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November 12, 1997

David Waddell
Executive Secretary
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, Tennessee 37243

Re: Universal Service Generic Contested Case
Docket No. 97-00888

Dear Mr. Waddell:

Enclosed for filing are Direct Testimonies of Richard Guepe, G. Michael Harper, and Dr. Randy Beard. AT&T's position on issue 14 is set forth in our Comments on the Time Warner Stipulation..

Respectfully Submitted,

Jim Lamoureux

Encls.

CERTIFICATE OF SERVICE

I, James P. Lamoureux, hereby certify that a true and exact copy of the foregoing has been served on counsel of record and other interested parties via hand-delivery or First Class Mail postage prepaid, this 12 day of November 1997.

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AT&T COMMUNICATIONS OF THE SOUTH CENTRAL STATES, INC.

DIRECT TESTIMONY OF RICHARD GUEPE

BEFORE THE TENNESSEE REGULATORY AUTHORITY

DOCKET NO. 97-00888

November 12, 1997

I. Introduction and Purpose

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

A. My name is Richard Guepe and my business address is 1200 Peachtree Street, N.E., Atlanta, Georgia 30309. I am employed by AT&T as a District Manager in the Law & Government Affairs organization.

Q. BRIEFLY OUTLINE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE IN THE TELECOMMUNICATIONS INDUSTRY.

A. I received a Bachelor of Science Degree in Metallurgical Engineering in 1968 from the University of Notre Dame in South Bend, Indiana. I received a Masters of Business Administration Degree in 1973 from the University of Tennessee in Knoxville, Tennessee. My telecommunications career began in 1973 with South Central Bell Telephone Company in Maryville, Tennessee, as an outside plant engineer. During my tenure with South Central Bell, I held various assignments in outside plant engineering, buildings and real estate, investment separations and division of revenues. At divestiture (1/1/84), I transferred to AT&T where I have held numerous management positions in Atlanta, Georgia, and Basking Ridge, New Jersey, with responsibilities for investment separations, analysis of access charges and tariffs, training development, financial analysis and

budgeting, strategic planning, regulatory issues management, product implementation, strategic pricing, and docket management.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY STATE PUBLIC SERVICE COMMISSIONS?

A. Yes, I have testified on behalf of AT&T in Tennessee, Georgia, Alabama, North Carolina, Mississippi, and South Carolina on product implementation issues, pricing issues, and policy issues.

Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A: The purpose of my testimony is to recommend to the Tennessee Regulatory Authority specific policies to implement in the areas of universal service and access reform, guided by the principles established in TCA 65-5-207, the Telecommunications Act of 1996, and the FCC's Report and Order on Universal Service issued May 8, 1997 in FCC Docket 96-45. Accordingly, the TRA should implement a competitively neutral universal service fund to ensure Tennessee consumers who require assistance for single line residential service remain connected to the telecommunications network.

Q: HOW WILL AT&T ADDRESS THE ISSUES IDENTIFIED BY THE AUTHORITY?

A: On October 31, the Authority issued a final list of issues to be addressed by the parties to this docket. The Phase 1 issues are: 1) Define and determine what services are to be supported by a Tennessee universal support system, 2) Will all carriers be able to provide all elements of universal service, 3) What carriers/providers are eligible to receive support, 4) Define carrier of last resort designation, 5) Define service areas, 6)What carriers/providers must provide

support under a Tennessee universal service system, 7) How do we determine if rates are affordable, 8) How does the TRA define implicit and explicit subsidies. 9) Preliminary cost modeling issues, 10) How should the TRA determine the basis for support for "low income consumers", 11) What support in addition to the Federal support already adopted by the TRA should be provided to schools and libraries, 12) What support should be provided to health care providers, 13) How should the TRA monitor provision of supported services to determine if support is being used as intended until competition fully develops, 14) Are any changes in state laws or rules needed, and 15) Should the access charge reform issues be incorporated into the schedule addressing Phase II of the universal service proceeding. AT&T is presenting the direct testimony of three witnesses in this proceeding to address these issues identified by the Authority. I will present AT&T's overall policy and recommendations concerning the implementation of a Tennessee Universal Service Fund and address issues 1-6 and 9-13. Dr. Randy addresses affordability (issue 7) and the fundamental economic principles that apply to the reform of the current system through which the policy objective of universal service is pursued. Mr. Mike Harper addresses access charge and subsidy issues (issues 8 and 15).

II. Overview

Q. IS THERE A NEED FOR SIGNIFICANT REFORM TO THE CURRENT UNIVERSAL SERVICE SUBSIDY SYSTEM?

A. Yes. In enacting the Telecommunications Act of 1996, Congress has encouraged the states to adopt regulations with the goals of both preserving and advancing universal service and of promoting the development of competition in all telecommunications markets. Similarly, the

Tennessee General Assembly has declared the policy of this state is to foster the development of competition and maintain universal service. TCA 65-4-123. If the dual goals of maximizing universal service and promoting competition are to be met, a complete overhaul of the current universal service "subsidy" system must be undertaken and replaced with one which is competitively neutral.

Q. PLEASE DESCRIBE THE CHARACTERISTICS OF A COMPETITIVELY NEUTRAL UNIVERSAL SERVICE FUNDING MECHANISM THAT THE TRA SHOULD BE SEEKING TO ACHIEVE.

A. The following are essential characteristics of a truly competitively neutral universal service funding mechanism:

The funding mechanisms must be specific, predictable, and sufficient. In this regard, the fund must be appropriately sized and any required subsidies must be explicit, in contrast to the current system that provides little data to support the needs, sources, or uses of implicit subsidies.

Payment of subsidies should be targeted to those who cannot afford telephone service in an open and competitive market or to support service in areas where forward looking economic costs exceed the revenues that a telecommunications carrier would reasonably expect to receive to offset its costs.

The subsidy must be portable among local service providers -- that is, the subsidy should follow the customer, not the carrier.

The fund should be administered by a neutral third party.

Payments into the fund should be assessed in the broadest possible manner, to avoid burdening one provider or class of providers.

The fund should not act as a barrier to entry.

Q: DID THE FCC IN ITS UNIVERSAL SERVICE ORDER [USO] HIGHLIGHT CERTAIN STATE REQUIRED ACTIONS?

A: Yes, it did. The FCC noted that among other things, states are required to take the following actions:

- Act pursuant to Sec. 254(f) and 253 to identify intrastate implicit universal service support. As competition develops, move support to explicit, sustainable mechanisms consistent with Sec. 254(f). [USO 14, 202][1]
- Make primary determination regarding affordability of basic dialtone services. [USO 23, 117-20]
- Designate common carriers as eligible carriers for purposes of receiving high-cost / low-income support. [USO 12-36]

[1] Bracketed references are to paragraphs in applicable FCC orders.

- Establish guidelines needed to govern and monitor the advertising requirement in Section 214(e)(1)(B) for "eligible telecommunications carriers". [USO 148]
- Rule on petitions from carriers for limited waivers of requirement to provide single-party, toll-limitation, and E911 services as a condition to being eligible for universal service support. [USO 56]
- Designate service areas throughout which non-rural carriers must provide universal service in order to be eligible for universal service support. [USO 184-90]
- Elect to conduct own cost-studies by 8/15/97 for use in determining forward looking economic cost of providing supported services; submit cost-studies by 2/6/98. [USO 248]
- Make determinations of whether, and to what extent, to participate in Lifeline and Link-Up programs, and definition of certain aspects of those programs within the state. [USO 351-88]
- Make determination of extent to which schools and libraries may participate in federal universal service funding for schools and libraries with respect to intrastate services. [USO 550-51]

The Telecommunications Act provides that states may adopt specific predictable and sufficient mechanisms to advance and preserve universal service, provided they are not inconsistent with the FCC's rules and must require every telecommunications carrier that provides intrastate telecommunications services to "contribute, on an equitable and nondiscriminatory basis, in a manner determined by the state, to the preservation and advancement of universal service in that state". Generally, for a state universal service fund,

the state must decide: (1) what services are to be supported by the universal service fund, (2) who should receive universal service support; (3) what constitutes an "affordable" rate for supported services; (4) what revenues and costs are appropriate in determining the state benchmark level for the purpose of sizing the fund; (5) the basis on which contributions will be made to the universal service fund; and, (6) the manner and the extent to which contributors to the fund recover their contributions.

Q. PLEASE SUMMARIZE AT&T'S PROPOSAL?

A. AT&T supports a system that explicitly identifies and targets support for high cost areas and low income customers to assure universal service and promote competition. Such a universal service system would provide subsidy payments to LECs providing service in geographic areas of the state where basic universal service costs exceed associated revenues and encourage state Lifeline programs for low income consumers consistent with the federal program. This system would eliminate and replace existing implicit subsidies in switched access charges that historically have been associated with support of basic local exchange service.

AT&T believes that the goals of universal service and access reform can be most effectively advanced by driving rates for all services, including local exchange service, toll, and access charges to their forward looking economic costs. To the extent that local exchange rates, at cost-based levels, could in some geographic areas or for certain classes of customers be unacceptably high, identifying and implementing needed levels of targeted subsidies is required. Targeted subsidies are more economically and socially efficient than broad-based, non-targeted subsidies in improving connectivity to the network. The elimination of existing

implicit subsidies and the identification and implementation of any needed explicit subsidies is critical. To implement this proposal, the TRA must first determine the cost of providing basic universal service in various geographic areas throughout the state. The amount of subsidy required in each area can then be determined by comparing the geographic specific costs to the revenues per line generated. As recommended by the Joint Board, these revenues should include local, discretionary, access services and other appropriate revenues, such as, yellow pages. These represent the revenues any company serving an individual residential customer would anticipate to receive to offset the cost of serving that customer. In areas where costs exceed revenues which would be recovered from affordable rates, a subsidy would be provided. The sum of the subsidies from all such areas would form a major portion of the initial budget for a Tennessee Universal Service Fund. AT&T supports the Tennessee Lifeline program to provide universal service support for qualifying low income consumers in the state complementing the Federal Lifeline program. The TRA has already established rules concerning discounted services to qualifying libraries, educational providers and rural health care providers to encourage wider availability of telecommunications and information services for education and in our communities.

The TN-USF should be administered by a neutral third party who would collect the TN-USF payments based on all intrastate telecommunications revenues, net of payments to other carriers (e.g. access or interconnection charges), and who then would distribute subsidy payments. In addition to distributing payments to LECs offering special Lifeline services to low income customers, the TN-USF Administrator would also provide geographically based subsidy payments to whatever local exchange provider serves each customer (except where service is provided via total service resale). The size of the geographical subsidy payments

would vary based upon the differences in the revenues and costs of providing local universal service in each area (using the incumbent LEC's benchmark revenues and its costs as determined by the Hatfield model to determine the specific portable subsidy for each geographical area). The subsidy would be portable, and hence provided to whichever LEC serves a particular customer in the relevant geographic area, i.e., the subsidy follows the customer and that person's choice of local telephone service provider.

Q: PLEASE DESCRIBE THE RELATIONSHIP BETWEEN UNIVERSAL SERVICE AND ACCESS REFORM?

A: Universal service and access reform are two components of a trilogy of actions to achieve Congress' goal of establishing a "pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening up all telecommunications markets to competition." The other part of the competitive trilogy is being addressed by this Authority in establishing the environment for opening up the local market to competition. The role that universal service plays in this competitive trilogy is to ensure that all consumers have access to affordable telecommunications services in order to promote connectivity to the network and to promote competition in all areas (urban and rural, business and residence) of the local exchange and local exchange access markets by implementing cost-based rates for such services. Congress specified in Section 254(c)-(e) of the Act that universal service support should be explicit, rather than implicit as it is today. Interstate and intrastate access charges account for a large portion of the historic implicit subsidy for universal service support. Therefore, the primary role that access reform plays is

to eliminate the implicit subsidies, incorporated in the current rate structure, and to reduce access charges to their forward looking economic cost. Elimination of these implicit subsidies, which have artificially distorted local and intrastate toll tariffed rates, is a necessity if the benefits of competition are to be achieved. Without such reform, the incumbent, monopoly LECs will continue to reap an unjustified windfall: they collect access charges at rates that were established to provide a subsidy for local service, and they also would collect the explicit subsidies from the universal service funding mechanism established here to support local service.

II. Issue Discussion

Issue 1: <u>Define and determine what services are to be supported by a Tennessee universal support system.</u>

Q: WHAT SERVICES SHOULD BE ELIGIBLE FOR UNIVERSAL SERVICE SUPPORT?

A: TCA 65-5-207(a) identifies Universal Service as 'consisting of residential basic local exchange telephone service at affordable rates..." Section 254(c) of the Telecommunications Act of 1996 states that "[u]niversal service is an evolving level of telecommunications services that the [Federal Communications] Commission shall establish periodically . . . taking into account advances in telecommunications and information technologies and services." Section 254(c) further instructs the Federal-State Joint Board on Universal Service ("Joint Board") and the FCC to consider certain factors in defining the services supported by federal universal service support mechanisms. These factors are the extent to which such telecommunications services: "(A) are essential to education, public health, or public safety; (B) have, through the

operation of market choices by customers, been subscribed to by a substantial majority of residential customers; (C) are being deployed in public telecommunications networks by telecommunications carriers; and (D) are consistent with the public interest, convenience, and necessity."

In its Universal Service Order, in consideration of the above, the FCC determined that the following services will receive federal universal service support: (a) single party, (b) voice grade access to the public switched network, (c) DTMF (dual tone multi-frequency) signaling or its functional equivalent, (d) access to emergency services, (e) access to operator services, (f) access to interexchange carriers, (g) access to Directory Assistance, and (h) toll limitations for qualifying low-income consumers.

a.) Do we use state or federal defined services?

c.) What are the universal service core elements?

AT&T agrees with the FCC definition of core services that should receive universal service support. These are: (a) single party, (b) voice grade access to the public switched network, (c) DTMF (dual tone multi-frequency) signaling or its functional equivalent, (d) access to emergency services, (e) access to operator services, (f) access to interexchange carriers, (g) access to Directory Assistance, and (h) toll limitations for qualifying low-income consumers.

b.) Should we provide support in addition to the federal mandated services?

Q: SHOULD BUSINESS SERVICES OR ADDITIONAL RESIDENTIAL LINES BE ELIGIBLE FOR SUPPORT?

A: No. AT&T recommends that the state support should not include support for any business line service and should be limited only to the first residential line. Generally, business services are priced above costs and in no case should be subsidized. Second or multiple residential lines go beyond the requirement to ensure that customers are connected to the network. Households with incomes capable of sustaining multiple communications lines into the house or subscribing to advanced technological services should not receive subsidies. Second residential lines should not receive universal service support, nor should they be counted when determining the percent of households connected to the network.

d.) Does Tennessee Relay Center need to be addressed in this proceeding?

e.) Do public interest payphones, if determined to be necessary, need to be addressed in this proceeding?

Q: SHOULD OTHER ADDITIONAL SERVICES BE ADDRESSED IN THIS PROCEEDING?

A: No. AT&T believes that the list of universal service elements listed above for single line residence service is adequate and should not be expanded at this time. Tennessee Relay Center funding and public interest payphone needs and funding should not be an issue in this docket. AT&T believes TRS should be funded through a separate line item charge on all consumers bills and if any support is required for public interest payphones, it should be borne by the payphone industry.

Issue 2: Will all carriers be able to provide all elements of universal service?

a.) How should the TRA address exceptional circumstances?

Q: IF A CARRIER IS NOT ABLE TO PROVIDE ALL THE ELEMENTS OF UNIVERSAL SERVICE, SHOULD THE CARRIER BE DESIGNATED AS AN "ELIGIBLE TELECOMMUNICATIONS CARRIER?"

A: The FCC determined that states are in the best position to determine whether to allow limited waivers of the requirement to provide single-party, toll limitation, and E911 services as a condition to being eligible for universal service support. AT&T supports this position and feels the TRA should address such exceptions on a case by case basis.

Issue 3: <u>What carriers/providers are eligible to receive support?</u>

Q: WHAT CRITERIA SHOULD THE AUTHORITY USE IN DETERMINING WHICH CARRIERS ARE ELIGIBLE TO RECEIVE SUPPORT FROM THE UNIVERSAL SERVICE FUND?

A: AT&T recommends that the Authority, in establishing its criteria for carriers eligible to receive universal service support, should be as inclusive as possible. Any carrier providing supported services using its own facilities or services provided using incumbent local exchange companies unbundled network elements (UNEs) in whole or in part, should be eligible. This would be consistent with the FCC's requirement for the Federal universal service subsidy. Section 214(e)(1) of The Act defines the criteria for carrier eligibility. The Act requires that only a common carrier be designated as an eligible telecommunications carrier (ETC) and such carrier must throughout its service area: (1) offer services that are supported by the universal support mechanism, (2) offer services using its own facilities or a combination of its own facilities and resale of another carrier's services, including the services offered by another eligible telecommunications carrier, and (3) advertise the

availability of, and charges for, such services using media of general distribution. Any common carrier, whether a participant in this proceeding or not, upon demonstration to the TRA in a filing that it meets these requirements, should be designated as an ETC.

a.) What procedures should the TRA use for designating ETC?

A Carrier seeking certification as Eligible Telecommunications Carrier should file a motion or petition with the TRA for approval.

b.) Should those companies not under TRA authority be designated as an ETC?

In order for any to receive universal service fund support, common carriers not under TRA authority must request certification as an ETC. If the carrier meets the applicable requirements, it should be designated as an ETC.

c.) Should the TRA adopt the federal advertising guidelines?

Yes, the TRA should adopt only the federal advertising guidelines as set forth in Section 214(e)(1)(B) of the Communications Act.

d.) Should the TRA adopt the Federal facilities requirements?

Yes. Any carrier providing supported services using its own facilities or services provided using incumbent local exchange companies unbundled network elements (UNEs) in whole or in part, should be eligible.

e.) Must a carrier participate in this proceeding to be eligible for designation as ETC?

No.

f.) What procedure is necessary to ensure that rural carriers satisfy notice of status requirement?

The procedures adopted by the FCC in the Universal Service Order, FCC 97-157 and the TRA in its November 3, 1997 order in Docket No. 97-00888 satisfy this requirement.

Issue 4: Define carrier of last resort designation.

a.) Is this term still relevant.

No.

b.) If so, how do we designate.

Not applicable.

c.) Can a carrier of last resort withdraw service, and if so, how?

Section 214 (e) of the Communications Act addresses the withdrawal of service by an eligible telecommunications carrier.

Q: **SHOULD ELIGIBILITY CRITERIA INCLUDE CARRIER OF LAST RESORT OBLIGATIONS?**

A: No. In accordance with the provisions of Section 214 (e) of the Communications Act, once a carrier becomes designated as an eligible telecommunications carrier, it must petition the

Authority if it wants to abandon providing service in its territory. Therefore, the Authority can appropriately police the activities of carriers who are receiving universal service support.

Issue 5: Define service areas.

a.) How does the TRA designate service areas for rural and non-rural areas?

Q: **HOW SHOULD THE AUTHORITY ADDRESS DEFINING SERVICE AREAS FOR NEW CARRIERS?**

A: A competitive local exchange carrier, whether operating in a non-rural or rural area, should be permitted to define their service areas in small geographic areas consistent with their facility service arrangements. A new entrant, like incumbent carriers, would have a common carrier obligation to serve all customers in their defined service area on a non-discriminatory basis. In order to be designated an ETC, the new entrant must demonstrate to the TRA that it meets the requirements of Section 214 (e) of the Communications Act. If other parties do not feel the new entrant meets these requirements, they can intervene in the new entrants request to be designated an ETC. The service areas of new entrants providing service, on other than a resale basis, generally will not have any reason to conform to an incumbent carrier's serving area. The Authority should avoid any criteria tying new entrants to any incumbent's service area. The states are required by The Act to establish service areas for new entrants. One of the guiding principles incorporated in the FCC's discussion is noting that making a service area unreasonably large would in fact result in creating a barrier to entry. New entrants should be allowed maximum latitude in defining its serving area. The TRA should define service areas in non-rural areas no larger than existing wire centers. In rural areas, the FCC determined that new entrants need only serve the contiguous portions of the rural ILEC's serving area. The TRA should concur with the FCC determination.

b.) Should ETC and service area be the same? If not, what are alternatives?

See response above.

c.) Should rural carriers be required to file proposed service area and can others comment on that filing?

The service areas for rural carriers are defined by the Communications Act. The FCC determined that that new entrants need only serve the contiguous portions of the rural ILEC's serving area. In order to be designated an ETC, the new entrant must demonstrate to the TRA that it meets the requirements of Section 214 (e) of the Communications Act. If other parties do not feel the new entrant meets these requirements, they can intervene in the new entrants request to be designated an ETC.

Issue 6: What carriers/providers must provide support under a Tennessee universal service system?

The Telecommunications Act requires support for universal service be recovered from all telecommunications providers on a non-discriminatory basis. All carriers providing intrastate telecommunications services in Tennessee should support any Tennessee universal service fund. Any carrier, whether regulated by the TRA or not, must contribute to the state fund in order to receive support from such a fund.

a.) Define telecommunications carrier. Is the TRA required to us the Federal definition?

Section 3(a)(49) of the Act defines a telecommunications carrier as any provider of telecommunications services, except aggregators of telecommunications service. The TRA must adopt the federal definition.

b.) Does state or federal law require contributions or participation from carriers not under TRA authority?

Yes.

Issue 7: How do we determine if rates are affordable?

Q: **WHO DETERMINES "AFFORDABILITY"?**

A: The FCC concluded that the states have the primary responsibility for determining the affordability of rates. The FCC, in adopting the Joint Board's recommendation, determined that states must take into account both the cost of providing service and non-rate factors, such as the extent of the local calling area, the consumer's income level, the cost of living, the population density, variations in local rate designs, and other relevant areas that the state authorities may deem appropriate. AT&T supports these considerations.

With respect to the appropriate level of "affordable" rates for supported services, AT&T believes that affordable rates are well in excess of existing rate levels. Therefore, it would be inappropriate for the Authority to adopt existing rates as the "affordable" rates for universal service purposes. Dr. Beard addresses affordability issues in more detail in his testimony.

In making the determination of what an "affordable" rate should be, it is AT&T's position that it is not necessary for the Authority to establish a specific "affordable" rate level for areas that will not be eligible for high cost state funded support. Therefore, in non-high cost areas, competition will drive retail prices to their economically efficient level, if wholesale rates are set at cost-based levels. Information from BellSouth indicates a decrease in rates or increase in rates would have a minimal impact on connectivity to the network. BellSouth

indicated in testimony that even if service was offered for free, you would only achieve a 95% connectivity level. Establishment of local residential rates at forward looking economic costs would, in AT&T's view, considering existing evidence, constitute a rate well within the "affordable" range.

Q. SECTION 254 OF THE ACT STATES THAT SERVICE SHOULD BE AVAILABLE AT AFFORDABLE RATES. ARE THERE OTHER CONSIDERATIONS THAT THE AUTHORITY MUST TAKE INTO ACCOUNT?

A. Yes. Not only are the rates to be affordable, but they are also to be reasonable and just. This provides a natural tension between the buyer's desire to purchase at as low a price as possible and the supplier's desire to provide service at as high a price as can be obtained. The Authority must weigh not only the affordability of the rate, but whether such rate is just and reasonable.

Q: WHY DO YOU THINK THESE CONDITIONS ARE IMPORTANT IN DETERMINING LOCAL RATES?

A. In some cases, the rates charged for basic local residential service are lower than the forward looking retail costs to provide the service. Presently, there is a 94% subscription take level. Some people would then consider, based on the high subscription rate, that existing rates should be the "affordable" rate. AT&T considers the existing rates to be the lower boundary of affordable rates. An analysis of a 1994-95 Consumer Expenditure Survey for the Southern Region performed by the U.S. Bureau of Labor Statistics indicated that, on a total of 28 million households, 2.2% of income after taxes was spent on telephone service. The

percentage range was from 30% for households with incomes under $5,000 annually to slightly greater than 1% for households having greater than $70,000 per year. It appears that subscriber rates could be increased and still be considered affordable. If certain low-income subscribers cannot afford the "affordable" rate, subsidy programs like Lifeline and Link-Up should be utilized to allow such subscribers to remain connected to the network.

Issue 9: Preliminary cost modeling issues.

a.) Should universal cost studies be company-specific or generic?

Universal Service cost studies should be representative of an efficient firm providing service in specific service areas.

b.) What is the proper territorial scope of universal service rates?

Universal Service rates should be on a wire center basis.

c.) What is the proper level to which deaveraging should be applied in the cost studies?

Costs for universal service should be deaveraged to the wire center level. When unbundled network element rates are deaveraged, they must be consistent with universal service cost deaveraging.

d.) Should rural and non-rural study areas be combined or separated in the cost studies?

Rural and non-rural study areas should be separately addressed in the cost studies.

e.) Which network components are necessary to provide services included in universal service?

Universal service (i.e., local dial tone with touch-tone) is made possible by the following combination of network elements: a 2-wire loop, a two-wire port (i..e., the unbundled local switching rate element that is non-traffic sensitive), the usage-rated element of local switching, tandem switching and common transport.

f.) Should universal service cost studies be based on cost studies for permanent UNE prices?

Costs for universal service should be consistent with the pricing of unbundled network elements.

g.) Should costs be developed on a combined or intrastate basis?

The costs developed should be the total forward looking economic costs, not jurisdictionally separated costs.

h.) Should state specific or federal factors be used in the cost studies?

Input factors should be representative of the characteristics of Tennessee.

i.) Is it possible to create a hybrid model from the individually proposed models?

The development of a hybrid model is possible, but not practical.

j.) Which revenues should be included in the revenue benchmark?

k.) What time period should be used to calculate the revenue benchmark?

Q: WHAT REVENUES ARE APPROPRIATE IN DETERMINING THE EXISTENCE OF ANY SUBSIDY AND NEED FOR FUTURE SUBSIDY SUPPORT FROM UNIVERSAL SERVICE?

A: AT&T strongly recommends that the same categories of revenues that are used in calculating the national benchmark revenue level for purposes of the federal universal high-cost service support, should be used in calculating the Tennessee specific subsidy as well, using the same revenue categories with Tennessee specific rates for each local exchange carrier. The FCC and the Joint Board have determined that the revenues that should be used in calculating the amount of universal service subsidy should include revenues from the following services:

* Basic local exchange service
* Touchtone service
* Discretionary services
* Intrastate switched access service
* Interstate switched access service
* IntraLATA toll service

However, for the development of the state benchmark average revenue per-line, it will be necessary to also include revenues that will accrue to the serving local exchange carrier from the federal universal service high cost funding mechanism. (The FCC has determined that it will fund 25% of the cost above the national revenue benchmark). Another source of revenue that should be included is Yellow Pages. Historically Yellow Pages have provided

support for universal service, and, in fact, remained with the Bell Operating Companies at divestiture because the revenue from this source was used to support universal service.

For purposes of the federal universal service fund, "insular and high cost area support calculations on a nationwide benchmark per line revenue will be determined by the FCC, developed on average per line revenues which includes local service, discretionary services, (e.g., call waiting, call forwarding, caller ID), interstate and intrastate access services. While the FCC will establish separate benchmarks for single-line residential and single-line business customers, AT&T believes this Authority should determine that support should be directed to the first residential line only. It is AT&T's belief that the FCC revenue benchmark levels will be in the range of $31 for residential services and $51 for single-line businesses.

AT&T suggests the revenue benchmark be based on 1997 revenues, or revenues based on the most current 12 month period if 1997 revenues are not available for Phase 2 of this docket.

Q: WHAT COSTS ARE APPROPRIATE IN DETERMINING THE EXISTENCE OF ANY SUBSIDY AND NEED FOR FUTURE SUBSIDY SUPPORT FROM UNIVERSAL SERVICE?

A: On the cost side of the equation, both for purposes of federal and state universal service support mechanisms, AT&T is recommending that the Tennessee Authority establish economic costs consistent with the pricing of UNEs. Although the FCC did not require the state commissions to establish costs consistent with those being used to price UNEs, it encouraged the states to do so. Additionally, state commissions must also determine the

extent to which costs should be deaveraged for purposes of determining federal universal service subsidies. In its universal service order, the FCC indicated that such studies would have to be conducted at a minimum to the wire center level except in rural areas. AT&T recommends that costs for universal service support be deaveraged only to the wire center level at this time.

Q: PLEASE DISCUSS YOUR RATIONALE FOR WHAT REVENUES AND COSTS SHOULD BE INCLUDED IN THE ANALYSIS OF LOCAL RESIDENTIAL EXCHANGE SERVICE?

A: The costs used in the provision of local residential service should be the forward looking economic costs associated with all services that utilize the local loop, which are the dialtone related elements, state and interstate access services, and discretionary service arrangements. The costs should be examined at the wire center level. The revenues that should be included in the analysis of local residential service are the same elements for which cost data is developed. Universal service (i.e., local dial tone with touch-tone) is made possible by the following combination of network elements: a 2-wire loop, a two-wire port (i..e., the unbundled local switching rate element that is non-traffic sensitive), the usage-rated element of local switching, tandem switching and common transport. The identified elements, for which revenue and cost data are gathered, are consistent with the Joint Board's recommendation as to which service revenues should be included in the development of the average benchmark revenue per-line. For purposes of federal universal service high cost support, the benchmark revenue per-line will be a nationwide average of revenues derived from local services (including revenues from discretionary services), and interstate and

intrastate access. This would equate to the per-line revenue that is paid to the local exchange carrier by the end-user for services included in the local exchange market and by the interexchange carriers for services included in the local exchange access market. The totality of these two revenues, when compared to the cost of serving that customer, would determine if that customer is or is not being subsidized. These are the revenues that the incumbent and new entrant carriers evaluate when analyzing the desirability of serving a particular market area, not merely the revenues associated with basic local service.

Issue 10: How should the TRA determine the basis for support for "low income" consumers?

a.) Should the TRA change its existing lifeline program?

Q: **WHAT IS AT&T'S RECOMMENDATION AS TO HOW THE AUTHORITY SHOULD ADDRESS SUPPORT FOR LOW-INCOME CONSUMERS?**

A: AT&T supports the use of universal service funding targeted arrangements such as Lifeline and Link-Up. These subsidies must also be portable. That is, they would be available for facility based carriers, and for carriers utilizing some combination of unbundled network elements, as well as having the wholesale discounts applicable to such services for competitive local exchange companies providing service via total services resale. The FCC Order on Universal Service requires all eligible telecommunications carriers, as defined in Section 214 (e), to offer lifeline service. To the extent that the existing Tennessee Lifeline program differs from the Federal program, changes to conform to the Federal program are appropriate. Any state funding for the Lifeline and Linkup programs should be obtained through an explicit state funding mechanism.

b.) What standards and procedures should be adopted to address waiver requirements to the no-disconnect rule?

AT&T believes the TRA should adopt the waiver requirements set forth in the FCC Rules Section 54.401 (b) (1).

c.) What funding mechanism should be adopted to fund Lifeline and Linkup?

In addition to the federal funding mechanism for Lifeline and Linkup programs, an explicit state funding mechanism should be established for any TRA mandated reductions in end-user charges not funded from federal sources. As explained in Dr. Beard's testimony, the most economically efficient means to fund the program is through an explicit surcharge on end-user bills.

Issue 11: What support in addition to the Federal support already adopted by the TRA should be provided to schools and libraries?

Q: **WHAT IS AT&T'S RECOMMENDATION AS TO REQUIRED AUTHORITY ACTION WITH RESPECT TO THE SUPPORT OF SCHOOLS AND LIBRARIES?**

A: AT&T believes that the level of support that is being provided by the federal funding of $2.25 billion for schools and libraries is adequate. AT&T does not believe that additional state funding for schools or libraries would be appropriate. AT&T supports the adoption by the Authority in its order of September 18, 1997 of the same level of discounts for intrastate services for schools and libraries as has been adopted for interstate services by the FCC.

a.) The TRA should state specifically what discounts are available in Tennessee and at what levels.

AT&T believes it would be appropriate for the TRA to specifically identify the discounts available to schools and libraries in Tennessee.

b.) How does the TRA address pre-discount price complaints?

The existing complaint procedures should be followed with regard to any type of universal service complaint including but not limited to pre-discount complaints.

Issue 12: What should be provided to rural health care providers?

a.) Should the TRA provide support in addition to that provided by the Act and the FCC?

Q: **WHAT IS AT&T'S RECOMMENDATION AS TO REQUIRED AUTHORITY ACTION WITH RESPECT TO THE SUPPORT OF SCHOOLS, LIBRARIES, AND HEALTH CARE PROVIDERS?**

A: AT&T believes that the level of support that is being provided by the federal funding of $0.4 billion for rural health care providers is adequate. AT&T does not believe that additional state funding for rural health care providers or other non-traditional beneficiaries would be appropriate.

Issue 13 : How should the TRA monitor provision of supported service to determine if support is being used as intended until competition develops?

a.) Does the TRA need cost allocation rules or accounting safeguards to determine that services supported do not bear more than a reasonable share of joint and common cost or otherwise unnecessarily subsidize a service?

The TRA should continue to monitor the quality of service provided by incumbent LECs until competition is established throughout the ILEC study area. Cost allocation rules and accounting safeguards may not be necessary, however, an ILECs use of universal service funds should remain subject to audit by the TRA. The TRA should retain the authority to determine if support is being used as intended.

IV. Conclusions and Summary

Q: WHAT CONCLUSIONS HAS AT&T REACHED THUS FAR WITH RESPECT TO UNIVERSAL SERVICE ISSUES?

A: The Tennessee universal service fund should have as its objective to provide needed assistance to those Tennessee consumers who require such assistance to stay connected to the telecommunications network. Such assistance should be targeted to economically qualified consumers in areas where the forward looking economic cost to provide existing wireline service exceeds the revenue generated by that service. AT&T concludes that with respect to intrastate universal service requirements there is no need to provide subsidies in conjunction with secondary residential lines or any business service, single-line or multi-line. Business rates more than cover the cost of providing these services. Additionally, it seems inappropriate to subsidize a business related service. If a business is incapable of paying a

cost-based rate for their services, they do not need to stay in business. Companies should not be subsidized for being in business because they would be providing a drain on the overall economy.

In Phase II of this docket, the TRA will determine the actual size of the universal service fund in Tennessee based on the costs of providing service and the benchmark revenues which a service provider receives to recover its costs. The TRA should require that this intrastate benchmark revenue determination be consistent with the Joint Board's recommendation and include all revenues that would accrue to the local exchange company from local exchange service revenues (basic service elements, plus discretionary services, plus optional calling plans, local toll, and end user charges), the interexchange access market (inter plus intrastate access), revenue that would accrue to the local exchange company from the federally funded high cost support fund (this would be 25% of the cost in excess of the federal benchmark revenue number), and Yellow Pages advertising. AT&T feels the implementation of rates at the cost-based level will equate to rates that the Authority should reasonably deem as being affordable. The implementation of targeted subsidies for consumers who meet a means test is appropriate and the Authority should utilize the Lifeline and Link-Up type programs, where the assistance is tied solely to the consumers' eligibility.

Q: DOES THIS CONCLUDE YOUR TESTIMONY?

A: Yes, it does.

DIRECT TESTIMONY OF

G. MICHAEL HARPER

ON BEHALF OF AT&T COMMUNICATIONS

OF THE SOUTH CENTRAL STATES, INC.

BEFORE THE

TENNESSEE REGULATORY AUTHORITY

Docket No. 97-00888

Filed: November 12, 1997

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH AT&T.

A. My name is G. Michael Harper and my business address is 1200 Peachtree Street, Atlanta, Georgia. I am employed by AT&T as Senior Witness in the Local Infrastructure Access Management (LIAM) organization.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES WITH AT&T?

A. I am responsible for managing AT&T's regulatory initiatives and participation in proceedings affecting the prices for interconnection, unbundled network elements and access charges paid by AT&T in Alabama, Kentucky, Louisiana, Mississippi and Tennessee, as well as other related issues.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A. I have a Bachelors Degree in Physics and a Master of Business Administration from the University of Louisville in Louisville, Kentucky.

I have over thirty years of experience in telecommunications. I was employed by South Central Bell in Louisville, Kentucky and Birmingham, Alabama until December, 1983, holding positions in outside plant engineering, investment and

costs engineering, and Bell-Independent Relations, among others. My responsibilities at AT&T have included Local Exchange Company relations and regulatory docket management. I assumed my current responsibilities in January, 1993.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to address specific items contained in the list of Universal Service Issues in the "Phase I - Non-Cost Issues" portion of this docket, issued by the Tennessee Regulatory Authority ("TRA") on October 14, 1997. I will specifically address issue 8, parts (b) and (c) and issue 15.. AT&T witnesses Richard Guepe and Randy Beard will address the remaining issues in their respective testimonies.

Issue 8: How does the TRA define implicit and explicit subsidies?

Part (b) How does the TRA determine implicit subsidies in current rates?

Q. HOW SHOULD THE TRA DETERMINE THE AMOUNT OF IMPLICIT SUBSIDIES CONTAINED IN CURRENT LOCAL EXCHANGE COMPANY ("LEC") RATES?

A. First, it is not necessary in this proceeding to determine the amount of implicit subsidies in current rates. Such an approach suggests a simple transfer of implicit subsidies to an explicit subsidy to support universal service. As I describe below, such an approach is inappropriate. The purpose of this proceeding is to establish an explicit mechanism to support universal service in Tennessee. The removal of implicit subsidies should occur independently from,

but concurrent with, the establishment of an explicit universal support mechanism. This will ensure that the determination of the amount of explicit universal service support is not contaminated by the excessive amount of implicit subsidies currently embedded in incumbent LEC's rates in Tennessee.

Nonetheless, the amount of implicit subsidies collected by the LECs can be estimated by concentrating on the most likely and most significant sources of implicit subsidy. While it is true that any service that provides a contribution to the firm could potentially be used to subsidize other services, there are only a few services that provide such a measurable source of subsidy that, if accurately estimated, can reasonably be expected to constitute the majority of total subsidies.

There appears to be little direct accounting that would help the TRA to ascertain, (i) the amount of implicit subsidy required for targeted services, (ii) the exact sources and amounts of implicit subsidies collected, and (iii) specifically where the collected subsidies are actually used.

Generally, LEC rates today are the byproduct of regulatory rate making in a rate-of-return regulated environment. Under rate of return regulation, LECs adjust rates for services with a view toward achieving a given revenue requirement, or a range of allowable rates of return. Accordingly, several factors other than the underlying cost to provide specific services significantly influence the prices that the companies charge for tariffed services.

While certain LECs in Tennessee, like BellSouth, are no longer regulated on a rate-of-return basis, much of the tariff structure and many of the tariffed prices did not change appreciably at the time those companies changed their form of regulation. The lack of specific data regarding the need, sources and uses for

implicit subsidies continues today for many of the services of all incumbent local exchange companies. For this reason, an estimate of the most significant subsidy resources can be representative of the total level of implicit subsidies collected today by the LECs.

Q. WHICH SERVICES DO YOU BELIEVE PROVIDE THE LARGEST PORTION OF CURRENT IMPLICIT SUBSIDY AMOUNTS?

A. It is impossible to determine the sources and amounts of implicit subsidies used specifically to support universal service in Tennessee, but switched access charges clearly provide the largest source of potential subsidy to the local exchange companies today because they are priced so far in excess of the cost to provide access. Other high-margin services such as vertical calling features (i.e. Call Waiting, Caller ID, etc.), touch-tone, business local service and messaging services such as BellSouth's MemoryCall® all contribute to the support of other LEC services because their underlying cost is low, and occasionally de minimus, in relation to revenues. But none of these services contribute as much to current implicit subsidies as the excessive amounts paid by interexchange carriers for switched access services. Considering the current volume of access minutes on the network, the high annual growth rate of access services, the excessive margins in today's switched access charge rates, and the fact that interexchange carriers have few practical alternatives to LEC-provided access services, it is clear that the identification of implicit subsidy in switched access charges will approach the total level of implicit subsidy collected by LECs in Tennessee.

Q. WOULD YOU PLEASE INDICATE THE DEGREE TO WHICH AT&T BELIEVES SWITCHED ACCESS CHARGES ARE PRICED ABOVE THE COST TO PROVIDE ACCESS?

A. Using data available for BellSouth, the largest LEC in Tennessee, intrastate switched access revenues account for approximately 6.2% of BellSouth's total annual intrastate revenues in Tennessee. BellSouth's composite access rate for originating and terminating a call is approximately $0.074 per minute. (For comparison, BellSouth's current composite interstate rate for two ends of a call is just under $0.05 per minute.) But the underlying cost that BellSouth incurs to provide those two ends of a call is within a range of $0.0025 to $0.005 per minute according to statements by LEC representatives in various public forums in several states[1]. Based on the most conservative estimate, if you calculate the access revenue collected by BellSouth today based on current access rates, and then subtract their estimated cost to provide access, assuming that the cost is at the higher end of the estimated range ($0.005/conversation minute-of-use), indicates that BellSouth is collecting at least approximately $101M in revenues above cost, or a mark-up of about one thousand four hundred and seventy-one percent (1471%) above cost. If one uses the lower end of the cost range, a rate of $0.0025/conversation minute, the number becomes $105M in revenues above cost, or a mark-up of about two thousand nine hundred and forty-three percent (2943%) above cost. In addition, according to AT&T's records, intrastate access minutes in Tennessee have increased at a rate of over 13% annually for recent periods. Therefore, the excess contribution paid by interexchange carriers such as AT&T is growing at approximately 13% annually due to the growth in access minutes. The actual calculations and sources of data supporting this example are explained in the attached Exhibit GMH-1.

Q. DO THE LECS AGREE THAT SWITCHED ACCESS CHARGES ARE PRICED FAR IN EXCESS OF COSTS?

[1] I have included documentation relating to the underlying cost of switched access charges as Attachment GMH-1 to this testimony.

A. Yes. Local exchange companies have openly admitted in recent regulatory filings that it is true that the price of access greatly exceeds its forward-looking economic cost, but quickly add that such margins are necessary to support affordable local service rates and to help the LECs meet their carrier of last resort obligations. Unfortunately, the LECs have not been required to demonstrate the specific extent to which subsidies are required and for which services. There is no evidence that any of the more than $100M in revenue above the cost of access is necessary to support universal service in Tennessee. One of the major benefits of a universal fund reform action, such as in this docket, is to have the opportunity to determine the actual extent to which the LECs need any subsidies from other services to support their universal service obligations, to the extent any are needed at all.

Q. WHY ARE ACCESS CHARGE RATES PRICED SO FAR IN EXCESS OF THE COST TO PROVIDE THE SERVICE?

A. Incumbent local exchange companies have traditionally priced access far in excess of its cost allegedly in order to provide subsidy to local exchange service. In return, the retail price of local exchange service has historically been kept artificially low in order to support policy goals of affordable local service and availability of telephone service to all consumers.

In recent years, however, there are more frequent indications that (1) the cost of providing local service has been declining, and (2) in most cases, the price of local service is covering its costs. It is clear that the support that was traditionally inferred to be needed by the incumbent local exchange companies to subsidize local service is not evident based on current data.

Just as significant, however, is the method by which such artificial support of local service costs have traditionally been achieved. First, the perceived subsidy

requirement has been associated with all consumers regardless of need. For example, a telephone subscriber with a household income of $2,000,000 receives the same subsidized support of their local service rate as another household with an income of $5,000. Second, the support collected for this implicit subsidy has been collected primarily from interexchange carriers in the form of switched access charges. Until now, the LECs have made no substantive showing of the specific amount of any subsidy required for these social goals. As a result, interexchange carriers, and eventually Tennessee's toll users, have been asked to bear the burden of support with no specific recovery levels or a schedule that might reflect how long subsidies may remain at certain levels. Meanwhile, the LECs continue to collect switched access charge revenues that are growing as a result of the consistent growth in access minutes.

Q. ARE THERE ANTI-COMPETITIVE ASPECTS TO FUNDING CURRENT SUBSIDIES FROM INTEREXCHANGE CARRIERS, AND ULTIMATELY, TENNESSEE'S TOLL USERS?

A. Yes, there are. For example, in 1995 BellSouth sought, and achieved, authority to be regulated on prices of its services. By doing so, BellSouth gained the ability to change the prices of certain services without specific approval of the TRA. BellSouth may selectively subsidize certain services by increasing rates for other services under the provisions of its price regulation plan. But its main source of current implicit support for subsidizing other services comes from BellSouth's competitors in the toll business today and in the local business in the near future—the interexchange companies. IXCs do not have such lucrative sources of external subsidy and, as a result, Tennessee's long distance customers are paying rates far in excess of rates that would be charged if access charges were priced closer to cost-based rates. LECs have benefited from this system because they have not had to demonstrate where the subsidies are being used. Further, if today's implicit subsidies are automatically

moved into the new USF and collected on an explicit basis, the current inequities will not be addressed. It is time to remove the total burden of supporting the incumbent LEC's services from Tennessee's toll users.

Part (c) How does the TRA make implicit support explicit as defined by the Act and the FCC?

First, the TRA should not simply make implicit support explicit. There should be no assumption that any identified implicit subsidies currently collected by the incumbent LECs should automatically be converted to an explicit subsidy. There is a serious question that any amount of implicit subsidy collected by the incumbent LECs today is needed, or even used, to support universal service and other social programs. To the extent current implicit subsidies collected by a particular LEC exceeds the amount necessary for current universal service goals, then the LEC has been extracting an excessive contribution from interexchange carriers that it has been able to use any purpose it chooses, including possibly funding its efforts to enter the long distance markets, its international ventures, and the like.

The initial step in this process is to quantify, as closely as possible, the support required to achieve the universal service goals and objectives of the TRA. Those amounts identified to support the new, re-defined universal service goals should be included in a universal service fund.

The next step is to determine the amount of subsidy collected by the LECs today that exceeds the new USF requirements. Any excess funds should be

returned to Tennessee's rate payers in the form of reduced rates, such as switched access reductions.

Issue 15: Should access charge reform issues be incorporated into Phase II - Cost Issues?

Absolutely. While I do not recommend any particular procedure for addressing access reform in conjunction with universal service reform, it is imperative that access reform occur concurrently with universal service reform. The gross disparity between the minimal costs that the incumbent LECs incur to provide switched access services, and the revenues that they derive from their wholesale customers is, perhaps, the most significant issue that must be addressed if competition is to prosper and grow in all areas of telecommunications. It is not possible to isolate the implementation of local service competition, universal service and access reform from the current access disparity. Access charge policies are interwoven through all aspects of the TRA's desire to achieve a level of telecommunications competition in Tennessee that will make available the benefits of robust competition to its citizens.

While there is some historical basis for charging Tennessee's long distance consumers inflated rates to support universal service objectives, it is no longer appropriate to charge the customers of interexchange carriers tariffed rates that allow the incumbent LECs to support their own new service offerings and other unspecified ventures, often in competition with interexchange carriers. A major outcome of universal service and access reform must be to correct the misalignment between the costs that the LECs incur to provide access charges and the wholesale rates that the LECs charge potential competitors who currently have little alternative to LEC-provided access services.

Recent findings indicate that, in many cases, local service rates are covering costs. Considering that there may be service areas where local rates do not cover costs, the conclusion remains that the level of subsidy required to support local service is, in the aggregate, much less than the LECs infer is necessary, and much less than is traditionally believed. These excess subsidies should not be simply transferred into the new Universal Service Fund, but should be returned to the consumers of the state through reduced toll rates. To effectively accomplish this, the TRA must reduce access to its forward looking economic cost. This action will eliminate a double assessment against interexchange carriers, guard against discriminatory treatment and provide for a more competitively neutral means of funding universal service as required by the Telecommunications Act of 1996.

Q. WHAT ARE SOME OF THE NEGATIVE EFFECTS TO CONSUMERS OF CHARGING ACCESS RATES THAT ARE FAR IN EXCESS OF COSTS?

A. Interexchange carriers must pass these rates on to consumers resulting in intrastate toll rates that are far in excess of toll rates that would exist if access charges were priced at more cost-based levels. The use of subsidies from long distance charges to support local service was deemed appropriate during the time when all providers participated in the nationwide Division of Revenues process and were compensated for toll expenses, taxes and investments on an equitable basis. Today and in the future, however, it is no longer reasonable to expect interexchange carriers and other competitors of the local exchange companies to subsidize the local exchange company for uneconomic pricing methodologies. Indeed, the Telecommunications Act requires that implicit subsidies be removed to promote competition.

Q. WHAT IS YOUR ASSESSMENT OF THE MAGNITUDE OF THE DISPARITY BETWEEN THE LEVEL OF ACCESS CHARGES TODAY AND THEIR ASSOCIATED COSTS?

A. The disparity indicates that the level of implicit subsidy currently flowing from Tennessee's long distance users to the LECs for use at their own discretion is no longer justified, nor permitted under the Telecommunications Act. Additionally, the identification of the amount necessary for universal service in Tennessee should be the starting point for an assessment of how universal service should be funded, and not to determine how the LECs should recover any reduction in access revenues.

Q. HOW WILL TENNESSEE'S CONSUMERS BENEFIT IF ACCESS CHARGE RATES ARE MORE REFLECTIVE OF COST?

A. At the time access rates are reduced to their forward-looking costs, Tennessee consumers will benefit immediately from lower intrastate long distance rates that will result as AT&T flows through the access reduction to the rates paid by Tennessee's toll users. AT&T commits to flow through the reduction of intrastate access charges to their forward-looking costs, net of any increased charges to AT&T associated with funding of universal service or the creation of any other offset of access revenues.

Q. ARE THERE OTHER WAYS CONSUMERS WILL BENFIT?

A. Yes. Access prices that are much more reflective of the actual cost to provide access services will negate the ability of the incumbent LECs to leverage the current cost/price disparity by "price squeezing" potential competitors. The result will be more effective competition for the range of telecommunications services. Tennesseans will benefit from competition through increased choices, selection of new and innovative services, increased levels of customer service, and lower prices.

Q. HOW ARE THE INCUMBENT LECS ABLE TO PRICE SQUEEZE POTENTIAL COMPETITORS IN AN ENVIROMENT OF EXCESSIVE ACCESS CHARGES?

A. Exhibit GMH-2, pages 1 through 3, demonstrate the degrees to which incumbent local exchange companies may limit competition by leveraging the disparity between the actual cost the LEC incurs to provide access services and the prices that the LEC charges its wholesale customers, the interexchange carriers and other competitors, for necessary access to their customers. While the example does not apply to a specific LEC, the price squeeze phenomena is occurring today in Tennessee.

Exhibit GMH-2, Page 1 demonstrates the price differential that can exist if the LEC does not have to reflect the same cost of access as an input to prices of its services as do competitors who pay much higher access rates. It is obvious that the incumbent LEC can markedly undercut the price of competing services, while still reaping significant levels of profits. Existing competitors will be quickly driven out of business under this scenario. New competitors are unlikely to enter the market under these conditions.

Exhibit GMH-2, Page 2 shows that, even if the incumbent LEC is ordered, or elects, to impute the same cost of access that the LEC charges its competitors into its own service prices, the LEC is still able to make significant profits relative to the competition because the access rates the LEC imputes to itself are not an actual cost to the incumbent LEC. Competitors are not able to generate the required profits relative to the LEC in order to remain a viable provider of competitive services. While this scenario eliminates the competition at a slower rate than the scenario above, competitors are eventually driven from the market.

Finally, **Exhibit GMH-2, Page 3** shows the desired competitively-neutral pricing that exists if the price of access is more reflective of the actual cost to provide the service. In this case, the degree to which one company is more successful than its competitors will be due to effective marketing plans, ability to offer desirable services or combinations of services, pricing and operating efficiencies, and not because one company has the benefit of a monopoly position and the ability to collect excessive revenues from its wholesale customers and potential competitors. In this example, the price of service to the consumer has dropped by at least 50% to a level of $0.055 per Conversation Minute-of-Use (CMOU), made possible by the elimination of excessive LEC profits in current access rates, and by the reduction of "Other Costs" by both competitors as a result of competition-driven, cost-cutting measures. Both competitors are receiving contribution from the provision of service, while the clear winner, the Tennessee consumer, receives the benefit of greatly reduced toll rates.

AT&T is not suggesting that the LECs sell access services to its competitors at cost. AT&T believes that access prices should be set at forward-looking costs, similar to the Total Element Long Run Incremental Cost ("TELRIC") standard recommended for unbundled network elements (UNEs).

Q. WHAT SPECIFIC OPTIONS ARE AVAILABLE TO A LEC TO RECOVER WHAT IT CONSIDERS "LOST REVENUE"?

A. First, AT&T believes that there is no justification for an assumption that the LECs are automatically entitled to a revenue neutral recovery of any access reduction in a competitive environment. Nonetheless, if any LEC feels it can justify the recovery of any part of what it considers "lost revenue", the

LECs have varying options available to them, depending on the regulatory method that they operate under in Tennessee:

--BellSouth and United Intermountain are under a price regulation plan instituted at the request of BellSouth and United and approved by the TRA. Under their price regulation plan, the companies have the authority to set prices as it sees fit for many of their services. The companies may decide to recovery any amounts they determine are applicable from increases in non-basic services.

--For those LECs under a traditional rate-of-return regulation plan, each LEC has the option to petition the Commission to adjust rates upon a showing of need.

--The establishment of an "affordable" local rate by the Commission will enable LECs to recover a portion of what it considers "lost revenue" by raising their local rate by whatever increments and according to whatever schedule the LEC feels is appropriate for their customers, up to the specific affordable level determined by the Commission.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes, it does.

REPRESENTATIVE CALCULATION OF BELLSOUTH INTRASTATE SWITCHED ACCESS COSTS AND REVENUES

It is widely recognized that switched access charges are priced well in excess of their costs. The underlying cost of access is of vital importance in the determination of the degree to which all LECs are collecting implicit subsidies that exceed any demonstrated need for such levels, in relation to the amount of explicit subsidies required in the new Tennessee USF. The calculations below estimate the magnitude of the revenue/cost relationship for BellSouth. The underlying data for other local exchange companies in Tennessee may be somewhat different, but the general relationship between the costs that the companies incur to provide switched access service, and the revenue derived from the service is still expected to be significant for all incumbent LECs.

	Source	
1. Annual TN Intrastate Orig. + Term 1,480,197,003 Access MOU a/o June, 1995	Actual TN Megacom Plan Data ('96)	
2. Current Access Rate (two ends)	AT&T Calculations	$0.07358
3. Access Revenue at Current Rate	(L1 X L2)	**$108,912,895**
4. Annual Access MOU above	1996 Megacom Data	1,480,197,003
5. Cost-Based Access Rate (two ends) $0.005	AT&T Estimate	
6. Access Revenues at Cost-Based Rate	(L4 X L5)	**$ 7,400,985**
7. Current less Cost-Based Revenue	(L3 - L6)	**$101,511,910**
8. Mark-up of Current Access Revenue 1471% over Cost-Based Revenue	(L3 / L6)	

Trending data showing that access minutes are growing in excess of 13% annually add to the concerns surrounding the amount of access revenue produced at current rates as opposed to revenue resulting from cost-based rates.

RECORD SUPPORTING ESTIMATE OF UNDERLYING COSTS THAT INCUMBENT LOCAL EXCHANGE COMPANIES INCUR TO PROVIDE SWITCHED ACCESS SERVICES

It is widely recognized that switched access charges are priced well in excess of their cost. Specific cost/price relationships have been demonstrated repeatedly in regulatory proceedings across the country, including Tennessee and other Southeastern states. Since the underlying cost of access is of vital importance in the determination of the degree to which all LECs are collecting implicit subsidies in relation to the amount of explicit subsidies required to support the new Tennessee USF, I am presenting the evidence again, along with more recent instances that indicate the actual cost is even lower than previously thought:

--A Southern Bell data request response to AT&T in South Carolina (Docket No. 93-503-C) indicates that Bell's cost of providing switched access in South Carolina is "around" one cent per minute.

--In Florida, both BellSouth and United Telephone Company have offered evidence in proceedings that the cost of access is "about" a penny per minute.

--On August 4, 1994, Bell responded to AT&T's First Data Request, Item No. 47, in their similar Modified Regulation Plan proposal in Louisiana, that they agree that the incremental cost of access in Louisiana does not exceed one cent per minute.

--Under cross examination during the hearings in Kentucky Case No. 94-121, BellSouth witness, Margaret Greene, agreed that the cost of access for BellSouth in Kentucky would not exceed one cent per minute for two ends of a call.

RECORD SUPPORTING ESTIMATE OF UNDERLYING COSTS THAT INCUMBENT LOCAL EXCHANGE COMPANIES INCUR TO PROVIDE SWITCHED ACCESS SERVICES

It is widely recognized that switched access charges are priced well in excess of their cost. Specific cost/price relationships have been demonstrated repeatedly in regulatory proceedings across the country, including Tennessee and other Southeastern states. Since the underlying cost of access is of vital importance in the determination of the degree to which all LECs are collecting implicit subsidies in relation to the amount of explicit subsidies required to support the new Tennessee USF, I am presenting the evidence again, along with more recent instances that indicate the actual cost is even lower than previously thought:

--A Southern Bell data request response to AT&T in South Carolina (Docket No. 93-503-C) indicates that Bell's cost of providing switched access in South Carolina is "around" one cent per minute.

--In Florida, both BellSouth and United Telephone Company have offered evidence in proceedings that the cost of access is "about" a penny per minute.

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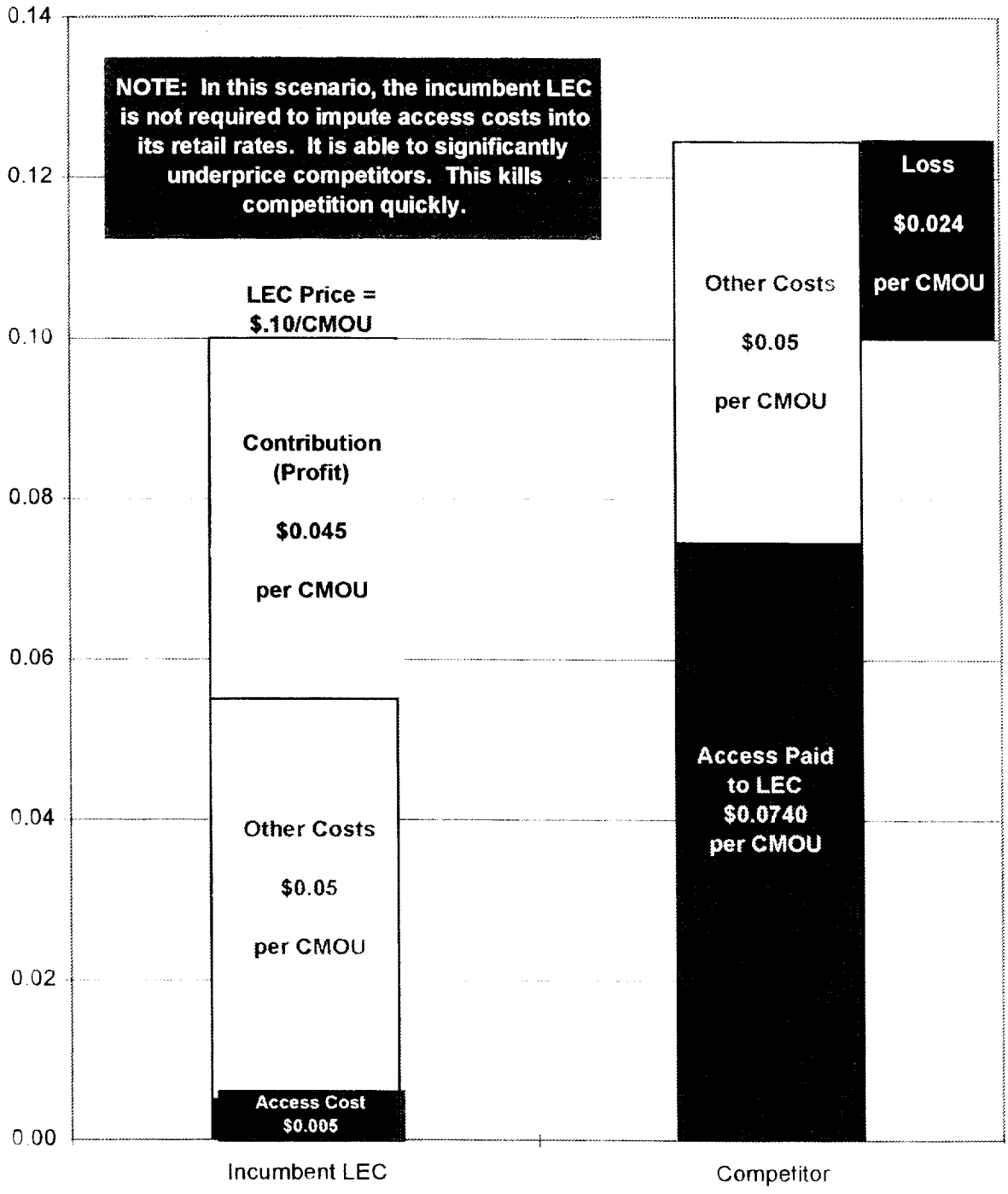
--Under cross examination during the hearings in Kentucky Case No. 94-121, BellSouth witness, Margaret Greene, agreed that the cost of access for BellSouth in Kentucky would not exceed one cent per minute for two ends of a call.

--BellSouth cost study results produced in Mississippi in Docket 94-UA-536 show that the incremental cost for Bell to provide switched access services in Mississippi is about one-half cent per conversation minute, or about one-fourth of a cent for each end of a call.

--Most recently, in Florida, Information made available through Florida Public Service Commission Docket No. 950985-TP indicates that BellSouth's cost of providing switched access service is less than $.0025 per access minute of use - perhaps as low as $.002 or less. Similar information made available through the same Florida Docket indicates that GTE's cost of providing switched access service is likewise less than $.0025 per access minute of use.

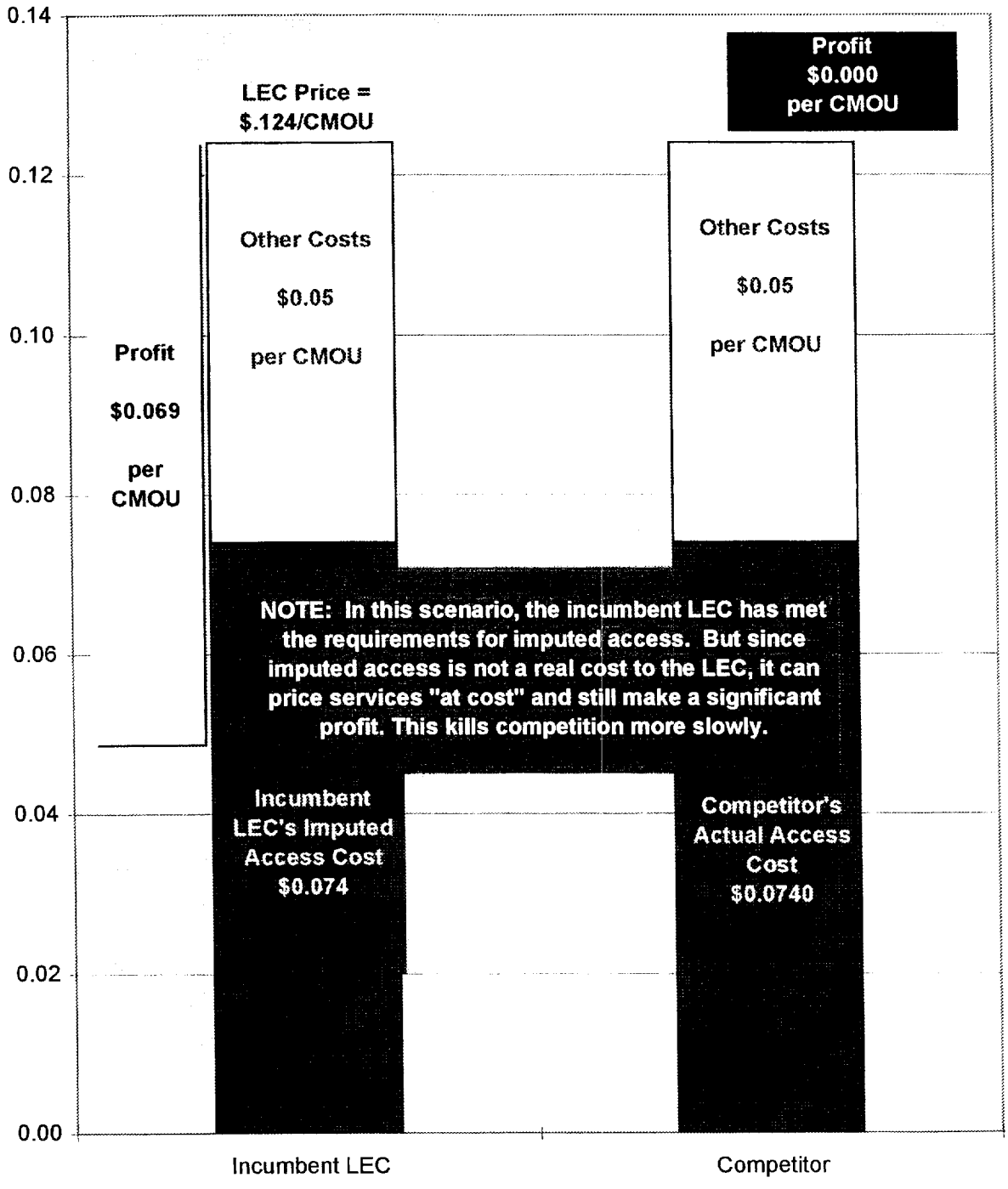
It is clear that the actual cost that local exchange companies incur to provide switched access services is well below one-half cent per minute for two ends of switched access service, and more likely closer to two-tenths of a cent. Significantly, this cost range seems to apply consistently for companies of different sizes and in various states. Yet, local exchange companies, in general, charge their wholesale customers, the interexchange carriers, far in excess of this amount. These additional costs must be passed on to Tennessee's toll users in the form of higher-than-necessary toll rates.

PRICE SQUEEZE ONE
COMPETITORS ARE ELIMINATED QUICKLY



CONVERSATION MINUTES-OF-USE (CMOU)
IS THE SUM OF TWO ENDS OF A CALL

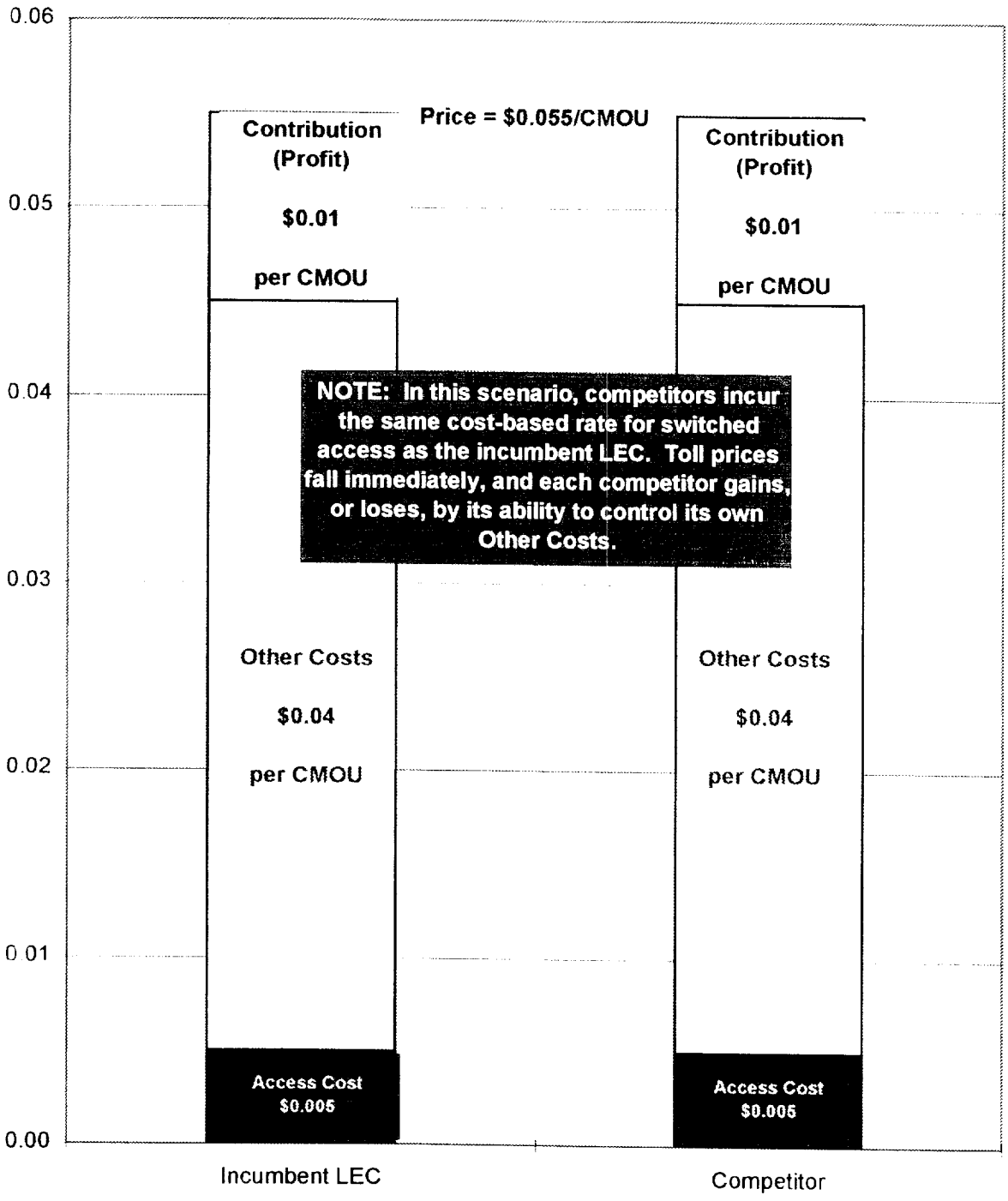
PRICE SQUEEZE TWO
COMPETITORS ARE ELIMINATED MORE SLOWLY



CONVERSATION MINUTES-OF-USE (CMOU)
IS THE SUM OF TWO ENDS OF A CALL

PRICE SQUEEZE THREE

PRICE SQUEEZE ELIMINATED
COMPETITION THRIVES



CONVERSATION MINUTES-OF-USE (CMOU)
IS THE SUM OF TWO ENDS OF A CALL

DIRECT TESTIMONY OF
T. RANDOLPH BEARD

ON BEHALF OF
AT&T COMMUNICATIONS OF THE SOUTH CENTRAL STATES, INC. AND
MCI TELECOMMUNICATIONS CORPORATION

BEFORE THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

UNIVERSAL SERVICE
GENERIC CONTESTED CASE

DOCKET NO. 97-00888

October, 1997

SECTION 1

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is T. Randolph Beard. My address is Department of Economics, College of Business, Lowder Business Building, Auburn University, Auburn, AL., 36849.

Q. WHAT IS YOUR OCCUPATION?

A. I am an economist. My current employment is as Associate Professor of Economics in the College of Business at Auburn University.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have been asked by AT&T and MCI to provide testimony on the proper application of the economic theory of efficient pricing to assist the Tennessee Regulatory Authority (TRA) in implementing efficient and effective mechanisms for universal service and affordability goals. I describe in what follows those widely accepted economic principles which the TRA may wish to consider in designing support mechanisms that will promote economic efficiency and competition in telecommunications markets in Tennessee.

Q. WHAT ARE YOUR QUALIFICATIONS?

A. I am currently Associate Professor of Economics at Auburn University. I earned a B.A. with honors in economics from Tulane University in 1982, and a Ph.D. in economics from Vanderbilt University in 1988. I have published numerous scientific journal articles in the areas of regulation, cost theory, industrial economics, and microeconomics in such

journals as *The RAND Journal of Economics, The Review of Economics and Statistics, Management Science, The Journal of Business, The Journal of Industrial Economics, The Journal of Regulatory Economics, Energy Economics*, and many others. I am an author of the book, *Initial Public Offerings: Findings and Theories*, published in 1995 by Kluwer Academic publishers. I have taught numerous classes, to both undergraduates and graduate students, in the areas of industrial organization and microeconomics. I served as an instructor in the public utility economics program of the Southern Company College at Auburn. I have served as a consultant to large corporations such as AT&T, MCI, and Alabama Power Company. Recently, I appeared as an expert witness before the South Carolina Public Service Commission in BellSouth's application for interLATA relief under Section 271 of The Telecommunications Act of 1996. I previously filed testimony with the TRA in the Permanent Prices Proceeding, Docket No. 97-01262. My curriculum vita is attached to this testimony as Exhibit 1.

Q. PLEASE OUTLINE YOUR TESTIMONY.

A. Economic principles can provide the TRA with useful assistance in the efficient design and implementation of universal service and affordability support programs. Universal service refers to initiatives designed to maximize subscription to the public switched telecommunications network. Affordability refers to programs intended to assure inexpensive basic service to broadly-defined groups of consumers, most of whom would subscribe to the network even in the absence of subsidized pricing. Although both of

these goals are often lumped together under the title "universal service," it is useful to keep these ideas separate for the purpose of analysis.

The current system used to support universal service and affordability goals in Tennessee relies on a complex set of subsidies that create large gaps between the prices and incremental economic costs of many services. In particular, the use of "value of service" pricing methodologies, broad geographic rate averaging, and carrier access charges in excess of economic costs has resulted in a pricing structure that is economically inefficient and incompatible with developing competition in telecommunications. Reform of this system can both lower the costs of achieving appropriate public interest goals, and promote competition in Tennessee's local exchange services industry.

Economic theory shows that an efficient universal service/affordability program must satisfy the following requirements. First, funds raised to support subsidies should be obtained from broadly-based, minimally distortionary charges such as universal SLCs or general tax revenue. Second, funding mechanisms must be competitively neutral and, to the degree possible, transparent in their effects. Reliance on excessive prices for some services to fund below cost pricing of others is inefficient. Carrier access charges are a particularly poor source of universal service funding.

Efficiency also requires that any funds raised be spent efficiently. In particular, universal service subsidies should be targeted at those households for whom the subsidy makes a difference in the subscription decision. Competitive neutrality is also required, and all

subsidies should belong to consumers, not incumbent providers, so that competition for subsidized customers is possible. Finally, the level of subsidies should reflect only the differences between target consumer contributions and the incremental economic costs of basic service. Embedded cost recovery is an entirely different issue than universal service and affordability, and the two should not be mixed.

Thus, I recommend that the TRA adopt the following universal service policy. First, the TRA should commission a statistical study to determine the effects of local service price changes on subscription decisions by households in Tennessee, with an emphasis on determining the role of income in this decision. Using the results of this study, the TRA should establish reasonable criteria for universal service assistance targeted at individual households on a means-tested basis. Subsidies required should be calculated as the difference between the long run, forward looking economic costs of serving the household and the level of contribution expected from the household as determined by TRA criteria. An independent agency or office within the TRA would collect broadly funded, modest SLCs sufficient to fund the required subsidies. Participating households would pay only their contributions, while the universal service fund would make subsidy payments to the service provider which serves the customer.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. Section 2 addresses the broad economic principles relevant to universal service and affordability support mechanisms. Section 3 offers a detailed application of these

principles to issues of program design of relevance to the TRA in this proceeding. Section 4 briefly critiques the current system of universal service and affordability support in Tennessee and concludes that, with the exception of the Lifeline and Linkup programs, contemporary practice is inefficient and inconsistent with competition. Section 5 considers design of an efficient support mechanism for Tennessee, while Section 6 summarizes the main conclusions of my analysis.

SECTION 2. ECONOMIC PRINCIPLES RELEVANT TO UNIVERSAL SERVICE

Q. WHAT IS UNIVERSAL SERVICE?

A. Universal service refers to a long-standing goal of U.S. telecommunications policy, extending back at least until the 1930's. Although many definitions of universal service attempt to delineate specific sets of services relevant to this goal, at its most basic level universal service merely refers to policies aimed at maximizing, within the constraints of feasibility, subscription to the public switched telecommunications network. Policies ostensibly designed to increase subscribership by, for example, assisting low income consumers, fall under the heading of universal service.

Many policies commonly pursued by regulatory authorities aim at assuring "affordability" of basic local exchange services. Policies such as averaging of rates, inflating access charges above costs to create revenue streams, and similar initiatives have historically been used in an attempt to keep local rates low in some absolute sense. Although actions of this sort are often described as a component of universal service,

these policies are more properly regarded as social initiatives only since untargeted subsidies, provided even to wealthy consumers who would subscribe anyway, cannot materially increase subscription rates. Thus, it is quite important for policy purposes that these two goals of universal service and affordability be kept logically separate.

Although telecommunications is undergoing rapid and fundamental changes today, the FCC and Joint Board pronouncements retain a strong commitment to universal service, while emphasizing that mechanisms used to support universal service must be compatible with the new, procompetitive direction in telecommunications policy.

Q. WHAT SERVICES SHOULD BE INCLUDED IN A DEFINITION OF UNIVERSAL SERVICE?

A. The FCC has proposed a list of basic services to be included in their definition of "universal service." In general, though, universal service refers to ubiquitous access to the public switched network, rather than to any detailed set of specific services. It is important that the inability of some service providers to offer one or another of these many services not be used to cripple legitimate universal service goals. Further, because universal service funding will inevitably require some distortions due to revenue raising requirements, the services that should be included under the title "universal service" should be limited.

Q. WHAT BASES, IF ANY, EXIST THAT SUPPORT THE GOAL OF UNIVERSAL SERVICE?

A. First and foremost, universal service is a political or social goal that is closely tied with the ideals of democratic society. Everyone, it is reasoned, should have the ability to communicate with fellow citizens, government, and businesses. Given the technical world in which we live, such communication is best supported by an ubiquitous switched telecommunications network.

Economists have also pointed out that telecommunications, a network-based technology, is characterized by what economists term a "network externality." This externality refers to the fact that, as more users join (subscribe) to the public switched network, the value of subscription rises for all previous subscribers. This occurs because the value of subscription depends on what a subscription allows one to do. The greater the number of subscribers, the greater the number of people one can contact over the network. This effect is economically important because it suggests that a pure free market approach may lead to undersubscription to the network from the social point-of-view. In deciding whether or not to subscribe, a potential customer ordinarily considers only the costs and benefits they would directly incur, thereby ignoring benefits their actions may create for others. To overcome this tendency, it may be appropriate for the government to take actions aimed at encouraging subscription in one fashion or another. Although this network externality does not imply everyone should subscribe, it is usually taken to mean some steps to encourage subscription may be justified.

Q. HOW DOES THE SOCIAL GOAL OF UNIVERSAL SERVICE MANIFEST ITSELF IN PUBLIC POLICY IN TELECOMMUNICATIONS?

A. For many years, the focus has been on the price of a basic package of telephone services. Basic residential local exchange services have even been priced below costs in some cases. In all cases, regulatory authorities have sought to limit the costs of such services to residential consumers. This laudable goal has, unfortunately, led to the very opaque system of universal service funding we now have.

Q. WHAT CONSTITUTES AFFORDABILITY?

A. The FCC and Joint Board have set criteria for affordability, but have placed the burden of implementation on the states. The Telecommunications Act of 1996 contains the requirement that, "... quality services should be available at just, reasonable, and affordable rates ..." (47 U.S. C. § 254). Joint Board recommendations, adopted by the FCC, conclude that "affordability" contains both absolute and relative components. Thus, universal service is affordable if the costs to the consumer are not unduly burdensome both in an absolute sense, and when service cost is expressed as a percentage of income. Further, although the Joint Board recognized that affordability is closely related to subscribership levels, they declined to accept high subscribership by itself as proof of affordability. Further, in judging affordability, the Joint Board recommended that various nonrate factors, including consumer income, local calling order size, and costs of living be considered. The Board suggested that the ability of a household to call essential facilities such as hospitals or government offices with no, or low, toll charges, was also a relevant factor in determining affordability. In fact, the FCC noted in its Universal Service Report and Order (FCC 97-157, § 5m ¶ 114) that, "Toll charges can

greatly increase a consumer's expenditure on telecommunications services, mitigating the benefits of universal service support."

I am in relative agreement with the FCC formulation of the issue. It is impossible to sensibly discuss affordability without a clear focus on the incomes of consumers and their abilities to pay competitive prices for basic telecommunications services. There is no policy justification for providing large, untargeted subsidies to consumers who are able to pay competitive prices for service and would, in fact, do so. I also agree that toll charges are a factor in determining the overall affordability of telecommunications services.

Q. WHAT ECONOMIC PRINCIPLES SHOULD THE TRA CONSIDER IN FORMULATING A UNIVERSAL SERVICE POLICY FOR TENNESSEE?

A. Universal service is an important policy goal. That said, it is in the overwhelming interests of the people of Tennessee that this goal should be implemented in the most economically efficient manner possible. By funding universal service needs in an economically efficient way, the benefits to Tennessee are maximized.

Economics can therefore provide some very useful guidance the TRA should consider in its deliberations on universal service. The problem presented by universal service obligations is, in fact, a familiar one to economists. A social goal such as universal service is articulated. What is the most efficient means for achieving this goal? The economic concept of efficient pricing allows this question to be answered.

Under conventional conditions, economics shows that social benefits are made as large as possible when the quantities of goods and services made and consumed are the same quantities as would occur in a market where prices were set at incremental economic costs. This principle, variously referred to as "marginal cost pricing," "efficient pricing," or "allocative efficiency," is among the most important results in economics.

The principles of efficient pricing are quite relevant to the problem of universal service implementation. In particular, universal service should not be, and need not be, funded by means of pricing distortions that lead to gross violations of pricing efficiency. As is explained in great detail in Section 3, the twin goals of universal service and economic efficiency are not incompatible. The requirements of allocative or pricing efficiency provide clear guidance for universal service policy design. By appropriate action, the TRA can insure that Tennessee enjoys both a continued high degree of network subscribership and a low cost, efficient telecommunications industry.

Funding universal service obligations in an efficient manner, besides assuring Tennessee of both optimally structured telecommunications markets and widespread subscribership, is also critical for establishing meaningful competition in local exchange services markets. In particular, irrational pricing of telecommunications services is the enemy of competition. Low prices and expanding services in long-distance toll markets provide evidence of the potential benefits of competition. The competitive prize should not be

sacrificed at the altar of a poorly conceived attempt to support universal service goals by introducing distortions throughout the pricing structure.

Q. HOW CAN UNIVERSAL SERVICE FUNDING MECHANISMS HINDER THE DEVELOPMENT OF COMPETITION?

A. When it was widely accepted that local exchange service markets would be regulated monopolies, universal service funding mechanisms had no effect on local competition because there wasn't any. Although many local markets in Tennessee are still virtual monopolies, the Telecommunications Act of 1996 ("The Act") envisions that local services markets will become competitive. There are, however, some important preconditions necessary for competition to develop. First, the one-time costs of entry into local markets, so-called "sunk costs," must be reasonable. This requires determining the prices of unbundled network elements (UNEs), and the nonrecurring charges (NRCs) associated with them, using a forward looking, long-run incremental economic cost methodology. Second, incumbent local exchange companies (ILECs) must not behave in a discriminatory or anticompetitive manner. Third, subsidies implemented to attain universal service goals must not themselves create disadvantages for entrants that do not reflect real economic cost advantages of incumbent firms. For example, subsidies to consumers located in high cost areas must be available to any firm that serves these consumers. Distortions in carrier access charges likewise cause noneconomic asymmetries between firms that limit and distort competition.

SECTION 3. PRINCIPLES FOR EFFICIENT SUPPORT OF UNIVERSAL SERVICE

Q. IF UNIVERSAL SERVICE IS AN IMPORTANT GOAL, WHY IS IT IMPORTANT THAT SUPPORT MECHANISMS SATISFY THE REQUIREMENTS OF ECONOMIC EFFICIENCY?

A. There are many ways to achieve the universal service goal, but some ways are much less efficient that others. The decisions made by the TRA in this and the related access charge and cost proceedings will determine the costs to Tennessee of obtaining universal service. Inefficient funding and subsidy mechanisms will produce several costly and unfortunate results.

First, funding mechanisms that rely on distortions in prices will demonstrably destroy the potentially very large benefits Tennessee could realize from efficient pricing. Allocative efficiency requires that consumers confront prices that are equal to the relevant economic costs of services they buy. These economic costs represent the social value of the resources used to provide the services. Thus, if prices equal economic costs, consumers will consume goods and services only when they value those resources more that do others. In this way, resources are allocated to their highest valued uses. When prices are driven away from economic costs, the wrong goods are produced in the wrong amounts and are distributed to the wrong people.

Through the practices of residual pricing of local residential phone service, implicit subsidization of some services through inflated carrier access charges, distortions in

pricing of business services and the like, universal service goals have, in the past, been pursued through highly inefficient means that inevitably led to gross misallocations of resources. High rates of phone subscription, such as Tennessee's approximately 94% rate in 1996, were obtained, but it must be recognized that these pricing distortions were both costly and, perhaps, less effective than generally believed in encouraging efficient subscription. One can have both high subscription rates and efficient telecommunications markets.

A second, critical problem with inefficient support mechanisms is the stifling effect such mechanisms will have on the emergence of effective competition in local exchange markets in Tennessee. Competition, if it is to emerge, will require an environment in which the most efficient firms can succeed. This, in turn, requires that distortions in pricing and other funding burdens should not fall disproportionately on entrants into local markets. The firm with the lowest economic costs of serving a customer should, in fact, do so. Any mechanism used to support universal service should be closely examined to determine if it is compatible with a competitive environment.

Q. WHAT ECONOMIC PRINCIPLES SHOULD BE APPLIED TO THE FUNDING MECHANISM ADOPTED BY THE TRA?

A. The requirements of efficiency are few but important. First, any mechanism used to generate funds to support a USF type program should be broadly, rather than narrowly,

drawn. A charge applicable to all subscribers or general tax appropriations could satisfy this requirement.

Second, funding for universal service obligations should be obtained in a competitively neutral manner. In particular, charges levied on services should not fall disproportionately on services or products of particular relevance to potential entrants into local exchange markets. No single group of firms should be arbitrarily targeted to pay for all universal service obligations.

Third, distortions of prices away from competitive levels should be minimized. As explained in Section 2, prices that reflect incremental economic costs will lead to an efficient allocation of resources. This desirable outcome should be degraded as little as possible. Economists generally agree that all taxes create some distortions in resource allocation. Yet, some taxes are much worse offenders than others. The responsiveness of buyers to the imposition of the tax is a key determinant of the degree of economic welfare losses from the tax. Thus economists ordinarily favor taxes targeted towards activities whose levels are relatively unresponsive to price increases.

Finally, any mechanism used to fund a USF type program should be explicit and transparent. Pursuing universal service goals by general distortions in prices results in subsidy patterns which are unfathomable, occasionally totally perverse, and anticompetitive. The FCC recognizes this, and has argued in favor of explicit

mechanisms based on differences between target costs and actual economic costs across areas. In such a scheme, the economic cost of serving a customer is compared to some benchmark cost consistent with criteria of universal service. The required subsidy then equals the difference between these figures. A mechanism of this kind is explicit and intelligible.

Q. WHAT ARE THE BENEFITS OF A BROADBASED APPROACH TO FUNDING UNIVERSAL SERVICE?

A. Raising the necessary revenues to support universal service goals from a broad set of consumers serves both democratic and economic ends. Since a high degree of network connectivity benefits all users, it seems reasonable that, barring hardship, all users should help fund universal service. In general, citizens who benefit from a program should fund it when that responsibility is consistent with the economic welfare of contributor citizens.

Important economic goals are also served by a broadly funded approach. When many customers contribute, the costs of individual consumers are minimized. Since economics generally holds that the first dollar taken away hurts less than the second, minimizing the contributions required from individual users is a valid goal.

Additionally, funding universal service broadly may lead to less distortion of prices away from economic costs than would occur when a smaller set of consumers is compelled to fund the mechanism through distortions in the prices of a few key services. This point of

view is important with respect to access charge reform. Currently, access charges in excess of economic costs lead to substantial distortions in the prices of long distance services. The smaller set of relatively intensive long distance service users are heavily penalized to fund a vague, untargeted subsidy for a much larger set of users of local services. This may result in welfare losses far beyond those associated with a more broadly imposed contribution scheme.

Q. WHY IS COMPETITIVE NEUTRALITY AN IMPORTANT REQUIREMENT FOR A GOOD UNIVERSAL SERVICE FUNDING MECHANISM FOR TENNESSEE?

A. When the mechanism chosen to fund universal service is not competitively neutral, two sorts of results can occur. First, competition, and the potentially huge benefits of competition in local exchange markets, may never develop in Tennessee. Second, even if some competition does develop, the pattern of that competition will be distorted, and the benefits obtained by the people of Tennessee reduced. For example, below cost local service prices available in some areas to even wealthy households will not attract more efficient entrants unless those entrants can avail themselves of the subsidies inherent in the pricing structure. Thus, at a minimum, the subsidies established to promote network subscription should be symmetrically available to any provider who supplies services to the subsidized customer.

Q. WHAT IS MEANT BY A MINIMALLY DISTORTIVE FUNDING MECHANISM, AND WHY IS THAT A DESIRABLE PROPERTY FOR TENNESSEE'S UNIVERSAL SERVICE PROGRAM?

A. When the prices paid by consumers for goods and services deviate from economic costs, inefficiencies result that reduce the economic welfare of society. The extent to which these distortions occur depends on the size of the deviation between price and incremental economic costs, and on the nature of consumers' demands and production costs. Larger gaps between price and relevant economic cost lead to larger losses in benefits to society. Thus it is important that, to the extent possible, any universal service funding mechanism avoid adding charges to services that drive price significantly above competitive levels whenever consumers are expected to react to the price increases by substantially reducing purchases. Should charges attached to specific services be necessary, it is critical that these charges be as small as possible, and be levied on categories of services exhibiting low consumer responses to price charges. Hence, inflated access charges are almost certainly a more distortionary way to raise revenues than are broad subscriber line charges, since long distance service demand is apparently much more price sensitive than is the demand for network access.

The requirement of minimal distortion in prices also implies an important complementary principle widely accepted by economists. In general, it is almost always better for society that needs revenues to raise those revenues by taxes or charges on final services, rather than by taxes or charges applied to intermediate level services used in the production of other services sold to the public. Put simply, it is usually better to tax outputs than inputs. There are several reasons for this. First, input taxes lead to changes in the intensities of use of various inputs, making production inefficient. Since the cost

increases occasioned by intermediate good taxation also create further price distortions in the final goods markets, taxing inputs creates distortions at all levels of production. Second, taxes on inputs are taxes on businesses, and the effects of such taxes on final consumers are often difficult to trace. Yet, in the end, only individuals pay taxes. In the case of telecommunications, implicit taxes represented by inflated carrier access charges can lead to competitive access providers (CAPs) offering alternative access services when their economic costs of doing so exceed those of the incumbent local exchange. To the extent that this occurs, society suffers a waste of valuable resources and a diminution of well-being.

Q. WHY IS IT IMPORTANT THAT UNIVERSAL SERVICE FUNDING MECHANISMS ADOPTED IN TENNESSEE BE EXPLICIT AND TRANSPARENT?

A. Unless the funding of universal service is made explicit and transparent, it will never be possible to determine the actual subsidy flows required, nor will the TRA find it possible to separate the legitimate needs of service providers from their public claims. In addition, it is very hard to see how competition will ever arise in local markets in an environment of significant price distortions and implicit subsidies. Claims for universal service support can easily take on an anticompetitive character. The legitimate social goal of universal service must be separated from the self-interested advocacy of market participants. Only explicit and transparent funding mechanisms can do this.

Q. WHAT ECONOMIC PRINCIPLES ARE RELEVANT TO THE DESIGN OF THE UNIVERSAL SERVICE SUPPORT DISTRIBUTION SYSTEM?

A. Economics can offer the TRA several useful principles applicable to the design of a good support distribution system. Application of these principles will go a long way toward assuring that the goals of universal service are effectively realized at minimum cost to the people of Tennessee.

First, funds disbursed in support of universal service goals must be narrowly targeted at those consumers for whom the subsidy is important in assuring network subscription. The goal of universal service is a high level of subscription to the public switched network. Thus, spending in support of this goal should increase or maintain participation by subscribers who would not otherwise subscribe. Whenever a consumer who would subscribe anyway receives a subsidy, the costs of universal service rise with no corresponding public benefit whatsoever. It is senseless for the public to subsidize someone who needs no subsidy.

Second, any subsidies supported by an efficient universal service mechanism must be competitively neutral. This requirement has two important implications. First, any local exchange companies that receive such subsidies should receive support only in amounts sufficient to sustain the desired service price level when the service provider is efficient. An inefficient provider should not be insulated from the consequences of its inefficiency at the expense of other consumers in the name of universal service.

The requirement of competitive neutrality also immediately implies that universal service subsidies should be associated with customers and fully portable among service

providers. In other words, if a customer has, for example, an incremental economic cost of service of $60 per month, and if this level of cost triggers a subsidy payment, then that payment must be available to any local exchange company that serves that customer. It is imperative that subsidies be the "property" of consumers, not particular service providers.

Finally, economic principles of efficient pricing require that the levels of subsidies provided be equal to the difference between the relevant economic costs of serving the customer and the politically determined contribution required of the customer. Expanding on the example above, if the incremental economic cost of serving the customer is $60 per month, and it is decided that this customer should pay $20 per month for service, then the subsidy attached to this customer should be $40 per month. Any provider serving this customer in compliance with the TRA's definition of acceptable service would then be entitled to a $40 per month subsidy.

As this simple example illustrates, the correct calculation of subsidy levels requires calculation of incremental economic costs, as the FCC and Joint Board recognized. The relevant economic costs should be forward looking, long run costs determined using a best practice technology without reference to a rate of return type proceeding. The historical costs of the embedded network of the incumbent provider ordinarily do not equal economic costs, and should not be the basis for universal service subsidy support. The issue of embedded cost recovery is entirely separate from correct universal service mechanism design.

Q. WHAT ARE THE CONSEQUENCES IF THE TRA ADOPTS A UNIVERSAL SERVICE SUPPORT DISTRIBUTION SYSTEM THAT IS INCONSISTENT WITH THE REQUIREMENTS OF NARROW SUBSIDY TARGETS, COMPETITIVE NEUTRALITY, PORTABLE SUBSIDIES, AND ECONOMIC COST-BASED SUBSIDY LEVELS?

A. Even if the TRA raises the funds needed to support universal service goals in an efficient manner, a failure to distribute the proceeds efficiently will have several unfortunate consequences. Failure to target subsidies at those consumers for whom subsidies make a difference will squander resources to no legitimate public purpose. Lack of competitive neutrality will slow the emergence of credible local exchange competition. Lack of competition among local exchange companies for subsidy payments will deprive poor consumers and high cost households of any choice in service providers. Determining subsidy levels with reference to costs of embedded networks will both inflate the social price of universal service, and misuse the universal service ideal to reward inefficiency. By implementing a universal service mechanism that satisfies the requirements of economic efficiency, the TRA can fulfill its public interest obligations at a lower cost, and not sacrifice the benefits of efficient pricing and competition.

SECTION 4. CURRENT UNIVERSAL SERVICE MECHANISMS

Q. HOW IS UNIVERSAL SERVICE CURRENTLY FUNDED IN TENNESSEE?

A. As in many states, initiatives in Tennessee aimed at establishing high rates of subscription to the public switched network have followed several courses. Perhaps the most important component of the Tennessee experience is the introduction of deviations in prices away from costs of service in response to perceived variations in service "value" among subscribers. In particular, Tennessee local tariffs reflect a "value of service" adjustment that is loosely based on the number of subscribers a customer can call without paying long distance charges.

In addition, the general pricing structure in Tennessee exhibits common sorts of cross subsidization between business, high and low cost residential, and other lines. In general, averaging of rates and the introduction of differentials based on service classifications rather than costs are an attempt to limit basic local rates.

Carrier access charges also play a role in the current universal service effort. When carrier access charges are set in excess of the economic costs of access, an untargeted revenue stream is generated which can be used to support lower residential rates. This is achieved, of course, at the cost of substantial distortions to long distance prices and a corresponding misallocation of society's scarce resources. Of course, high carrier access charges have historically been justified as an attempt to retain local service rates at "low" levels.

Q. WHAT ELEMENTS OF THE CURRENT UNIVERSAL SERVICE EFFORT IN TENNESSEE ARE ECONOMICALLY EFFICIENT?

A. Tennessee offers both lifeline and linkup programs to assist low income consumers in purchasing telephone service. The linkup program assisted 4,356 users in 1995, while the lifeline program, which provides a monthly discount to qualifying households, assisted over 20,000 families in 1995.

Both the lifeline and linkup programs generally satisfy the requirements of economic efficiency. Both offer narrowly targeted assistance to those for whom such assistance may well make the difference between having a phone or not. Means testing rules for participation assure that the application of these benefits satisfies the social goals of universal service. Since such subsidies can easily be made portable among providers, programs of this kind can be made fully compatible with an efficient, competitive telecommunications environment.

Q. WHICH ASPECTS OF THE CURRENT UNIVERSAL SERVICE POLICY IN TENNESSEE ARE NOT EFFICIENT?

A. It is important to recognize that the term universal service has been widely construed in Tennessee and elsewhere to mean that basic local service should be inexpensive for everyone. This is quite a different thing than saying that subscription rates to the public switched network should be maximized. Even the notion of "affordability" does not

implicit subsidy built into the prices of local service does nothing to promote universal service. Subsidies enjoyed by consumers who would subscribe anyway are, from the public policy perspective, a waste. Second, price distortions required to support universal service type goals lead to potentially large misallocations of resources. Access charges levied on interexchange carriers are a case in point. Since access charges exceed the incremental costs of access, long distance prices are driven above economic costs, leading to under consumption of long distance services, potentially socially inefficient attempts to evade access charges by CAPs, and the like. Additionally, it is quite unclear how competition in local service markets can develop in an environment of substantial cross subsidies in local rates. Thus, Tennesseans implicitly spend too much on universal service, waste valuable resources subsidizing consumers who require no subsidies, and face a future of diminished competition in telecommunications.

Q. DOES NOT THE CURRENT UNIVERSAL SERVICE SYSTEM ACHIEVE THE GOAL OF AFFORDABLE RESIDENTIAL SERVICE IN TENNESSEE?

A. Yes, although this result is achieved at a potentially staggering cost. An analogy will explain this point. Suppose there is public concern over the ability of poor households to purchase sufficient foodstuffs to maintain their health. How should society respond to this problem? The current system of funding universal service goals is akin to passing a law requiring that certain foods be priced very low, and funding this initiative by heavily taxing other foods. Further, grocery stores serving poorer neighborhoods receive subsidy checks directly from the public authorities, bypassing the poor consumers entirely. Thus

the entire grocery marketplace is distorted in a costly attempt to assist a certain set of consumers who should, after all, be assisted directly. This analogy also highlights a very important consequence of the uncritical application of the affordability idea. In this example, a set of basic foodstuffs can be made sufficiently low cost as to meet some affordability criterion applied to that set of goods. However, this policy does not, and can not, meet affordability criteria applied to a broader set of foodstuffs, since those other products will be taxed to subsidize below cost pricing of the basic set of products. In the context of telecommunications, the affordability of basic residential service in, for example, high cost areas, is bought at the expense of diminished affordability of local service in low cost areas, long distance service in any area, etc.

In reality, the situation may be even worse that the above example suggests because local service regulation and a lack of local exchange competition may imply that the actual costs incurred in providing local service could well exceed the economic costs due either to inefficiencies in the embedded network, or to excess profits earned by incumbent local exchange companies.

SECTION 5. DESIGNING AN EFFICIENT UNIVERSAL SERVICE MECHANISM FOR TENNESSEE

Q. WHAT WOULD AN EFFICIENT UNIVERSAL SERVICE MECHANISM FOR TENNESSEE LOOK LIKE?

A. Any efficient mechanism adopted by the TRA would have the following properties. First, affordability criteria for all customers would be clearly articulated. Second, estimates of the deaveraged costs of elements needed to support a predetermined basket of services would be obtained from reliable cost models. Third, the degrees of subsidies needed, if any, for each customer type would be determined. In this way, the quantity of funding support required for Tennessee is calculated. Next, the revenue required to fund universal service would be raised by broad based, minimally distortive charges that were both competitively neutral and explicit. Those funds would support the required subsidies, and would be fully portable among service providers. Any provider serving a customer would be entitled to receive the subsidy, if any, due to that customer.

Q. HOW CAN THE TRA DETERMINE WHICH CUSTOMERS SHOULD RECEIVE UNIVERSAL SERVICE FUND SUBSIDIES?

A. It would be extremely helpful for the TRA to commission a study, funded by the telecommunications providers and conducted by an independent econometric consulting firm selected by the TRA, to examine the price sensitivity of network access decisions, and how this sensitivity varies with consumer income and local calling area characteristics. Such a study would provide direct guidance to determine which consumers require universal service support in order to subscribe to the network, and would be specific to conditions in Tennessee. Then the results of this analysis could be used to establish specific criteria for customer inclusion in the universal service program.

Such a study would also allow for far more exact calculation of the support required for universal service.

Q. WHAT ROLE WOULD CARRIER ACCESS CHARGES PLAY IN FUNDING AN EFFICIENT UNIVERSAL SERVICE MECHANISM?

A. Economic efficiency requires that carrier access charges be driven to costs. For several reasons, carrier access is a uniquely bad source of funds for universal service support. First, access is an input to the production of other services such as long distance and, as an input, is a poor target for taxation. Second, access charges are a key component in long distance charges, and increases in access charges influence long distance prices penny for penny. Thus, excessive access charges cause long distance prices to exceed the incremental economic costs of long distance to a substantial degree, resulting in allocative inefficiency in this important market. Third, in an attempt to evade high access charges, CAPs may offer access services that have higher economic costs than does the ILEC. Finally, high profits from carrier access create a strong incentive for the ILECs to resist entry by competitors into local network services.

Thus, any efficient system would not rely on carrier access fees as a source of funds. In fact, there is no economic justification whatsoever for selecting carrier access as a critical funding source for universal service. Broad-based SLCs, or revenue based taxes, on final services only, make far more economic sense as sources of support for universal service and affordability goals.

Q. HOW COULD EFFICIENT PRICING OF RESIDENTIAL LOCAL SERVICE BE COMPATIBLE WITH THE UNIVERSAL SERVICE AND AFFORDABILITY GOALS OF THE TRA?

A. The welfare of Tennessee consumers depends only on the net prices they pay for goods and services. Efficiency requires that gross prices be based on incremental economic costs. This done, it is then possible to target subsidies as needed to achieve either universal service or affordability goals established by the TRA. It is very important on practical grounds that prices be correct, and that subsidies, if any, be explicitly applied to prices only after prices are correctly determined.

Q. WHAT IMPLICATIONS WOULD EMERGING COMPETITION IN LOCAL SERVICE MARKETS HAVE FOR AN EFFICIENT UNIVERSAL SERVICE MECHANISM?

A. Unlike the current system, an efficient system for supporting universal service would not collapse in the face of local exchange services competition. Since an efficient system would allow any supplier who serves a customer to obtain the subsidies due to that customer, competition for subsidies would both minimize the social costs of the program and facilitate entry into the local telecommunications marketplace. Since the levels of subsidies would be determined with reference to the incremental economic costs of service, any firm with efficient operations could compete in the market without special disadvantage. Thus an efficient mechanism creates no additional impediment for meaningful local exchange services competition.

Q. HOW IS THE ISSUE OF EFFICIENT UNIVERSAL SERVICE SUPPORT RELATED TO PROBLEMS OF REVENUE ADEQUACY AND EMBEDDED COST RECOVERY FOR INCUMBENT PROVIDERS?

A. Those issues are logically separate problems. Should the TRA conclude that revenue adequacy problems will arise for some ILECs when and if efficient universal support mechanisms are enacted in Tennessee, then these issues should be addressed directly and explicitly, as problems of historical cost recovery are completely unrelated to the principles governing efficient universal service funding.

To the extent that revenue shortfalls arise under efficient support mechanisms, it is extremely important to ascertain the source of the problem. Economic principles require that support for affordability and universal service goals be based on forward looking, long run incremental economic costs. Thus, when these subsidies are calculated correctly, they allow for any efficient producer to earn normal profits. Firms that fail to do so are presumably inefficient. Whether these inefficiencies should be subsidized at the expense of Tennessee rate payers is a political, not an economic, question. In any event, universal service is a totally inappropriate mechanism to support embedded cost recovery for incumbent monopolies.

Q. SHOULD TENNESSEE ESTABLISH A DEFINITION OF UNIVERSAL SERVICE THAT INCLUDES MORE SERVICES THAT THOSE IDENTIFIED BY THE FCC?

A. The services identified by the FCC appear to encompass all of the basic calling requirements for universal service. The economic and social basis for support of the universal service goal is rooted in the ability of all the citizens of Tennessee to communicate widely with essential facilities. The FCC services appear to allow this.

Q. PLEASE SUMMARIZE THE RECOMMENDATIONS IN YOUR TESTIMONY AS THEY RELATE TO THE SPECIFIC PHASE 1 NON-COST ISSUES LIST AS DEVELOPED IN THIS PROCEEDING.

A. Specific issues list items addressed in my testimony, together with my recommendations to the TRA, are as follows.

Item 1 (b): Services included in the definition of universal service for Tennessee should not include services in addition to those outlined by the FCC.

Item 2: Carriers unable to offer some marginal service in the universal service "service list" should not be excluded from receiving USF payments. Further, carriers offering a bundled service that includes universal service services should be eligible for USF payments.

Item 6: Funding for universal service in Tennessee should be obtained from usage insensitive subscriber line charges broadly levied on all final users. Excess prices for inputs should not be used to fund universal service.

Item 7: Affordability is not identical to universal service. Affordability cannot be defined without reference to households' incomes. An independent

econometric study specific to Tennessee would allow the TRA to establish efficient and sensible criteria for consumer assistance programs.

Item 8: Subsidies are deviations, due to law or regulation, between prices at which transactions occur and those prices that would arise in a competitive market. Competitive forces ordinarily drive prices towards long run, forward looking incremental costs. Regulations which prevent cost-based pricing, or artificially preserve monopoly pricing, create subsidies. Rather than relying on large, untargeted, distortionary implicit subsidization to fund universal service goals, the TRA should establish explicit mechanisms, through SLCs or other similar means, to fund targeted subsidies to consumers who need assistance to purchase basic telephone services.

Item 10: The TRA should commission an econometric study conducted by an independent economic consulting firm selected by the TRA, to determine the price sensitivity of network access decisions by consumers in Tennessee, and how that sensitivity is affected by consumer income and local calling area characteristics. Information from such a study could be readily used to develop explicit formulae for calculating support needed to reach any subscription goal. When funding requirements are determined, explicit SLCs should be instituted to fund universal service obligations.

Item 11: Support for schools and libraries is an issue logically separate from universal service. However, the principles for efficiently funding these

social initiatives are the same as those outlined previously in my testimony.

Item 15: Access charges should not be used to fund universal service obligations. Access reform should be addressed in this proceeding.

SECTION 6. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. Universal service is a long-standing goal of telecommunications policy in this country. When universal service is defined as the maximization of subscription to the public switched network, it is clear that many of the policies common in U.S. telephone regulation are not really universal service initiatives, but instead should be thought of as social goals of some kind. Attempts to keep basic local service rates low for everyone, including wealthy households who would subscribe to the public network anyway, have minimal effects on subscription rates. Historically, these policies have been pursued by introducing substantial deviations in prices from relevant economic costs.

The methods by which universal service and affordability goals have been achieved in the past are both inefficient and unviable in a competitive environment. The introduction of large distortions in prices leads to large losses in social well-being due to gross misallocation of resources. Further, cross subsidies in the current tariff structure are incompatible with competition in local exchange services. In addition, the current system

is virtually opaque to analysis, so it is impossible to accurately gauge the cost effectiveness of the current policy.

Economic principles can assist the TRA in designing an efficient universal service/ affordability program that will (i) achieve the goals of the TRA at minimum cost; (ii) allow competition to develop in telecommunications in Tennessee; (iii) provide for fair and equitable treatment of all the concerned parties, including the public.

Economic analysis shows that the universal service/affordability policies adopted by the TRA should satisfy the following criteria.

(1) Required funding should be obtained by broadly-based charges on final product users.

(2) Funding mechanisms must be competitively neutral.

(3) Charges should not be levied in a highly distortionary manner. In particular, charges should not create large differences between prices and costs when consumers can be expected to react to price increases by substantially altering their decisions.

(4) Charges in support of universal service/affordability goals should be explicit.

(5) Subsidies for universal service support should be narrowly targeted.

(6) Subsidy disbursement should be competitively neutral. In particular, subsidies must be attached to customers, not suppliers, so that competition for subsidized customers is efficiently encouraged.

(7) The amounts of subsidies should be equal to the differences between clearly articulated reference levels of consumer contributions and the incremental economic costs of serving those particular consumers. Subsidies should not be based on the costs of embedded networks.

In light of the principles, an economically efficient mechanism for universal service and affordability support in Tennessee would have the following features. First, the subsidy standards to be applied should be explicitly stated. Second, reliable economic costs for providing services on a deaveraged basis should be obtained from a cost model utilizing a forward looking, long run, incremental cost methodology. Next, the levels of subsidy support should be determined. Funding can then be addressed. Broadly-based charges that minimize price distortions should be selected. Access charges should be adjusted to economic costs. Any telecommunications firm which provides the requisite services to a subsidized consumer should be entitled to the subsidy due that consumer. Further, the entire system should be scrutinized to insure that competitive neutrality is obtained.

Specifically, I recommend the following actions to the TRA.

(1) Adopt a narrow definition of those services that constitute universal service;

(2) Commission an independent econometric study for Tennessee which establishes the link between consumer network access price sensitivity and income and local calling area characteristics;

(3) Use the study results from (2) to develop explicit, objective criteria to determine which households should be eligible for subsidization;

(4) Set subsidies at the difference between the economic costs of service and targeted consumer contribution levels;

(5) Make all subsidies fully portable among telecommunications providers;

(6) Raise needed support through subscriber line charges on final services users or other nondistortionary means. Adjust carrier access to costs.

By implementing a universal service and affordability support mechanism consistent with these economic principles, the TRA can assure that the people of Tennessee receive the best of both worlds: affordable and universal service, and an efficient, competitive, low-cost telecommunications industry.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.