcontractors, where there would be no such infringement or violation in the absence of such modification; or

2. The combination, operation or use of the service with any product, data or apparatus not provided by the providing Party and/or its subcontractors, where there would be no such infringement or violation in the absence of such combination, operation or use.

G. Promptly after receipt of notice of any claim or the commencement of any action for which a Party may seek indemnification pursuant to this Article XXI, such Party (Indemnified Party) shall promptly give written notice to the other Party (the Indemnifying Party) of such claim or action, but the failure to so notify the Indemnifying Party shall not relieve the Indemnifying Party of any liability it may have to the Indemnified Party except to the extent the Indemnifying Party has actually been prejudiced thereby. The Indemnifying Party shall be obligated to assume the defense of such claim, at its own expense. The Indemnified Party shall cooperate with the Indemnifying Party's reasonable requests for assistance or information relating to such claim, at the Indemnifying Party's expense. The Indemnified Party shall have the right to participate in the investigation and defense of such claim or action, with separate counsel chosen and paid for by the Indemnified Party.

XXII. MOST FAVORABLE PROVISIONS

A. If as a result of any proceeding before any Court, Commission, or the FCC, any voluntary agreement or arbitration proceeding pursuant to the Act, or pursuant to any applicable federal or state law, BellSouth becomes obligated to provide interconnection, number portability, unbundled access to network elements or any other services related to interconnection, whether or not presently covered by this Agreement, to another telecommunications carrier operating within a state within the BellSouth territory at rates or on terms and conditions more favorable to such carrier than the comparable provisions of this Agreement, then ACSI shall be entitled to add such network elements and services, or substitute such more favorable rates, terms or conditions for the relevant provisions of this Agreement, which shall apply to the same states as such other carrier and such substituted rates, terms or conditions shall be deemed to have been effective under this Agreement as of the effective date thereof to such other carrier.

B. If the more favorable provision is a result of the action of an appropriate regulatory agency or judicial body, whether commenced before or after the effective date of this Agreement, the Parties agree to incorporate such order in this Agreement as of its effective date. In the event BellSouth files and receives approval for a tariff offering to provide any substantive service of this Agreement in a way different than that provided for herein, the Parties agree that the Companies shall be eligible for subscription to said service at the rates, terms and conditions contained in tariffs as of the effective date of the tariff.

C. In the event that BellSouth provides interconnection and/or temporary number portability arrangements via tariff or has or enters into an interconnection and/or temporary number portability agreement with another entity, BellSouth will permit ACSI an opportunity to inspect such tariff or agreement and, upon ACSI's request, BellSouth will immediately offer ACSI an agreement on the same material terms with effect from the date BellSouth first made such tariff effective or entered into such arrangement and for the remainder of the term of this Agreement. The other items covered by this Agreement and not covered by such tariff or agreement shall remain unaffected and as to such items this Agreement shall remain in effect.

D. In the event that BellSouth is required by an FCC or a state commission decision or order to provide any one or more terms of interconnection or other matters covered by this Agreement that individually differ from any one or more corresponding terms of this Agreement, ACSI may elect to amend this Agreement to reflect all of such differing terms (but not less than all) contained in such decision or order, with effect from the date ACSI makes such election. The other items covered by this Agreement and not covered by such decision or order shall remain unaffected and as to such items this Agreement shall remain in effect.

XXIII. DEFAULT

If either Party defaults in the payment of any amount due hereunder, or if either Party violates any other provision of this Agreement, and such default or violation shall continue for thirty (30) days after written notice thereof, the other Party may terminate this Agreement forthwith by written instrument. The failure of either Party to enforce any of the provisions of this Agreement or the waiver thereof in any instance shall not be construed as a general waiver or relinquishment of its part of any such provision, but the same shall, nevertheless, be and remain in full force and effect.

XXIV. NONDISCLOSURE

A. All information, including but not limited to specifications, microfilm, photocopies, magnetic disks, magnetic tapes, drawings, sketches, models, samples, tools, technical information, data, employee records, maps, financial reports, and market data, (i) furnished by one Party to the other Party dealing with customer specific, facility specific, or usage specific information, other than customer information communicated for the purpose of publication or directory database inclusion, or (ii) in written, graphic, electromagnetic, or other tangible form and marked at the time of delivery as "Confidential" or "Proprietary," or (iii) communicated orally and declared to the receiving Party at the time of delivery, or by written notice given to the receiving Party within ten (10) days after delivery, to be "Confidential" or "Proprietary" (collectively referred to as "Proprietary Information"), shall remain the property of the disclosing Party.

B. Upon request by the disclosing Party, the receiving Party shall return all tangible copies of Proprietary Information, whether written, graphic or otherwise, except that the receiving Party may retain one copy for archival purposes.

C. Each Party shall keep all of the other Party's Proprietary Information confidential and shall use the other Party's Proprietary Information only for performing the covenants contained in the Agreement. Neither Party shall use the other Party's Proprietary Information for any other purpose except upon such terms and conditions as may be agreed upon between the Parties in writing.

D. Unless otherwise agreed, the obligations of confidentiality and non-use set forth in this Agreement do not apply to such Proprietary Information as:

1. was at the time of receipt already known to the receiving Party free of any obligation to keep it confidential evidenced by written-records prepared prior to delivery by the disclosing Party; or

2. is or becomes publicly known through no wrongful act of the receiving Party; or

3. is rightfully received from a third person having no direct or indirect secrecy or confidentiality obligation to the disclosing Party with respect to such information; or

4. is independently developed by an employee, agent, or contractor of the receiving Party which individual is not involved in any manner with the provision of services pursuant to the Agreement and does not have any direct or indirect access to the Proprietary Information; or

5. is disclosed to a third person by the disclosing Party without similar restrictions on such third person's rights; or

6. is approved for release by written authorization of the disclosing Party; or

7. is required to be made public by the receiving Party pursuant to applicable law or regulation provided that the receiving Party shall give sufficient notice of the requirement to the disclosing Party to enable the disclosing Party to seek protective orders.

E. Effective Date. Notwithstanding any other provision of this Agreement, the Proprietary Information provisions of this Agreement shall apply to all information furnished by either Party to the other in furtherance of the purpose of this Agreement, even if furnished before the date of this Agreement. The obligation to that information as confidential shall survive the termination of this Agreement.

XXV. ARBITRATION

A. Any controversy or claim arising out of, or relating to, this Contract or the breach thereof shall be settled by arbitration, in accordance with the rules then obtaining, of the American Arbitration Association, and judgment upon the award rendered may by entered in any court having jurisdiction of the controversy or claim. As an express condition precedent to any legal or equitable action or proceeding in the event of disputes or controversies as to the amount of loss or damage arising out of this Contract, such disputes or controversies shall first be submitted to the arbitration of two persons, one chosen by each Party, who shall jointly select a third person. Provided, however, that nothing contained herein shall preclude either Party from filing any complaint or other request for action or relief with the FCC or the appropriate state commission, including any appeals thereof. The Party which does not prevail shall pay all reasonable costs of the arbitration or other formal complaint proceeding, including reasonable attorney's fees and other legal expenses of the prevailing Party.

B. Nothing herein shall preclude ACSI from seeking state commission arbitration, pursuant to Section 252 of the Telecommunications Act, of issues upon which the

Parties hereto were unable to reach agreement during the negotiations hereof. The Parties acknowledge that they were unable to reach agreement on the rates applicable to unbundled local loops, associated cross connections, local loop multiplexing and switch ports, and that these issues will be submitted for resolution by the state commissions through arbitration. BellSouth hereby waives any right to contest ACSI's ability to seek state commission and/or FCC review of such unresolved issues.

XXVI. WAIVERS

Any failure by either Party to insist upon the strict performance by the other Party of any of the provisions of this Agreement shall not be deemed a waiver of any of the provisions of this Agreement, and each Party, notwithstanding such failure, shall have the right thereafter to insist upon the specific performance of any and all of the provisions of this Agreement.

XXVII. GOVERNING LAW

This Agreement shall be governed by, construed and enforced in accordance with, applicable federal law and the laws of the State in which the arrangements are implemented.

XXVIII. ARM'S LENGTH NEGOTIATIONS

This Agreement was executed after arm's length negotiations between the undersigned Parties and reflects the conclusion of the undersigned that this Agreement is in the best interests of all Parties.

XXIX. NOTICES

Any notices required by or concerning this Agreement shall be sent via facsimile and overnight courier to the Parties at the addresses shown below:

Riley M. Murphy
Executive Vice President & General Counsel
American Communications Services, Inc.
131 National Business Parkway, Suite 100
Annapolis Junction, Maryland 20701

Richard Dender
Account Manager
BellSouth Telecommunications, Inc.
South E4E1
3535 Collonnade Parkway
Birmingham, Alabama 35243

Each Party shall inform the other of any changes in the above addresses.

XXX. ENTIRE AGREEMENT

This Agreement and its Attachments, incorporated herein by this reference, sets forth the entire understanding and supersedes prior agreements between the Parties relating to the subject matter contained herein and merges all prior discussions between them, and neither Party shall be bound by any definition, condition, provision, representation, warranty, covenant or promise other than as expressly stated in this Agreement or as is contemporaneously or subsequently set forth in writing and executed by a duly authorized officer or representative of the Party to be bound thereby.

XXXI. COUNTERPARTS

This Agreement may be executed in any number of counterparts, each of which when executed and delivered shall be deemed an original and all such counterparts shall constitute one and the same instrument. Signatures transmitted by the Parties by facsimile shall have the same effect as original signatures as of the date transmitted by the executing Party.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their respective duly authorized representatives.

AMERICAN COMMUNICATIONS SERVICES, INC.	BELLSOUTH TELECOMMUNICATIONS, INC.
By: _____ Name/Title	By: _____ Name/Title
Date: _____	Date: _____

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their respective duly authorized representatives.

AMERICAN COMMUNICATIONS SERVICES, INC. BELLSOUTH TELECOMMUNICATIONS, INC.

By: Riley M. Murphy/Executive Vice President
Name/Title

By: Jerry D. Hendrix / Manager
Name/Title

Date: July 25, 1996

Date: July 25, 1996

ATTACHMENT A

OPERATING SUBSIDIARIES OF AMERICAN COMMUNICATIONS SERVICES, INC.

ACSI of Mobile, Inc.

ACSI of Montgomery, Inc.

ACSI of Birmingham, Inc.

ACSI of Charleston, Inc.

ACSI of Columbia, Inc.

ACSI of Columbus, Inc.

ACSI of Greenville, Inc.

ACSI of Spartanburg, Inc.

ACSI of Chattanooga, Inc.

ACSI of Louisville, Inc.

ACSI of Lexington, Inc.

ACSI of Jackson, Inc.

ACSI of Baton Rouge, Inc.

ATTACHMENT B

DEFINITIONS

1. **"Access Service Request"** or **"ASR"** means an industry standard form used by the Parties to add, establish, change or disconnect trunks for the purposes of interconnection.

2. **"Advanced Intelligent Network" or "AIN"** means a network switching and architecture concept that centralizes intelligence in databases and application processors internal to the network rather than in central office switching systems. AIN enables the network to complete interactions (or actions) regarding routing, signaling and information quickly and accurately. The AIN concept permits intelligent database systems and application processors to be either centralized or distributed throughout one network.

3. **"Advanced Intelligent Network Features"** or **"AIN/IN Features"** refers to the replacement or enhancement of electronic switching and electronic network hardware and software functions via the use of distributed network based processors and Common Channel Interoffice Signaling (CCIS/SS7). For example, SCPs and STCs are part of the advanced intelligent network. AIN also features a "service creation environment" which permits the end user or reseller to create, and modify, in near real time, their own network routing instructions for calls to their facilities, creating, in effect a user customized virtual network.

4. **"Affiliate"** means a person that (directly or indirectly) owns or controls, is owned or controlled by, or is under common ownership or control with, another person. For purposes of this paragraph, the term "own" means to own an equity interest (or equivalent thereof) or more than 10 percent.

5. **"American National Standards Institute"** or **"ANSI"** is a private, non-profit organization representing more than 1,300 corporations, 30 government agencies, 20 institutions and 250 trade, labor, consumer, technical and professional organizations which sets voluntary standards for the United States (U.S.). ANSI has established an Information Infrastructure Standards Panel. ANSI is appointed by the U.S. State Department as a representative of the U.S. to the ITU's International Standards Organization.

6. **"Automated Report Management Information System"** or **"ARMIS"** means the most current ARMIS 4308 report issued by the FCC.

7. **"Automatic Number Identification"** or **"ANI"** is a telecommunications carrier signaling parameter that identifies, through industry standard network interfaces and formats (either SS7/CCIS (preferred), or in band signalling (predecessor technology), the billing number of the calling party. This functionality is also known and referred to as "Calling Party Number" or "CPN." This term is not to be limited by "Called Party Identification" service, another product that is frequently required by call centers.

8. **"Bell Communications Research"** or **"BellCore"** means an organization owned jointly by the RBOC that conducts research and development projects for them.

9. **"Busy Line Verification/BLVI Traffic"** or **"BLV/BLVI Call"** refers to an operator call in which the end user inquires as to the busy status of, or requests an interruption of, a call on an Exchange Service.

10. **"Calling Party Number"** or **"CPN"** means a common channel signalling parameter which refers to the number transmitted through the network identifying the calling party.

11. **"Carrier Identification Code"** or **"CIC"** means a three or four digit number assigned to an IXC that identifies that carrier's traffic.

12. **"Central Office Switch," "Central Office"** or **"CO"** refers to either a means a Switching entity or the physical location (site) which houses a traditional central office switch and its peripherals within the public switched telecommunications network, including but not limited to:

a. **"End Office Switches"** which are Class 5 switches from which End User Telecommunications Services are directly connected and offered.

b. **"Tandem Office Switches"** which are Class 4 switches which are used to connect and switch trunk circuits between and among Central Office Switches.

c. **"Remote Switching Module"** or **"RSM"** refers to a Central Office architecture element that permits the Central Office switch the ability to extend either line or trunk side interfaces, with all typical service features and functions to a cabinet which is physically remote from the home CO site, and where stand alone capability may or may not be implemented. RSMs are sometimes also referred to as "switches" in the BellSouth infrastructure inventory discussions and to that extent may be used as interchangeable terms.

d. **"Central Office Switches"** may be employed as combination End Office and Tandem Office Switches (combination Class 5/Class 4).

13. **"Central Office Equipment"** refers to the traditional Central Office Switch itself and all of the peripheral electronics (network elements) that supply network-based processing functions other than "transport." Network elements which provide "Transport" are generally referred to as "Outside Plant" equipment or electronics.

14. **"Centralized Message Distribution System"** or **"CMDS"** means the billing record and clearing house transport systems that incumbent LECs use to exchange out-collects, in-collects and Carrier Access Billing System ("CABS") records.

15. **"CLASS Features"** refers to features and functions (products) which become available on the "line side" of the Central Office through the use of common channel signalling system seven (CCIS/SS7.) CLASS features include, but are not necessarily limited to: Automatic Call Back, Call Trace, Caller ID and Related Blocking Features, Distinctive Ringing/Call Waiting, Selective Call Forward, and Selective Call Rejection. See also: "Software-based network elements and services."

16. **"Commission"** means the appropriate regulatory agency in each of BellSouth's nine state regions, Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

17. **"Common Channel (Interoffice) Signaling" or "CCIS"** means a method of digitally transmitting call set-up and network control data over separate physical or virtual connections from those which normally carry the actual call user connections. This technology supersedes "in-band" signalling. The current industry standard for common carrier network signaling is called Signaling System 7.

18. **"Cross Connect"** refers to the equipment physical or logical "meet point" between network elements.

a. For example, within a wire center, it is a connection between line termination blocks on the two sides of a distribution frame or between individual line terminations on the same side of the frame. Cross connections are made to route traffic from one group of lines to another specific group of lines on the distribution frame, or to route traffic from one individual line to another specific line on the distribution frame.

b. A piece of manual, electromechanical or electronic apparatus designed to make and rearrange the cross connections among the lines that terminate on a distribution frame. Cross-connect devices are employed where rearrangement of transmission circuits occur infrequently.

19. **"Customer Local Area Signalling Services"** or **"CLASS"** means features available to end users based on availability of CCIS, including, without limitation, Automatic Callback, Call Trace, Caller ID and related blocking, Distinctive Ringing, Call Waiting, Selective Call Forward and Selective Call Rejection.

20. **"DID"** or **"Direct Inward Dialing"** is a feature which allows callers on the public switched network to directly dial a specific PBX or Centrex extension telephone.

21. **"Directory Number Call Forwarding"** or **"DNCF"** is one form of Interim Number Portability ("ISPNP") which is provided through call routing and call forwarding capabilities. DNCF will forward calls dialed to an original telephone number to a new telephone number on a multi-path basis. DNCF is not limited to listed directory numbers.

22. **"Digital Loop Carrier" or "DLC"** consists of electronic equipment which uses one or more digital facilities, usually DS-1s, to provide voice grade analog or ISDN telecommunication services. Service is multiplexed at a remote location, transmitted over connecting digital facilities and demultiplexed, usually at a switching location. It can be concentrating or non-concentrating. **"Integrated Digital Loop Carrier"** is the same as Digital Loop Carrier, except it is not demultiplexed, but instead the DS-1 facilities are directly connected into compatible digital equipment.

23. **"Digital Service - Level 0"** or **"DS-0"** means a signal rate of 64 kilobits per second.

24. **"Digital Service - Level 1"** or **"DS-1"** is an industry standard telecommunications transport channel which can support a digital signaling rate of 1.544 Mbps (Mega Bits Per Second) at industry standard performance levels. Unless identified and priced as "fractional," this channel is assumed to be fully available.

25. **"Digital Service - Level 3"** or **"DS-3"** is an industry standard telecommunications transport channel which can support a digital signal rate of 44.736 Mbps (Mega Bits Per Second) at industry standard performance levels. Unless identified and priced as "fractional," this channel is assumed to be fully available.

26. **"DSX"** or **"Digital and Access Cross-connect System ("DACS")** is a cross-connection product (including a mounting bay/panel) used for termination of equipment and facilities operating at digital rates.

27. **"Electronic Data Interchange," "Electronic File Transfer"** or **"EFT"** is a process which utilizes an electronic format and protocol to send/receive digital data business documents between different companies' computers over phone lines. There are several generally accepted industry standards for EFT, pending acceptance of a single common standard.

28. **"Exchange Access"** means the offering of access to telephone exchange services or facilities for the purpose of the origination or termination of telephone toll services.

29. **"Exchange Message Record"** or **"EMR"** is a term used to refer to the current standard used for exchange of telecommunications message information among Local Exchange Carriers for billable, non-billable, sample, settlement and study data. EMR format is currently contained in BR-010-200-010 CRIS Exchange Message Record, a Bellcore document which has traditionally defined Bell standards for exchange message records.

30. **"Exchange Service"** is a traditional marketing term used to refer to a service offered to end users which provides the end user with a telephonic connection to, and a unique local telephone number address on, the public switched telecommunications network, and which enables such end user to generally place calls to, or receive calls from, other stations on the public switch telecommunications network. Exchange Services include, but are not limited to, basic residence and business line service, PBX trunk line service, pay telephone stations, pay phone line service, Centrex and Centrex-like line services, AIN, and ISDN line/trunk services. Exchange Service does not traditionally include Private Line, Toll, Switched and Special Access (digital channel) services, which have traditionally been separately billed and regulated, although today these services are frequently formed from and bundled within common transport and network elements.

31. **"Feature Group A" or "FGA"** means FGA interexchange access as defined in BellSouth's FCC Tariff No. 1.

32. **"Feature Group B"** or **"FGB"** means FGB interexchange access as defined in BellSouth's FCC Tariff No. 1.

33. **"Feature Group D"** or **"FGD"** means FGD interexchange access as defined in BellSouth's FCC Tariff No. 1.

34. **"Interconnection"** means the connection between network elements that enable the formation of network systems. The objective of interconnection is to provide transport and transparent interoperation among separate pieces of equipment, transmission facilities, *etc.*, within, between or among networks. The architecture of interconnection may include several industry standard, or regulatory structured methods including, but not limited to, collocation arrangements ("physical" and "virtual" collocation) arrangements via industry standard interface arrangements.

35. **"Interconnection Point," "Point of Interconnection"** or **"POI"** includes all points where ACSI is entitled to interconnect with BellSouth under the terms of this Agreement, including, without limitation, points on the line side and trunk side of each Network Element.

36. **"Interexchange Carrier"** or **"IXC"** traditionally means a provider of stand-alone interexchange telecommunications services. Under the new Act, the term IXC may be interpreted to embrace any competitive intermediary telecommunications carrier providing switched (and/or private line) services between switching entities operated by local exchange service providers (BOC-LEC, Independent-LEC, Competitive-LEC, Wireless-LEC). IXC connectivity is typically an access services arrangement. The use of this term does not preclude the provider from also offering bundled telecommunications services.

37. **"Integrated Services Digital Network"** or **"ISDN"** refers to a switched network service that provides end-to-end digital connectivity for the simultaneous transmission of voice, data, video or multimedia services. Basic Rate Interface-ISDN (BRI-ISDN) provides for digital transmission of two 64 Kbps bearer channels and one 16 Kbps data channel (2B + D). Primary Rate Interface-ISDN (PRI-ISDN) provides for digital transmission of twenty-three (23) 64 Kbps bearer channels and one (1) 16 Kbps data channel (23B + D). Unless identified and priced as "fractional" both BRI and PRI ISDN circuits are assumed to be fully available.

38. **"Interim Number Portability"** or **"INP"** refers to the temporary means by which BellSouth allows customers to retain their existing telephone numbers when changing from one local exchange carrier to another. This service provides transparent delivery of Telephone Number Portability ("TNP") capabilities, from a customer standpoint in terms of call completion, and from a carrier standpoint in terms of compensation, through the use of call routing, forwarding, and addressing capabilities. The interim nature of these arrangements result from the fact that their performance and cost cannot meet or sustain end-user customer or co-carrier expectations. Standards for permanent number portability will be set by regulatory stricture, and both Parties agree to implementation of permanent number portability at the earliest possible point in time.

39. **"InterLATA Service"** means telecommunications between a point located in one LATA and a point located outside such area.

40. **"Intermediary function"** means the delivery of local traffic from a local exchange carrier other than BellSouth; an ALEC other than ACSI; another telecommunications company such as a wireless telecommunications provider through the network of BellSouth or ACSI to an end user of BellSouth or ACSI.

41. **"IntraLATA Service"** means telecommunications between a point located in one LATA and a point located in the same LATA.

42. **"International Telecommunications Union"** or **"ITU"** is a United Nations organization which comprises the organization previously known as the CCITT. Open Standards Interconnection (OSI) standards are established by the ITU. Telecommunications Management Network (TMN) standards are a subset of the OSI model. The American National Standards Institute (ANSI) is appointed by the State Department as a U.S. representative to the ITU's ISO.

43. **"Line Side"** refers to local loop interface ports of an end office switch that are programmed to treat the circuit as a local line connected to an ordinary telephone station set.

44. **"Link"** or **"Loop"** are synonyms for a communications channel or circuit on the line side or the trunk side of the common carrier switching element. This term has been used as a marketing term to refer to an element of "Exchange Service" whereby BellSouth provides transport between the Minimum Point of Entry (MPOE) at an end user premise and the BellSouth wire center from which the transport is extended. The communications channel, circuit or group of channels or circuits which are segmented from a transmission medium that extends from BellSouth's Central office or wire center's Main Distribution Frame, DSX-panel, or functionally comparable piece of equipment, to a demarcation point or connector block in/at a customer's premises. "Links" are communications channels or circuits, which may be provided as 2-wire or 4-wire copper pairs, as radio frequencies or as a channel on a high-capacity feeder/distribution facility so long as all industry standard interface, performance, price, privacy, reliability and other operational characteristics are functionally transparent and are equal to or better than that of dedicated copper pairs. Examples of communications channels or circuits that are "links" or "loops" include, but are not limited to:

45. **"Basic Voice Grade Line/Link/Circuit"** is a basic voice grade line which is a two wire circuit or equivalent voice frequency channel for the transmission of analog signals with an approximate bandwidth of 300 to 3000 Hz (3 Khz analog or 56 Kbps digital (POTS grade, capable of transmitting voice or analog data transmissions up to 28.8 BPS with current generation modems). In addition, Basic Links must meet all RELRA and USF requirements for "basic telephone service" imposed by State and Federal regulatory authorities. Digital signaling, transmission performance and reliability characteristics for basic "link" circuits are a matter of industry standard, having an expected measured loss or gain of approximately +/-6dB, and a signal to noise ratio that does not exceed (fill-in) and capable of supporting fully functional connections for up to 2 miles from the nearest electronic network element. Within the 300 to 3000 Hz range, "Basic Links" will support all

standard signalling arrangements including repeat loop start, loop reverse battery, or ground start seizure and disconnect in one direction (toward the end office switch), and repeat ringing in the other direction (toward the end user).

a. **"ISDN link/loop/circuit"** is an ISDN link which provides a 2-wire ISDN digital circuit connection that will support digital transmission of two 64 Kbps clear channels and one 16 Kbps data channel (2B+D), suitable for provision of BRI-ISDN service. ISDN links shall be provisioned by least cost planning methodologies sufficient to insure industry standard interface, performance, price, reliability and operational characteristics are functionally transparent and are equal to or better than dedicated copper pairs. All things being equal, "Broadband ISDN" is preferred to CO-based ISDN circuits. Unless specifically identified and priced as "fractional" these circuits are assumed to be fully available.

b. **"4-Wire DS-1 Digital Grade Links"** will support full duplex transmission of isochronous serial data at 1.544 Mbps, and provide the equivalent of 24 voice grade channels. Unless specifically identified and priced as "fractional" these circuits are assumed to be fully available.

46. **"Local Exchange Carrier"** or **"LEC"** means any carrier that provides local common carrier telecommunications services to business and/or residential subscribers within a given LATA and interconnects to other carriers for the provision of alternative telecommunications products or services, including, but not limited to toll, special access, and private line services. This includes the Parties to this Agreement. The term "Incumbent-LEC" or "I-LEC" is sometimes used to refer to the dominant LEC for a particular locality (such as BellSouth). Such Incumbent-LECs include both Bell Operating Companies ("BOCs") and non-BOC LECs, which are often referred to as "Independent-LECs." By contrast, new entrants into the local exchange market are sometimes referred to as "Competitive LECs" or "CLECs," or sometimes as "Alternative LECs" or "ALECs."

47. **"Local Exchange Routing Guide"** or **"LERG"** means a BellCore Reference customarily used to identify NPA-NXX routing and homing information, as well as network element and equipment designations.

48. **"Local Traffic"** means telephone calls that originate in one exchange and terminate in either the same exchange, or a corresponding **Extended Area Service ("EAS")** exchange. The terms Exchange, and EAS exchanges are defined and specified in Section A3. of BellSouth's General Subscriber Service Tariff.

49. **"Local Interconnection"** means (1) the delivery of local traffic to be terminated on each Party's local network so that end users of either Party have the ability to reach end users of the other Party without the use of any access code or substantial delay in the processing of the call; (2) the LEC unbundled network features, functions, and capabilities set forth in this Agreement; and 3) Service Provider Number Portability sometimes referred to as temporary telephone number portability to be implemented pursuant to the terms of this Agreement.

50. **"Local Interconnection Trunks/Trunk Groups"** means equipment and facilities that provide for the termination of Local Traffic and intraLATA traffic.

51. **"Local Access and Transport Area"** or **"LATA"** means one of 161 contiguous geographic areas established pursuant to the AT&T Content Decree to define the permitted operating regions of the RBOCs prior to the enactment of the Telecommunications Act of 1996.

52. **"Long Run Incremental Cost"** o **"LRIC"** refers to the costs a company would incur (or save) if it increases (or decreases) the level of production of an existing service or group of services. These costs consist of the costs associated with adjusting future production capacity and reflect forward-looking technology and operations methods.

53. **"MECAB"** refers to the Multiple Exchange Carrier Access Billing (MECAB) document prepared by the Billing Committee of the Ordering and Billing Forum (OBF), which functions under the auspices of the Carrier Liaison Committee of the Alliance for Telecommunications Industry Solutions (ATIS). The MECAB document published by Bellcore as Special Report SR-BDS-000983, contains the recommended guidelines for the billing of an access service provided by two or more LECS (including a LEC and a C-LEC), or by one LEC in two or more states within a single LATA.

54. **"MECOD"** refers to the Multiple Exchange Carriers Ordering and Design (MECOD) Guidelines for Access Services—Industry Support Interface, a document developed by the Ordering/Provisioning Committee under the auspices of the Ordering and Billing Forum (OBF), which functions under the auspices of the Carrier Liaison Committee of the Alliance for Telecommunications Industry Solutions (ATIS). The MECOD document, published by Bellcore as Special Report, SR STS-002643, establishes methods for processing orders for access service which is to be provided by two or more LECs.

55. **"Meet-Point Billing"** or **"MPB"** refers to a mutual compensation arrangement whereby two LECs provide the transport element of a switched access service to one of the LEC's end office switches, with each LEC receiving an appropriate share of the transport element revenues as defined by law, regulatory requirements, this agreement or, where permissible, effective access tariffs. MPB concepts are also incorporated in some LEC-toll (intraLATA) mutual compensation arrangements.

56. **"Multiple Bill/Multiple Tariff method"** means the meet-point billing method where each LEC (or C-LEC) prepares and renders its own meet point bill to the IXC in accordance with its own tariff for that portion of the jointly provided switched Access Service which the LEC (or C-LEC) provides. Bellcore's MECAB document refers to this method as "Multiple Bill/Single Tariff."

57. **"Mutual Traffic Exchange"** means that the sole compensation to a Party for termination of specified categories of traffic shall be the reciprocal services provided by the other Party. Each Party shall bill its own customers for such categories of traffic and retain all revenues resulting therefrom.

58. **"North American Numbering Plan"** or **"NANP"** is the system of telephone numbering employed in the United States, Canada, and certain Caribbean countries.

59. **"Network Element"** means any facility or equipment used by BellSouth in the provision of Exchange Services, and all features, functions and capabilities that are provided by means of such facility or equipment, including numbering systems, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing or other provision of a telecommunications service.

60. **"Network Management Forum"** is a consortium of 160 U.S. and international carriers and global alliances, including SITA, Unisource and others. Their objective is to determine specific interoperability needs, so that manufacturers of network management equipment will have the detailed technical specification needed to develop interoperable standards. For the purposes of this Agreement, both Parties agree to accept the NMF standards and solutions for OAM&P interconnections.

61. **"Numbering Plan Area"** or **"NPA"** is also sometimes referred to as an area code. This is the three digit indicator which is defined by the "A," "B," and "C" digits of each "digit" telephone number within the North American Numbering Plan ("NANP"). Each NPA contains 800 Possible NXX Codes. At present, there are two general categories of NPA, "Geographic NPAs" and "Non--Geographic NPAS." A "Geographic NPA" is associated with a defined geographic area, and all telephone numbers bearing such NPA are associated with services provided within that Geographic area. In some locations, and ultimately with number portability, more than one area code will be associated with many geographic areas. A "Non-Geographic NPA," also known as a "Service Access Code" (SAC Code) is typically associated with a specialized telecommunications service which may be provided across multiple geographic NPA areas; 500, 800, 900, 700, and 888 are examples of Non-Geographic NPAS.

62. **"NXX," "NXX Code," "Central Office Code"** or **"CO Code"** is defined by the "D," "E," and "F" digits of a 10-digit telephone number within the North American Numbering Plan. Each NXX Code contains 10,000 station numbers. Historically, entire NXX code blocks have been assigned to specific individual local exchange end office switches, because, in general, this approach did not conflict with geographic numbering except as the CO approached number exhaustion. Where there are multiple COs in the same geographic area, this assignment method must change. With the advent of end-user telephone number portability, the usual one-on-one association on an NXX with an end office switching entity will be severed.

63. **"OAM&P"** or **"Operations, Administration, Maintenance and Provisioning Functions"** are those automated and manual functions which insure quality of service and least cost planning, management and operations for telecommunications service providers. These functions, have traditionally been addressed through the user of operations support, decision support and administrative support systems, and are now generally in the process of being integrated under client-server and mainframe network management platforms such as HP's OpenView, IBM's NetView and SUN's various network management product sets.

64. **"OZZ Codes"** define FGD call paths through a LEC's access Tandem Office Switch.

65. **"Percent of Interstate Usage" or "PIU"** means a factor to be applied to terminating access services minutes of use to obtain those minutes that should be rated as interstate access services minutes of use. The numerator includes all interstate "nonintermediary" minutes of use, including interstate minutes of use that are forwarded due to service provider number portability less any interstate minutes of use for Terminating Party Pays services, such as 800 Services. The denominator includes all "nonintermediary", local, interstate, intrastate, toll and access minutes of use adjusted for service provider number portability less all minutes attributable to terminating party pays services.

66. **"Percent Local Usage" or "PLU"** means a factor to be applied to intrastate terminating minutes of use. The numerator shall include all "nonintermediary" local minutes of use adjusted for those minutes of use that only apply local due to Service Provider Number Portability. The denominator is the total intrastate minutes of use including local, intrastate toll, and access, adjusted for Service Provider Number Portability less intrastate terminating party pays minutes of use.

67. **"Permanent Number Portability"** means the use of a database solution to provide fully transparent TNP for all customers and all providers without limitation.

68. **"Port"** and **"Slot"** are terms used to describe physical interfaces and traffic carriage capacity of some network elements. One "port" is needed for each connection capable of carrying one message into or out of the network element to other network elements. One "slot" is needed within each network element for each message to be handled simultaneously with other messages. Port categories include, but are not limited to:

a. **"2-wire analog line port"** is a line side switch connection employed to provide basic residential and business type analog telephone services.

b. **"2-wire ISDN digital line port"** is a set of Basic Rate Interface (BRI) line side switch connections which actually consists of multiple paths or interfaces to the switching network (2B+D). It is employed to provide residential and business type digital telephone services. The port connections may or may not be the same Central Office switch (network element) that provides analog services. When ISDN is provisioned as "broadband" ISDN through current generation digital switches the cost causation is totally different than when the digital service is provisioned as a set of CO port attachments.

c. **"2-wire analog DID trunk port"** is a direct inward dialing (DID) trunk side switch connection employed to provide incoming trunk-side services. Each port provisioned permits one simultaneous connection to the customer premises equipment.

d. **"4-wire DS-1 digital DID trunk port"** is a direct inward dialing (DID) trunk side switch connection which is time division multiplexed to provide the equivalent of 24 analog incoming trunk type DID trunk ports.

e. **"4-wire DS-1 digital CBWT trunk port"** is a trunk side switch connection which is time division multiplexed to provide the equivalent of 24 analog incoming trunk ports which may be programmed as DID, CBWT, TIE, or dedicated private trunk circuits.

f. **"4-wire ISDN digital DS-1 trunk port"** is a Primary Rate Interface (PRI) trunk side switch connection which is time division multiplexed to provide the equivalent of 23 digital one or two-way trunk ports and one signalling trunk port (23 B+D), where the B channels can be programmed as digital DID, CBWT, TIE, Private Line or Special Access trunk circuits. The port connections may or may not be the same Central Office switch (network element) that provides analog services.

69. **"Rate Center"** currently refers to a specific geographic point, designated by latitude and longitude, a corresponding V and H coordinate pair, and an associated geographic area which has heretofore been defined by the incumbent LEC industry to be associated with switched message telecommunications services (MTS). Rate centers, sometimes also known as exchange areas, often determine the regions within which particular classes, features, and pricing for exchange services are uniformly administered. Each NPA-NXX code combination is associated with a single rate center although any one such code may only service a fraction of the rate center area when the rate center areas circumscribes multiple serving wire centers. Where retail MTS services contain a distance sensitive rate element, the valuation of that element utilizes the calculated distance between the V and H coordinate pairs of the originating and terminating rate centers.

70. **"Rating Point"** means the vertical and horizontal coordinates associated with a particular telephone number for rating purposes.

71. **"Routing Point"** traditionally refers to a location which a LEC or CLEC has designated on its own network as the homing (routing) point for traffic inbound to Telecommunications Services provided by the LEC or CLEC which bear a certain NPA-NXX designation. The Routing Point is employed to calculate mileage measurements for the distance-sensitive transport element charges of Switched Access Services. At present, Bellcore Practice BR 795-100-100, places the Routing Point at either an "End Office" location, or a "LEC Consortium Point of Interconnection." According to that same Bellcore Practice, examples of the latter shall be designated by a common language location identifier (CLLI) code with (x)KD in positions 9, 10, 11, where (x) may be any alphanumeric A-Z or 0-9. Nothing in this Agreement shall be construed to preclude either Party hereto from establishing its own Routing Points.

72. **"Service Control Point"** or **"SCP"** is network element of the common channel signaling network to which informational requests for service handling, such as routing, are directed and processed. The SCP is a real-time processor with a database system that, based on a query from a Service Switching Point ("SSP"), performs software-based common carrier, subscriber or application-specific service logic, and then sends instructions back to the SSP on how to continue call processing.

73. **"Signal Transfer Point" or "STP"** is a network element (presently a packet switch) that routes signaling messages among Service Switching Points (SSPs), Service Control Points (SCPs), Signaling Points (SPs) and other network elements in order to set up calls and to query databases for digital telecommunications services using CCIS/SS7 and software-based common carrier telecommunications services.

74. **"Switched Access Detail Usage Data"** shall mean a category 1101XX record as defined in the EMR Bellcore Practice BR 010-200-010.

75. **"Switched Access Summary Usage Data"** shall mean a category 1150XX record as defined in the EMR Bellcore Practice BR 010-200-010.

76. **"Switched Access Service"** means the offering of facilities for the purpose of the origination or termination of traffic to or from telecommunications services offered in a given area. Switched Access Services include: Feature Group A, Feature Group B, Feature Group D, 800 access, and 900 access.

77. **"Synchronous Optical Network"** or **"SONET"** is a set of optical interface standards that allow optical transmission at rates from 51.4 Mbps to 13.22 Gbps. Synchronous optical network standard is an ultra-high-speed, fiber-optic transmission standard developed by Bellcore for large-scale, fiber-based digital transmission networks that use equipment form many different manufacturers. It is the first telecom industry agreement on standardized interfaces between fiber optic transmission systems and is well on the way to becoming an international standard. Because all SONET-compatible devices speak a common language, network administrators will gain network-wide use of advanced operation and maintenance systems, regardless of who made individual network components. The SONET standard is built around a 51.84 Mbps basic communications channel that is multiplexed upward. SONET line-rate standards now include network bandwidths up to 2.488 Gbps, a rate equivalent to 48 basic SONET communications channels. SONET network standards incorporate present-day 1.544 Mbps DS-1 service and 44.6 Mbps DS-3 service as subsets of the 51.84 Mbps SONET basic channel. SONET will eventually become the primary avenue for transporting broadband ISDN services. Major network equipment manufacturers are introducing network products claiming conformity to the SONET standard.

78. **"Telecommunications"** means the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent or received.

79. **"Telecommunications Act of 1996"** or **"Act"** means Public Law 104-104 of the United States Congress effective February 8, 1996. The Act amended the Communications Act of 1934 (47, U.S.C. Section 1 *et seq.*).

80. **"Telecommunications Carrier"** means any provider of telecommunications services.

81. **"Telecommunications Service"** means the offering of telecommunications for a fee directly to the public, to such classes of users as to be effectively available to the public, or to telecommunications carriers, regardless of the facilities used.

82. **"Telephone Number Portability"** or **"TNP"** is the means by which BellSouth allows customers to retain their existing telephone numbers when changing from one local exchange carrier to another. This service provides transparent delivery of telephone number capabilities, from a customer standpoint in terms of call completion, and from a carrier standpoint in terms of compensation, through the use of call routing, forwarding, and addressing capabilities. Permanent number portability standards will be set by regulatory action, and both Parties agree to implementation of permanent number portability at the earliest possible point in time. The performance and cost of permanent number portability meets end-user customer or co-carrier expectations on a sustainable basis. (See also Interim Number Portability and Permanent Number Portability.)

83. **"Total Service Long Run Incremental Cost"** or **"TSLRIC"** is the total additional cost incurred by a telecommunications services provider to produce the entire quantity of a service, group of services, or basic network functions, given that the telecommunications services provider already provides all its other services. TSLRIC is based on the least cost, most efficient technology that is capable of being implemented at the time the decision to provide the service is made.

84. **"Toll Free Service"** means service provided with any dialing sequence that invokes toll-free (*i.e.*, 800-like) service processing. Toll Free Service includes calls to the Toll Free Service 800/888 NPA SAC codes.

85. **"Transit Calls"** or **"Intermediary Function"** means intraLATA calls (local and toll) sent between the Parties originating from or terminating to an end user of a third-party LEC, CLEC, wireless provider, or other carrier or calls sent between the Parties destined for or originating from an IXC.

86. **"Trunk Side"** refers to a central office switch connection that is capable of, and has been programmed to treat the circuit as connecting to another switching entity. Trunk side connections offer those transmission and signaling features appropriate for the connection of switching elements, and cannot be used for the direct connection of ordinary telephone station sets. Incoming telecommunications services from the trunk to the line-side and for trunk-side-to-trunk side connections within any switching element should experience no less than a P.001 blocking probability in the average peak busy hour of the year, and should meet or exceed this level at all other times. This is a means to ensure that end-to-end blocking, which is cumulative, does not exceed a consistent P.02 for all call types in a multi-carrier network.

87. **"Wire Center"** denotes a building or space within a building which serves as an aggregation point on a given carrier's network, where transmission facilities and circuits are connected or switched. Wire Center can also denote a building in which one or more central offices, used for the provision of telecommunications services are located. The Parties hereby agree

that interconnection will be available at any wire center which meets any or all legislative, judicial and regulatory eligibility standards for interconnection. Interconnection services and access to these interconnections shall not unreasonably by withheld by either Party on any grounds.

88. **"Undefined Terms."** The Parties acknowledge that terms may appear in this Agreement which are not defined and agree that any such terms shall be construed in accordance with their customary usage in the telecommunications industry as of the effective date of this Agreement.

ATTACHMENT C-1

Unbundled Products and Services and New Services

Service:	Virtual Collocation
Description:	Virtual Expanded Interconnection Service (VEIS) provides for location interconnection in collocator-provided/BellSouth leased fiber optic facilities to BellSouth's switched and special access services, and local interconnection facilities.
State(s):	All
Rates, Terms and Conditions:	In all states, the rates, terms and conditions will be applied as set forth in Section 20 of BellSouth Telecommunication's Inc.'s Interstate Access Service Tariff, F.C.C. No. 1.

Service:	Physical Collocation
Description:	Per FCC — (10/19/92 FCC Order, para 39) Physical Collocation is whereby "the interconnection party pays for LEC central office space in which to locate the equipment necessary to terminate its transmission links, and has physical access to the LEC central office to install, maintain, and repair this equipment."
State(s):	All
Rates, Terms and Conditions:	In all states, the rates and availability will be as provided in the "rates for Physical Interconnection" tables which follow.

RATES FOR PHYSICAL INTERCONNECTION

Rate Element	Application/Description	Type of Charge	Rate
Application Fee	Applies per arrangement per location	Nonrecurring	Tariff Rates (same as virtual)
Space Preparation Fee	Applies for survey and design of space, covers shared building modification costs	Nonrecurring	ICB - See Note 1 Will not be less than $1800 - not to exceed $8500 unless HVAC or power plant update. If so, rates to be ICB.
Space Construction Fee	Covers materials and construction of optional cage in 100 square foot increments	Nonrecurring	$29,744.00 See Note 2
Cable Installation Fee	Applies per entrance cable	Nonrecurring	Tariff Rates (same as virtual)
Floor Space	Per square foot, for Zone A and Zone B offices, respectively	Monthly Recurring	$7.50/$6.75 See Note 3
Power	Per ampere based on manufacturer's specifications	Monthly Recurring	$5.14 per ampere
Cable Support Structure	Applies per entrance cable	Monthly Recurring	$13.35 per cable
POT Bay	Optional Point of Termination bay; rate is per DS1/DS3 cross-connect, respectively	Monthly Recurring	$1.20/$5.00 See Note 4
Cross-Connects	Per DS1/DS3, respectively	Monthly Recurring	$8.00/$72.48
Security Escort	First and additional half hour increments, per tariff rate in Basic time (B), Overtime (O), and Premium time (P)	As Required	$41.00/25.00 B $48.00/$30.00 O $55.00/$35.00 P

Note 1: Will be determined at the time of the application based on building and space modification requirements for shared space at the requested CO

Note 2: Applies only to collocators who wish to purchase a steel-gauge cage enclosure. Carriers may also pay $330.00 per square foot for the first 100 square feet and $242.00 for each additional 100 square feet in the same CO in lieu of space preparation and construction fees. This option does not apply where HVAC, power plant or both upgrade is required.

Note 3: See attached list for Zone A offices as of May 1996. This list will be amended monthly.

Note 4: Applies when collocator does not supply their own POT bay.

BellSouth Zone A Offices - as of May 1996 EX = Exempt from Physical

STATE	CITY	OFFICE	CLLI	STATUS
AL	Birmingham	Main & Toll	BRHMALMA	EX
	Montgomery	Main & Toll	MTGMALMT	
	Mobile	Azalea	MOBLALAZ	
FL	Boca Raton	Boca Teeca	BCRTFLBT	
	Fort Lauderdale	Main Relief	FTLDFLMR	
		Cypress	FTLDFLCY	
		Plantation	FTLDFLPL	
	Jacksonville Beach	Main	JCBHFLMA	
	Jacksonville	Arlington	JCVLFLAR	
		Beachwood	JCVLFLBW	
		Clay Street	JCVLFLCL	
		Southpoint	JCVLFLJT	EX
		Normandy	JCVLFLNO	
		Riverside	JCVLFLRV	
		San Jose	JCVLFLSJ	EX
		San Marco	JCVLFLSM	
		Westconnett	JCVLFLWC	
		Mandarin Avenues	MNDRFLAV	EX
		Mandarin Loretto	MNDRFLLO	
	Lake Mary	Lake Mary	LKMRFLMA	EX
	Miami	Grande	MIAMFLGR	
		Palmetto	MIAMFLPL	
		Alhambra	MIAMFLAE	
		Bayshore	MIAMFLBA	
		Metro	MIAMFLME	
	Melbourne	Main	MLBRFLMA	
	Orlando	Magnolia	ORLDFLMA	
		Azalea Park	ORLDFLAP	
		Sand Lake	ORLDFLSL	
		Pinecastle	ORLDFLPC	
		Pinehills	ORLDFLPH	
	West Palm Beach	Annex (Main Annex)	WPBHFLAN	
GA	Athens	Athens	ATHNGAMA	
	Atlanta	Courtland St	ATLNGACS	

		Peachtree Pl	ATLNGAPP	
		Buckhead	ATLNGABU	
		East Point	ATLNGAEP	
		Toco Hills	ATLNGATH	
		Sandy Springs	ATLNGASS	
	Lilburn	Lilburn	LLBNGAMA	
	Smyrna	Power Ferry	SMYRGAPF	
		Smyrna Main	SMYRGAMA	
	Tucker	Tucker Main	TUKRGAMA	EX
	Roswell	Roswell Main	RSWLGAMA	
	Norcross	Norcross Main	NRCRGAMA	
	Marietta	Marietta Main	MRRTGAMA	
	Dunwoody	Dunwoody Main	DNWDGAMA	
	Alpharetta	Alphareta Main	ALPRGAMA	
	Columbus	Columbus Main	CLMBGAMT	
KY	Louisville	Armory Place	LSVLKYAP	EX
		Westport Rd	LSVLKYWE	EX
		Beechmont	LSVLKYBE	
		Bardstown Road	LSVLKYBR	EX
		Fern Creek	LSVLKYFC	
		JTown	LSVLKYJT	
		Matthews	LSVLKYSM	
		Third Street	LSVLKYTS	
LA	New Orleans	Main	NWORLAMA	
	Baton Rouge	Main	BTRGLAMA	
MS	Hattiesburg	Hattiesburg Main	HTBGMSMA	
	Jackson	Cap Pearl	JCSNMSCP	
	Vicksburg	Vicksburg	VCBGMSMA	
NC	Cary	Central	NARYNCCE	
	Chapel Hill	Rosemay	CPHLNCRO	
	Charlotte	Caldwell	CHRLNCCA	
		South Boulevard	CHRLNCBO	
		Derita	CHRLNCDE	
		Erwin	CHRLNCER	
		Lake Point	CHRLNCLP	
		Reid	CHRLNCRE	EX
		Sharon Amity	CHRLNCSH	

		University	CHRLNCUN	EX
	Greensboro	Eugene St	GNBONCEU	
	Raleigh	Morgan	RLGHNCMO	
		New Hope	RLGHNCHO	
	Salisbury	Main	SLBRNCMA	
	Winston Salem	Fifth Street	WNSLNCFI	
	Asheville	O'Henry	AHVLNCOH	
SC	Charleston	Dial & Toll	CHTNSCDT	
	Columbia	Senate St	CLMASCSN	EX
		St. Andrews	CLMASCSA	
	Greenville	D&T	GNVLSCDT	
		Woodruff Road	GNVLSCWR	EX
	Spartenburg	Main	SPBGSCMA	
TN	Knoxville	Main	KNVLTNMA	
	Memphis	Bartlett	MMPHTNBA	
		Chickasaw	MMPHTNCT	
		Eastland	MMPHTNEL	
		Germantown	MMPHTNGT	
		Main	MMPHTNMA	EX
		Oakville	MMPHTNOA	
		Southland	MMPHTNSL	
	Nashville	Main & Toll	NSVLTNMT	
		Airport	NSVLTNAP	
		Brentwood	NSVLTNBW	
		Crieve Hall	NSVLTNCH	
		Donelson	NSVLTNDO	
		Inglewood	NSVLTNIN	
		Sharondale	NSVLTNST	
		University	NSVLTNUN	

ATTACHMENT C-2

Unbundled Products and Services and New Services

Service: Unbundled Exchange Access Loop

Description: Provides the connection from the serving central office to a subscriber's premises and is rated on a distance sensitive basis. It is engineered to meet the same parameters as a residence or business exchange access line.

BellSouth shall allow ACSI to access the following Loop types (in addition to those Loops available under applicable tariffs) unbundled from local switching and local transport in accordance with the terms and conditions set forth herein:

"2-Wire Analog Voice Grade Loops" or "Analog 2W" which support analog transmission of 300-2000 Hz, repeat loop start, loop reverse battery, or ground start seizure and disconnect in one direction (toward the End Office Switch), and repeat ringing in the other direction (toward the Customer). Analog 2W include Loops sufficient for the provision of PBX trunks, pay telephone lines and electronic key system lines. Both "pure copper" and "Unintegrated Digital Loop Carrier" (ULDC) systems shall be made available.

"4-Wire Analog Voice Grade Loops" or "Analog 4W" which support transmission of voice grade signals using separate transmit and receive paths and terminate in a 4-wire electrical interface. Both "pure copper" and "Unintegrated Digital Loop Carrier" (ULDC) systems shall be made available.

"2-Wire ISDN Digital Grade Links" or "BRI ISDN" which support digital transmission of two 64 kbps bearer channels and one 16 kbps data channel. BRI IDSN is a 2B+D Basic Rate Interface-Integrated Services Digital Network (BRI-ISDN) Loop which will meet national ISDN standards.

"2-Wire ADSL-Compatible Loop" or "ADSL 2W" is a transmission path which facilitates the transmission of up to a 6 Mbps digital signal downstream (toward the Customer) and up to a 640 kbps digital signal upstream (away form the Customer) while simultaneously carrying an analog voice signal. An ADSL-2W is provided over a 2-Wire non-loaded twisted copper pair provisioned using revised resistance design guidelines and meeting ANSI Standard T1.413-1995-007R2. An ADSL-2W terminates in a 2-wire electrical interface at the Customer premises and at the BellSouth Central Office frame.

"2-Wire HDSL-Compatible Loop" or "HDSL 2W" is a transmission path which facilitates the transmission of a 768 kbps digital signal over a 2-Wire non-loaded twisted copper pair meeting the specifications in ANSI T1E1 Committee Technical Report Number 28. HDSL compatible Loops are

available only where existing copper facilities can meet T1E1 Technical Report Number 28 specifications.

"4-Wire HDSL-compatible Loop" or "HDSL 4W" is a transmission path which facilitates the transmission of a 1.544 Mbps digital signal over two 2-Wire non-loaded twisted copper pairs meeting the specifications in ANSI T1E1 Committee Technical Report Number 28. HDSL compatible Loops are available only where existing copper facilities can meet the specifications.

"Integrated Digital Loop Carrier" or "Integrated DLC" is the same as Digital Loop Carrier, except it is not demultiplexed, but instead the DS-1 facilities are directly connected into compatible digital equipment.

Rate(s): **The Parties hereby agree to submit the issue of rate structure and rate levels to state commission arbitration.**

State(s): Alabama Florida Georgia

Rate Elements	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l
Unbundled Exchange Access Loop	$X.XX	$XX.XX	$XX.XX	$X.XX	$XX.XX	$XX.XX	$X.XX	$XX.XX	$XX.XX
Unbundled Exchange Access IOC									
- Fixed	$X.XX	$XX.XX	N/A	$X.XX	$XX.XX	N/A	$XX.X	$XX.XX	N/A
- 1-8 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A
- 9-25 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A
- Over 25 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A

State(s):	Kentucky			Louisiana			Mississippi		
Rate Elements	Monthly	Nonrecurring Charges First	Add'l	Monthly	Nonrecurring Charges First	Add'l	Monthly	Nonrecurring Charges First	Add'l
Unbundled Exchange Access Loop	$X.XX	$XX.XX	$XX.XX	$X.XX	$XX.XX	$XX.XX	$X.XX	$XX.XX	$XX.XX
Unbundled Exchange Access IOC									
- Fixed	$X.XX	$XX.XX	N/A	$X.XX	$XX.XX	N/A	$X.XX	$XX.XX	N/A
- 1-8 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A
- 9-25 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A
- Over 25 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A

State(s):	N. Carolina			S. Carolina			Tennessee		
Rate Elements	Monthly	Nonrecurring Charges First	Add'l	Monthly	Nonrecurring Charges First	Add'l	Monthly	Nonrecurring Charges First	Add'l
Unbundled Exchange Access Loop	$X.XX	$XX.XX	$XX.XX	$X.XX	$XX.XX	$XX.XX	$X.XX	$XX.XX	$XX.XX
Unbundled Exchange Access IOC									
- Fixed	$X.XX	$XX.XX	N/A	$X.XX	$XX.XX	N/A	$X.XX	$XX.XX	N/A
- 1-8 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A
- 9-25 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A
- Over 25 Miles	$X.XX	N/A	N/A	$X.XX	N/A	N/A	$X.XX	N/A	N/A

ATTACHMENT C-3

Unbundled Products and Services and New Services

Service: Channelization System for Unbundled Exchange Access Loops

Description: This new rate element provides the multiplexing function for Unbundled Exchange Access Loops. It can convert up to 96 voice grade loops to DS1 level for connection with the ACSI's point of interface. The multiplexing can be done on a concentrated basis (delivers at 2 DS1 level to customer premise) or on a non-concentrated basis (delivers at 4 DSI level to customer premise) at the option of the customer.

In addition to the following rates elements, 1.544 Mbps local channel and/or interoffice channel facilities may be required as set forth in E7 of BellSouth Telecommunication's Inc.'s Intrastate Access Service Tariff for non-collocated ACSIs.

Rates: **The Parties hereby agree to submit the issue of rate structure and rate levels to state commission arbitration.**

State(s): Alabama | Florida | Georgia

Rate Elements	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l
Unbundled Loop Channelization System (DS1 to VG), Per System	SX.XX	SXX.XX	N/A	SX.XX	SXX.XX	N/A	SX.XX	SXX.XX	N/A
Central Office Channel Interface (circuit specific plug-in equipment), 1 per circuit	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX

State(s): Kentucky | Louisiana | Mississippi

Rate Elements	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l
Unbundled Loop Channelization System (DS1 to VG), Per System	SX.XX	SXX.XX	N/A	SX.XX	SXX.XX	N/A	SX.XX	SXX.XX	N/A
Central Office Channel Interface (circuit specific plug-in equipment), 1 per circuit	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX

State(s): N. Carolina | S. Carolina | Tennessee

Rate Elements	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l	Monthly	Nonrecurring Charges First	Nonrecurring Charges Add'l
Unbundled Loop Channelization System (DS1 to VG), Per System	SX.XX	SXX.XX	N/A	SX.XX	SXX.XX	N/A	SX.XX	SXX.XX	N/A
Central Office Channel Interface (circuit specific plug-in equipment), 1 per circuit	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX	SX.XX

ATTACHMENT C-4

Unbundled Products and Services and New Services

Service: Unbundled Exchange Ports

Description: An exchange port is the capability derived from the central office switch hardware and software required to permit end users to transmit or receive information over BellSouth's public switched network. It provides service enabling and network features and functionality such as translations, a telephone number, switching, announcements, supervision and touch-tone capability.

In addition, a BellSouth provided port with outgoing network access also provides access to other services such as operator services, long distance service, *etc.* It may also be combined with other services available in BellSouth's Intrastate Access Service Tariffs as technically feasible.

When an Unbundled Port is connected to BellSouth provided collocated loops, cross-connection rate elements are required as set forth in Section 20 of BellSouth Telecommunications, Inc.'s Interstate Access Tariff, FCC No. 1.

Rates: **The Parties hereby agree to submit the issue of rate structure and rate levels to state commission arbitration.**

Alabama			Florida		Georgia	
Rate Elements	Rates	Per	Rate Elements	Rate	Rate Elements	Rate
Monthly			Monthly		Monthly	
Residence Port	$X.XX		Residence Port	$X.XX	Residence Port	$X.XX
Business Port	$X.XX		Business Port	$X.XX	Business Port	$X.XX
PBX Trunk Port	$X.XX		PBX Trunk Port	$X.XX	PBX Trunk Port	$X.XX
Rotary Service	$X.XX		Rotary Service	$X.XX	Rotary Service	$X.XX
Primary Rate ISDN NAS	$X.XX					
Usage-Mileage Bands						
A (0 miles)	$X.XX	init.min.	Usage-(STS)		Usage-(STS)	
	$X.XX	init.min.	- init.min.	$X.XX	- setup per call	$X.XX
B (1-10 miles)	$X.XX	init.min.	- add'l min.	$X.XX	- per minute or	
	$X.XX	init.min.			fraction thereof	$X.XX
C (11-16 miles)	$X.XX	init.min.				
	$X.XX	init.min.				
D (17-22 miles and existing LCA						
described in A3.6 greater than 22 mi.)	$X.XX	init.min.				
	$X.XX	init.min.				
E (23-30 miles)	$X.XX	init.min.				
	$X.XX	init.min.				
F (31-40 miles)	$X.XX	init.min.				
	$X.XX	init.min.				
G (Special Band)	$X.XX	init.min.				
	$X.XX	init.min.				

Kentucky

Rate Elements	Rates	Per
Monthly		
Residence Port	$X.XX	
Business Port	$X.XX	
PBX Trunk Port	$X.XX	
Rotary Service	$X.XX	
Usage-Mileage Bands		
A (0 miles)	$X.XX	init.min.
	$X.XX	addl.min.
B (1-10 miles)	$X.XX	init.min.
	$X.XX	addl.min.
C (Greater than 10 miles Limited LCA)	$X.XX	init.min.
	$X.XX	addl.min.
D (1-10 miles beyond Limited LCA)	$X.XX	init.min.
	$X.XX	addl.min.
E (11-16 miles beyond Limited LCA)	$X.XX	init.min.
	$X.XX	addl.min.
F (17-22 miles beyond Limited LCA)	$X.XX	init.min.
	$X.XX	addl.min.
G (23-30 miles beyond Limited LCA)	$X.XX	init.min.
	$X.XX	addl.min.
H (31-40 miles beyond Limited LCA)	$X.XX	init.min.
	$X.XX	addl.min.
I (Greater than 40 miles beyond Limited LCA)	$X.XX	init.min.
	$X.XX	addl.min.

Louisiana

Rate Elements	Rate	Per
Monthly		
Residence Port	$X.XX	
Business Port	$X.XX	
PBX Trunk Port	$X.XX	
Rotary Service	$X.XX	
Usage-Mileage Bands		
0 (0 miles)	$X.XX	init.min.
	$X.XX	addl.min.
A (1-10 miles)	$X.XX	init.min.
	$X.XX	addl.min.
B (11-16 miles)	$X.XX	init.min.
	$X.XX	addl.min.
C (17-22 miles)	$X.XX	init.min.
	$X.XX	addl.min.
D (23-30 miles Basic LCA and Intra Parish Expanded LCA)	$X.XX	init.min.
	$X.XX	addl.min.
E (Greater than 30 miles Basic LCA and Intra Parish Expanded LCA)	$X.XX	init.min.
	$X.XX	addl.min.
F (23-30 miles Inter-Parish Expanded LCA)	$X.XX	init.min.
	$X.XX	addl.min.
G (31-40 miles Inter-Parish Expanded LCA)	$X.XX	init.min.
	$X.XX	addl.min.
H (Greater than 40 miles Inter-Parish)	$X.XX	init.min.
	$X.XX	addl.min.

Mississippi

Rate Elements	Rates	Per
Monthly		
Residence Port	$X.XX	
Business Port	$X.XX	
PBX Trunk Port	$X.XX	
Rotary Service	$X.XX	
Usage-Mileage Bands		
A (0 miles)	$X.XX	init.min.
	$X.XX	addl.min.
B (1-10 miles)	$X.XX	init.min.
	$X.XX	addl.min.
C (11-18 miles, existing LCA described in A3.6 greater than 16 miles and calls to county seat greater than 16 miles)	$X.XX	init.min.
	$X.XX	addl.min.
D (17-30 miles)	$X.XX	init.min.
	$X.XX	addl.min.
E (31-55 miles Biloxi LATA)	$X.XX	init.min.
	$X.XX	addl.min.
F (31-55 miles Jackson LATA)	$X.XX	init.min.
	$X.XX	addl.min.
G (56-85 miles Biloxi LATA)	$X.XX	init.min.
	$X.XX	addl.min.

N.Carolina

Rate Elements	Rate
Monthly	
Residence Port	$X.XX
Business Port	$X.XX
PBX Trunk Port	$X.XX
Rotary Service	$X.XX
Usage-(STS)	
- init.min.	$X.XX
- add'l min.	$X.XX

S.Carolina

Rate Elements	Rate
Monthly	
Residence Port	$X.XX
Business Port	$X.XX
PBX Trunk Port	$X.XX
Rotary Service	$X.XX
Usage-(STS)	
- Basic Svc. area	$X.XX
- Expanded Svc. area	$X.XX

Tennessee

Rate Elements	Rates	Per
Monthly		
Residence Port	$X.XX	
Business Port	$X.XX	
PBX Trunk Port	$X.XX	
Rotary Service	$X.XX	
Usage-Mileage Bands		
A (0-16 miles)	$X.XX	
B (17-30 miles)	$X.XX	mou
C (>30 miles)	$X.XX	mou

Special Service Requirements:

1. Switching functionalities in the port element include dialtone, screening, recognition of service request, recognition of call-specific information, digit analysis, routing, testing, recordings, signal generation, call completion or handoff, SSP functionality and tables, PIC tables, trunk tables, class of service tables, billing record generation, and AIN tables.

2. ACSI's purchase of the port element for a specific switch avails to it all the features and functionality on that switch.

3. ACSI can interconnect loops from any source to the line port(s) that it purchases on the same terms/conditions/intervals as loops provided by BellSouth.

4. ACSI can use the port element to provide any local exchange service, including switched access services.

5. Optional functionality to support CLASS/Customer Calling features will be included with the port element. No additional charges will apply.

6. Functionality to craft Centrex offerings (call transfer, special dialing, *etc.*) will be available as part of the port element.

ATTACHMENT C-5

Unbundled Products and Services and New Services

Service: Signaling

Description: Provides for connection to and utilization of BellSouth's Signaling System 7 network for both call setup and non-call setup purposes.

State(s): All

Rate(s):

Rate Elements	Monthly Rate	Recurring Rate	Non-Recurring	Applied Per
CCS7 Signaling Connection	$155.00	—		56 Kpbs facility
CCS7 Signaling Termination	$355.00	—	$510.00	STP Port
CCS7 Signaling Usage*	—	$0.000023	—	Call Set Up Msg.
	—	$0.000050	—	T-Cap Msg.
CCS7 Signaling Usage Surrogate*	$395.00	—	—	56 Kpbs facility
			—	

*Where signaling usage measurement capability exists, CCS7 Signaling Usage will be billed on a per signaling message basis. Where measurement capability does not exist, CCS7 Signaling Usage will be billed on a per 56 Kpbs facility basis.

ATTACHMENT C-6

Unbundled Products and Services and New Services

Service:	Line Information Database (LIDB)-Storage Agreement
Description:	The LIDB Storage Agreement provides the terms and conditions for inclusion in BellSouth's LIDB of billing number information associated with BellSouth exchange lines used for Local Exchange Companies' resale of local exchange service or Service Provider Number Portability arrangements requested Local Exchange Companies' on behalf of the Local Exchange company's end user or for ACSI NXX's stored in BellSouth's LIDB. BellSouth will store in its database, the relevant billing number information and will provide responses to on-line, call-by-call queries to this information for purposes of Billed Number Screening, Calling Card Validation and Fraud Control. Each time an ACSI's data is used BellSouth will compensate ACSI at a rate of 40% of BellSouth's LIDB Validation rate per query as displayed in Attachment C-13 following.
State(s):	All
Rate(s):	No Charge

LINE INFORMATION DATA BASE (LIDB)
STORAGE AGREEMENT
FOR RESOLD LOCAL EXCHANGE LINES,
AND SERVICE PROVIDER NUMBER PORTABILITY ARRANGEMENTS

This agreement, effective as of _____, 1996, is entered into by and between BellSouth Telecommunications, Inc. ("BST"), a Georgia corporation, and _____ ("Local Exchange Company").

WHEREAS, in consideration of the mutual covenants, agreements and obligations set forth below, the parties hereby agree as follows:

I. SCOPE

This Agreement sets forth the terms and conditions for inclusion in BST's Line Information Data Base (LIDB) of billing number information associated with Local Exchange Company's provision (or resale) of local exchange service or Service Provider Number Portability (SPNP) arrangements requested by Local Exchange Company on behalf of Local Exchange Company's end user. BST will store in its data base the relevant billing number information, and BST will provide responses to on-line, call-by-call queries to this information for purposes specified below.

LIDB is accessed for:

- Billed Number Screening
- Calling Card Validation for Calling Cards issued by BellSouth
- Fraud Control

II. DEFINITIONS

2.01. Billing number - a number used by BST for the purpose of identifying an account liable for charges. This number may be a line or a special billing number.

2.02. Line number - a ten digit number assigned by BST that identifies a telephone line associated with a resold local exchange service, or with a SPNP management.

2.03. Special billing number - a ten digit number that identifies a billing account established by BST in connection with a resold local exchange service or with a SPNP arrangement.

2.04. Calling Card number - a billing number plus PIN number assigned by BST.

2.05. PIN number - a four digit security code assigned by BST which is added to a billing number to compose a fourteen digit calling card number.

2.06. Toll billing exception indicator - associated with a billing number to indicate that it is considered invalid for billing of collect calls or third number calls or both, by the Local Exchange Company.

2.07. Billed Number Screening - refers to the activity of determining whether a toll billing exception indicator is present for a particular billing number.

2.08. Calling Card Validation - refers to the activity of determining whether a particular calling card number exists as stated or otherwise provided by a caller.

2.09. Billing number information - information about billing number or Calling Card number as assigned by BST and toll billing exception indicator provided to BST by the Local Exchange Company.

III. RESPONSIBILITIES OF PARTIES

3.01. BST include billing number information associated with resold exchange lines or SPNP arrangements in its LIDB. The Local Exchange Company will request any toll billing exceptions via the Local Service Request (LSR) form used to order resold exchange lines, or the SPNP service request form used to order SPNP arrangements.

3.02. Under normal operating conditions, BST shall include the billing number information in its LIDB upon completion of the service order establishing either the resold local exchange service or the SPNP arrangement, provided that BST shall not be held responsible for any delay or failure in performance to the extent such delay or failure is caused by circumstances or conditions beyond BST's reasonable control. BST will store in its LIDB an unlimited volume of the working telephone numbers associated with either the resold local exchange lines or the SPNP arrangements. For resold local exchange lines or for SPNP arrangements, BST will issue line-based calling cards only in the name of Local Exchange Company. BST will not issue line-based calling cards in the name of Local Exchange Company's individual end users. In the event that Local Exchange Company wants to include calling card numbers assigned by the Local Exchange Company in the BST LIDB, a separate agreement is required.

3.03. BST will provide responses to on-line, call-by-call queries to the stored information for the specific purposes listed in the next paragraph.

3.04. BST is authorized to use the billing number information to perform the following functions for authorized users on an on-line basis:

(a) Validate a 14 digit Calling Card number where the first 10 digits are a line number or special billing number assigned by BST, and where the last four digits (PIN) are a security code assigned by BST.

(b) Determine whether the Local Exchange Company has identified the billing number as one which should not be billed for collect or third number calls, or both.

3.05. BST will provide seven days per week, 24 hours per day, fraud control and detection services. These services include, but are not limited to, such features as sorting Calling Card Fraud detection according to domestic or international calls in order to assist the pinpointing of possible theft or fraudulent use of Calling Card numbers; monitoring bill-to-third number and collect calls made to numbers in BST's LIDB, provided such information is included in the LIDB query, and establishing Account Specific Thresholds, at BST's sole discretion, when necessary. Local Exchange Company understands and agrees BST will administer all data stored in the LIDB, including the data provided by

Local Exchange Company pursuant to this Agreement, in the same manner as BST's data for BST's end user customers. BST shall not be responsible to Local Exchange Company for any lost revenue which may result from BST's administration of the LIDB pursuant to its established practices and procedures as they exist and as they may be changed by BST in its sole discretion from time to time.

3.06. Local Exchange Company understands that BST currently has in effect numerous billing and collection cents with various interexchange carriers and billing clearing houses. Local Exchange Company further understands that these billing and collection customers of BST query BST's LIDB to determine whether to accept various billing options from end users. Additionally, Local Exchange Company understands that presently BST has no method to differentiate between BST's own billing and line data in the LIDB and such data which it includes in the LIDB on Local Exchange Company's behalf pursuant to this Agreement. Therefore, until such time as BST can and does implement in its LIDB and its supporting systems the means to differentiate Local Exchange Company's data from BST's data and the parties to this Agreement execute appropriate amendments hereto, the following terms and conditions shall apply:

(a) The Local Exchange Company agrees that it will accept responsibility for telecommunications services billed by BST for its billing and collection customers for Local Exchange Customer's end user accounts which are resident in LIDB pursuant to this Agreement Local Exchange Company authorizes BST to place such charges on Local Exchange Company's bill from BST and agrees that it shall pay all such charges. Charges for which Local Exchange Company hereby takes responsibility include, but are not limited to, collect and third number calls.

(b) Charges for such services shall appear on a separate BST bill page identified with the name of the entity for which BST is billing the charge.

(c) Local Exchange Company shall have the responsibility to render a billing statement to its end users for these charges, but Local Exchange Company's obligation to pay BST for the charges billed shall be independent of whether Local Exchange Company is able or not to collect from Local Exchange Company's end users.

(d) BST shall not become involved in any disputes between Local Exchange Company and the entities for which BST performs billing and collection. BellSouth will not issue adjustments for charges billed on behalf of an entity to Local Exchange Company. It shall be the responsibility of the Local Exchange Company and the other entity to negotiate and arrange for any appropriate adjustments.

IV. COMPLIANCE

Unless expressly authorized in writing by the Local Exchange Company, all billing number information provided pursuant to this Agreement shall be used for no purposes other than those set forth in this Agreement.

V. TERMS

This Agreement will be effective as of _____, 1996, and will continue in effect for one year, and thereafter may be continued until terminated by either Party upon thirty (30) days' written notice to the other Party.

VI. FEES FOR SERVICE AND TAXES

6.01. The Local Exchange Company will not be charged a fee for storage services provided by BST to the Local Exchange Company, as described in Section I of this Agreement.

6.02. Sales, use and all other taxes (excluding taxes on BST's income) determined by BST or any taxing authority to be due to any federal, state or local taxing jurisdiction with respect to the provision of the service set forth herein will be paid by the Local Exchange Company. The Local Exchange Company shall have the right to have BST contest with the imposing jurisdiction, the Local Exchange Company's expense, any such taxes that the Local Exchange Company deems are improperly levied.

VII. INDEMNIFICATION

To the extent not prohibited by law, each Party will indemnify the other and hold the other harmless against any loss, cost, claim, injury, or liability relating to or arising out of negligence or willful misconduct by the indemnifying Party or its agents or contractors in connection with the indemnifying Party's provision of services, provided, however, that any indemnity for any loss, cost, claim, injury or liability arising out of or relating to errors or omissions in the provision of services under this Agreement shall be limited as otherwise specified in this Agreement. The indemnifying Party under this Section agrees to defend any suit brought against the other Party for any such loss, cost, claim, injury or liability. The indemnified Party agrees to notify the other Party promptly, in writing, of any written claims, lawsuits, or demands for which the other Party is responsible under this Section and to cooperate in every reasonable way to facilitate defense or settlement of claims. The indemnifying Party shall not be liable under this Section for settlement by the indemnified Party of any claim, lawsuits, or demand unless the defense of the claim, lawsuit, or demand has been tendered to it in writing and the indemnifying Party has unreasonably failed to assume such defense.

VIII. LIMITATION OF LIABILITY

Neither Party shall be liable to the other Party for any lost profits or revenues or for any indirect, incidental or consequential damages incurred by the other Party arising from this Agreement or the services formed or not performed hereunder, regardless of the cause of such loss or damage.

IX. MISCELLANEOUS

9.01. It is understood and agreed to by the parties that BST may provide similar services to other companies.

9.02. All terms, conditions and operations under this Agreement shall be performed in accordance with, and subject to, all applicable local, state or federal legal and regulatory tariffs, rulings, and other requirements of the federal courts, the U.S. Department of Justice and state and federal regulatory agencies. Nothing in this Agreement shall be construed to cause either Party to violate any such legal or regulatory requirement and either Party's obligation to perform shall be subject to all such requirements.

9.03. The Local Exchange Company agrees to submit to BST all advertising, sales promotion, press releases, and other publicity matters relating to this Agreement wherein BST's corporate or trade names, logos, trademarks or service mark or those of BST's affiliated companies are mentioned or language from which the connection of said names or trademarks therewith may be inferred or implied; and the Local Exchange Company further agrees not to publish or use advertising, sales promotions, press releases, or publicity matters without BST's prior written approval.

9.04. This Agreement constitutes the entire agreement between the Local Exchange Company and BST which supersedes all prior agreements or contracts, oral or written representations, statements, negotiations, understandings, proposals and understandings with respect to the subject matter hereof.

9.05. Except as expressly provided in this Agreement, if any part of this Agreement is held or construed to be invalid or unenforceable, the validity of any other Section of this Agreement shall remain in full force and effect to the extent permissible or appropriate in furtherance of the intent of this Agreement.

9.06. Neither Party shall be held liable for any delay or failure in performance of any part of this Agreement for any cause beyond its control and without its fault or negligence, such as acts of God, acts of civil or military authority, government regulations, embargoes, epidemics, war, terrorist acts, riots, insurrections, fires, explosions, earthquakes, nuclear accidents, floods, power blackouts, volcanic action, other major environmental disturbances, unusually severe weather conditions, inability to secure products or services of other persons or transportation facilities, or acts or omissions of transportation common carriers.

9.07. This Agreement shall be deemed to be a contract made under the laws of the State of Georgia, and the construction, interpretation and performance of this Agreement and all transactions hereunder shall be governed by the domestic law of such State.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their fully authorized officers.

BELLSOUTH TELECOMMUNICATIONS, INC.

By: _____
Title: _____
Date: _____
Address: _____

9.02. All terms, conditions and operations under this Agreement shall be performed in accordance with, and subject to, all applicable local, state or federal legal and regulatory tariffs, rulings, and other requirements of the federal courts, the U.S. Department of Justice and state and federal regulatory agencies. Nothing in this Agreement shall be construed to cause either Party to violate any such legal or regulatory requirement and either Party's obligation to perform shall be subject to all such requirements.

9.03. The Local Exchange Company agrees to submit to BST all advertising, sales promotion, press releases, and other publicity matters relating to this Agreement wherein BST's corporate or trade names, logos, trademarks or service mark or those of BST's affiliated companies are mentioned or language from which the connection of said names or trademarks therewith may be inferred or implied; and the Local Exchange Company further agrees not to publish or use advertising, sales promotions, press releases, or publicity matters without BST's prior written approval.

9.04. This Agreement constitutes the entire agreement between the Local Exchange Company and BST which supersedes all prior agreements or contracts, oral or written representations, statements, negotiations, understandings, proposals and understandings with respect to the subject matter hereof.

9.05. Except as expressly provided in this Agreement, if any part of this Agreement is held or construed to be invalid or unenforceable, the validity of any other Section of this Agreement shall remain in full force and effect to the extent permissible or appropriate in furtherance of the intent of this Agreement.

9.06. Neither Party shall be held liable for any delay or failure in performance of any part of this Agreement for any cause beyond its control and without its fault or negligence, such as acts of God, acts of civil or military authority, government regulations, embargoes, epidemics, war, terrorist acts, riots, insurrections, fires, explosions, earthquakes, nuclear accidents, floods, power blackouts, volcanic action, other major environmental disturbances, unusually severe weather conditions, inability to secure products or services of other persons or transportation facilities, or acts or omissions of transportation common carriers.

9.07. This Agreement shall be deemed to be a contract made under the laws of the State of Georgia, and the construction, interpretation and performance of this Agreement and all transactions hereunder shall be governed by the domestic law of such State.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their fully authorized officers.

BELLSOUTH TELECOMMUNICATIONS, INC.

By: _____

Title: Manager

Date: July 25, 1996

Address: 22645 BellSouth Center
675 West Peachtree Street, N.E.
Atlanta, Georgia 30375

AMERICAN COMMUNICATIONS SERVICES, INC.

By: _____
Title: _____
Date: _____
Address: _____

AMERICAN COMMUNICATIONS SERVICES, INC.

By: _____

Title: Executive Vice President

Date: July 25, 1996

Address: 131 National Business Pkwy. Suite 100
Annapolis Junction, MD 20701

ATTACHMENT C-7

Unbundled Products and Services and New Services

Service: Line Information Database Access Service (LIDB) - Validation

Description: Provides a customer the ability to receive validation of billing information through query of data stored in BellSouth's LIDB data base. See below for additional information.

State(s): All

Rate Elements	Description	Monthly	Non-Recurring
LIDB Common Transport	Provides for transport of the customer's query from the LIDB Location (RSTP) to the data base (SCP). This charge will apply each time the customer requests and receives validation of a BellSouth calling card or requests and receives the status of a billed number associated with a LEC line stored in the BellSouth LIDB.	$0.00030	--
LIDB Validation	Provides for query of data resident in BellSouth's LIDB. This rate will apply each time a customer requests and receives validation of LEC calling card or requests and receives the status of a billed number associated with a LEC line stored in BellSouth's LIDB.	$0.03800	--
Originating Point Code Establishment or Change	Provides for the establishment or change of a customer requested Originating Point Code. This charge will apply each time the customer establishes or changes a point code destination identifying one of his locations or a location of one of his end users.	--	$91.00
CCS7 Signaling Connections	Rates, terms and conditions for CCS7 Signaling Connections are as set forth in Section E6.8 of BellSouth Telecommunication's Inc.'s Intrastate Access Services Tariff.		

ATTACHMENT C-8

Unbundled Products and Services and New Services

Service:	Subscriber Listing Information
Description:	Subscriber primary listing information provided at no charge and in an acceptable format will be published at no charge as standard directory listings in an alphabetical directory published by or for BellSouth at no charge to each ACSI end user customer.
States(s):	All
Rate(s):	(1) No charge for ACSI customer primary listings. (2) Additional listings and optional listings may be provided by BellSouth at rates set forth in BellSouth's intrastate General Subscriber Services Tariffs.
Special Requirements:	ACSI agrees to execute a directory listing agreement with BAPCO in a form consistent in all material respects with the sample listing agreement attached hereto.

AGREEMENT

In consideration of the mutual promises contained herein, BellSouth Advertising & Publishing Corporation, a Georgia corporation ("BAPCO") and American Communications Services, Inc. and the affiliates thereof included in Attachment A (collectively "ACSI") agree as follows:

1. RECITALS. BAPCO is the publisher of alphabetical and classified directories for certain communities in the southeastern region of the U.S. (the "Directories"). ACSI provides, or intends to provide, local exchange telephone service in communities in which BAPCO publishes Directories. BAPCO and ACSI hereby establish the terms by which BAPCO will include listings of ACSI subscribers in such Directories and by which BAPCO will provide such Directories to ACSI subscribers.

2. ACSI OBLIGATIONS. ACSI agrees as follows:

(a) Carrier shall provide to BAPCO, or its designee, at ACSI's expense and at no charge, listing information concerning its subscribers (designating any who do not desire published listings), consisting of customer name, address, telephone number and all other information reasonably requested by BAPCO for BAPCO's use in publishing Directories of whatever type and format. Such subscriber listing information shall be provided in the format and on the schedule set forth herein, or as otherwise mutually agreed between the parties from time to time.

(b) ACSI shall provide directory delivery information to BAPCO for all subscribers.

(c) ACSI shall advise BAPCO promptly of any directory-related inquiries, requests or complaints which it may receive from ACSI subscribers and shall provide reasonable cooperation to BAPCO in response to or resolution of the same.

(d) ACSI shall respond promptly regarding corrections or queries raised by BAPCO to process listing changes requested by subscribers.

3. BAPCO OBLIGATIONS. BAPCO agrees as follows:

(a) BAPCO shall include one standard listing for each ACSI subscriber per hunting group in BAPCO's appropriate local alphabetical Directory as published periodically by BAPCO unless nonlisted or nonpublished status is designated by subscribers at no charge to ACSI or the listing ACSI subscribers. Such listings shall be interfiled with the listings of other local exchange telephone company subscribers and otherwise published in the manner of such other listings according to BAPCO's generally applicable publishing policies and standards, and in a manner consistent with the treatment of listings by subscribers of BellSouth Telecommunications, Inc. The parties hereto agree to cooperate with each other in establishing formats for submission, timelines, lead times and content of listing information.

(b) BAPCO shall publish additional listings, foreign listings and other alphabetical Directory listings of ACSI subscribers upon their request consistent with BAPCO's generally applicable policies in BAPCO's alphabetical Directories at BAPCO's prevailing rates, terms and conditions. BAPCO shall in no event charge ACSI subscribers more for such services than is charged to subscribers of BellSouth Telecommunications, Inc. for similar services.

(c) BAPCO will distribute regularly published alphabetical and classified Directories to local ACSI subscribers in accordance with BAPCO's prevailing practices, including delivery following Directory publication and upon establishment of new ACSI service, if a current Directory for that geographic area has not previously been provided. Such deliveries may include separate advertising materials accompanying the Directories.

(d) BAPCO will include ACSI information in the customer guide pages of its alphabetical Directories for communities where ACSI provides local exchange telephone service at the time of publication in accordance with BAPCO's prevailing standards for the same. ACSI will provide information requested by BAPCO for such purpose on a timely basis. BAPCO agrees to negotiate in good faith with ACSI to provide additional customer guide space, including a separate customer guide page for ACSI.

(e) BAPCO shall make available at no charge to ACSI or its subscribers one listing for ACSI business customers per hunting group in one appropriate heading in BAPCO's appropriate local classified directory as published periodically by BAPCO. Such listings shall be published according to BAPCO's generally applicable publishing policies and standards, and in a manner no less favorable than treatment afforded to subscribers to BellSouth Telecommunications, Inc. services.

(f) BAPCO agrees to solicit, accept and publish directory advertising from business subscribers for ACSI in communities for which BAPCO publishes classified Directories in the same manner and upon substantially the same terms as it solicits, accepts and publishes advertising from advertisers who are not ACSI subscribers.

(g) BAPCO will deal with subscribers of ACSI on the same basis and in the identical manner that it deals with subscribers of BellSouth Telecommunications, Inc. respecting inclusion in and delivery of white and yellow page directories (including both hard copy and electronic format directories). BAPCO specifically agrees to include primary listings for ACSI subscribers in such directories at no charge to ACSI, and at no charge to ACSI's listing subscribers other than such charge as would normally be applied to BellSouth Telecommunications, Inc. subscribers.

(h) Respecting inclusion in and delivery of yellow page directories, BAPCO will not discriminate against subscribers of ACSI. With respect to inclusion of listings by ACSI subscribers, BAPCO will use the same criteria in determining whether to publish advertisements and listings in its yellow page directories as it uses for all other customers and potential customers, including customers of BellSouth Telecommunications, Inc. BAPCO will work cooperatively with ACSI to ensure that yellow page advertisements by customers who switch their local service from BellSouth Telecommunications, Inc. to ACSI are maintained without interruption.

4. PUBLISHING POLICIES. BAPCO shall maintain full authority over its publishing schedules, policies, standards, and practices and over the scope and publishing schedules of its Directories.

5. LIABILITY AND INDEMNITY.

(a) Each party agrees to defend, indemnify and hold harmless the other from all damages, claims, suits, loses or expenses, including without limitation costs and attorneys fees, to the extent of such party's relative fault, arising out of or result from any error, omission or act of such party hereunder. Each party shall notify in writing the other promptly of any claimed error or omission affecting this paragraph and of any claim or suit arising hereunder or relating to this Agreement and shall provide reasonable and timely cooperation in its resolution of the same.

Without wavier of any rights hereunder, the indemnified party may at its expense undertake it sown defense in any such claim or suit.

6. TERM. This Agreement shall be effective on the date of the last signature hereto for a term of two (2) years and shall relate to Directories published by BAPCO during such period. Thereafter, it shall continue in effect unless terminated by either party upon sixty days' prior written notice.

7. ASSIGNMENT. This Agreement shall be binding upon any successors or assigns of the parties during its Term.

8. RELATIONSHIP OF THE PARTIES. This Agreement does not create any joint venture, partnership or employment relationship between the parties or their employees, and the relationship between the parties shall be that of an independent contractor. There shall be no intended third party beneficiaries to this Agreement.

9. NONDISCLOSURE.

(a) During the term of this Agreement it may be necessary for the parties to provide each other with certain information ("Information") considered to be private or proprietary. The recipient shall protect such Information from distribution, disclosure or dissemination to anyone except its employees or contractors with a need to know such Information in conjunction herewith, except as otherwise authorized in writing. All such Information shall be in writing or other tangible form and clearly marked with a confidential or proprietary legend. Information conveyed orally shall be designed as proprietary or confidential at the time of such oral conveyance and shall be reduced to writing within forty-five (45) days.

(b) The parties will not have an obligation to protect any portion of Information which: (1) is made publicly available lawfully by a nonparty to this Agreement; (2) is lawfully obtained from any source other than the providing party; (3) is previously known without an obligation to keep it confidential; (4) is released by the providing party in writing; or (5) commencing two (2) years after the termination date of this Agreement if such Information is not a trade secret under applicable law.

(c) Each party will make copies of the Information only as necessary for its use under the terms hereof, and each copy will be marked with the same proprietary notices as appear on the originals. Each party agrees to use the Information solely in support of this Agreement and for no other purpose.

10. FORCE MAJEURE. Neither party shall be responsible to the other for any delay or failure to perform hereunder to the extent caused by fire, flood, explosion, war, strike, embargo, governmental requirements, civic or military authority, act of God, or other similar cause beyond its reasonable control. Each party shall use best efforts to notify the other promptly of any such delay or failure and shall provide reasonable cooperation to ameliorate the effects thereof.

11. REPRESENTATIVES AND NOTICES.

(a) Each party shall name one or more representatives for contacts between the parties which shall be authorized to act on its behalf. Such representatives may be changed from time to time upon written notice to the other party.

(b) Notices required by law or under this Agreement shall be given in writing by hand delivery, certified or registered mail, or by facsimile followed by certified or registered mail, addressed to the named representatives of the parties with copies to:

If to BAPCO:

Director-LEC/BST Interface
BellSouth Advertising & Publishing Corporation
Room 270
59 Executive Park South
Atlanta, GA 30329

With Copy to:

Associate General Counsel
BellSouth Advertising & Publishing Corporation
Room 430
59 Executive Park South
Atlanta, GA 30329

If to ACSI:

Riley M. Murphy
Executive Vice President and General Counsel
American Communications Services, Inc.
131 National Business Parkway, Suite 100
Annapolis Junction, MD 20701

12. MISCELLANEOUS. This Agreement represents the entire Agreement between the parties with respect to the subject matter hereof and supersedes any previous oral or written communications, representations, understandings, or agreements with respect thereto. It may be executed in counterparts, each of which shall be deemed an original. All prior and contemporaneous written or oral agreements, representations, warranties, statements, negotiations, and/or understandings by and between the parties, whether express or implied, are superseded and there are no representations or warranties, either oral or written, express or implied, not herein contained. This Agreement shall be governed by the laws of the state of Georgia.

IN WITNESS WHEREOF, the parties have executed this Agreement by their duly authorized representatives in one or more counterparts, each of which shall constitute an original, on the dates set forth below.

BELLSOUTH ADVERTISING & PUBLISHING CORPORATION	AMERICAN COMMUNICATIONS SERVICES, INC.
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____

ATTACHMENT C-9

Unbundled Products and Services and New Services

Service: Access to 911 Service

Description: Provides a universal, easy-to-remember number which is recognized nationally as the appropriate number to call in an emergency.

Additionally, ACSI must provide a minimum of two dedicated trunk groups originating from ACSI's serving wire center and terminating to the appropriate 911 tandem. These facilities, consisting of a Switched Local Channel from ACSI's point of interface to its serving wire center and Switched Dedicated Transport to the 911 tandem, may be purchased from BellSouth at the Switched Dedicated Transport rates set forth in Section E6 of BellSouth Telecommunications Inc.'s Intrastate Access Service Tariffs.

State(s): All

Rate(s): Will be billed to appropriate municipality.

Special Service Requirements:

1. BellSouth shall provide interconnection to a 911 selective routing switch to route calls from ACSI network to correct the Public Safety Answering Point (PSAP).

2. BellSouth shall identify any special default arrangements and routing arrangements to complete overflow.

3. BellSouth shall specify any requirements for emergency backup numbers in case of massive trunk failures.

4. BellSouth shall provide priority restoral of trunk or network outages on the same terms/conditions it provides itself (and without the imposition of TSP).

5. The Parties agree to develop a mutual aid agreement to assist with disaster recovery.

6. BellSouth shall implement a process to identify and correct errors to the ALI database to ensure that the accuracy of data stored by new entrants is no less than its own data.

7. BellSouth shall provide reasonable advance notification of any pending tandem moves, and scheduled maintenance outages which could affect the provision of 911 service.

8. BellSouth shall establish a process for the management of NPA splits as well as NXX splits sufficient to ensure that the provision of 911 services to ACSI is not adversely affected.

ATTACHMENT C-10

Unbundled Products and Services and New Services

Service: Operator Call Processing Access Service

Description: Provides Operator and Automated call handling. This includes processing and verification of alternate billing information for collect, calling card, and billing to a third number. Operator Call Processing Access Service also provides dialing instructions, and other operator assistance the customer may desire.

Rate Elements	State(s)	Monthly Recurring	Applied Per
Operator Provided Call Handling	All	$1.17	Per Work Minute
Call Completion Access Termination Charge This charge will be applicable per call attempt and is in addition to the Operator Provided Call Handling charge listed above.	Alabama Florida Georgia Kentucky Louisiana Mississippi S. Carolina Tennessee	$0.06 $0.06 $0.06 $0.06 $0.06 $0.06 $0.08 $0.12	Per Call Attempt Per Call Attempt Per Call Attempt Per Call Attempt Per Call Attempt Per Call Attempt Per Call Attempt Per Call Attempt
Fully Automated Call Handling	All	$0.15	Per Attempt
Operator Services Transport Operator Services transport rates, terms and conditions are as set forth in E6 of BellSouth Telecommunication's, Inc.'s Intrastate Access Service Tariff.			

ATTACHMENT C-11

Unbundled Products and Services and New Services

Service: Directory Assistance Access Service (Number Services)

Description: In order to provide customers of the co-carriers access to ubiquitous directory assistance services, whereby they can gain information on all assigned numbers regardless of the exchange service provider, methods and procedures need to be developed to 1) incorporate BellSouth and ACSI customer data into each other's directory assistance databases; 2) provide access to each other database(s) for their customers; 3) to buy and sell companies of each others directory assistance and use.

State(s): All.

Rate(s):

Rate Elements	Description	State(s)	Monthly Rate
Directory Assistance Call Completion Access Service	Given a listed telephone number at the request of an Access subscriber's end user, BellSouth will provide or attempt to provide from the DA Operator System, call completion to the number requested.	All	$0.25 per call attempt
Call Completion Access Termination Charge	This charge will be applicable per completed call and is in addition to the DACC Access Service charge listed above.	Alabama Florida Georgia Kentucky Louisiana Mississippi S. Carolina Tennessee	$0.06 $0.06 $0.06 $0.06 $0.06 $0.06 $0.08 $0.12
Number Services Intercept Access Service	Number Services Intercept Access refers calls from disconnected numbers to the proper number or numbers. This charge will be applied per intercept query.	All	$0.30
Directory Assistance Service Call	Rates, terms and conditions will be applied as set forth in E9.1.7 for Georgia and as set forth in E9.5.3 for AL. FL. KY. LA. MS. NC. SC. TN of BellSouth Telecommunication's Inc.'s Intrastate Access Service Tariff.		
Directory Transport	Rates, terms and conditions will be applied as set forth in E9.1.7 for Georgia and as set forth in E9.5.3 for AL. FL. KY. LA. MS. NC. SC. TN of BellSouth Telecommunication's Inc.'s Intrastate Access Service Tariff.		
Directory Assistance Interconnection	Rates, terms and conditions will be applied as set forth in E9.1.7 for Georgia and as set forth in E9.5.3 for AL. FL. KY. LA. MS. NC. SC. TN of BellSouth Telecommunication's Inc.'s Intrastate Access Service Tariff.		
Directory Assistance Database Service	Rates, terms and conditions will be applied as set forth in A38.1 of BellSouth Telecommunication's Inc.'s General Subscriber Service Tariff.		
Direct Access to DA Service	Rates, terms and conditions will be applied as set forth in Section 9.3 of BellSouth Telecommunication's Inc.'s Interstate Access Service Tariff F.C.C. No. 1.		

Special Service Requirements:

1. DA Service hereunder provides the ability to make ACSI's data available to anyone calling BellSouth's DA, and BellSouth's data available to anyone calling ACSI's DA.

2. BellSouth shall store proprietary customer information provided by ACSI in its AA database; such information shall be able to be identified by source provider in order to provide the necessary protection of proprietary information.

3. DA Service includes the ability to complete intraLATA, 555 and 411 calls utilizing components of BellSouth's DA network.

4. ACSI may resell BellSouth DA either as part of a bundled ACSI service or independently.

5. ACSI shall be able to buy the components or any combination of components, that comprise the DA Service and package them as required, including:

   - Unbundled Directory Platform (includes operators, switch and LAN)
   - Unbundled Directory Assistance Database Access Service ("DADAS")
   - Unbundled Directory Assistance Database Service ("DADS")

   DADAS and DADS will be offered pursuant to the terms of the applicable BellSouth Local Interconnection Services Tariff.

6. There will be no charge for BellSouth storage of ACSI customer information in the Directory Assistance Database.

7. The end-to-end interval for updating database must be the same as provided to BellSouth's end users.

8. BellSouth will provide ACSI with an interface into BellSouth's database for updating and inquiries.

9. Quality standards shall be equivalent to that provided by BellSouth to its own customers.

10. Speed-to-answer times will be equivalent to that provided by BellSouth to its own customers.

Special Service Requirements (cont'd):

11. Dialing parity will be provided, including no unreasonable dialing delays.

12. BellSouth will incorporate ACSI customer data in its DA database via the ordering process specified in its Facilities-Based Ordering Guide ("FBOG").

13. BellSouth's DA database shall be updated and maintained with ACSI data for customers who:

- Disconnect
- Change carrier
- Install
- "Change" orders
- Are Non-Published
- Are Non-Listed
- Are Non-Published/Non-Listed

14. Each carrier shall bill its own end-users.

15. BellSouth invoices to ACSI for DA Services shall be in a CABS format.

16. The Parties agree to develop reasonable intercompany procedures to correct errors which are identified in the DA database.

ATTACHMENT C-12

Unbundled Products and Services and New Services

Service: Centralized Message Distribution System - Hosting (CMDS-Hosting)

Description: CMDS - Hosting is the Bellcore administered national system used to exchange Message Record (EMR) formatted message data among host companies.

All intraLATA and local messages originated and billed in the BellSouth Region involving BellSouth CMDS hosted companies will be processed through the Non-Send Paid Report System (NSPRS) described in the attached agreement and Attachment C-13 hereto. BellSouth agrees to provide CMDS/RAO hosting and NSPRS services for ACSI, subject to the terms of this Attachment and Attachment C-14, and subject to execution of a services agreement substantially in the form attached hereto.

State(s): All

Rate Elements	Description	Monthly
Message Distribution	Message Distribution is routing determination and subsequent delivery of message data from one company to another. Also included is the interface function with CMDS, where appropriate. This charge is applied on a per message basis.	$0.004
Data Transmission	This charge is applied on a per message basis.	$0.001

CONTRACT PROVISIONS FOR RAO HOSTING AND NSPRS

SECTION 1. SCOPE OF AGREEMENT

1.01 This Agreement shall apply to the services of Revenue Accounting Office (RAO) Hosting and the Non-Sent Paid Report System (NSPRS) as provided by BellSouth to ACSI. The terms and conditions for the provisions of these services are outlined in the Exhibits to this Agreement.

SECTION 2. DEFINITIONS

2.01 A. Centralized Message Distribution System is the BellCore administered national system, based in Kansas City, Missouri, used to exchange Message Record (EMR) formatted data among host companies.

B. Compensation is the amount of money due from BellSouth to ACSI or from ACSI to BellSouth for services and/or facilities provided under this Agreement.

C. Exchange Message Record is the nationally administered standard format for the exchange of data among Exchange Carriers within the telecommunications industry.

D. Intercompany Settlements (ICS) is the revenue associated with charges billed by a company other than the company in whose service are such charges were incurred. ICS on a national level includes third number and credit card calls. ICS within the BellSouth region includes third number, credit card and collect calls.

E. Message Distribution is routing determination and subsequent delivery of message data from one company to another. Also included is the interface function with CMDS, where appropriate.

F. Non-Sent Paid Report System (NSPRS) is the system that calculates ICS amounts due from one company to another in the state of Florida.

G. Revenue Accounting Office (RAO) Status Company is a local exchange company/alternate local exchange company that has been assigned a unique RAO code. Message data exchanged among RAO status companies is grouped (*i.e.*, packed) according to From/To/Bill RAO combinations.

SECTION 3. RESPONSIBILITIES OF THE PARTIES

3.01 RAO Hosting and NSPRS services provided to ACSI by BellSouth will be in accordance with the methods and practices regularly adopted and applied by BellSouth to its own operations during the term of this Agreement, including such revisions as may be made from time to time by BellSouth.

3.02 ACSI shall furnish all relevant information required by BellSouth for the provision of RAO Hosting and NSPRS.

SECTION 4. COMPENSATION ARRANGEMENTS

4.01 Applicable compensation amounts will be billed by BellSouth to ACSI on a monthly basis in arrears. Amounts due from one Party to the other (excluding adjustments) are payable within thirty (30) days of receipt of the billing statement.

SECTION 5. ASSOCIATED EXHIBITS

5.01 Listed below are the exhibits associated with this Agreement.

Exhibit A Message Distribution Service (RAO Hosting)

Exhibit B Intercompany Settlements (NSPRS)

5.02 From time to time by written agreement of the parties, new Exhibits may be substituted for the attached Exhibits, superseding and canceling the Exhibits then in effect.

SECTION 6. TERM OF AGREEMENT

6.01 This agreement is effective _____ and will continue in force until terminated, with or without cause, by thirty (30) days' prior notice in writing from either Party to the other. This Agreement may be amended from time to time upon written agreement of the parties.

Executed this _____ day of _____, 1996.

WITNESS: ACSI

_____ _____
(title)

WITNESS: BELLSOUTH TELECOMMUNICATIONS, INC.

_____ _____
(title)

4.01 Applicable compensation amounts will be billed by BellSouth to ACSI on a monthly basis in arrears. Amounts due from one Party to the other (excluding adjustments) are payable within thirty (30) days of receipt of the billing statement.

SECTION 5. ASSOCIATED EXHIBITS

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6.01 This agreement is effective _____ and will continue in force until terminated, with or without cause, by thirty (30) days' prior notice in writing from either Party to the other. This Agreement may be amended from time to time upon written agreement of the parties.

Executed this _____ day of _____, 1996.

WITNESS:

ACSI

WITNESS:

Riley M. Murphy (title)
Executive Vice President

BELLSOUTH TELECOMMUNICATIONS, INC.

(title)

SECTION 1. SCOPE OF EXHIBIT

1.01 This exhibit specifies the terms and conditions, including compensation, under which BellSouth shall provide message distribution service to ACSI. As described herein, message distribution service includes the following:

1) Message Forwarding to Intraregion LEC/ALEC - function of receiving an ALEC message and forwarding the message to another LEC/ALEC in the BellSouth region.

2) Message Forwarding to CMDS - function of receiving an ALEC message and forwarding that message on to CMDS.

3) Message Forwarding from CMDS - function of receiving a message from CMDS and forwarding that message to ACSI.

SECTION 2. RESPONSIBILITIES OF THE PARTIES

2.01 An ALEC that is CMDS hosted by BellSouth must have its own unique RAO code. Requests for establishment of RAO status where BellSouth is the selected CMDS interfacing host, require written notification from ACSI to BellSouth at least six (6) weeks prior to the proposed effective date. The proposed effective date will be mutually agreed upon between the parties with consideration given to time necessary for the completion of required BellCore functions. BellSouth will request the assignment of an RAO code from its connecting contractor, currently BellCore, on behalf of ACSI and will coordinate all associated conversion activities.

2.02 BellSouth will receive messages from ACSI that are to be processed by BellSouth, another LEC/ALEC in the BellSouth region or a LEC outside the BellSouth region.

2.03 BellSouth will perform invoice sequence checking, standard EMR format editing, and balancing of message data with the EMR trailer record counts on all data received from ACSI.

2.04 All data received from ACSI that is to be processed or billed by another LEC/ALEC within the BellSouth region will be distributed to that LEC/ALEC in accordance with the agreement(s) which may be in effect between BellSouth and the involved LEC/ALEC.

2.05 All data received from ACSI that is to be placed on the CMDS network for distribution outside the BellSouth region will be handled in accordance with the agreement(s) which may be in effect between BellSouth and its connecting contractor (currently BellCore).

2.06 BellSouth will receive messages from the CMDS network that are destined to be processed by ACSI and will forward them to ACSI on a daily basis.

2.07 Transmission of message data between BellSouth and ACSI will be via electronic data transmission.

2.08 All messages and related data exchanged between BellSouth and ACSI will be formatted in accordance with accepted industry standards for EMR formatted records and packed between appropriate EMR header and trailer records, also in accordance with accepted industry standards.

2.09 ACSI will ensure that the recorded message detail necessary to recreate files provided to BellSouth will be maintained for back-up purposes for a period of three (3) calendar months beyond the related message dates.

2.10 Should it become necessary for ACSI to send data to BellSouth more than sixty (60) days past the message date(s), that ALEC will notify BellSouth in advance of the transmission of the data. If there will be impacts outside the BellSouth region, BellSouth will work with its connecting contractor and ACSI to notify all affected parties.

2.11 In the event that data to be exchanged between the two parties should become lost or destroyed, both parties will work together to determine the source of the problem. Once the cause of the problem has been jointly determined and the responsible Party (BellSouth or ACSI) identified and agreed to, the company responsible for creating the data (BellSouth or ACSI) will make every effort to have the affected data restored and retransmitted. If the data cannot be retrieved, the responsible Party will be liable to the other Party for any resulting lost revenue. Lost revenue may be a combination of revenues that could not be billed to the end users and associated access revenues. Both parties will work together to estimate the revenue amount based upon historical data through a method mutually agreed upon. The resulting estimated revenue loss will be paid by the responsible Party to the other Party within three (3) calendar months of the date of problem resolution, or as mutually agreed upon by the parties.

2.12 Should an error be detected by the EMR format edits performed by BellSouth on data received from ACSI, the entire pack containing the affected data will not be processed by BellSouth. BellSouth will notify ACSI of the error condition. ACSI will correct the error(s) and will resend the entire pack to BellSouth for processing. In the event that an out-of-sequence condition occurs on subsequent packs, ACSI will resend these packs to BellSouth after the pack containing the error has been successfully reprocessed by BellSouth.

2.13 In association with message distribution service, BellSouth will provide ACSI with associated intercompany settlements reports (national and regional) as appropriate.

2.14 In no case shall either Party be liable to the other for any direct or consequential damages incurred as a result of the obligations set out in this agreement.

SECTION 3. COMPENSATION

3.01 For message distribution service provided by BellSouth for ACSI, BellSouth shall receive the following as compensation:

Rate Per Message $0.004

3.02 For data transmission associated with message distribution service, BellSouth shall receive the following as compensation:

Rate Per Message	$0.001

3.03 Data circuits (private line or dial-up) will be required between BellSouth and ACSI for the purpose of data transmission. Where a dedicated line is required, ACSI will be responsible for ordering the circuit, overseeing its installation and coordinating the installation with BellSouth. ACSI will also be responsible for any charges associated with this line. Equipment required on the BellSouth end to attach the line to the mainframe computer and to transmit successfully ongoing will be negotiated on a case by case basis. Where a dial-up facility is required, dial circuits will be installed in the BellSouth data center by BellSouth and the associated charges assessed to ACSI. Additionally, all message toll charges associated with the use of the dial circuit by ACSI will be the responsibility of ACSI. Associated equipment on the BellSouth end, including a modem, will be negotiated on a case by case basis between the parties.

3.04 All equipment, including modems and software, that is required on ACSI end for the purpose of data transmission will be the responsibility of ACSI.

SECTION 1. SCOPE OF EXHIBIT

1.01 This Exhibit specifies the terms and conditions, including compensation, under which BellSouth and ACSI will compensate each other for Intercompany Settlements (ICS) messages.

SECTION 2. RESPONSIBILITIES OF THE PARTIES

2.01 BellSouth will remit to ACSI the revenue, less a billing charge, for IntraLATA ICS messages, Local ICS messages, and charges for other services when related messages and/or services are provided by ACSI and billed to:

1) a BellSouth customer,

2) another company within the BellSouth region (excluding Florida) associated with the exchange of message data with BellSouth (excluding CIID and 891 messages),

3) another company within the conterminous United States that utilizes CMDS directly or indirectly and settles with BellSouth directly or indirectly through the Credit Card and Third Number Settlement System (CATS) administered by BellCore,

4) another company utilizing the non-conterminous RAO codes associated with AT&T's Transport and Tracking Intercompany System settlements with BellSouth.

2.02 These other services include, but are not limited to:

1) Maritime Mobile Radiotelephone Services radio link charges as set forth in the FCC's Maritime Mobile Radiotelephone Services tariff.

2) Aviation Radiotelephone Service radio link charges as set forth in the FCC's Aviation Radiotelephone Service tariff.

3) Public Land Mobile Radiotelephone Transient-Unit Non-Toll Service [changes] as approved by the authorized state regulatory commission (or municipal regulatory authority).

4) Non-Toll Service Charges billed to a calling card or to a third number as filed with and approved by the authorized state regulatory commission (or municipal regulatory authority).

5) Directory Assistance Call Charges to a calling card or to a third number as approved by the authorized regulatory commission.

2.03 ACSI will bill, collect and remit to BellSouth the charges for intraLATA and/or local ICS messages and other services as described above where such messages and/or services are provided by:

1) BellSouth,

2) another company with the BellSouth region (excluding Florida) associated with the exchange of message data with BellSouth (excluding CIID and 891 messages),

3) another company within the conterminous United States that utilizes CMDS directly or indirectly and settles with BellSouth directly or indirectly through the Credit Card and Third Number Settlement System (CATS).

2.04 For ICS revenues involving ACSI and other non-BellSouth LECs/ALECs within the state, BellSouth will provide ACSI with monthly reports summarizing the ICS revenues for messages that originated with ACSI and were billed by each of the other Florida LECs/ALECs and those messages that originated with each of the other Florida LECs/ALECs and were billed by ACSI.

SECTION 3. COMPENSATION

3.01 The following compensation shall be retained by the billing company for the billing of ICS messages and services:

		Rate Per Message
1)	Calls originated and billed in Florida or originated and billed in North Carolina	$0.066
2)	Calls originated in any of the states within BellSouth region and billed in that same state	$0.05
3)	Calls originated in a state within BellSouth's region and billed in another state or originated in another state and billed in a state within BellSouth's region	$0.05
4)	Calls originated in a state within BellSouth's region and billed outside the conterminous United States	$0.16

ATTACHMENT C-13

Unbundled Products and Services and New Services

Service: Non-Sent Paid Report System (NSPRS)

Description: NSPRS includes: (1) a mechanized report system that provides to the BellSouth CMDS hosted companies within the BellSouth Region information regarding Non-Sent Paid message and revenue occurring on calls originated and billed within the Bellsouth region; (2) distribution of Bellcore produced Credit Card and Third Number System (CATS) reports and administration of associated elements; (3) distribution of Bellcore produced non-conterminous CATS reports and administration of associated settlements. Subject to the terms hereof and execution of a services agreement substantially in the form attached to Attachment C-12, BellSouth agrees to provide NSPRS services for ACSI.

State(s): All

Rate Elements	Billing and Collections Fee Retained by Billing Co.	Applied Per
NSPRS — intrastate FL and NC	$0.066	message
NSPRS — intrastate all other BellSouth states	$0.05	message
NSPRS — CATS	$0.05	message
NSPRS — non-conterminous	$0.16	message

ATTACHMENT D

SERVICE PROVIDER NUMBER PORTABILITY REMOTE (RCF)

INTERIM COSTS

	Monthly Rate	Nonrecurring Charge
Per Number Ported		
- Resident/6 paths	$1.15	--
- Business/10 paths	$2.25	--
Each Additional Path	$0.50	--
Per Order, per end user location	--	None

ATTACHMENT E

Service: Service Provider Number Portability-Direct Inward Dailed (DID)*

Description: Service Provider Number Portability (SPNP) is an interim service arrangement provided by BellSouth to ALECs whereby an end user, who switches subscription to local exchange service form BellSouth to an ALEC is permitted to retain use of the existing BellSouth assigned telephone number provided that the end user remains at the same location.

SPNP-DID provides trunk side access to BellSouth end office switched for direct inward dialing to ALEC premises from the telecommunications network directly to lines associated with ALEC switching equipment.

Interim Rates:

State(s): Alabama / Florida

Rate Elements	Monthly Recurring	Applied For	Non-Recurring	Applied For	Monthly Recurring	Applied Per	Non-Recurring	Applied For
Per Number Ported-Business	$0.01	each	$1.00	each	$0.01	each	$1.00	each
Per Number Ported-Residence	$0.01	each	$1.00	each	$0.01	each	$1.00	each
Per Order	---	---	$25.00	end user	---	---	$25.00	end user
	---	---	---	location	---	---	---	location
SPNP-DID Trunk Termination	$13.00	trunk	$160.00	trunk-init.	$15.00	trunk	$170.00	trunk-init.
			$80.00	trunk-sub			$86.00	trunk-sub.
DS1 Local Channel**	$133.81	LC	$866.97	LC-First	$133.81	LC	$866.97	LC-First
	---	---	$486.83	LC-Add'l	---	---	$486.83	LC-Add'l
DS1 Dedicated Transport**	$23.50	per mile	---	---	$16.75	per mile	---	---
	$90.00	fac. term.	$100.49	fac. term.	$59.75	fac. term.	$100.49	fac. term.

*Rates are displayed at the DS1-1.544 Mbps level. For rates and charges applicable to other arrangement levels, refer to Section E6 of BellSouth Telecommunications, Inc.'s Intrastate Access Tariff.

**May not be required if the ALEC is collocated at the ported number end office.

State(s): Georgia / Kentucky

Rate Elements	Monthly Recurring	Applied For	Non-Recurring	Applied For	Monthly Recurring	Applied Per	Non-Recurring	Applied For
Per Number Ported-Business	$0.01	each	$1.00	each	$0.01	each	$1.00	each
Per Number Ported-Residence	$0.01	each	$1.00	each	$0.01	each	$1.00	each
Per Order	—	—	$25.00	end user	—	—	$25.00	end user
	—	—	—	location	—	—	—	location
SPNP-DID Trunk Termination	$14.00	trunk	$165.00	trunk-init.	$13.00	trunk	$150.00	trunk-init.
			$83.00	trunk-sub			$80.00	trunk-sub.
DS1 Local Channel	$133.81	LC	$866.97	LC-First	$133.81	LC	$866.97	LC-First
	—	—	$486.83	LC-Add'l	—	—	$486.83	LC-Add'l
DS1 Dedicated Transport	$23.50	per mile	—	—	$23.50	per mile	—	—
	$90.00	fac. term.	$100.49	fac. term.	$90.00	fac. term.	$100.49	fac. term.

State(s): Louisiana / Mississippi

Rate Elements	Monthly Recurring	Applied For	Non-Recurring	Applied For	Monthly Recurring	Applied Per	Non-Recurring	Applied For
Per Number Ported-Business	$0.01	each	$1.00	each	$0.01	each	$1.00	each
Per Number Ported-Residence	$0.01	each	$1.00	each	$0.01	each	$1.00	each
Per Order	—	—	$25.00	end user	—	—	$25.00	end user
	—	—	—	location	—	—		location
SPNP-DID Trunk Termination	$13.00	trunk	$170.00	trunk-init.	$13.00	trunk	$150.00	trunk-init.
			$86.00	trunk-sub			$80.00	trunk-sub
DS1 Local Channel	$133.81	LC	$866.97	LC-First	$133.81	LC	$866.97	LC-First
	—	—	$486.83	LC-Add'l	—	—	$486.83	LC-Add'l
DS1 Dedicated Transport	$16.75	per mile	—	—	$23.50	per mile	—	—
	$59.75	fac. term.	$100.49	fac. term.	$90.00	fac. term.	$100.49	fac. term.

State(s): North Carolina / South Carolina

Rate Elements	Monthly Recurring	Applied For	Non-Recurring	Applied For	Monthly Recurring	Applied For	Non-Recurring	Applied For
Per Number Ported-Business	$XXX	each	$XXX	each	$0.01	each	$1.00	each
Per Number Ported-Residence	$XXX	each	$XXX	each	$0.01	each	$1.00	each
Per Order	---	---	$XXX	end user	---	---	$25.00	end user
	---	---	---	location	---	---	---	location
SPNP-DID Trunk Termination	$XXX	trunk	$XXX	trunk-init.	$13.00	trunk	$164.00	trunk-init.
			$XXX	trunk-sub			$81.00	trunk-sub.
DS1 Local Channel	$XXX	LC	$XXX	LC-First	$133.81	LC	$866.97	LC-First
	---	---	$XXX	LC-Add'l	---	---	$486.83	LC-Add'l
DS1 Dedicated Transport	$XXX	per mile	---	---	$23.50	per mile	---	---
	$XXX	fac. term.	$XXX	fac. term.	$90.00	fac. term	$100.49	fac. term

State(s): Tennessee

Rate Elements	Monthly Recurring	Applied For	Non-Recurring	Applied For
Per Number Ported-Business	$0.01	each	$1.00	each
Per Number Ported-Residence	$0.01	each	$1.00	each
Per Order	---	---	$25.00	end user
	---	---	---	location
SPNP-DID Trunk Termination	$13.00	trunk	$164.00	trunk-init.
			$81.00	trunk-sub.
DS1 Local Channel	$133.81	LC	$866.97	LC-First
	---	---	$486.83	LC-Add'l
DS1 Dedicated Transport	$23.50	per mile	---	---
	$90.00	fac. term.	$100.49	fac. term.

ATTACHMENT F

BLANKET AGENCY AGREEMENT LETTER

I am an official of American Communications Services, Inc. ("ACSI") and am authorized to commit my company to the conditions stated herein:

1. ACSI will not submit any requests or inquiries for Resale or Facility Based local service provisioning under Blanket Agency Agreement procedures to BellSouth for which it does not have proper authorization from the End User upon whose behalf service is offered.

2. ACSI will instruct its End Users to deal directly with ACSI on all inquiries concerning the Local Service. This may include, but is not limited to, billing, repair, directory listings, and number portability.

3. ACSI is authorized to release all information regarding the End User's local service to BellSouth.

4. In the event that an End User successfully challenges action taken by BellSouth as a result of the above mentioned service request, ACSI will indemnify and hold harmless BellSouth for any reasonable damages or losses, resulting from ACSI's preparation and submission of service requests for which it did not have proper End User authorization.

5. In the event that an End User successfully challenges billing which resulted from local service requests submitted to BellSouth by ACSI under this Blanket Agency Agreement, then ACSI will indemnify and hold harmless BellSouth for any reasonable damages, losses, and costs, if any, arising from BellSouth provisioning and maintenance of the End User's local service due to errors in the ordering of said service by ACSI.

6. In the event that an End User disputes actions taken by ACSI as a result of a submission by ACSI of a service request for disconnection or termination of a previously submitted local service request for which it did not have proper End User authorization, then ACSI will indemnify and hold harmless BellSouth for any reasonable damages, losses, and costs, if any, resulting from said dispute.

7. This Agreement shall continue in effect unless cancelled by prior written notice by ACSI or BellSouth thirty (30) days' prior to the effective date of cancellation. Cancellation shall not release or limit any matters occurring prior to the cancellation of this Blanket Agency Agreement.

_____

[Signed]

SUMMARY OF ISSUES RESOLVED

The Parties have reached agreement on the following subjects:

1. ACCESS TO UNBUNDLED NETWORK ELEMENTS

The Parties agreed on an initial set of unbundled network elements (UNEs) that would be made available, order processing procedures, service quality standards, interface arrangements, and a procedure for the addition of other UNEs. The Parties could not agree on recurring and non-recurring charges for the UNEs described in the Petition, however.

2. LOCAL TRAFFIC INTERCONNECTION ARRANGEMENTS

The Parties agreed on the types of interconnection that would be available, the designated points of interconnection, as well as trunking, signalling and network management issues surrounding such interconnection.

3. LOCAL TRAFFIC EXCHANGE AND MEET-POINT BILLING ARRANGEMENTS

The Parties agreed on arrangements, including compensation arrangements, for the mutual exchange of local traffic and for interconnection necessary to accomplish such exchange.

4. TOLL TRAFFIC INTERCONNECTION

The Parties agreed on procedures for the delivery and exchange of interexchange toll traffic.

5. NUMBER RESOURCE ARRANGEMENTS

The Parties agreed on procedures to ensure that ACSI has nondiscriminatory access to telephone numbers for assignment and on arrangements to ensure the seamless routing of local exchange calls.

6. ACCESS TO POLES, DUCTS, CONDUIT AND RIGHTS OF WAY

The Parties agreed on procedures for nondiscriminatory access to poles, ducts, conduit and rights of way owned or controlled by the ILEC.

7. ANCILLARY SERVICES AND PLATFORM ARRANGEMENTS

The Parties agreed on arrangements relating to ancillary services including 800 traffic, 911/E-911, operator services, transfer of service announcements, repair services, busy line verification and interrupt, directory assistance, directory listings, and access to signalling and signalling databases.

8. TELEPHONE NUMBER PORTABILITY ARRANGEMENTS

The Parties agreed on arrangements for interim number portability.

9. OTHER MATTERS

The Parties also reached agreement on various other matters, including procedures for the disconnection of customers, the resale of ILEC local services, network management and control and other responsibilities between the parties.

ACSI Rate Proposals for Florida

1. Unbundled Loop (including channelization)*

	Recurring Charge Monthly	Non-Recurring Charge First line	Additional lines
Analog 2W	$9.11	TELRIC	TELRIC
Analog 4W	$9.11	TELRIC	TELRIC
BRI ISDN	$9.11	TELRIC	TELRIC
ADSL 2W	$9.11	TELRIC	TELRIC
HDSL 2W	$9.11	TELRIC	TELRIC
HDSL 4W	$9.11	TELRIC	TELRIC
Integrated DLC	$9.11	TELRIC	TELRIC

2. Loop Cross-Connect - Priced at TELRIC

* In those cases where ACSI will take the loop without channelization, its initial interim proposed rate is at the same level.

BellSouth Rate Proposals for Florida

In the course of negotiations, BellSouth made the following proposals for rates in Florida. ACSI cannot state with certainty that these rates are the "final" proposal made by BellSouth, nor is ACSI able to state whether or how BellSouth believes these rates meet the requirements of Sections 251(c) and 252(d)(1).

1. Unbundled Loop

	Recurring Charge	Non-Recurring Charge	
		First line	Additional lines
Exchange Access Loop	$17 per month	$71	$25
Interoffice Channel Charges (IOC) Fixed	$28.50 per month	$87	N/A
IOC 1-8 miles	$ 1.65 per month	N/A	N/A
IOC 9-25 miles	$ 1.60 per month	N/A	N/A
IOC > 25 miles	$ 1.55 per month	N/A	N/A

2. Loop Cross-Connect - Current tariff rates

3. Loop Channelization

	Recurring Charge	Non-Recurring Charges	
		First line	Additional lines
Channelization System (DS1 to VG), per system	$555.00 per month	$490.00	N/A
Central Office Channel Interface, 1 per circuit	$1.70 per month	$7 first	$7 additional

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of	)	
	)	
Petition by American Communications	)	
Services, Inc., and American Communications	)	Docket No.
Services of Jacksonville, Inc. for	)	
Arbitration with BellSouth	)	
Telecommunications, Inc. pursuant to the	)	
Telecommunications Act of 1996	)	
	)	

NOTICE OF SERVICE OF
ACSI'S FIRST SET OF INTERROGATORIES AND FIRST
REQUEST FOR PRODUCTION OF DOCUMENTS TO BELLSOUTH

AMERICAN COMMUNICATIONS SERVICES, INC. AND AMERICAN COMMUNICATIONS SERVICES OF JACKSONVILLE, INC. ("ACSI") by and through its undersigned counsel, hereby files and serves Notice that it has served its First Set of Interrogatories and First Request for Production of Documents by Hand Delivery on Mary Jo Peed, c/o Nancy Sims, 150 South Monroe Street, Suite 400, Tallahassee, Florida 32301, on this 13th day of August, 1996.

Respectfully submitted,

FLOYD R. SELF, ESQ.
NORMAN H. HORTON, JR., ESQ.

MESSER, CAPARELLO, MADSEN,
GOLDMAN & METZ, P.A.
215 S. Monroe Street, Suite 701
Post Office Box 1876
Tallahassee, FL 32302-1876

Attorneys for American Communications Services, Inc. and American Communications Services of Jacksonville, Inc.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of	)	
	)	
Petition by American Communications	)	
Services, Inc., and American Communications	)	Docket No.
Services of Jacksonville, Inc. for	)	
Arbitration with BellSouth	)	
Telecommunications, Inc. pursuant to the	)	
Telecommunications Act of 1996	)	
	)	

ACSI'S FIRST SET OF INTERROGATORIES
TO BELLSOUTH TELECOMMUNICATIONS, INC.

Pursuant to Rules 25-22.034 and 25-22.035(3), Florida Administrative Code, and Rule 1.340, Florida Rules of Civil Procedure, American Communications Services, Inc. and American Communications Services of Jacksonville, Inc., ("ACSI") hereby submits its First Set of Interrogatories to BellSouth Telecommunications, Inc. ("BellSouth"). These interrogatories shall be answered under oath by BellSouth through its qualified agents with said answers being served as provided pursuant to the Florida Rules of Civil Procedure or earlier as may be directed by the Florida Public Service Commission.

Definitions and Instructions

1. Provide the name, address and relationship to the company of each person providing answers to each of the following interrogatories.

2. For the purposes of these interrogatories the following definitions will apply:

"You," "your," and "company" shall mean BellSouth Telecommunications, Inc. and includes the parents, subsidiaries, affiliates, divisions, groups, predecessors, and other operational or

functional units which operate, support operations, or function, in whole or in part, in the State of Florida, and all officers, directors, employees, agents, consultants, attorneys and representatives of those entities.

"Relating to" shall mean constituting, referring to, discussing, or concerning, in whole or in part.

"And" and "or" shall be construed as and/or.

"Documents" shall mean all written, printed, typed, recorded, or graphic matter of any kind, including, without limiting the foregoing, all notes, work papers, supporting or back up materials, correspondence, memoranda, contracts, agreements, marginal notations, computer printouts, computer or word processing disks, magnetic tapes, or memory-stores materials, and includes without limitation, originals and all copies unless identical.

"Cost" shall mean the company's costs, as such costs may be defined by the company.

"Identify" means (1) when used with reference to a natural person, give the person's full name, business or residence address, business or residence telephone numbers, occupation and employer; (2) when used with reference to an entity, give the entity's full name, principal place of business, address and telephone number; (3) when used with reference to a document, give the document's date, title, author, recipient, type (*e.g.*, letter, memorandum, note, *etc.*), name of the custodian of the document, and a description of the contents with sufficient specificity to be the basis of discovery; and (4) when used with reference to an action taken by an entity, identify the person(s) taking the action, describe the nature of the action, and give the date on which the action was taken. If any action identified pursuant to (4) involved a communication with another person, identify the

person(s) with whom the actor(s) communicated; and, if the communication was through the use of a document, identify the document through which the communication was made.

"Person" includes a natural person, partnership, joint venture, firm, corporation, association, organization, or any other type of business or legal entity.

"CAP" means a competitive or alternative access provider.

"ALEC" means an alternative local exchange carrier

"ILEC" means an incumbent local exchange carrier.

"LEC" means a local exchange carrier, including but not limited to ALECs and ILECs.

"IXC" means an interexchange carrier.

"LRIC" means long run incremental cost.

"TSLRIC" means total service long run incremental cost.

"TELRIC" means total element long run incremental cost.

"PCS" means personal communications service.

"SMR" means specialized mobile radio.

3. If the answers to any interrogatory could be provided through the production of existing documents within BellSouth's possession or control, or within the possession or under the control of any of its representatives, including its attorneys, ACSI will accept such production in lieu of written answers to any such interrogatories.

4. If any interrogatory cannot be answered in full after exercising due diligence to secure all the information requested, or precise information with regard to any part is unavailable, you should so state, describing in full efforts to obtain the information requested, and then proceed to answer to the fullest extent possible.

5. When the information requested by an interrogatory varies over time, state the response for each period of time as to which the response differs, and identify the time periods applicable to each portion of the response.

INTERROGATORIES

1. Please name each ALEC or other LEC with which BellSouth has entered into a local interconnection agreement. State the date on which such agreement was executed and indicate whether such agreement covers local traffic exchange, provision of unbundled network elements or both.

Response:

Response provided by:

2. Please explain in detail what activities are required for BellSouth to provide an unbundled local loop when an existing BellSouth exchange service customer elects to switch an existing line to ACSI as the provider of their local service.

Response:

Response provided by:

3. Please explain in detail what activities are required to provide an unbundled local loop to ACSI and to establish service for a new customer which has elected ACSI as its provider of local service.

Response:

Response provided by:

4. Please provide a complete explanation of the manner in which the non-recurring costs BellSouth assesses when a customer elects to change its presubscribed long-distance carrier was established.

Response:

Response provided by:

5. Please describe specifically and in detail how BellSouth computed its proposed non-recurring and recurring charges for unbundled local loops.

Response:

Response provided by:

10. For each of the BellSouth service offerings listed below, please state the proportion of the rates charged that is attributable to an allocation of joint and common costs.

		Non-Recurring	Recurring
a.	Centrex	XX%	XX%
b.	Special Access (DS1 and DS3 level)	XX%	XX%
c.	Private line (DS1 and DS3 level)	XX%	XX%
d.	PBX Trunk Service and DID	XX%	XX%

Response:

Response provided by:

11. Please identify the sections of BellSouth's tariff identifying and/or describing BellSouth's contracting authority and the sections identifying the products and services available to which such contracting authority applies. Also, please provide copies of the portions of tariffs identified.

Response:

Response provided by:

Respectfully submitted this 13th day of August, 1996.

MESSER, CAPARELLO, MADSEN, GOLDMAN
& METZ, P.A.
215 S. Monroe Street, Suite 701
Post Office Box 1876
Tallahassee, FL 32302-1876

FLOYD R. SELF, ESQ.
NORMAN H. HORTON, JR., ESQ.

Attorneys for American Communication Services, Inc. and
American Communications Services of Jacksonville, Inc.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of	)	
	)	
Petition by American Communications	)	
Services, Inc., and American Communications	)	Docket No.
Services of Jacksonville, Inc. for	)	
Arbitration with BellSouth	)	
Telecommunications, Inc. pursuant to the	)	
Telecommunications Act of 1996	)	
	)	

ACSI'S FIRST REQUEST FOR PRODUCTION OF DOCUMENTS TO BELLSOUTH TELECOMMUNICATIONS, INC.

Pursuant to Rules 25-22.034 and 25-22.035(3), Florida Administrative Code, and Rule 1.350, Florida Rules of Civil Procedure, American Communications Services, Inc. and American Communications Services of Jacksonville, Inc. ("ACSI"), hereby submits its First Request for Production of Documents to BellSouth Telecommunications, Inc. ("BellSouth").

ACSI requests that the documents sought below be produced for inspection and copying at the office of its attorneys, Messer, Caparello, Madsen, Goldman & Metz, P.A., Suite 701, First Florida Bank building, 215 South Monroe Street, Tallahassee, Florida, at or before 5:00 p.m. on Friday, September 13, 1996, or earlier, as ordered by the Florida Public Service Commission, unless a different time is mutually agreed upon by counsel.

GENERAL INSTRUCTIONS

1. If you withhold any information or documents, in whole or in part, because of a claim of privilege, please identify each document for which the privilege is claimed together with the following information: author, receipt(s), date, type of document, general subject matter, and the basis upon which such privilege is claimed.

2. If the company or its attorneys have possession, custody, or control of the originals of the documents requested, please produce the originals or a complete copy of the originals, whether by interline action, receipt stamp or notation. If the company or its attorneys do not have possession, custody or control of the originals of the documents requested, please produce copies, however made, in the possession, custody, or control of the company or its attorneys.

3. In producing the documents requested, please indicate, by number, the Production Request to which each set of documents pertains.

4. For the purposes of these document requests the following definitions will apply:

"You," "your," and "company" shall mean BellSouth Telecommunications, Inc. and includes the parents, subsidiaries, affiliates, divisions, groups, predecessors, and other operational or functional units which operate, support operations, or function, in whole or in part, in the State of Florida, and all officers, directors, employees, agents, consultants, attorneys and representatives of those entities.

"Relating to" shall mean constituting, referring to, discussing, or concerning, in whole or in part.

"And" and "or" shall be construed as and/or.

"Documents" shall mean all written, printed, typed, recorded, or graphic matter of any kind, including, without limiting the foregoing, all notes, work papers, supporting or back up materials, correspondence, memoranda, contracts, agreements, marginal notations, computer printouts, computer or word processing disks, magnetic tapes, or memory-stores materials, and includes without limitation, originals and all copies unless identical.

"Cost" shall mean the company's costs, as such costs may be defined by the company.

"Identify" means (1) when used with reference to a natural person, give the person's full name, business or residence address, business or residence telephone numbers, occupation and employer; (2) when used with reference to an entity, give the entity's full name, principal place of business, address and telephone number; (3) when used with reference to a document, give the document's date, title, author, recipient, type (*e.g.*, letter, memorandum, note, *etc.*), name of the custodian of the document, and a description of the contents with sufficient specificity to be the basis of discovery; and (4) when used with reference to an action taken by an entity, identify the person(s) taking the action, describe the nature of the action, and give the date on which the action was taken. If any action identified pursuant to (4) involved a communication with another person, identify the person(s) with whom the actor(s) communicated; and, if the communication was through the use of a document, identify the document through which the communication was made.

"Person" includes a natural person, partnership, joint venture, firm, corporation, association, organization, or any other type of business or legal entity.

"CAP" means a competitive or alternative access provider

"ALEC" means an alterantive local exchange carrier.

"ILEC" means an incumbent local exchange carrier.

"LEC" means a local exchange carrier, including but not limited to ALECs and ILECs.

"IXC" means an interexchange carrier.

"LRIC" means long run incremental cost.

"TSLRIC" means total service long run incremental cost.

"TELRIC" means total element long run incremental cost.

"PCS" means personal communications service.

"SMR" means specialized mobile radio.

5. If any document or record which would be responsive to any of the requests has been destroyed, set forth the content of said document, the location of any copies of said document, the date and circumstances of said destruction and the name of the person who ordered or authorized such destruction.

6. Where the document requested, including but not limited to the cost studies and related information, are available or can be made available on diskette, please provide the data on diskette and indicate the format in which the data reside.

DOCUMENTS REQUESTED

1. Please provide copies of all agreements between BellSouth and any CAP, ALEC, other LEC, or IXC relating to local interconnection, local traffic exchange or access to unbundled network elements.

Response:

Response provided by:

2. Please provide copies of all interconnection agreements into which BellSouth has entered with any cellular telephone, PCS, SMR or other local wireless provider.

Response:

Response provided by:

3. Please provide copies of the TSLRIC, TELRIC and/or other cost studies prepared by or for BellSouth which show the cost of providing each of the following types of local loops as an unbundled network element:

a 2-Wire Analog Voice Grade Loop(s)

b. 4-Wire Analog Voice Grade Loop(s)

c. 2-Wire ISDN Digital Grade Link(s) (BRI ISDN)

d. 2-Wire ADSL-Compatible Loop(s)

e. 2-Wire HDSL-Compatible Loop(s)

f. 4-Wire HDSL-Compatible Loop(s)

g. Integrated Digital Loop Carrier

Please separately identify non-recurring costs, recurring costs, fixed costs and distance-related costs. In addition, please breakdown the cost information provided to either: (1) specify the localities where ACSI has requested interconnection or, if not available, (2) reflect costs at a disaggregated basis below the statewide level such as by exchange, switching center or density cell.

Response:

Response provided by:

4. Please provide copies of the TSLRIC, TELRIC and/or other cost studies prepared by or for BellSouth which show the cost of providing cross-connections required to connect an unbundled local loop to the ACSI system.

Response:

Response provided by:

5. Please provide copies of the TSLRIC, TELRIC and/or other cost studies prepared by or for BellSouth which show the cost of providing channelization and/or multiplexing required to convert voice-grade unbundled loops to DS-1 level for connection with the ACSI point interface.

Response:

Response provided by:

6. Please provide copies of the TELRIC and/or other cost studies prepared by or for BellSouth which show the cost of providing interoffice transport to ACSI as may be required to transport traffic from BellSouth's end office where unbundled loops are ordered to another BellSouth end office or tandem switch. Please identify the cost separately for DS-1 dedicated, DS-3 dedicated and tandem switched transport.

Response:

Response provided by:

7. Provide copies of all TSLRIC, TELRIC and/or other cost studies prepared by or for BellSouth which relate to the cost of providing each of the following services:

a. Special access (DS1 and DS3 level)

b. Private line (DS1 and DS3 level)

c. Centrex access and features

d. PBX Trunk service and DID

e. Residential local exchange service (1FR or the equivalent)

f. Business local exchange service (1MB or the equivalent)

g. Switched access transport (DS1 DTT, DS3 DTT and tandem switching)

h. Local switching

Response:

Response provided by:

8. Please provide all TSLRIC, TELRIC and/or other cost studies which identify the non-recurring costs associated with switching an existing BellSouth local exchange customer to ACSI.

Response:

Response provided by:

9. Please provide all TSLRIC, TELRIC and/or other cost studies which identify the costs of activities required to provide an unbundled local loop to ACSI and to establish service for a new customer which has elected ACSI as its provider of local service.

Response:

Response provided by:

10. Please provide copies of any written explanations which describe the manner in which BellSouth's existing non-recurring charges (NRCs) for local exchange service were established. Also provide any cost studies which have been prepared to support those NRCs.

Response:

Response provided by:

11. Provide copies of any cost studies which have been prepared by or for BellSouth to support the non-recurring charge that BellSouth assesses when a customer elects to change its presubscribed long distance carrier.

Response:

Response provided by:

12. If not provided elsewhere, please provide a copy of BellSouth's (1) cost study of Unbundled 4-wire DSI Digital Grade Loop; (2) cost study of Unbundled Loops (2-wire analog voice grade; 4-wire analog voice grade; and 2-wire ISDN digital grade); and (3) cost study of Unbundled Loop Channelization System and Central Office Channel Interface.

Response:

Response provided by:

13. Please provide any studies, memoranda, or other documents in BellSouth's possession analyzing, discussing or relating to the Hatfield Model.

Response:

Response provided by:

14. Please provide copies of all end user customer contracts entered into since January 1, 1995 relating to the provision by BellSouth of the following service types:

a. Centrex access and features

b. Private lines

c. PBX Trunk Service and DID

d. Special Access

Response:

Response provided by:

15. If BellSouth prepares a revenue/cost comparison or justification for its end user customer contracts, please provide the comparison or justification for each contract provided in response to the previous question.

Response:

Response provided by:

16. Please identify all orders issued by the Commission granting BellSouth contracting authority. Also, please provide copies of the relevant sections of all such orders.

Response:

Response provided by:

Respectfully submitted this 13th day of August, 1996.

MESSER, CAPARELLO, MADSEN, GOLDMAN
& METZ, P.A.
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FLOYD R. SELF, ESQ.
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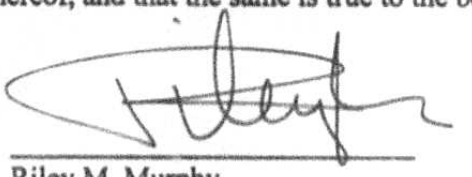
Attorneys for American Communication Services, Inc. and
American Communications Services of Jacksonville, Inc.

VERIFICATION

STATE OF MARYLAND)
) ss
COUNTY OF ANNE ARUNDEL)

Riley M. Murphy, being first duly sworn, deposes and states that she is Executive Vice President – Legal & Regulatory Affairs for American Communications Services, Inc., the Petitioner herein and is authorized to make this verification; that she has read the foregoing Petition and knows the contents thereof, and that the same is true to the best of her knowledge, information and belief.



Riley M. Murphy

Subscribed and sworn to before me on the 8th day of August, 1996.

Notary Public

My Commission Expires:

CHARLES W.N. KALLENBACH
Notary Public, State of Maryland
Qualification Anne Arundel County
Commission Expires 5/16/00

(SEAL)

6. Please describe specifically and in detail how BellSouth computed its proposed non-recurring and recurring charges for cross-connections required to connect an unbundled local loop to the ACSI system.

Response:

Response provided by:

7. Please describe specifically and in detail how BellSouth computed its proposed non-recurring and recurring charges for providing channelization and/or multiplexing required to convert voice-grade unbundled loops to DS-1 level for connection with the ACSI point of interface.

Response:

Response provided by:

8. Please describe specifically and in detail how BellSouth computed its proposed non-recurring and recurring charges for unbundled interoffice transport for use in connecting end offices where unbundled loops are ordered to other tandem switches or end offices.

Response:

Response provided by:

9. If BellSouth believes that the Hatfield Model does not accurately state its costs for unbundled loops, please provide a textual description of the reasons why BellSouth believes the Hatfield Model is flawed.

Response:

Response provided by: