ORIGINAL

e-spire EXHIBIT____

Revised Testimony
of Marvin H. Kahn

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition by e-spire Communications, Inc. for Arbitration with BellSouth Telecommunications, Inc., pursuant to the Telecommunications Act of 1996	))))	Docket No. 981745-TP

REVISED DIRECT TESTIMONY OF DR. MARVIN H. KAHN

ON BEHALF OF

e-spire COMMUNICATIONS, INC.

FEBRUARY 4, 1999

Resubmitted on February 19, 1998 with cross-references to the Florida Issues List as it appears in e.spire's February 18, 1999 Issues List Letter.

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I. QUALIFICATIONS AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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

Q. PLEASE REVIEW YOUR BACKGROUND AND QUALIFICATIONS.

A. I am an economist specializing in public utility regulation, communications, energy, and antitrust analysis. My primary research interest is in the application of microeconomic principles to public policy issues in these areas. Over the last several years, my focus has turned to matters regarding the restructuring of the natural gas pipeline, electric and telephone industries and the regulation of firms in these industries operating simultaneously in competitive and non-competitive markets. Particular issues addressed include unbundling services, TELRIC analyses, the effects of imposing line of business restrictions on regulated firms, assessments of alternative regulatory structures, and matters regarding cost allocation and rate design.

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

I am a graduate of Ohio Northern University and hold a Ph.D. in Economics from Washington University in St. Louis. Further details of my experience and a complete list of testimonies is included as my Exhibit__(MHK-1).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony is organized in six sections, including this initial introductory section. In Section II, I discuss the economic principles of pricing and open access. Specifically, I explain why pricing at economic or forward-looking cost is necessary to achieve competitive benefits established as the goal of the Act. I also explain why the TSLRIC costing and pricing methodology adopted by the Commission should be applied to all interconnection arrangements and unbundled network elements. No distinction in pricing various interconnection arrangements and UNEs is appropriate if widespread consumer benefits remain the goal of the telecommunications policy. I note and describe why requiring all components of the ILEC network be made available in the form of unbundled network elements and through interconnection is consistent with the

underlying premise and goals of the Act. Doing so would result in CLECs having access to HICAP loops and interoffice transport, as well as to data (i.e., advanced communications services such as packet switching), and other network elements on an unbundled basis at rates based on economic cost. Finally, I explain why pricing parity is necessary to avoid price discrimination and price squeeze, as well as to provide widespread consumer benefits to telecommunications customers.

In Section III, I discuss issues particular to non-recurring charges. I explain why careful attention must be paid to cost development and pricing proposals for these charges, if only because this is an area of costing that is both new and different. In the two and one-half years since the passage of the Telecommunications Act, ILECs, CLECs and commissions have gained a great deal of knowledge and experience in estimating the forward-looking costs of the non-recurring activities associated with unbundled network elements. Recognizing that suggests that these cost estimates and rates should be reviewed and adjustments made as new information is gained. I explain the concerns with regard to both pricing and costing in Section III. I also explain why using TELRIC and establishing ceilings based on BellSouth's charges to its own customers for comparable activities are appropriate.

Section IV deals with collocation. The Commission established rates and charges for a number of collocation activities in its recent generic costing proceeding. Collocation requirements and pricing can act as barriers to entry. I explain why the Commission should establish alternatives which provide the CLECs the opportunity to minimize the time and costs involved with interconnection. This would include optional,

space-saving forms of collocation, such as cageless and cage sharing, and even alternatives to a collocation requirement, such as through the extended loop.

Section V deals with call transport and termination. This section deals with the appropriate method of establishing the costs and prices associated with this activity. I also discuss the potential differences in ILEC and CLEC costs and why rates based on e-spire's cost of this activity would be appropriate for reimbursing e-spire for calls terminated on e-spire's network. Section VI discusses the issue of frame relay UNEs.

Finally, Section VII deals with several remaining issues related to unbundled network elements, interconnection and pricing issues. For example, I discuss the appropriateness of establishing unbundled network elements associated with xDSL functions, packet switching functions and geographic deaveraging. In many instances, the information necessary to actually identify the appropriate TELRIC has not been made available by BellSouth. In such circumstances, the information will be sought during discovery and estimates will be provided to the Commission upon review and examination of those data.

II. COSTING AND PRICING PRINCIPLES

A. OVERVIEW

Q. WHAT ECONOMIC POLICY OBJECTIVES SHOULD GOVERN THE ESTABLISHMENT OF PRICES, TERMS AND CONDITIONS FOR INTERCONNECTION ARRANGEMENTS AND NETWORK ELEMENTS? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. The 1996 Act expressed the view that the national telecommunications' policy goals could be better met through the workings of a competitive market than through a regulated monopoly. The intent of the Act is that consumers benefit from an increase in competitive activity through lower retail prices and a diversity of high quality, advanced service options. This position is articulated in the preamble to the Act:

> To promote competition and reduce regulation in order to secure lower prices and higher quality service for American telecommunications consumers and encourage the rapid deployment of new technology.

Thus, the primary economic policy objective of the Act can be simply described as attaining a "competitive outcome."

The Act established a vehicle to allow meaningful and effective competition to develop in the markets for local exchange services. That vehicle is based on free and unfettered entry into the market for local services. This requires that the market be free of barriers to entry, which in turn, requires the availability of network resources (which incorporates unbundling to the extent needed by CLECs) and the appropriate pricing of these resources (which includes imputation requirements for non-discrimination) . The pricing of unbundled network elements is one of the critical components of any open market policy implementing the new Sections 251(c)(3) and 252(d)(1) of the Act. Since the market is not now competitive, regulatory oversight remains necessary to achieve this outcome. A key policy objective for the Commission should be to establish prices for all interconnection and network elements that are consistent with and support a competitive market outcome. That result can only be achieved through a pricing policy which includes prices based on economic cost and which prevents discrimination.

Q. WHAT ARE THE EFFICIENCY IMPLICATIONS ASSOCIATED WITH THE COMPETITIVE MARKET OUTCOME? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. In a competitive market, characterized by a sufficient number of buyers and sellers so that no one market participant can dictate the price or quantity available, the market yields important efficiencies. These efficiencies fall into two categories: operational and allocative efficiencies.

Operational efficiency results when the lowest cost method of production is utilized to produce the good or service in question. Market competition promotes this result. For instance, new entrants into the market are not required to adopt the same operating methods or technologies used by the incumbent. Instead, they are able to adopt the lowest cost method of production. With their lower costs, these firms will tend to lower the price charged in order to gain market share from higher-cost incumbents. Other market participants are then forced to reduce their prices, or face the loss of market share. As new entrants increase supply, inefficient producers are forced to either become more efficient or lose market share or possibly cease production altogether. The result is lower industry costs and lower prices to consumers.

Allocative efficiency results when resources are channeled into the production of those goods and services that are valued more highly than the resources necessary for production. As long as the market price covers the cost to produce an additional unit of output, that unit of output would be produced in a competitive market. Since society has

scarce resources, it is in society's interest to have these resources used in a way that maximizes the value to consumers of what is produced with those limited resources.

Q. WHAT ROLE DOES PRICING PLAY IN ACHIEVING THESE RESULTS AND THE OBJECTIVES OF THE ACT? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. Pricing sends signals to buyers and sellers and affects the decisions of both. In a most general sense, pricing plays two roles: cost compensation and rationing of limited quantities.[1]

Sellers turn to price signals to make decisions with regard to market entry and production alternatives. By comparing prices to their own costs, producers determine which markets and services are profitable, and thus make entry (or exit) decisions. In addition, price signals are important inputs into "make-buy" decisions. That is, these signals are key in determining whether entry will be "facilities based," using the CLECs own facilities with or without UNEs, or whether entry will instead involve resale.

Price signals are used by buyers to select among alternative goods and services, and among alternative service providers. Since both producers and buyers react to pricing, the greatest opportunity to realize the allocative and operational efficiencies discussed above exists if prices reflect the underlying cost. Thus, to promote the competitive outcome, prices should be cost based. With cost based prices, the most efficient producers are rewarded and are ensured adequate compensation for the goods and services produced. At the same time, consumers are asked to pay the full additional cost

[1]For a more general discussion of the role of prices in the regulated model, see Bonbright, Principles of Public Utility Rates, Columbia (1961), Chapter VI.

of the resources used to produce the additional output. By sending efficient price signals, prices that are cost-based and non-discriminatory promote the goals of the Act.

B. TELRIC

Q. WHAT IS THE APPROPRIATE METHODOLOGY FOR DEVELOPING RATES FOR INTERCONNECTION AND UNBUNDLED ELEMENTS? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. Decisions in a competitive market are made based on forward-looking costs, not historic costs. Thus, the appropriate cost methodology to be used in conjunction with a policy intending to promote efficient pricing, efficient production and the competitive outcome is one which focuses on economic, forward-looking costs. The TELRIC/TSLRIC methodology which has been adopted by the FCC and relied upon by this Commission in setting prices for interconnection and network elements is such an approach.

Q. WHAT IS THE DIFFERENCE BETWEEN THE TELRIC METHODOLOGY AS PROPOSED BY THE FCC AND THE TSLRIC METHODOLOGY ADOPTED BY THIS COMMISSION? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. TELRIC and TSLRIC are both measures of average incremental costs; both are based on the same general costing logic. In fact, the FCC refers to TELRIC as the application of TSLRIC principles to network elements and BellSouth uses its TELRIC model and TELRIC Calculator to produce both TELRIC and TSLRIC estimates. These methods do differ, however, in two broad respects.

First, a TSLRIC focuses initially on services, whereas a TELRIC focuses on network elements. It is not unusual for network elements to be used to provide multiple services.

Thus, there may be a number of costs and expenses that are directly attributable to a network element, but are shared among the services using these elements. As such, there are a number of costs and expenses which are considered direct in a TELRIC, but are considered shared in a TSLRIC.

Second, TSLRIC typically examines costs of services in the retail or end-user market, whereas, TELRIC focuses on costs to service providers, i.e., in the "wholesale" market. As such, there are certain retail-related costs and expenses that are properly included in a TSLRIC that should be excluded from a TELRIC.

Since the differences between a TSLRIC and a TELRIC deal more with application than concept, I will use the terms TSLRIC and TELRIC interchangeably in what follows.

Q. WHY DOES TELRIC PROVIDE A REASONABLE MEASURE OF COSTS FOR PRICING PURPOSES? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. Using TELRIC will result in prices for network elements which reflect forward-looking, efficiently incurred costs. As noted, it is appropriate that prices be based on forward-looking costing methodologies. Efficient decisions regarding market entry, exit and expansion are based on forward-looking comparisons of expected revenues and expected costs. To ensure that price signals are correct and that market entry is efficient, forward-looking costs should be used.

The appropriate cost study is also *long run in nature, i.e.*, it is based on a time horizon long enough to allow entry or exit to occur and/or for substantial changes in capacity or technology to occur. Costs affecting entry, exit, capacity expansion or technology adoption decisions are forward-looking and variable. A properly structured

cost measure or cost study should, therefore, include forward-looking capital costs and maintenance expenses, and the preponderance of all other expenses should be viewed as variable, *i.e.*, shared and common costs should amount to a relatively small fraction of total costs.

The relevant increment of demand to estimate interconnection or network element costs is the *total demand by all users*, including the incumbent. Hence, the "total service" or "total element" designation. ILECs realize economies of scale. Focusing on any volume of output smaller than the total market may result in higher estimates of per unit costs than are actually realized.

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

Similarly, the study should capture all costs associated or attributable to that network element, but only those so attributable. For instance, the cost of an unbundled voice-grade loop should be based on a network designed for narrowband, voice-grade services. Costs not necessary for the provision of this grade of service should not be included in the cost study.

The TELRIC/TSLRIC model is a method that adheres to these principles and, thus, promotes the competitive outcome.

Q. HAS BELLSOUTH PROVIDED A CURRENT, RELIABLE TELRIC? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. No. As indicated, it is my understanding that BellSouth will file new TELRIC studies on February 4, 1999; and I plan to provide recommendations based on the BellSouth's TELRIC models once those are available and can be evaluated.

Q. ABSENT COST ESTIMATES BASED ON THE BELLSOUTH TELRIC MODEL, ARE THERE OTHER APPROACHES AVAILABLE TO THE COMMISSION TO SET COST-BASED RATES FOR INTERCONNECTION AND UNES? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. A primary objective and result of the TELRIC estimate is to determine a rate that is cost-based. Absent a reliable current TELRIC, one method of approximating cost is to look at the lowest rate or charge currently offered by the RBOC for a particular service, activity or functionality. Under the assumption that current retail rates exist which include that functionality or activity and that those charges cover the cost of the functionality, the lowest rate offered for a service including the particular function or activity should provide an approximation of the forward-looking, efficient cost (including a reasonable mark-up for shared and common costs).

Q. PLEASE EXPLAIN WHY THE LOWEST RATE OFFERED WILL BE AN APPROXIMATION OF A TELRIC-BASED COST. [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. The desirable property of a TELRIC cost is that it yields an approximation of the rate(s) that would prevail in a competitive market. The benefits of the workings of a competitive

market being the ultimate goal, the interim methodology for selecting charges for UNEs and interconnection services should lead as close to that cost-based solution as possible. That is, as close to a forward-looking efficient cost as possible, including a reasonable mark-up for shared and common.

ILECs offer service under standard tariffs, on an individual case basis and under other types of arrangements (e.g., a price cap regulation). Assuming retail rates exist for services or functionalities that are comparable to the UNE, one can look to the ILEC's charges for that service or functionality for a proxy to the TELRIC approach. Specifically, once the comparable retail rates are identified, the lowest rate offered for that service is the one most likely to approximate the efficient, forward-looking characteristics of the TELRIC. Further adjustments may be necessary to eliminate the costs of retail functions that may be embedded in the retail rate chosen. Similarly, the retail rate is likely to contain costs for other functionalities, in addition to the retail functions just mentioned, since retail services are unlikely to be unbundled to the same extent as the UNEs requested. To the extent the functionality is offered on an individual case basis and faces some competition, the retail tariff will also overstate the cost proxy.

Assuming price differences are market related, and not cost based, it is the lowest retail rate which will more closely approximate a TELRIC and, thus, a competitive, result.[2]

Q. ARE YOU FAMILIAR WITH e-spire's PROPOSAL FOR INTERIM CHARGES? [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

[2]As I noted in my discussion of deaveraging, cost-based differences exist for loops; but few other elements have been found to exhibit this geographic cost differential.

A. Yes, I am. Given the expedited nature of this proceeding and the lack of BellSouth TELRIC results, this is a reasonable interim approach, consistent with the approach which I have just described.

C. ACCESS TO UNBUNDLED ELEMENTS AND INTERCONNECTION

Q. YOU INDICATED THAT BOTH PRICING AND ACCESS WERE IMPORTANT IN ACHIEVING THE GOALS OF THE ACT. PLEASE SUMMARIZE THE ROLE OF ADEQUATE ACCESS TO UNBUNDLED ELEMENTS AND INTERCONNECTION IN ACHIEVING THOSE GOALS. [ISSUES 2, 3, 4, 5, 6, 7, 9, 12, 20]

A. The Act calls for the market for telecommunications services to be transformed from one of regulated monopoly to one of market competition. The approach adopted by Congress accomplishes this through a policy of open and expedited entry, rather than through divestiture forced upon the incumbent LECs. Thus, the success of this transition to competition rests critically on whether commissions are able to remove artificial barriers to entry into these markets. The paradigm laid out in the Act to accomplish this has two critical components: pricing and access (availability). The pricing concerns were discussed earlier. Adequate access requires, as I noted above, that all segments of the ILEC network be open for entry, through the availability of unbundled network elements and interconnection arrangements provided at TELRIC/TSLRIC cost and/or through availability of services for resale. Limitations to access, conditioned on requirements which artificially and unnecessarily increase the cost to CLECs will deter or even eliminate competition.

> nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms and conditions that are just, reasonable and nondiscriminatory in accordance with ... this section and section 252.[4]

Therefore, incumbent LECs have a duty to provide nondiscriminatory access to equipment and facilities needed to provide voice or advanced services to the extent technically possible, and at rates based on forward-looking costs.

Q. DOES THE RECENT 706 ORDER ADDRESS UNBUNDLING? [ISSUES 1, 2, 3, 4, 6, 12, 20]

A. Yes, it does. The FCC's recent ruling in the 706 Order concluded that efficient entry and the competitive outcome require the widespread unbundling of network elements. Specifically, the FCC found that the facilities used in the provision of all advanced services, including packet-switched services and collocation are subject to the unbundling requirements of Section 251(c).[5] In that Order, the FCC ruled that ILECs must offer unbundled access to the "equipment used in the provision of advanced services." This ruling is subject only to consideration of technical feasibility.[6]

Q. WHAT IS THE RESULT OF THE SUPREME COURT'S DECISION AS IT RELATES TO UNBUNDLING? [ISSUES 1, 2, 3, 4, 6, 12, 20]

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[4] Section 251(c)(3).
[5] 706 Order ¶57 (... all equipment and facilities used in the provision of advanced services are "network elements" as defined by Section 153(29).) "Network elements" is defined to include any facility or equipment used to provide a "telecommunications service," and includes any "features, functions and capabilities that are provided by means of such facility or equipment." 706 Order, ¶50. ¶52 clarifies that this applies to loops capable of transporting high speed digital signals, and ¶57 clarifies that it applies to "advanced services" and the facilities and equipment used to provide advanced services.
[6] 706 Order, ¶11.

A. The Supreme Court recently issued its ruling on the Eighth Circuit's decision on the FCC's First Report and Order on Local Competition (Docket 96-98).[7] Technically, this decision vacates 47 CFR §51.319 (Rule 319) which is the section of the FCC rules listing the elements which, at minimum, must be provided. The Supreme Court did not rule on the propriety of the specific elements in Rule 319, but found that the FCC must establish a "standard" as the basis for determining which elements must be m. . available. This standard according to the Supreme Court decision must

> ... tak[e] into account the objectives of the Act and giving some substance to the "necessary" and "impair" requirements.[8]

The total impact of this standard on the FCC's list of minimum elements remains to be seen. However, the above discussion in this Section II with respect to unbundling employs exactly the objectives of the Act and, explicitly takes into consideration the "necessary" and "impair" requirements discussed by the Supreme Court.

2 Section 251(d)(2) of the Act defines the "necessary" and "impair" standard of access to network elements.

> In determining what network elements should be made available for purposes of subsection (c)(3), the Commission shall consider, at a minimum, whether --
> (A) access to such network elements as are proprietary in nature is necessary;
> (B) The failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer. §2519(d)(2)

The necessary/impairment standard I have used relates to the impairment of competition (through removal of entry barriers), not the impairment of a CLECs ability to earn above

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[7] Opinion of the Court, op. cit.
[8] Ibid., p. 27

normal profits. This is consistent with the Supreme Court ruling. The Court decision does not impose an antitrust-type "essential facilities" standard, but is clearly supportive of an objective or standard defined in terms of the impact on entry barriers. Section 253 of the Act [Removal Of Entry Barriers], which deals primarily with state and local requirements, also is supportive of using a standard which considers the impact on entry barriers. Removal of entry barriers, like cost-based pricing, is synonymous with promoting competition.

Q. SHOULD BELLSOUTH BE REQUIRED, FOR EXAMPLE, TO PROVIDE FOUR-WIRE DS0 LOOPS AND DS3, OC3, OC12 OR OC48 LOOPS AS UNBUNDLED ELEMENTS? [ISSUES 1, 2]

A. Yes. Unless BellSouth can demonstrate a technical reason why it cannot provide an element, including any particular loop, these loops should be available at cost-based rates. As I indicated, from an economic policy perspective, fulfilling the goals of the Act requires that *all* segments of the ILEC network be available at economically based prices and at non-discriminatory terms and conditions. What I have referred to as adequate access or availability does not exclude certain loops, or interconnection associated with certain types of service, or unbundled transport, or any other necessary element/function/service simply because (a) they have not been offered before or, (b) because the ILEC has not yet completed cost studies or (c) because the loop, UNE or function is associated with an advanced service rather than a voice grade service. Public policy considerations, and not the ILEC's commercial interests, should be the basis of decisions on the extent of unbundling.

In addition, attempts to exclude any UNE, service or function is inconsistent with the Act and the 706 Order (subject only "technically feasible" constraints). The successful elimination of entry barriers, requires access to all such elements is necessary and must be available at forward-looking cost based rates. The loop elements listed above, as well as the other elements sought by e·spire and interconnection are not constrained by technical feasibility.

D. IMPUTATION

Q. WHAT ARE THE ECONOMIC CONSEQUENCES OF DISCRIMINATION? [ISSUES 1, 2, 3, 6, 12, 20]

A. Discrimination provides an advantage to one or a group of market participants. For instance, if the ILEC charged the CLECs amounts that differed from the costs incurred or if the ILEC or provides network elements under terms and conditions dissimilar to those it experiences in its own operations, barriers to entry may result as entry will be more costly to or more difficult for the CLEC. By requiring that prices (as well as terms and conditions) for network elements and interconnection are non-discriminatory, the relative efficiencies of the market participants -- and not the prices charged -- will determine market performance, market share and the market outcome.

If prices are discriminatory, an anticompetitive price squeeze may result. Price squeeze occurs when the ILEC prices an input that is used by a CLEC to provide a service (in competition with the ILEC) at a level that puts the CLEC at an automatic disadvantage and, thus, effectively bars entry. For instance, if the price BellSouth charges a CLEC for an unbundled network element is higher then the price BellSouth

charges its own end user for the retail service which uses that UNE, a price squeeze results. The CLEC can be as efficient as, or even more efficient than, BellSouth, and yet because of the price charged for the UNE, the CLEC cannot expect to operate in this market and fully recover its costs. Entry is blocked by the price squeeze. Imputation is a policy that addresses needed to deal with the price squeeze and cross-subsidy issues which inevitably arise in an industry where one firm has market power in the wholesale market and competes with others in the retail or end use market. An example of this is discussed by Mr. Stipe in his testimony regarding the problems created when BellSouth forced e·spire to incur the added expense of the SL2 loop (pay non-cost-based premiums) in order to obtain comparable quality, i.e., in order to provide service that competes with BellSouth.

Q. HOW CAN THE COMMISSION ADDRESS THIS MATTER? [ISSUES 2, 3, 6, 12, 20]

A. The Commission can address this matter by establishing an imputation requirement. The ILEC has control over certain input facilities and functions (which the ILEC also uses in the provision of its own retail services) needed by a CLEC to provide telecommunications services. It is this control over "bottleneck" or "essential" facilities and functions which creates potentially non-competitive problems and which creates the potential for anti-competitive problems.

Q. WOULD YOU PLEASE EXPLAIN? [ISSUES 2, 3, 6, 12, 20]

A. Yes. When the ILEC has market power over the services/functions required by the CLEC, and the ILEC competes with the CLEC to provide the same retail service, there is

an incentive, facilitated and disguised by the bundling involved, to engage in price discrimination. If the ILEC can effectively charge competitors a higher price for these functions than it incurs itself, the ILEC will have a market advantage of the type specifically proscribed by the Act. Under the Act, ILECs must make these functions or services available at rates that are just, reasonable and non-discriminatory. Charging CLECs costs which exceed the costs the ILEC in essence charges itself, clearly violates the non-discrimination provision of the Act. Other non-competitive activities are possible as well. For example, the ILEC may use high prices for functions over which it has market power to subsidize its services that are subject to more competitive forces.

Importantly, if the ILEC's cost of providing these functions is lower than the charge to competitors (i.e., the rate CLECs must pay) for the identical function, the ILEC can charge a lower end-use rate (than its competitors) for any service that uses that function. That is, the ILEC can beat the CLEC's price even when the CLEC is the technically more efficient provider. And, competitive entry does not occur, competition is impaired, and the benefits of competition envisioned by Congress in passing the Act will not occur.

Finally, competitive neutrality implies not only that rates be cost based and non-discriminatory, but that the rates not negatively affect the ability of CLECs to compete with the ILEC or other carriers. A rate charged which is not based on economic cost, or which exceeds the rate an ILEC would charge itself and its own customer for the same function is not competitively neutral and will discourage efficient entry.

Q. PLEASE EXPLAIN HOW AN IMPUTATION POLICY CAN BE IMPLEMENTED. [ISSUES 2, 3, 6, 12, 20]

A. One method of implementing an imputation policy would be to require that BellSouth charge a CLEC no more than it "charges itself" for a similar element, service or functionality.

To help understand how an imputation policy would be implemented, consider the following hypothetical. BellSouth provisions a particular service utilizing two cost components, which I simply call A and B. A is a network element over which BellSouth has extensive market control, and for which an unbundled network element must be made available. Component B is made up of a variety of activities and expenses incurred by BellSouth in providing the final service, but which are not subject to unbundling or necessarily made available in the form of an unbundled network element. An imputation policy will require BellSouth to impose upon itself a *cost for pricing purposes* equal to the sum of the TELRIC for component A[9] and the TSLRIC for component B. This is consistent with the non-discriminatory pricing and efficiency conditions described above will result.

Q. HOW WOULD SUCH IMPUTATION STANDARDS ADDRESS THE CONCERNS YOU EXPRESSED ABOVE? [ISSUES 2, 3, 12, 16, 20]

A. This policy has two important implications. First, it results in rates that are non-discriminatory. Both BellSouth and the CLECs would be subject to the same prices for UNEs (based on the ILEC's costs). Second, it would promote efficiency in the market for communications services. With BellSouth and the CLECs being charged the same

[9]The imputed amount should be the price for the UNE in question, Component A in this instance. The assumption is that the UNE price is equal to the TELRIC. TELRIC or TSLRIC includes a reasonable profit and thus meets the pricing requirements of Section 252(d) of the Act.

price for similar elements or functionalities (i.e., for UNEs), it would be the relative efficiencies of the two organizations in the more competitive aspects of the their operations that would determine the least cost producer. Similarly, with this policy, the least cost producer would be able to establish a lower price, capture a larger market share and/or earn higher profits. Moreover, if BellSouth is forced to charge itself and the CLEC the same price for similar functionalities, BellSouth has every incentive to improve the efficiency of the remaining components in order to ensure that it can compete.

III. NRCs

Q. WHAT ARE NON-RECURRING CHARGES? [ISSUES 2, 3, 12, 20]

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

Q. WOULD YOU PLEASE SUMMARIZE THE CONSIDERATIONS FOR ESTABLISHING CHARGES FOR NON-RECURRING ACTIVITIES? [ISSUES 2, 3, 12, 20]

A. Yes. There are several considerations that are necessary in establishing prices for non-recurring charges for unbundled network elements.

First, non-recurring charges can serve as a barrier to entry. These are one-time, up-front charges that are incurred before service or the underlying element is provided. In that regard, an excessive non-recurring charge may have a greater deterrence than does an excessive recurring charge. To allow Bell South the opportunity to fully recover all costs incurred, but to prevent anticompetitive pricing (i.e., entry barriers), charges for non-recurring activities should be based on the same standards as are charges for recurring activities. NRCs should be forward-looking, cost based, and include recovery of a reasonable overhead, as discussed in Section IIB.

Another consideration involves the potential for discriminatory pricing (even at alleged cost based charges), and how the market can be used to maintain a benchmark for comparison. That is, the Commission should consider establishing a ceiling for non-recurring charges to CLECs associated with unbundled network elements at the level which would apply if BellSouth were providing this service to a customer which it serves directly, less any retail costs which the ILEC does not incur in serving the CLEC instead of a retail end user. This ceiling serves two purposes. One, it provides a reasonableness check on any cost study provided by BellSouth in this proceeding. Two, it ensures that the non-recurring charges established are truly non-discriminatory. As discussed above with regard to price squeeze, if BellSouth is allowed to establish a charge to its competitors that is allegedly cost based, yet exceeds the costs that it would incur in providing service to itself, the goal of fostering competition is thwarted. More specifically, the ceiling should be set at the charge established by the Commission for

non-recurring activities associated with end-use services, less the wholesale discount established by the Commission.

Q. THE COMMISSION HAS RECENTLY ADDRESSED NON-RECURRING CHARGES FOR THE UNES CURRENTLY IN PLACE. WHY IN YOUR OPINION ARE THOSE CHARGES NOT APPROPRIATE FOR A NEW CONTRACT, AS e-spire IS SEEKING HERE? [ISSUES 2, 3, 12, 20]

A. When the Commission set NRCs, it based its decision on the best cost information available at that time. In some instances, cost data may remain reasonably accurate over the next one, two or more years; in others, they may not. The available data suggest that cost information regarding many of the NRCs is likely to change materially over the near term. The NRC for loop elements is a clear case in point. BellSouth's cost estimates are based in part on using its legacy system for taking service orders for loop UNEs and provisioning these UNEs. BellSouth has suggested that the unbundled loop provisioning process bears resemblance to that of a design circuit -- e.g., a special access line -- rather than that of a POTS loop. It is also my understanding that BellSouth expects its estimate of the difference in the cost of providing an unbundled loop and a POTS loop to diminish with time. Thus the cost estimate for NRCs can be expected to change materially over a period as short as one year. Cost estimates set for contract rates expected to last into the next one, two or more years, should be reviewed to ensure that they are consistent with what is currently the best information available.

Q. ILECs HAVE ASSERTED THAT IT IS LESS COSTLY TO PROVIDE SERVICE TO THEMSELVES THAN TO PROVIDE SERVICE TO

COMPETITORS. SHOULD THAT BE CONSIDERED WHEN ESTABLISHING NRCS? [ISSUES 2, 3, 12, 20]

A. No. There are both efficiency and equity considerations that suggest that the costs, net of ILEC retail marketing activities, of performing a non-recurring activity should be considered the same, whether undertaken on behalf of the ILEC or a CLEC.

First, the approximate costing methodology is a total element long run incremental cost (TELRIC). TELRIC is the forward-looking per unit incremental cost of providing the entire volume of service, net of ILEC retail marketing activities, assuming the most efficient technology currently available. A single TELRIC is established for unbundled loops or ports, for instance, irrespective of whether the element is to be used by the ILEC or sold to a CLEC, or whether the end user is a residence or business customer. Similarly, the TELRIC based cost for a non-recurring activity should be the same irrespective of the service provider or of the end user.

Second, and somewhat related, is that a properly structured TELRIC presumes that the ILEC is separated into two operating divisions, a wholesale element provider and a retail service provider. The non-recurring charge is that which would be levied by the wholesale element provider to any and all retail service providers, irrespective of whether that retail service provider were the ILEC or a CLEC. The same costs and the same cost based rates should apply to both.

Third, even if one accepts arguendo that the cost of the ILEC providing service to itself is less than that of providing service to a CLEC, allowing the ILEC to take advantage of its monopoly position in establishing costs and rates is clearly inconsistent

with the competitive goal established by the Telecommunications Act. The result would be an unwarranted competitive advantage realized by the ILEC, thwarting the non-discriminatory, pro-competitive goals of the Act.

In short, there are both efficiency and equity considerations which argue strongly for comparability in establishing NRCs associated with ILEC and CLEC activities.

Q. WHAT IS YOUR RECOMMENDATION FOR THE NRCS TO THE CLECS? [ISSUES 2, 3, 12, 20]

A. As noted, NRCs should be based on the efficiently incurred, forward-looking expenses of these functions. This requirement leads to two considerations in setting NRCs for UNEs.

First, the cost estimates should be reviewed with some frequency. Providing UNEs is an activity never before performed by ILECs. Greater experience should result in improved capability in measuring and capturing the relevant costs, and in the efficiency with which the provisioning occurs. Further, reliance on legacy systems will diminish over the next few years. Cost estimates used to set charges for existing contracts should not be used to set rates for contracts expected to last one, two and more years into the future.

Second, for NRCs to be non-discriminatory, they should be capped at the rate charged by BellSouth for comparable end use services, less the appropriate avoided cost adjustment.[10] As an example, the NRC for a POTS loop UNE should not be higher than the NRC for a retail business POTS loop.

[10]An alternative is to set the NRC for the end use service at the sum of the relevant UNEs plus the appropriate retail costs excluded form the measure of UNE recurring costs.

Q. IS THERE A REASONABLE TELRIC-BASED COST ESTIMATE FOR THE NRCS AT ISSUE IN THIS PROCEEDING? [ISSUES 2, 3, 12, 20]

A. Not at this time. Although TELRIC-based data has been developed in the past for selected items, this did not include all of the elements and interconnection services needed by CLECs. It is my understanding that BellSouth will be filing updated or revised TELRIC studies very soon. However, at this time I have not seen those studies. I plan to review and, if possible, use those studies to make recommendations for NRCs once the studies are available.

IV. COLLOCATION

Q. PLEASE EXPLAIN WHAT IS MEANT BY CO' LOCATION? [ISSUES 7, 8, 9]

A. Collocation involves the placement and connection of one telecommunications carrier's equipment (located on the premises of another telecommunication carrier) to the equipment (network) of the host carrier. Collocation can be physical or virtual.

Q. WHAT ARE THE COLLOCATION REQUIREMENTS OF THE ACT? [ISSUES 7, 8, 9]

A. Section 251(c)(6) of the Act addresses unbundling. That portion of the statute provides

> ... for the physical collocation of equipment necessary for interconnection or access to unbundled network elements at the premises of the local exchange carrier, except that the carrier may provide for virtual collocation if the local exchange carrier demonstrates to the State commission that physical collocation is not practical for technical reasons or because of space limitations.

Q. DID THE FCC ADDRESS COLLOCATION? [ISSUES 7, 8, 9]

A. Yes. Section 251(c)(6)[11] of the Act requires ILECs to provide for collocation on rates, terms and conditions that are just, reasonable, and non-discriminatory.[12] The FCC adopted national rules for physical and virtual collocation.[13] The FCC found that specific rules defining minimum requirements for non-discriminatory collocation arrangements were necessary:

> Our experience in the *Expanded Interconnection* proceeding indicates that incumbent LECs have an economic incentive to interpret regulatory ambiguities to delay entry by new competitors. We and the states should therefore adopt, to the extent possible, specific and detailed collocation rules.[14]

The FCC's findings were consistent with the incentives discussed above for ILECs to increase the costs of competing providers, if possible.

The FCC subsequently acknowledged collocation as a potential entry barrier to CLECs in the provision of advanced services (as well as local voice services).

> One of the major barriers facing new entrants that seek to provide advanced services on a facilities basis is the lack of collocation space in many LEC central offices ... Because incumbent LECs have the incentive and capability to impede competition by reducing the amount of space available for a collocation by competitors, the Commission, in the Local Competition Order, required incumbent LECs that deny requests for physical collocation on the basis of space limitations to provide the state commission with detailed floor plans or diagrams of their premises.[15]
>
> ... we believe that incumbent LECs have a statutory obligation to offer cost efficient and flexible collocation arrangements.[16]

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[11] *Additional Obligations of Incumbent Local Exchange Carriers.*
[12] This is the same language used in the Act for unbundled access and interconnection.
[13] First Report and Order, CC Docket No. 96-98, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, ¶551 and ¶¶653-772, August 8, 1996.
[14] Ibid., ¶558.
[15] 706 Order (Advanced Services Order), ¶145.
[16] Ibid., ¶64.

As I have discussed, the policy approach should be one which ensures that costs are

Q. HOW DOES COLLOCATION POLICY RELATE TO THE DEVELOPMENT OF LOCAL COMPETITION? [ISSUES 7, 8, 9]

A. The terms and conditions, including pricing, of collocation are critical to the development of local competition. For competition to successfully emerge, it is necessary that CLECs be able to interconnect with the incumbent's network to exchange traffic. As noted, the Act establishes a framework for access to the ILECs' facilities on an unbundled network element basis. For most CLECs, collocation is necessary to access unbundled network elements most efficiently, and should be made available under rates, terms and conditions which do not create barriers to entry.

Q. HOW CAN COLLOCATION TERMS BE A BARRIER TO ENTRY? [ISSUES 7, 8, 9]

A. From an economic perspective, collocation is no different than an unbundled network element, as it allows the entrant necessary access to an essential portion of the incumbent's network. As discussed in Section II above with respect to unbundling, pricing or inadequate access can become an artificial barrier to entry. Whether the price charged for this facility is excessive, or the CLEC is required to purchase a component of collocation that is not necessary, entry will be impaired as the CLEC will be placed at an economic disadvantage. Competition will be harmed as a barrier to competitive entry will result.

Collocation options can help eliminate barriers and promote efficient market entry. In a competitive market, firms can be expected to seek alternative methods of achieving

collocation to reduce the cost, or of finding lower cost alternatives to collocation. Not all firms will find the same collocation options attractive. The Commission should ensure that a number of collocation options be available, subject to technical feasibility constraints. Otherwise, the lack of availability (or lack of flexibility) creates barriers to entry.

The collocation policy should recognize that collocation space is finite and, thus, can be a potential barrier. Increasing central office space may be costly. An alternative is to pursue policies that minimize the space required for collocation. Cageless collocation, sharing of space and subleasing[17] allow a scare resource (collocation space) to be utilized by a greater number of CLECs. A second alternative is to allow reasonable offsite collocation which expands the supply of the limited resource. "Closet POPs" in neighboring buildings are one such example.

Similarly, requiring ILECs to provide the CLEC with an extended link reduces the entry barrier created by unavailable or uneconomic collocation. This approach also prevents ILECs from forcing CLECs to purchase expensive collocation unnecessarily.

Another rather subtle option is to allow CLECs to self-provision collocation. Among other things, this provides a market-based reality check on the charges levied by the ILEC.

Q. WOULD YOU PLEASE EXPLAIN WHAT IS MEANT AN EXTENDED LOOP? [ISSUES 1, 2]

[17]As Mr. Falvey explains in his testimony, e·spire and other CLECs have been required to take minimums of 100 square feet of collocation space. This can be a penalty to a CLEC which does not need this amount of space, unless sharing and subleasing are allowed.

A. Yes. An Extended Loop consists of a loop, multiplexing and the transport from the BellSouth end office serving an end-user to the CLEC switch; and allows CLECs access to customers served from a BellSouth end office in situations where the CLEC either cannot collocate (due, for example, to space limitations or delays in obtaining the necessary provisioning from the ILEC), or where it is not yet financially possible for the CLEC to have a physical collocation in all end offices. It takes time as well as capital for CLECs to expand their facilities. Thus, even where it is the intent of the CLEC to eventually collocate in a given set of end offices, it cannot be everywhere at once. The CLEC must prioritize and work with the ILEC in moving toward that goal. In the meantime, a reasonable alternative to that collocation must be available if competition is to progress.

Q. IS AN UNBUNDLED EXTENDED LINK TECHNICALLY FEASIBLE? [ISSUES 1, 2]

A. Yes. Extended links are currently used by ILECs, including BellSouth. There is no basis, technical or economic, why the ILECs should not provide extended links at cost-based rates.

Q. WHAT OTHER CONCERNS DO YOU HAVE WITH BELLSOUTH'S PROPOSED CHANGES FOR COLLOCATION? [ISSUE 7]

A. My remaining concerns involve the pricing/costing methodology. This Commission should ensure that BellSouth's charges for collocation are cost based and procompetitive. For instance:

(1) Care must be taken to ensure that there not be double recovery of costs, once through UNEs, then again through collocation charges;

(2) The method by which shared costs of collocation are included in collocation charges should be non-discriminatory;

(3) Costs should be recovered in a manner consistent with how they are incurred. Doing otherwise runs the risk of inefficient price signals and of the overrecovery of costs; additionally, there is temptation to try to recover through associated non-recurring costs any recurring costs the Company may not be allowed to recover in other UNE rates;

(4) Anticompetitive allocation of overhead costs should be avoided;

(5) And, costs associated with items that the entrant does not need in order to provide service, and does not want, should not be included.

Q. WHAT IS YOUR CONCERN WITH REGARD TO DOUBLE RECOVERY OF COSTS THROUGH CHARGES FOR UNBUNDLED NETWORK ELEMENTS AND THEN AGAIN THROUGH CHARGES FOR COLLOCATION ACTIVITIES. [ISSUE 7]

A. The ILECs have typically undertaken cost studies for UNEs using traditional costing methods. These methods have been developed in an environment where the ILEC and only the ILEC had access to its facilities. This assumption is challenged by the concept of collocation. Take central office space as an example. In its cost studies, BellSouth identifies the land and buildings associated with its central office facilities and assigns all such investment and associated costs to the various central office functions, services or network elements. This results in the recovery of 100 percent of the central office related land and building costs. Collocation charges, however, include a charge for central office floor space, a change which is apparently redundant.

Q. WHAT IS YOUR CONCERN WITH REGARD TO SHARED COSTS OF COLLOCATION? [ISSUE 7]

A. It is e·spire's experience that ILECs claim that they incur costs in preparing central office space for CLEC collocation. Large portions of this cost are further claimed to be a fixed "space prep" cost, that is, invariant with the number of CLECs that collocate. Typically, the first CLEC to collocate agrees to reimburse the ILEC for these costs, subject to a provision that the ILEC will recover a proportionate share of all these costs from subsequent collocators, and provide this as a reimbursement to the first entrant. e·spire has such agreements with BellSouth. The difficulty is that reimbursements or refunds have not occurred. This behavior by BellSouth penalizes the first entrant, and can reduce the willingness to be the first to collocate in a market area.

Q. WHAT IS YOUR CONCERN WITH REGARD TO OVERHEAD COSTS? [ISSUE 7]

A. The Commission has issued orders limiting the markup for overhead costs. I would still caution that if the markup were based upon dividing total overhead costs by total direct costs, total direct costs included in that calculation may not recognize any collocation activities. This is true where an extrapolation of past experiences is used in the calculation. Where ever that is the case, there should be no overhead costs assigned to the collocation activities.

Q. WHAT ARE YOUR CONCERNS WITH RESPECT TO THE INCUMBENT'S ABILITY TO FORCE CLECS TO TAKE UNWANTED ELEMENTS OR SERVICES? [ISSUE 7]

A. As noted above, there is an incentive on the ILEC's part to increase the costs of competing providers. One way to accomplish this is to create bundles that require CLECs

to take unnecessary or duplicate elements. Bundling in this manner can reduce the incentive to enter a market or at least make facilities based entry less attractive. CLECs should not be discouraged from entering or from offering services using their own equipment. The level of bundling and flexibility should be such that CLECs do not pay unnecessary or uneconomic costs.[18]

Q. DO YOU HAVE ANY OTHER OBSERVATIONS WITH REGARD TO THE ESTABLISHMENT OF CHARGES FOR COLLOCATION ACTIVITIES? [ISSUE 7]

A. Yes. It must be recognized that while ILECs have been running cost studies and presenting them to commissions for some time, it is only recently that they have conducted cost studies for collocation (or non-recurring charges for unbundled network elements, for that matter). What that means is there is no historic time series of data to which the Commission can turn to judge the reasonableness of any rates proposed. Hence, a benchmark of some type would be most helpful in evaluating the rates charged by the ILEC in this regard.

Q. BASED ON THE ABOVE, WHAT IS YOUR RECOMMENDATION WITH REGARD TO ESTABLISHING RATES AND CHARGES FOR COLLOCATION? [ISSUE 7]

A. In addition to the options recommended above, I suggest that the Commission establish a two-pronged approach to pricing collocation. In the first, a collocation tariff, both physical and virtual, must be established at TELRIC-based rates. Without an explicit

[18]See also 706 Order (Advanced Services Order), ¶64.

collocation tariff, including the rates and charges for each of the activities, each request for collocation will be on an individual case basis ("ICB") which means that it will require negotiation between the ILEC and CLEC. Clearly, the ILEC has all the information, no incentive to facilitate its competitor's entry into the market, and therefore can exercise its monopoly power in the negotiation process. This arrangement can also result in frequent complaints to the Commission, increasing the demand on Commission resources.

With a tariff in place, the Commission will have established a set of prices that are just and reasonable and can be used as a standard or a benchmark for any of these activities. If the parties agree mutually that there is a superior set of terms, conditions or prices, that should be acceptable, as long as the default, or benchmark, exists.

Q. YOU INDICATED A TWO-PRONGED APPROACH. WHAT IS THE SECOND ASPECT OF YOUR RECOMMENDATION? [ISSUE 7]

A. In addition to tariffing collocation activities, I recommend that the Commission adopt policies that allow CLECs the option to self-provide or contract for facilities and collocation installation to the maximum extent feasible, and at minimum for any activities for which BellSouth uses outside contractors.

This arrangement will allow a market test or sanity check of the reasonableness of the tariffed rates on a regular and ongoing basis. It will provide both the ILEC and the Commission with continual feedback as to the reasonableness of the rates and the reality of market conditions.

Tariffing at TELRIC-based rates, allowing market benchmarks (self-provision/outside contractors) and adopting the maximum flexibility in terms of access to the interconnection (maximizing the use of limited space), are all needed to promote entry and the competitive outcome.

V. TERMINATION

Q. WHAT COSTS ARE TO BE RECOVERED THROUGH CHARGES FOR TERMINATION AND TRANSPORT? [ISSUES 10, 14]

A. The requirements for pricing interconnection services including termination and transport are specified at Section 252(d)(2) of the Act. The Act specifies that prices for transport and termination should be based on the costs of the carrier terminating the call and that these costs should be the "additional costs" of terminating such calls. From an economic perspective, the concept of additional cost incurred by the carrier terminating the call refers to the incremental costs of the termination and transport functions.

The FCC established rules are totally consistent with this economic interpretation. The FCC identified the additional cost as the "forward looking, economic cost,"[19] of the service or element, including reasonable margins for profit and recovery of joint and common costs. TELRIC provides an appropriate measure of these costs.

Q. DIDN'T THE FCC ESTABLISH A PRESUMPTION OF SYMMETRICAL RATES BASED ON THE ILEC'S COSTS FOR TRANSPORT AND TERMINATION? [ISSUES 10, 14]

[19]FCC, First Report and Order, CC Docket No. 96-98, para. 1057. In regulatory terminology, these would be the "traffic sensitive" costs associated with the local network.

A. Yes. However, the FCC concluded that if the costs of efficiently configured and operated systems of competing local service providers justify a different rate, state commissions could and should adopt rates that are not symmetrical.[20] Symmetrical compensation was adopted as an interim measure for many reasons, not the least of which was because there was no cost information for CLECs and, thus, no evidence at the time that costs were other than symmetrical.[21] The Local Interconnection Order, however, clearly anticipated that state commissions would review the symmetry presumption, and directed those state commissions to "give full and fair effect to the economic costing methodology" of the Order when evaluating the cost studies of CLECs.

Q. IS THERE REASON TO BELIEVE THAT THE COST FOR A CLEC TO TERMINATE A CALL IS DIFFERENT THAN THE ILEC'S COST TO PROVIDE THE SAME FUNCTION? [ISSUES 10, 14]

A. Yes. First, CLECs tend to develop their network using a ring topology rather than the pine tree topology used by the ILECs. This would generally lead to a more traffic sensitive network. In addition, newer and smaller entrants will not buy equipment in the same volumes or provide the same diversity and scope of services as the ILEC. There is also evidence of scale economies in switching systems.[22] Finally, a CLEC is likely to realize a higher cost of capital than does the ILEC. These differences could result in higher equipment costs and higher expenses. Thus, there is reason to expect that the CLEC's relevant unit costs may differ from the ILEC's.

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[20]Local Interconnection Order, ¶¶1085-1089.
[21]Ibid., ¶1089.
[22]See Further Notice of Proposed Rulemaking, Federal State Joint Board on Universal, Service, CC Docket No. 96-45, July 18, 1997.

Q. HAVE YOU PREPARED A TELRIC ESTIMATE OF THE CALL TRANSPORT AND TERMINATION FUNCTION ON THE e-spire NETWORK? [ISSUES 10, 14]

A. A TELRIC estimate of e-spire's call transport and termination function is in progress and the results will be provided when the analysis has been completed. The TELRIC methodology will be similar to that developed by BellSouth and will include three major steps. First, facility requirements and investment cost estimates are identified; next, expense factors will be developed; finally, the expenses will be calculated and summed.

Q. HOW WILL INVESTMENT COSTS BE DETERMINED? [ISSUES 10, 14]

A. We interviewed e-spire personnel and other industry personnel to identify the appropriate forward-looking technologies and facility requirements. The costs are based on vendor prices for the facilities, plus installation costs. The vendor prices are taken from the vendor's current price list and adjusted to include hardware, spare, generic software and other system related costs. These costs will then be further adjusted to reflect anticipated discounts and inflation.

Q. HOW WILL EXPENSES BE CALCULATED? [ISSUES 10, 14]

A. Expenses are being calculated using the BellSouth TELRIC calculator methodology. To calculate expenses, we first identified a set of expense factors appropriate for e-spire. These factors were then applied to the investment costs developed. Expense factors were obtained or developed for capital, maintenance, other tax, shared and common expenses.

Capital costs are developed utilizing the phi factor method incorporated into the BellSouth TELRIC Calculator. Depreciation service life, cost of money and plant

specific expenses are based on factors reflecting e-spire costs. Gross receipts, shared and common expense factors, are those approved by the Commission.

VI. FRAME RELAY

Q. WHAT IS THE APPROPRIATE COSTING AND PRICING STANDARD FOR FRAME RELAY INTERCONNECTION SERVICES AND NETWORK ELEMENTS? [ISSUES 2, 12]

A. The standard for these services is the same as that of other interconnection services and network elements. That is, the only costing methodology which can support prices consistent with both the Telecommunications Act of 199[illegible] (Act) and the 706 Order is a TELRIC/TSLRIC approach.

Q. WHAT OBJECTIVES ARE IMPORTANT IN DETERMINING THE APPROPRIATE PRICES FOR INTERCONNECTION WITH INCUMBENT LECS? [ISSUES 2, 12]

A. Pricing for all interconnection with incumbent LECs, including Frame Relay interconnections, must be consistent with the goals and requirements of the Act. The fundamental premise of the Act is that a competitive market can better achieve the national telecommunications goals than can a market characterized by monopoly and regulation.

A key objective of the Act is, thus, the encouragement of a competitive telephone industry market structure for all telecommunications services. As noted, the preamble to the Act refers to lower prices and higher quality services for American

telecommunication services and to the rapid deployment of new telecommunication technologies. It does not exclude packet-switched services from the goals or requirements of the Act.

Q. WHAT IS THE RELEVANT METHOD TO COST AND PRICE PACKET SWITCHING TRANSPORT AND TERMINATION? [ISSUES 2, 12]

A. Assuming availability of the relevant cost data, a TELRIC approach is preferred.

Q. ARE THERE CIRCUMSTANCES WHERE A BILL-AND-KEEP APPROACH IS SUPERIOR TO THE TELRIC APPROACH? [ISSUES 2, 12]

A. Yes. A bill-and-keep approach is appropriate if the cost to be incurred by the parties is expected to be similar. This will be the case where the equipment or facilities provided by the ILEC and the CLEC are similar, and where there is no reason to expect the volume of traffic going each direction to be significantly different.

For example, this would likely be the case with the network to network (NNI) ports (and the transport between them) employed by the two parties to a frame relay agreement. As Mr. Mazraani explains in his testimony, the traffic flow between end users can be expected to be balanced. Additionally, the facilities (i.e., the NNI ports) used by the ILECs for packet switching, and those used by e-spire for its packet switching service, are not materially different and will provide the same functions.

Q. YOU INDICATED THAT THERE WOULD BE EFFICIENCIES BECAUSE BILL AND KEEP AVOIDS THE COSTS ASSOCIATED WITH TRAFFIC MEASUREMENT. PLEASE EXPLAIN. [ISSUES 2, 12]

A. Currently, I understand that both BellSouth and e·spire do not measure and are not equipped to measure, any traffic sensitive components of frame relay services on a volumetric basis. The requirement that e·spire invest in measuring equipment, when traffic is expected to be roughly in balance, and costs are already covered, is an unnecessary expense and can act as a barrier to entry. Morever, TELRIC studies for frame relay termination and transport have not been provided, nor were proxies for elements of frame relay -- transport and termination -- (with the exception of transmission facilities) established by the FCC in the Local Competition Order Thus, even if the Commission prefers a TELRIC based rate, a lack of relevant cost information points to the usefulness of bill-and-keep, at least on an interim basis.

Q. BELLSOUTH HAS TAKEN THE POSITION THAT FRAME RELAY INTERCONNECTION AND SERVICES ARE TARIFFED AND THAT CLECS SHOULD BE REQUIRED TO PURCHASE FRAME RELAY UNDER THOSE TARIFFS. DO YOU AGREE? [ISSUES 2, 12]

A. No. Requiring that CLECs take frame relay from existing tariffs has the potential of creating barriers to entry and should not be permitted. First, recognize that existing tariffs provide services not network elements. Requiring that CLECs take any element as a service can result in the CLEC being forced to take functions, services elements not needed, which can unnecessarily increase the cost to the CLEC. Taking frame relay as a UNE rather than a service can avoid this. Second, tariff rates are not necessarily restricted to TELRIC plus a reasonable allocation of joint and common costs. Instead, these rates may include retail-related costs and additional markups.

VII. OTHER ISSUES

4-WIRE LOOPS

Q. HOW SHOULD RATES FOR 4-WIRE LOOPS BE SET? [ISSUE 2]

A. Rates for 4-wire loops should be based on TELRIC. In general, 4-wire loops require twice the material as do 2-wire loops. However, there is virtually no incremental cost associated with installation or support structures. That is, a 4-wire loop does not require twice as many poles, twice the plowing or trenching or twice the installation cost associated with a 2-wire loop. In addition, 4-wire loops do not require twice the electronics as do 2-wire loops.

To account for this, a 4-wire loop TELRIC should include twice the material as a 2-wire loop, but only a proportionate increase in the amount of engineering, furnishing and installation costs and only a proportionate increase in the amount of support structure.

Q. HAVE YOU ESTIMATED THE TELRIC OF A 4-WIRE LOOP? [ISSUE 2]

A. Yes. Using the BellSouth TELRIC Calculator, as adjusted by the Commission, I calculated the TELRIC for a 4-wire voice grade loop distribution element. Including twice the material as the 2-wire, but no incremental support structure results in an estimated cost of $6.78, which consists of:

Table 1

4-Wire Loop Cost-Based Price

TELRIC	$6.45
Common Cost	.33
Cost-Based Price	$6.78

Q. SHOULD THIS SAME METHOD BE APPLIED IN ESTIMATING THE TELRIC FOR OTHER 4-WIRE UNE LOOPS? [ISSUE 2]

A. Yes. This methodology is applicable to other unbundled 4-wire loops.

UNBUNDLING REQUESTS

Q. IS THE REQUEST FOR ADDITIONAL UNBUNDLED NETWORK ELEMENTS CONSISTENT WITH THE ACT? [ISSUES 2, 3, 12, 20]

A. Yes. As I explained, the Act selected entry as the vehicle to transform the market for local services from one of regulated monopoly to one that is structurally competitive. e-spire is asking that network facilities that are in place and used by BellSouth be made available as unbundled network elements. The elements include copper and fiber loop facilities, subloop unbundling, high capacity transport facilities, xDSL and packet switching facilities, among others. These requests are consistent with the open-entry provisions of the Act.

GEOGRAPHIC DEAVERAGING

Q. SHOULD THE COMMISSION MOVE TOWARD THE GEOGRAPHIC DEAVERAGING OF RATES FOR UNBUNDLED ELEMENTS? [ISSUES 2, 3, 12, 20]

A. It is e-spire's position that the Commission should require the geographic deaveraging of rates for unbundled network elements, where significant geographically based cost

differentials exist. Generally, one would expect that to be the case for the various loop elements, though not necessarily with regard to other network elements.

The case for cost deaveraging of unbundled network elements rests on both procompetitive and practical considerations. First, a primary goal in establishing prices for unbundled network elements is to achieve a competitive market outcome. Price signals to the market participants should promote efficient market entry and exit decisions and efficient facility make/buy decisions. If efficient decision-making is to result, then the prices charged must accurately reflect the underlying cost of the facilities in question.

Cost studies and engineering analysis point unquestionably to the fact that the cost of providing unbundled loop elements will vary across geographic areas within most states. This applies to 2-wire and 4-wire voice grade facilities, DS0 and DS1 channels, and fiber loop facilities (DS3, OC3, OC12, OC48 and Dark fiber). If efficient price signals are to result, the cost calculation should reflect these differentials as should the resulting prices. Hence, rates for unbundled loops should be geographically deaveraged.

Further, the FCC, in its decision with regard to the Ameritech-Michigan Section 271 Application, found that approval will rest on, among other things, cost based and geographically deaveraged prices for unbundled loop elements (hence, the practical reality of proposing geographically deaveraged rates).

Q. WHAT ARE THE MATTERS THAT MUST BE CONSIDERED IN ESTABLISHING GEOGRAPHICALLY DEAVERAGED RATES? [ISSUES 2, 3, 12, 20]

A. If geographically deaveraged rates are to be established consist with the intent of the Act, then the rates must be cost based. The structure of rates should be driven by cost differences, not a LEC marketing strategy. This would suggest, for instance, that geographically deaveraged rates could be based on wire centers, but not on exchanges.

TELRIC estimates are based on a "scorched node" model. This is the basis of the BellSouth study and most other cost models (for instance, the HAI, BCPM and HCPM). Using a wire center is therefore reasonable both from a policy as well as a practical perspective. Exchanges, on the other hand, often include several wire centers. Where this is the case, the exchange cost represents an average of the costs of the individual wire centers. In that manner, cost differences are masked, and not allowed to serve as the basis of geographically deaveraged rates.

Moreover, basing geographically deaveraged rates on exchanges can be anticompetitive. There is no reason to require that CLECs establish calling areas comparable to the exchanges used by the ILEC, and there are no data to suggest that it is efficient for CLECs to do so. Cellular carriers provide a case in point. Therefore, there is no basis to use the calling area currently established by ILEC as the basis for geographically deaveraged rates for elements taken by the CLEC. Using these exchanges

as the basis for geographically deaveraged rates will require the CLEC to mirror the calling areas of the ILEC to take full advantage of pricing differentials. The implication is clearly anticompetitive.

Q. DOES THE BELLSOUTH TELRIC MODEL INCLUDE DATA ALLOWING THE DETERMINATION OF COST BASED DEAVERAGED RATES? [ISSUES 2, 3, 12, 20]

A. Yes. BellSouth used a sample of loops in estimating loop costs. This sample included loops serving business and residence customers, loops of various lengths and located in different density areas. These same data should be able to describe costs on a geographically deaveraged basis. Complete data on the entire sample used by BellSouth were not included with the filing in the generic cost proceeding. We are seeking these data, and upon their receipt and review, geographically deaveraged costs based on the BellSouth TELRIC will be presented.

Q. ARE THERE ALTERNATIVE DATA SOURCES THAT THE COMMISSION CAN RELY ON TO SET DEAVERAGED RATES? [ISSUES 2, 3, 12, 20]

A. Yes. There is a possibility that the BellSouth data will either not be available or not be useful in estimating geographically differentiated loop costs. If that is the case, one option is to rely on an alternative data source to deaverage the statewide rate. The Hatfield 5.0 (HAI), BCPM 3.1, and FCC Hybrid Cost Proxy Model (HCPM) models can be used in that manner. I present an illustration of cost based geographically deaveraged

rates using the HAI 5.0 model as the source of data for deaveraging in Table 2. To determine these rates, I began with the statewide 2-wire voice grade unbundled loop rate of $17.00 in the e-spire agreement. This rate is for the loop including the NID, which is tariffed separately at $1.08. I applied the ratios to the rate for the loop less the NID (i.e., $15.92 and then added back the rate for the NID.

Table 2

Geographically Deaveraged
2-Wire Voice Grade Unbundled Loop

	Cost Ratio	TELRIC	Percent of Loops
Statewide Average		$17.00	
Zone 1	.701	$12.24	42.0
Zone 2	1.004	$17.06	44.8
Zone 3	1.802	$29.77	13.2

Q. WHY DID YOU USE HAI 5.0 IN YOUR ILLUSTRATION? [ISSUES 2, 3, 12, 20]

A. The HAI 5.0 data were readily available. Any of these other models could be used for this purpose, however. As noted, we are seeking data from BellSouth which will allow a deaveraging using that model. When these other data are available, we will be able to provide comparable results using them as well.

Q. HOW ARE THE DEAVERAGED RATES IN TABLE 2 DEVELOPED? [ISSUE 2]

A. Appreciating the policy issues involved in deaveraging rates, I limited the analysis to three rate groups. Using HAI 5.0, I calculated the relative structure of these rates and applied that to the Commission-approved statewide area rate. Switches with per line costs below $105 were included in Zone 1, between $105 and $160 were included in Zone 2 and above $160 in Zone 3.

Q. ARE THERE OTHER DATA AVAILABLE THAT THE COMMISSION CAN DRAW ON TO DEAVERAGE UNES? [ISSUES 2, 3, 12, 20]

A. Yes. BellSouth has geographically deaveraged rates for interstate special access. These rates are based on differences in density and could be used as the basis for geographically deaveraged unbundled loop rates, as well.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

4142/mhk direct/fl/e.spire_fnl.wpd

e-spire EXHIBIT_____

Revised Testimony
of Marvin H. Kahn

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition by e-spire Communications, Inc. for Arbitration with BellSouth Telecommunications, Inc., pursuant to the Telecommunications Act of 1996	))))	Docket No. 9817445-TP

EXHIBITS ACCOMPANYING THE
REVISED DIRECT TESTIMONY OF DR. MARVIN H. KAHN

ON BEHALF OF

e-spire COMMUNICATIONS, INC.

FEBRUARY 4, 1999

Exhibit___(MHK-1)

MARVIN H. KAHN

Education:

B.A. Business Administration, 1965
Ohio Northern University

Ph.D. Economics, 1974
Washington University

Previous Employment:

1977-1980 - Senior Economist, J.W. Wilson & Associates, Inc., Washington, D.C.

1975-1977 - Economist, MITRE Corporation, McLean, Virginia, Department of Energy Planning and Analysis.

1975 - Economist, Institute for Defense Analysis, Arlington, Virginia, Program Analysis and Evaluation, Cost Analysis Group.

1974 - Staff Economist, Ad Hoc Committee on the Domestic and International Monetary Effect of Energy and Natural Resource Pricing, U.S. House of Representatives, Committee on Banking and Currency, Washington, DC.

1969-1974 - Assistant Professor, Economics, University of Tennessee, Knoxville, Tennessee.

Professional Work:

At J.W. Wilson & Associates, Inc., Dr. Kahn had the principal responsibility of developing and managing the firm's work dealing with analysis of the telecommunications industry. His efforts included basic and applied economic research into the cost of providing telecommunications services and market demand characteristics. He had lead responsibility in the firm's work involving cost of service, rate design, competition, and regulatory policy in telephony.

At the MITRE Corporation, Dr. Kahn directed much of the economic analysis into energy related issues. He was engaged in energy supply and demand analysis examining economic, life style, and growth implications of energy policies and issues; energy facilities siting issues; cost benefit analysis; and utility pricing policies. Particular efforts included econometric investigations of electricity demand, examinations of foreign peak load pricing experience, assessing the economic potential and effect of federal regulations on coal, nuclear and advanced electricity generation technologies, and examining the impact of energy conservation on electric utility growth, load factors and finances.

While at the Institute for Defense Analysis, Dr. Kahn was engaged in economic and cost analysis for the Office of Program Analysis and Evaluation, Office of Assistant Secretary of Defense. He developed an econometric model of manpower supply to naval and private shipyards.

At the Ad Hoc Committee, Dr. Kahn directed and assisted in preparation of committee studies on domestic and international effects of higher energy prices and analysis of energy legislation and policies. He served as the principal investigator in the study of energy price effects on domestic employment, production and price levels.

While serving on the faculty of the University of Tennessee, Dr. Kahn taught a variety of courses in economics including microeconomic, macroeconomic and labor market theory.

Other Professional Activities:

Chairman	-	Workshop on Long Run Energy Demands, sponsored by National Science Foundation, 1976.
Consultant	-	National Republican Senatorial Committee
	-	OAO Corporation
	-	ABT Associates

Selected Publications and Reports:

An Economic and Ratemaking Assessment of Issues Regarding IntraLATA Competition for Telecommunications Services, Exeter Associates, Inc., September 1993.

The Pennsylvania Telecommunications Infrastructure, Exeter Associates, Inc., March 24, 1992, (Co-author).

Report on the Status of Intrastate Incentive Regulation in the United States, Exeter Associates, Inc., March 1992, (Co-author).

Market and Regulatory Effects of the Elimination of the Manufacturing Restriction on the Bell Operating Companies, Exeter Associates, Inc., November 1989, (Co-author).

Assessment of Issues Related to the MFJ Information Services Restrictions, Exeter Associates, Inc., November 1989, (Co-author).

An Analysis of the Open Network Architecture (ONA) Costing and Tariff Plans Filed by the Regional Bell Holding Companies, National Regulatory Research Institute, October 1988, (Co-author).

A Review and Evaluation of the Load Forecasts of Houston Light & Power Company and Central Power & Light Company: Past and Present, Exeter Associates, Inc., 1985, (Co-author).

Study of the Pricing Precedents in Public Utility Industries, Exeter Associates, Inc., November 1983, (Co-author).

Competition, Contribution and Cross Subsidy: An Examination of AT&T Costing and Pricing Procedures, Exeter Associates, Inc., August 1981.

Product and Market Diversification of Regulated Utilities: An Assessment of Competitive, Market and Regulatory Implications, Exeter Associates, Inc., May 1981.

A Study of Jurisdictional Separations to Compare AT&T's Interstate Settlements Information Systems with the Separations Manual and Division of Revenues Process, J.W. Wilson & Associates, Inc., September 1980, (Co-author).

Competition and Growth: An Economic Analysis of the Domestic Market for Private Branch Exchanges, J.W. Wilson & Associates, Inc., September 1978, (Co-author).

"Separations Analysis of New Jersey Bell Telephone Company," J.W. Wilson & Associates, Inc., July 1978.

"Conservation and Utility Pricing Policies," paper presented at Engineering Foundation Conference on Economic Impacts of Energy Conservation, sponsored by Committee on Science and Technology, U.S. House of Representatives, July 1978.

"An Economic Assessment of Market Potential for Advanced Intermediate and Peaking Electric Generating Technologies," MITRE Corporation, 1978, (Co-author).

Public Policy and Power Plant Siting, MITRE Corporation, March 1977.

Commercialization Case Study: The Light Water Reactor, MITRE Corporation, December 1976.

Fuel Choice vs. Fuel Use: An Economic Analysis of Residential Electricity Demand, MITRE Technical Report, 1976. Paper presented at NSF Workshop on Long Run Energy Demands, June 1976.

Long Run Energy Demands, MITRE Technical Report, 1976.

Electric Utility Financial Problems and Potential Solutions, MITRE Technical Report, April 1976.

Implications of Ownership Patterns on Financing and Development of Western Coal Resources, MITRE Technical Report, May 1976.

"Some Short Run Dynamics of Residential Electricity Consumption," presented at the NSF Workshop on Electric Utility Financial Problems and Potential Solutions, August 1975.

Energy Security and the Domestic Economy: Impact on Prices, Employment and Consumption, Ad Hoc Committee on the Domestic and International Monetary Effect of Energy and Natural Resource Pricing, 93rd Congress, 2nd Session, 1974.

"Layoff Behavior in Manufacturing Industries," (unpublished dissertation), Washington University, St. Louis, Missouri, 1974.

"The Homestead Provision: Its Costs and Those of Some Alternatives," unpublished working paper, Haney for Governor Committee, 1974.

"Extending the Tennessee Sales Tax: Estimates of its Revenue Potential, Distributional Effects, and Cyclical Sensitivity," unpublished working paper, Haney for Governor Committee, 1974.

Expert Testimony

Presented by Marvin H. Kahn

Before State Commissions:

Alabama Public Service Commission, Docket No. 17743; testified on separations and affiliated relations.

Alabama Public Service Commission, Docket No. 19983, testified on price cap regulation, local competition and universal service.

Alabama Public Service Commission, Docket No. 25625; testified on the application of TSLRIC/TELRIC principles in the pricing of unbundled network elements.

Alabama Public Service Commission, Docket No. 26029, testified on TELRIC estimates and pricing of unbundled network elements.

Alaska Public Utility Commission, Docket U-78-65; testified on cost of service and rate design of competitive service.

Arizona Corporation Commission, Docket No. E101-91-004; testified on telephone rate design.

Arizona Corporation Commission, Docket Nos. U-3021-96-448, U-3245-96-448, E-1051-96-448; testified on the application of TSLRIC/TELRIC principles in the pricing of unbundled network elements.

Arkansas Public Utility Commission, Docket 83-045-U; testified on access charges, impact of divestiture on revenue requirements and revenue sources, and rate design.

California Public Utilities Commission, Case No. 10001; testified on cost of service and rate design for Centrex service.

California Public Utilities Commission, Docket No. 93-04-003; testified on costing and pricing principles for unbundled network elements.

California Public Utilities Commission, Docket No. R.95-01-020; testified on discrimination and shared and common cost identification, and Universal Service Fund mechanics.

California Public Utilities Commission, Docket No. R.95-04-043; testified on pricing flexibility and local competition rules.

California Public Utilities Commission, Application No. 96-03-007; testified on regulatory policy for certification of a separate subsidiary under Section 272 of the Telecommunications Act of 1996.

California Public Service Commission, A.97-03-004; testified on rate reductions consistent with the PUC's competitively neutral mandate.

Colorado Public Utilities Commission, I&S Docket No. 1720; testified on utility rate design.

Delaware Public Service Commission, Docket No. 89-24T; testified on customer specific pricing of communication services.

Delaware Public Service Commission, Docket No. 91-35T; testified on pricing of Centrex services.

Delaware Public Service Commission, Docket No. 93-47; testified on Rate Design.

Public Service Commission of the District of Columbia, Formal Case No. 777: testified on telephone utility costs of service and rate design.

Public Service Commission of the District of Columbia, Formal Case No. 814, Phase III; competitive status of various services and cost support for pricing competitive services.

Public Service Commission of the District of Columbia, Formal Case No. 827; testified on rate design.

Public Service Commission of the District of Columbia, Formal Case No. 828; testified on regulatory principles and structure regarding competitive services.

Public Service Commission of the District of Columbia, Formal Case No. 828-II; testified on regulatory principles and structure regarding competitive services.

Public Service Commission of the District of Columbia, Formal Case No. 926; rate design.

Florida Public Service Commission, Docket No. 860984-TP; testified on market for interexchange services, pricing of access services and cost methodologies.

Florida Public Service Commission, Docket No. 880069-TL; testified on regulatory policy and depreciation practices.

Florida Public Service Commission, Docket No. 960916-TP; testified on the application of TSLRIC/TELRIC principles in the pricing of unbundled network elements.

Florida Public Service Commission, Docket No. 961537-TP; testified on local competition, unbundling network elements, TELRIC/TSLRIC, pricing.

Georgia Public Service Commission, Docket No. 3765-U; testified on Centrex Costs and Pricing Policies.

Georgia Public Service Commission, Docket No. 3882-U; testified on Alternative Regulatory Structures.

Georgia Public Service Commission, Docket No. 3893-U; testified on Depreciation Policy.

Georgia Public Service Commission, Docket No. 3905-U; testified on incentive regulation.

Georgia Public Service Commission, Docket No. 3914-U; testified on EAS.

Georgia Public Service Commission, Docket No. 4018-U; testified on design and structure of an ONA policy.

Georgia Public Service Commission, Docket No. 4232-U; testified on N11 Service arrangements.

Georgia Public Service Commission, Docket No. 7061-U; testified on costs of unbundled network elements, competitive based markups.

Indiana Public Service Commission, Cause No. 35181; testified on telephone utility rate structures, unbundling of services and implications of FCC Registration Program.

Indiana Public Service Commission, Cause No. 36732; testified on telecommunication cost of services and rate design.

Illinois Commerce Commission, Docket No. 89-0033; testified on regulatory structure and policy and cost study methodology for competitive services.

Illinois Commerce Commission, Docket No. 92-0448; testified on regulatory structure and policy.

Illinois Commerce Commission, Docket No. 93-0319, testified on comparable service requirements to promote gas supply competition.

Kentucky Public Service Commission, Case No. 285; testified on LMS policy.
Kentucky Public Service Commission, Case No. 90-256; testified on telephone rate design.

Kentucky Public Service Commission, Case No. 10109; testified on regulatory policy, telephone productivity growth and price caps.

Kentucky Public Service Commission, Administrative Case No. 323; testified on intraLATA toll competition.

Kentucky Public Service Commission, Case No. 92-297; testified on competitive and ratemaking implications of an extended area service policy.

Kentucky Public Service Commission, Case No. 94-121; testified on appropriate method of regulation.

Kentucky Public Service Commission, Case No. 355; testified on local competition rules.

Kentucky Public Service Commission, Case No. 96-467; testified on the application of TSLRIC/TELRIC principles in the pricing of unbundled network elements.

Kentucky Public Service Commission, Case No. 97-074; testified on rate restructuring implications of rebundling network elements.

Louisiana Public Service Commission Docket No. U-17949-(A); testified on negative attrition and alternative regulatory structures.

Louisiana Public Service Commission, Docket No. U-17949-(B); testified on toll competition issues.

Louisiana Public Service Commission, Docket No. U-17949-(D); testified on alternative regulatory structures.

Louisiana Public Service Commission, Docket No. U-17949-(E); testified on total factor productivity, economic depreciation, and an economic analysis of construction programs.

Louisiana Public Service Commission, Docket No. U-17957; testified on AOS policy.

Louisiana Public Service Commission, Docket No. U-18976; testified on cellular service.

Louisiana Public Service Commission, Docket No. U-20710; testified on competitive service pricing.

Louisiana Public Service Commission, Docket No. U-20925; testified on alternative regulatory structures.

Louisiana Public Service Commission, Docket No. U-22020; testified on avoided cost discounts.

Louisiana Public Service Commission, Docket No. U-22022, 22093; testified on costs of unbundled network elements, competitive based markups.

Maine Public Utilities Commission, Docket No. 92-345, Phase I; testified on regulatory policy and structure, and incentive regulation.

Maine Public Utilities Commission, Docket No. 92-345, Phase II; testified on Staff Plan for alternative regulation for Central Maine Power.

Maryland Public Service Commission, Case No. 7435; testified on affiliated relations and utility rate design.

Maryland Public Service Commission, Case No. 7467; testified on jurisdictional separations.

Maryland Public Service Commission, Case No. 7788; testified on the regulatory principles and structure regarding interexchange communications carriers.

Maryland Public Service Commission, Case No. 7851; testified on telephone utility rate design.

Maryland Public Service Commission, Case No. 7902; testified on category cost of service study methodologies.

Maryland Public Service Commission, Case No. 8763; testified on the application of the New Services Test to private coin services.

Massachusetts Department of Public Utilities, DPU No. 19843; testified on affiliated relations, Western Electric pricing.

Michigan Public Service Commission, Case No. U-5197, et al.; testified on Western Electric costs and pricing.

Michigan Public Service Commission, Case No. U-6002; testified on separations.

Mississippi Public Service Commission, Docket No. 97-AD-544; TELRIC and pricing standards.

Nevada Public Service Commission, Docket No. 91-7026; testified on rate design.

New Mexico Public Service Commission, Case No. 96-307-TC; testified on the application of TSLRIC/TELRIC principles in the pricing of unbundled network elements.

New York Public Service Commission, Case No. 27710/27995; testified on costs and rates of local coin service.

New York Public Service Commission, Case No. 27995; testified on category costs of service utility rate design and deregulation.

New York Public Service Commission, Case No. 28264; testified on category costs of service, costs of local service, and design and structure of local exchange rates.

New York Public Service Commission, Case No. 29469; testified on competition and regulation of cellular services.

Ohio Public Utilities Commission, Case No. 79-1184-TP-AIR; testified on rate design and rate structure.

Ohio Public Utilities Commission, Case No. 83-300-TP-AIR; testified on rate design and rate structure.

Ohio Public Utilities Commission, Case No. 83-464-TP-COI; testified on regulatory structure and access charges.

Ohio Public Utilities Commission, Case No. 84-435-TP-AIR; prepared analysis of rate design.

Pennsylvania Public Utility Commission, R.I.D. No. 289, et al.: testified on utility cost of service methodologies and rate design for competitive telecommunications service offerings.

Pennsylvania Public Utility Commission, Docket R-811512; provided telephone utility cost of service study, testified on rate design.

Pennsylvania Public Utility Commission, Docket R-811819; testified on telephone utility cost of service and rate structure.

Pennsylvania Public Utility Commission, Docket R-832316; testified on access charges, impact of divestiture on revenue requirements and revenue sources, and rate design.

Pennsylvania Public Utility Commission, Docket No. P-830452; testified on the impacts of divestiture on operating company operations and carrier access charges.

Pennsylvania Public Utility Commission, Docket No. R-842779; testified on telephone rate design and stand alone costing procedures.

Pennsylvania Public Utility Commission, Docket No. R-850044; testified on telephone rate design.

Pennsylvania Public Utility Commission, Docket No. R-850170; testified on policy issues regarding public, semipublic and privately owned coin stations and services.

Pennsylvania Public Utility Commission, Docket No. R-850229; testified on rate design.

Pennsylvania Public Utility Commission, Docket No. 860923; rate design and depreciation practices.

Pennsylvania Public Utility Commission, Docket No. R-930715; testified on regulatory structure, productivity growth and utility costs.

Pennsylvania Public Utility Commission, Docket No. 940587; testified on total service long run costs and revenue-cost comparisons of competitive services.

Pennsylvania Public Utility Commission, Docket No. 951005; testified on alternative regulatory structures for small telephone companies.

Pennsylvania Public Utility Commission, Docket No. 963556; testified on rate design for services and network elements.

Pennsylvania Public Utility Commission, Docket No. R-00951005; testified on alternative regulatory structures, total factor productivity, price cap plans.

Pennsylvania Public Utility Commission, Docket No. R-00963534; testified on rate rebalancing in the context of a price cap plan.

Pennsylvania Public Utility Commission, Docket No. A-310203F0002(III), et al.; testified on local competition, TELRIC/TSLRIC pricing of unbundled network elements.

Pennsylvania Public Utility Commission, Docket No. I-00960066; testified on issues related to access charge rate structure and universal service policies.

Rhode Island Public Utilities Commission, Docket No. 1475; testified on rate design and rate structure.

Rhode Island Public Utilities Commission, Docket 1631 (Phase I); testified on revenue requirements and merits of company cost of service studies.

Rhode Island Public Utilities Commission, Docket 1631 (Phase II); provided telephone utility cost of service study.

Rhode Island Utilities Commission, Dockets 1560R, 1631, and 1654; testified on utility cost of service and rate design.

Rhode Island Public Utilities Commission, Docket 1687; testified on rate design and structure of local and toll rates.

Rhode Island Public Utilities Commission, Docket 1698; testified on rate design.

Rhode Island Public Utilities Commission, Docket 1878; testified on rate design.

South Carolina Public Service Commission, Docket 79-305-C; testified on cost of service, rate design, separations and affiliated relationships.

South Carolina Public Service Commission, Docket 82-291-C; testified on telephone utility cost of service methodologies and rate structure.

South Carolina Public Service Commission, Docket No. 97-374-C; testified on costs of unbundled network elements, competitive based markups.

Tennessee Regulatory Authority, Docket No. 96-01331; testified on avoided cost discount.

Texas Public Utility Commission, Docket No. 8585; testified on cost study methodology and the pricing of competitive services.

Texas Public Utility Commission, Docket Nos. 16189, 16196, 16226, 16285, 16290; testified on the application of TSLRIC/TELRIC principles in the pricing of unbundled network elements.

Texas Public Utility Commission, Docket No. 16473; testified on local competition, unbundling network elements, TELRIC/TSLRIC, pricing.

Utah Public Service Commission, Docket No. 94-999-01, Phase III; testified on pricing of unbundled network elements, colocation services and interim number portability.

Virginia Corporation Commission, Docket PUC 920029; testified on incentive regulation, utility productivity, utility construction programs.

Virginia Corporation Commission, Docket PUC 930039; testified on productivity growth, construction programs and incentive regulatory plans.

Washington Utilities and Transportation Commission, Case No. U-75-54; testified on cost of service methodologies for competitive telecommunications service offerings.

Washington Utilities and Transportation Commission, Cause Nos. U-86-34, et al.; testified on the establishment of rules and procedures regarding the detariffing of utility products and services.

West Virginia Public Service Commission, Case No. 84-747-T-42T; testified on rate design, access charge structures and affiliated relationships.

West Virginia Public Service Commission, Case No. 85-282-T-GI; testified on the policy of interexchangeable competition.

West Virginia Public Service Commission, Case Nos. 85-490-T-P, et al.; testified on access charge structures.

West Virginia Public Service Commission, Case Nos. 86-038-T-C, et al. testified in complaint case regarding independent telephone company earnings.

West Virginia Public Service Commission, Case No. 86-364-T-GI; testified on access charge structures.

West Virginia Public Service Commission; Case No. 89-206-T-42T; Telephone Rate Design and Local Calling Plans.

West Virginia Public Service Commission; Case No. 90-522-T-42T; Telephone Rate Design and Local Calling Plans.

West Virginia Public Service Commission, Case No. 94-1103-T-GI; testified on total service long run incremental costs and local service competition.

Wisconsin Public Service Commission, Docket No. 6720-TI-10? testified on cost standards for competitive services and compensatory pricing of Centrex service.

Wisconsin Public Service Commission, Docket No. 6720-TI-102; testified on productivity and rate implications of rate moratorium.

Wisconsin Public Service Commission, Docket No. 6720-TR-104; testified on incentive regulation proposals.

Before the Federal Energy Regulatory Commission (FERC)

Natural Gas Pipeline Company of America, Docket No. 87-141; filed testimony on the GIC.

Tennessee Gas Pipeline Company, Docket No. RP-88-228-000 et. al.; filed testimony on comparable service.

Before Canadian Commissions:

Prince Edward Island Public Utilities Commission, complaint case; testified on cost of service and rate design for PBX equipment, and the economic implications of interconnection.

Before U.S. Postal Commission:

Docket MC79-3; testified on cost of service and rate design for second-class mail.

Before Legislatures:

Committee on Commerce, U.S. Senate, Subcommittee on Communications; expert witness testifying for Subcommittee Staff on U.S. Department of Transportation Study on Impacts of Daylight Savings Time Act.

Committee on Banking and Currency, U.S. House of Representatives, Ad Hoc Committee on the Domestic and International Monetary Effect of Energy and Natural Resource Pricing; appeared as Staff witness on inflationary and unemployment effects of the oil embargo, and on utility pricing policy proposals.

Committee on Consumer Affairs, Pennsylvania House of Representatives, appeared on behalf of the Office of Consumer Advocate, testified on regulatory policy regarding telecommunications.

Other:

District Court of Lancaster County, Nebraska, in Re: Norstan Communications vs. State of Nebraska, Docket No. 355; testified on the market for telecommunications services and the effect of emerging competition.

U.S. District Court for the District of Columbia, in RE: US. vs. AT&T et. al., C.A. No. 74-1698; testified on Western Electric PBX Pricing.

U.S. District Court for the Southern District of Florida, in Re: Eugene Steele d/b/a Yacht Buyers Group vs. Morgan Yacht, et al., Case No. 82-2757-CIU-JE; testified on economic estimate of damages.

U.S. District Court for the District of Maryland, in Re: Fred Menke's Car Store, Inc. and Fred R. Menke, Sr. vs. Volvo North America Corporation, C.A. No. H86-1150; testified on economic estimate of damages.

U.S. District Court for the Eastern District of Pennsylvania, in Re: Design Sales Associates, Inc. vs. Pittcon Industries, Inc., C.A. No. 87-0805; testified on economic estimate of damages.