

ORIGINAL

1 DIRECT TESTIMONY OF DR. RICHARD D. EMMERSON  
2 ON BEHALF OF BELLSOUTH TELECOMMUNICATIONS, INC.  
3 BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

4 DOCKET NO. 990649-TP

5 AUGUST 11, 1999

6

7

SECTION I

8

INTRODUCTION

9

10 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

11 A. My name is Richard D. Emmerson. I am the President and CEO of  
12 INDETEC International, Inc. My business address is 445 Marine View  
13 Avenue, Suite 310, Del Mar, California.

14

15 Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK  
16 EXPERIENCE.

17 A. My academic qualifications include a Ph.D. in economics from the  
18 University of California, Santa Barbara in 1971. From 1971 through 1979, I  
19 was a full-time member of the Economics Department at the University of  
20 California, San Diego ("UCSD"). Since 1979, I taught continuously through  
21 1996 (part time) at UCSD; I was the Director of the Executive Program for  
22 Scientists and Engineers ("EPSE") at UCSD during 1990-1991, a graduate  
23 business program designed for scientists and engineers with advanced  
24 degrees who are candidates for executive positions in large companies. I  
25 have written articles in professional economic journals, and I have

1 performed research projects for government agencies and private industry.

2

3 My work experience includes past positions as Senior Vice President of  
4 Criterion Incorporated, President of the Institute for Policy Analysis, and  
5 President of Economic Research Associates. These firms performed  
6 economic analysis for a range of clients, including "unregulated" or  
7 competitive firms, regulated firms, government agencies, regulatory  
8 commissions, and trade associations. INDETEC International, Inc.  
9 provides consulting and training services to international telephone  
10 companies, Lucent Technologies, the United States Telephone  
11 Association, Bellcore, interexchange companies, as well as to partners and  
12 managers of large accounting and consulting firms. During the past 30  
13 years, I have taught a wide variety of courses ranging from basic  
14 economics for telecommunications to highly specialized courses in  
15 incremental cost study methodology.

16

17 Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE A REGULATORY  
18 AGENCY?

19 A. Yes. I have testified before many public service commissions on  
20 access charges, bypass, rate structure, competition, terminal  
21 equipment pricing, network services pricing, and cost analyses in  
22 Florida and in over half of the states in the United States, as well as in  
23 Canada. Over the course of the past 12 years, my expert witness  
24 testimony in over 40 telecommunications regulatory hearings has aided  
25 in establishing appropriate cost standards in several jurisdictions within

1 the industry. I have worked for regulators and telephone companies in  
2 nearly a dozen foreign countries during the past few years. I have also  
3 served as an expert witness in antitrust and business litigation cases.  
4

5 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

6 A. Primarily I address the Commission's issue 3(a): What guidelines and  
7 specific requirements should be imposed on recurring and nonrecurring  
8 cost studies, if any, required to be filed in this proceeding? This issue is  
9 important since it establishes the cost information that will be used as a  
10 foundation for pricing unbundled network elements (UNEs). I also  
11 provide testimony relevant to issues 1 (c) (the appropriate basis for  
12 deaveraging UNEs), and 1 (f) (other factors and policy considerations  
13 relevant to determining deaveraged UNE rates).  
14

15 Q. HOW IS YOUR TESTIMONY ORGANIZED?

16 A. After this introduction, Section II briefly discusses the necessary and  
17 impair standards in the Telecommunications Act of 1996 that determine  
18 what network elements must be unbundled. I conclude that neither  
19 convenience nor cost reduction to existing or potential competitors is  
20 sufficient to require unbundling of a network element. Section III  
21 describes the proper uses of an incremental cost study. I conclude that  
22 these costs can establish the lower bound for pricing and a minimum  
23 revenue test to prevent a service from receiving a cross subsidy, but  
24 they cannot establish a service or network element price itself. Section  
25 IV, the longest section of testimony, explains the economic foundations

1 of incremental costs. It discusses the FCC's requirements and the  
2 relationship between total element/total service incremental costs and  
3 shared and common costs. Section V briefly addresses a typical point  
4 of confusion regarding cost studies: the proper application of least cost  
5 efficient provider concepts. I conclude that the proper standard reflects  
6 the costs that actually could be attained in the future, not those that are  
7 unattainably hypothetical. Section VI presents the economic principles  
8 of deaveraging. I conclude that if UNE prices are geographically  
9 deaveraged, corresponding retail rates should be simultaneously and  
10 consistently deaveraged in a similar manner. Section VII provides a  
11 brief summary of my testimony.

12  
13 For convenience, a separate page at the end provides a list of  
14 acronyms used in my testimony.

15  
16 SECTION II  
17 ONLY UNBUNDLE ELEMENTS THAT MEET THE  
18 NECESSARY AND IMPAIR STANDARD  
19

- 20 Q. SHOULD BELLSOUTH BE REQUIRED TO UNBUNDLE ALL  
21 NETWORK ELEMENTS THAT ARE TECHNICALLY FEASIBLE TO BE  
22 UNBUNDLED?
- 23 A. No, section 251(d)(2) of the Telecommunications Act of 1996 states: "In  
24 determining what network elements should be made available for  
25 purposes of subsection (c)(3), the Commission shall consider, at a

1 minimum, whether -- (A) access to such network elements as are  
2 proprietary in nature is necessary; and (B) the failure to provide access  
3 to such network elements would impair the ability of the  
4 telecommunications carrier seeking access to provide the services that  
5 it seeks to offer.”

6

7 Q. THE FCC, IN ITS FIRST REPORT AND ORDER OF AUGUST 6, 1996,  
8 SUGGESTED THAT INCUMBENT LECS BE REQUIRED TO  
9 UNBUNDLE ANY REQUESTED NETWORK ELEMENT THAT WAS  
10 TECHNICALLY FEASIBLE TO BE UNBUNDLED. DID THE SUPREME  
11 COURT AGREE WITH THIS VIEW?

12 A. No. This year the Supreme Court ruled regarding the appeal of the 8<sup>th</sup>  
13 Circuit Court's decision regarding the FCC's First Interconnection  
14 Order. (AT&T CORP. et al. v. IOWA UTILITIES BOARD et al., No.  
15 97—826. Argued October 13, 1998—Decided January 25, 1999). As  
16 part of that decision, the Supreme Court determined that “since the  
17 FCC did not adequately consider the §251(d)(2) ‘necessary and impair’  
18 standards when it gave requesting carriers blanket access to network  
19 elements, Rule 319 is vacated.” The court went on to state: “in  
20 addition, the FCC's assumption that *any* increase in cost (or decrease  
21 in quality) imposed by denial of a network element renders access to  
22 that element ‘necessary,’ and causes the failure to provide that element  
23 to ‘impair’ the entrant's ability to furnish its desired services, is simply  
24 not in accord with the ordinary and fair meaning of those terms.” The  
25 Supreme Court noted that incumbents not unbundling certain elements

1 may generate delays, decrease quality, or increase the financial or  
2 administrative cost to alternate local exchange carriers (ALECs).  
3 However, this is not sufficient to make such elements "necessary" for  
4 the new entrant nor does it "impair" entry.

5  
6 Q. IS THE NECESSARY AND IMPAIR STANDARD ECONOMICALLY  
7 REASONABLE?

8 A. Yes. The forced unbundling of virtually any network element greatly  
9 retards investment incentives. An improper standard of excessive  
10 unbundling would greatly retard the incentive of new entrants to choose  
11 efficiently between investing in facilities and leasing the facilities  
12 voluntarily offered by others. In addition, such an improper standard  
13 retards the incentives of incumbents to make investments in  
14 telecommunications infrastructure. While the incumbent would bear the  
15 full risk of making the investment, ALECs would have the option to  
16 utilize that investment without paying the premium that such options  
17 normally require in private enterprise. Since an unbundled element can  
18 be leased at the time, place and scale chosen by the ALEC, the final  
19 prices of UNEs should reflect the option value ALECs receive.

20  
21  
22  
23

### SECTION III

#### THE PROPER USES OF COST STUDIES

1 Q. WHY SHOULD THIS COMMISSION CONSIDER TOTAL SERVICE OR  
2 TOTAL ELEMENT LONG-RUN INCREMENTAL COSTS (TSLRIC OR  
3 TELRIC)?

4 A. The Commission should consider these cost concepts for two reasons.  
5 First, the FCC in its Interconnection Order of August 8, 1996, advances  
6 TELRIC as the cost standard to be used for unbundled network  
7 elements. Second, forward-looking incremental costs, TS or TE LRIC,  
8 if estimated correctly, provide the economically proper lower bound for  
9 pricing a service or element (and the lower bound for the revenue  
10 produced by a service or element when volume insensitive costs are  
11 included) for preventing a cross subsidy or an anticompetitively low  
12 price. However, an incremental cost cannot be used, by itself, to  
13 determine a UNE or service price.

14  
15 Q. WHAT PURPOSE IS SERVED BY THE PRODUCTION OF COST  
16 STUDIES?

17 A. Forward-looking cost studies are often produced for establishing  
18 bounds for pricing of services, both for purposes of ensuring profitable  
19 business practices and for establishing and maintaining competitive  
20 safeguards. In some instances, cost studies may be used for  
21 measuring subsidies brought about for public policy reasons. In this  
22 way, firms and regulators can assure themselves that competitive  
23 services and elements are not receiving a cross subsidy from  
24 noncompetitive services and elements and that regulatorily-imposed  
25 subsidy requirements are met and funded through proper channels.

1 Q. WHAT IS THE ECONOMICALLY PROPER USE OF INCREMENTAL  
2 COST INFORMATION FOR PRICING?

3 A. Generally, a volume sensitive price (e.g., a price per minute) should be  
4 no less than its volume sensitive cost. Further, the sum of the revenues  
5 from a service or element should not be lower than the total incremental  
6 cost for the service or element (including its service or element-specific  
7 volume insensitive cost). This ensures that no service or element  
8 receives a cross subsidy.

9  
10 Q. HOW DO THESE COSTS GOVERN THE BEHAVIOR OF  
11 COMPETITIVE FIRMS?

12 A. First, competitive firms generally find that pricing a unit of service below  
13 its volume sensitive incremental cost leads to a loss on that unit of  
14 service. Some other pricing arrangement, with a higher price for the  
15 unit of volume, or elimination of that sale, leads to higher profits for the  
16 firm.

17  
18 Second, competitive firms avoid a pricing arrangement that produces  
19 revenues for a service less than its total incremental cost (including  
20 volume insensitive costs). Such a pricing arrangement leads to losses  
21 for the service and the firm is better off by raising the price of the  
22 service or stopping production of the service.

23  
24 When a multi-service firm receives insufficient revenue from a service  
25 to recover its total incremental cost, it may attempt to make up this loss



1 by pricing other services to recover not only the shared and common  
2 costs of the firm, but also the losses on the subsidized product as well.  
3 However, in a competitive environment, such subsidizing behavior is  
4 simply not sustainable. The high subsidizing prices of its other services  
5 act as a magnet for competitors. This reduces the incumbent's sales of  
6 the subsidizing services and leaves the incumbent serving all of the  
7 subsidized service market; this is unsustainable. Competition is the  
8 natural enemy of such cross-subsidies.

9

10 Q. WHAT TYPE OF COST STUDIES ARE APPROPRIATE IN A  
11 COMPETITIVE MARKET ENVIRONMENT?

12 A. Competition leads to prices that exceed the total incremental costs of  
13 individual services by an amount sufficient to recover the efficiently  
14 incurred total costs of doing business, including shared and common  
15 costs. In an effectively competitive market, competition weeds out  
16 inefficient suppliers, and cost studies are therefore not explicitly  
17 required for public policy purposes. Firms with inefficiently high costs  
18 simply do not survive. As noted above, inflated prices do not persist if  
19 cross subsidies are inherent in the price structure.

20

21 Competing firms themselves may estimate their own costs in order to  
22 improve and refine business decisions. These firms are best served by  
23 using the same economic principles I describe in this testimony.

24 Q. WHAT TYPES OF COST STUDIES ARE APPROPRIATE IN A  
25 REGULATED ENVIRONMENT?

1 A. For the purposes I have outlined above, incremental cost studies are  
2 the appropriate studies for establishing the lower bound for prices (not  
3 the price itself) or the lower bound for revenues received from a service  
4 or element in order to preclude the service or element from receiving a  
5 cross subsidy. A properly performed long-run incremental cost study  
6 investigates the lowest cost combination of the resources that are  
7 required by a specific firm to produce a given service or network  
8 element. An incremental cost study should consider the most economic  
9 transition from the existing facilities the firm currently uses, to the  
10 facilities the firm will use in the future.

11

12 Q. IS THERE OTHER INFORMATION THAT SHOULD BE CONSIDERED  
13 WHEN ESTABLISHING PRICES?

14 A. Yes. Incremental costs only establish the lower-bound for revenues  
15 generated from a service or element; incremental costs do not  
16 determine the prices themselves. Regulators (and business managers)  
17 should also consider two additional categories of information for pricing:  
18 1) other costs; and 2) market conditions. As I will describe later in my  
19 testimony, there are other costs that a firm must also recover including  
20 shared and common costs, as well as any shortfall in recovering its full  
21 historical costs. Market conditions will dictate where (the price level  
22 and price structure) these other costs may be recovered. Market  
23 conditions also include the existing level and structure of the incumbent  
24 firm's other prices. Prices should be both internally (by comparison with

1 the firm's other prices) and externally (by comparison with the prices of  
2 alternatives customers face) consistent.

3

4

#### SECTION IV

5

#### INCREMENTAL COST FOUNDATIONS

6

7 Q. DOES THE TELECOMMUNICATIONS ACT OF 1996 MENTION THE  
8 TERM "COST"?

9 A. Yes. However, while the term "cost" appears over 30 times in the Act,  
10 there is no mention of total element long-run incremental cost  
11 ("TELRIC"), total service long-run incremental cost ("TSLRIC"), long-run  
12 incremental cost ("LRIC"), or even incremental cost or forward-looking  
13 cost. The phrases "additional cost" and "costs that will be avoided by  
14 the local exchange carrier" are used in the act, but not with respect to  
15 UNE costs.

16

17 Q. WHAT DOES THE ACT DIRECT WITH REGARD TO THE COSTS OF  
18 PROVIDING UNES.

19 A. The Telecommunications Act of 1996 discusses UNE costs in the  
20 context of charges for interconnection and network elements, at Section  
21 252 (d)(1)(A) and (B). It states that such charges shall be "(i) based on  
22 the cost (determined without reference to a rate-of-return or other rate-  
23 based proceeding) of providing the interconnection or network element  
24 (whichever is applicable), and (ii) nondiscriminatory, and (B) may  
25 include a reasonable profit." What constitutes a "reasonable profit" has

1           been a point of controversy. Normally profit is determined by market  
2           conditions, not regulation. Indeed, Adam Smith's "invisible hand" is the  
3           ebb and flow of profit opportunities brought about by market conditions  
4           that have their roots in consumers' needs and desires.

5

6    Q.    DOES THE FEDERAL COMMUNICATIONS COMMISSION (FCC) USE  
7           THE TERM TOTAL ELEMENT LONG-RUN INCREMENTAL COST  
8           (TELRIC)?

9    A.    Yes. In its Interconnection Order of August 8, 1996, the FCC coins the  
10           term TELRIC. The term and related cost concepts are discussed in  
11           detail in the Interconnection Order. However, at this point, it is best to  
12           first discuss the basic principles of forward-looking incremental costs in  
13           order to better understand the FCC's TELRIC terminology.

14

15   Q.    IS IT IMPORTANT THAT INCREMENTAL COST STUDIES BE BASED  
16           ON ECONOMIC PRINCIPLES?

17   A.    Yes, basing incremental cost calculations on economic principles is  
18           critical. Incremental cost is a concept that is well developed in the field  
19           of economics, not accounting.

20

21   Q.    IS THERE A CORE ECONOMIC PRINCIPLE THAT SHOULD GUIDE  
22           INCREMENTAL COST CONSIDERATIONS?

23   A.    Yes. The guiding principle for incremental cost considerations is cost  
24           causation. Incremental cost calculations should reflect only those  
25           economic costs that are caused by the cost object under consideration.

1           The term “incremental cost” was selected by economists to imply that  
2           an increment of cost is incurred or saved by some specified action,  
3           usually taken by managers or other governing authorities such as  
4           regulators. In telecommunications today, a cost object typically refers  
5           to the provisioning of a service or an unbundled network element  
6           (“UNE”).

7  
8    Q.    ARE THERE OTHER ECONOMIC PRINCIPLES THAT SHOULD BE  
9           FOLLOWED IN REFERENCING AN INCREMENTAL COST STUDY?

10   A.    Yes. As used in this proceeding, incremental cost studies should (1)  
11           be forward-looking, (2) pertain to the long run, and (3) reflect economic  
12           costs **rather** than accounting costs.

13  
14   Q.    PLEASE EXPLAIN THE CONCEPT OF FORWARD-LOOKING  
15           COSTS.

16   A.    A calculation of BellSouth’s incremental costs should be based on the  
17           expected cost to provide services or elements using efficient (i.e., least-  
18           cost) technologies that are practically available to BellSouth in Florida.  
19           For example, if the existing network consists of part fiber optic cable  
20           and part copper cable, the embedded or accounting cost would reflect  
21           this mix of technology. However, if all future growth and replacements  
22           most efficiently would use only fiber optic cable, then a forward-looking  
23           incremental cost analysis would appropriately use the cost of fiber optic  
24           cable. In other words, forward-looking incremental cost anticipates the  
25           manner in which resources could be most efficiently deployed in the

1 future, rather than looking back to the manner in which resources were  
2 deployed in the past.

3

4 Incremental costs should best reflect the costs that efficiently would be  
5 incurred in the future.

6

7 Q. WHAT IS THE DISTINCTION BETWEEN THE LONG RUN AND  
8 SHORT RUN?

9 A. In economic theory, the long run is a circumstance in which all inputs  
10 can be adjusted to optimal levels. The short run corresponds to a  
11 circumstance in which one or more inputs cannot be so adjusted. While  
12 these theoretical constructs are useful teaching tools, they must be  
13 tempered with practical considerations.

14

15 In practice, regulated industries generally differentiate between long-run  
16 costs and short-run costs by including or excluding (respectively) the  
17 cost of changing capacity through new construction or through  
18 liquidation of existing assets to achieve levels that represent optimal  
19 capacity utilization and spare capacity. Long-run costs reflect the  
20 opportunities to liquidate capital assets, construction of new plant, as  
21 well as the costs of operating that plant. In practice, short-run costs, on  
22 the other hand, generally pertain only to the cost of operating and  
23 maintaining existing capital assets whether such levels of assets are  
24 optimal or not (distinguishing between those that are used and those

1 that are idle). In some instances short-run costs may include the higher  
2 costs of adjusting to temporary limits on capacity or other constraints.

3

4 It is common practice in regulated industries to use long-run costs in  
5 support of tariffs because they include all costs, including investment-  
6 related costs, directly caused by a service, and they are consistent with  
7 long-term rate stability.

8

9 Q. WHY IS IT APPROPRIATE FOR AN INCREMENTAL COST STUDY  
10 TO USE ECONOMIC COSTS RATHER THAN ACCOUNTING  
11 COSTS?

12 A. It is more appropriate to use economic costs for at least two reasons.  
13 First, the economic cost of a particular product or service represents  
14 what society must forego, now and in the future, to obtain it. Economic  
15 cost measures the value of the resources used up when more of a good  
16 or service (or a network element) is produced. And second, economic  
17 costs -- by their very nature -- are forward-looking. Accounting costs  
18 reflect the historical transactions undertaken by a firm as recorded by a  
19 conventional standard. Because accounting costs (i.e., historical or  
20 embedded costs) do not necessarily reflect the forward-looking  
21 economic costs of providing telecommunications services and  
22 elements, incremental cost analysis must consider economic costs, and  
23 not necessarily accounting costs, to accurately reflect the economic  
24 value of the resources utilized. Accounting information is useful for a  
25 variety of functions, but it does not necessarily reflect incremental costs.

1 Q. IS IT EVER APPROPRIATE TO USE ACCOUNTING COSTS WHEN  
2 ESTIMATING INCREMENTAL COSTS?

3 A. Yes. Accounting information may properly be used to estimate  
4 economic costs when accounting costs constitute reasonable estimates  
5 of forward-looking economic costs (i.e., where past costs are  
6 acceptable surrogates for future costs). Accounting data are often  
7 readily available, and can provide useful information on the facilities  
8 that currently exist.

9

10 Q. WHAT TYPES OF INCREMENTAL COST STUDIES ARE  
11 CURRENTLY DEVELOPED IN THE TELECOMMUNICATIONS  
12 INDUSTRY FOR REGULATORY PURPOSES?

13 A. While any proper incremental cost is based on the principles I have just  
14 described, two cost labels are now typically used: Total Service Long-  
15 run Incremental Cost ("TSLRIC") and Total Element Long-run  
16 Incremental Cost ("TELRIC"). Such studies should identify the forward-  
17 looking cost avoided (or added) by discontinuing (or offering) an entire  
18 service or element, holding constant the production of all other services  
19 or elements produced by the firm. As such, TSLRIC and TELRIC  
20 studies include those costs which vary with the volume of the service or  
21 element as well as some costs that are unaffected by changes in the  
22 volume of the service or element in question, but which are caused by  
23 the provision of the service or element in total.

24



1 Volume sensitive costs are those which are caused by changes in the  
2 volume or output of the service or element. Volume insensitive costs  
3 are those which are caused by the existence of the service or element  
4 in total, but which are invariant to the level of output of the service or  
5 element. TELRIC is the name chosen by the FCC to designate that the  
6 TSLRIC concept has been applied to UNEs.

7

8 Q. WHAT IS THE FUNDAMENTAL DIFFERENCE BETWEEN TSLRIC  
9 AND TELRIC STUDIES?

10 A. The primary difference between a properly conducted TSLRIC and  
11 TELRIC studies is the cost object that is being studied. In a TSLRIC  
12 study, the object of study is a service. In a TELRIC study, the object  
13 under study is a UNE. The economic principles underlying each study  
14 are the same. Obviously, the cost object -- whether a UNE or a service  
15 -- may have implications regarding what costs will be incurred (e.g.,  
16 wholesale versus retail costs).

17

18 For brevity's sake, I will sometimes use the word service to refer to both  
19 services and elements, and the term TSLRIC to refer to studies  
20 considering either services or elements, unless a distinction is  
21 necessary. In addition, one could view UNEs as simply new services  
22 that will be sold to ALECs.

23

24 Q. HAS THERE BEEN ANY CONFUSION REGARDING THE USE OF  
25 THE TERM TELRIC?

1 A. Yes. In its Interconnection Order, the FCC has used the term TELRIC,  
2 in two different ways. First, it uses the term TELRIC as I have  
3 described it above, as a forward-looking incremental cost methodology.  
4 (The FCC's use of the term TELRIC expresses the combined volume  
5 sensitive and volume insensitive cost *per unit of output* rather than in  
6 total.) However, at times the FCC has used TELRIC to refer to its  
7 proposed TELRIC pricing methodology, where "TELRIC pricing"  
8 includes a "reasonable allocation of forward-looking joint and common  
9 costs" (e.g., paragraph 672). I will discuss joint, shared and common  
10 costs shortly.

11

12 Q. DO INCREMENTAL COSTS REPRESENT ALL OF THE COSTS OF  
13 THE COMPANY?

14 A. No. Except for the FCC's intended inclusion of shared and common  
15 costs in the TELRIC price, the sum of all incremental costs does not  
16 normally reflect the total costs of the Company. The Company also has  
17 shared and common costs that are not included in incremental cost  
18 calculations.

19

20 Q. WHAT ARE SHARED AND COMMON COSTS?

21 A. The terms shared (sometimes called joint) and common costs are often  
22 used in related, but different ways. The important aspect of these costs  
23 is that they are economic costs necessarily incurred by the firm that are  
24 not included in an incremental cost calculation. A shared cost is  
25 caused by the provision of two or more services or elements, but is not

1 solely attributable to any particular service or element. Common costs  
2 are a special type of shared costs incurred for the benefit of the firm as  
3 a whole, which are only avoided if all services and elements offered by  
4 the firm were discontinued. Common costs are unaffected by decisions  
5 involving individual services, elements, or specified groups of services  
6 or elements.

7  
8 Q. CAN YOU PROVIDE A GRAPHICAL DESCRIPTION OF THE  
9 RELATIONSHIP BETWEEN INCREMENTAL COSTS AND SHARED  
10 AND COMMON COSTS?

11 A. Yes, my Exhibit RDE-1 illustrates these relationships.

12  
13 Q. PLEASE EXPLAIN THE DIAGRAM SHOWN IN EXHIBIT RDE-1  
14 WHICH DEPICTS THE COST RELATIONSHIPS.

15 A. In the diagram, the term "object" refers to the portion of business under  
16 study. For example, the object may be a service when performing a  
17 TSLRIC study or a UNE when performing a TELRIC study. The cost  
18 incurred as a result of providing a particular object is depicted in the  
19 four boxes labeled A through D (for ease, only four objects are shown in  
20 this example). Next, shared costs incurred as a result of providing a  
21 group of objects (also referred to as a family of objects) is shown.  
22 These shared costs are unaffected by providing, or not providing,  
23 individual objects, but are avoided if a whole family of objects is  
24 discontinued. For example, a software right-to-use fee might apply to

1 multiple switch services. Only if the incumbent carrier were not to  
2 provide switched services at all would such costs be avoided.

3

4 Finally, truly common costs, (i.e., costs of doing business that do not  
5 change regardless of how many objects, or families of objects), are  
6 shown at the bottom of the diagram. The firm avoids such costs only if  
7 it discontinues its business altogether.

8

9 Q. YOUR DIAGRAM IN EXHIBIT RDE-1 ALSO LISTS VOLUME  
10 SENSITIVE AND VOLUME INSENSITIVE (FIXED) COSTS. WHAT DO  
11 THESE LABELS MEAN?

12 A. Incremental costs that are directly attributable to an individual UNE or  
13 service come in two forms: volume-sensitive (variable) and volume  
14 insensitive (fixed) costs. These volume-based terms are more precise  
15 than the old terms "fixed" and "variable" since they more specifically  
16 describe variability (and fixity) with respect to volume. The old term  
17 "fixed" in particular often lead to confusion.

18

19 Often a business or regulatory decision, such as lowering a price,  
20 causes an increase in the quantity demand of the service or element  
21 (an increase in volume) and, therefore, an increase in resources to  
22 meet that increased volume. The additional resources have costs that  
23 are best described as "volume-sensitive."

24

1 Other decisions, such as a decision to initially provide a service (entry)  
2 will cause additional costs, beyond volume-sensitive costs. An entry  
3 decision is much broader in scope than a pricing decision and affects a  
4 broader range of resources. Product management or marketing  
5 personnel dedicated to a service or element, service-specific  
6 advertising, one-time service start-up costs for a service, and some  
7 types of right-to-use fees are examples of volume-insensitive costs still  
8 specific to a service or an element, but which do not vary with volume.

9

10 Q. IF A NETWORK-BASED COMPANY LIKE BELL SOUTH IS REQUIRED  
11 TO SET RATES FOR EACH SERVICE OR ELEMENT JUST  
12 SUFFICIENT TO COVER TSLRIC OR TELRIC, WILL THAT  
13 COMPANY RECOVER ALL OF ITS COSTS?

14 A. No, prices equal to TSLRIC or TELRIC (as the cost concept not the  
15 pricing concept) will not be sufficient to recover all of the costs of a  
16 network-based company like BellSouth. Service and element prices,  
17 which only generate total revenue equal to the sum of all service  
18 incremental costs, will not cover total cost. As I noted above, there are  
19 common costs incurred by a company, especially a multiservice  
20 network-based company like BellSouth, which are *not* incremental to  
21 any one service, but which are nevertheless valid costs of engaging in  
22 its business activities. In total, service revenues must exceed service  
23 incremental costs by a margin sufficient to recover all costs of the firm,  
24 including the common costs of the firm. Even if it were determined that  
25 some costs presently categorized as common were incremental after

1 all, prices would need to cover those higher costs and contribute toward  
2 the remaining (non-incremental) costs. To simply assure that each  
3 service does not receive a subsidy, by establishing all service prices at,  
4 or slightly above, any measure of incremental costs means that a  
5 provider will not recover all of its costs.

6  
7 Moreover, BellSouth cannot be said to have priced its services to attain  
8 a reasonable profit (as required by the Telecommunications Act) until its  
9 prices are set sufficiently above any measure of incremental costs to  
10 recover its common costs plus a return. In short, if BellSouth is  
11 required to set service prices at any measure of incremental costs, with  
12 no provision for common costs, which must necessarily be incurred to  
13 provide all of its services, then it cannot even cover its total costs, much  
14 less earn a profit on those services.

15

16 Q. IS THERE SOME MEASURE OF COST THAT CAN BE USED TO  
17 ESTABLISH PRICES?

18 A. No. Incremental costs can be used to establish the lower bound for  
19 prices (the volume sensitive incremental cost), and the lower bound for  
20 revenue from a service in total (volume sensitive and volume insensitive  
21 costs in total). However, there is no "cost" consistent with economic  
22 principles that can be used to determine a price. Prices should be  
23 established based on costs and market conditions. By market  
24 conditions I mean characteristics of demand and competitors. Market  
25 conditions include the prices, quality and characteristics of alternatives

1 to the service or element in question, including the prices of related  
2 services offered by the same company. In this case, the prices of retail  
3 services are critically relevant to determining the market prices of  
4 unbundled network elements.

5

6 Q. WHAT SPECIFIC CRITERIA SHOULD A PROPER TS/TELRIC STUDY  
7 MEET?

8 A. A TS/TELRIC study should meet five requirements:

9 1. The study should be forward-looking. A TS/TELRIC study, by  
10 definition, should represent the current and future technologies used to  
11 provide the service (or element) under study, rather than the cost of  
12 embedded (historical) technologies, unless they are still forward-looking  
13 technologies.

14 2. The proper economic life of purchased equipment must be  
15 considered for depreciation purposes.

16 3. The TS/TELRIC study should include, in addition to operating  
17 expenses, investments that must be made in capital assets necessary  
18 to provide the service or (element) under study.

19 4. The inputs into a TS/TELRIC study should correspond to the  
20 physical resources required to provide the service or element under  
21 study. In other words, the engineering of the network and the use of  
22 physical resources that produce the service or element should form the  
23 basis of the study.





1 685). This approach incorporates the following characteristics: 1)  
2 "forward-looking economic cost;" 2) "most efficient technology deployed  
3 in the incumbent LEC's current wire center locations;" 3) "new  
4 technology that is compatible with existing network design;" 4) costs  
5 "incumbents actually expect to incur." At paragraph 680 the FCC also  
6 notes the incumbent LEC's greater access to the information necessary  
7 to calculate costs. Obviously, incumbent LECs (ILECs) have greater  
8 access to the costs of actual networks not hypothetical networks.

9

10 Q. IS THE STATED OBJECTIVE OF THE FCC'S FIRST  
11 INTERCONNECTION ORDER REGARDING THE COSTS  
12 INCUMBENTS *ACTUALLY* EXPECT TO INCUR CONSISTENT WITH  
13 ECONOMIC THEORY?

14 A. Yes, the FCC's objective is consistent with economic theory. For  
15 example, consider the advice of Nobel Laureate Ronald Coase: "In  
16 calculating the costs of an additional supply of a public utility service, it  
17 is of course necessary to start with the industry as it is, with whatever  
18 assets it possesses and the circumstances in which it finds itself. Costs  
19 are rooted in the actual situation." (R. H. Coase, "The Theory of Public  
20 Utility Pricing and Its Application," *Bell Journal of Economics and  
21 Management Science*, Vol. 1, No. 1 (Spring 1970), p. 123). The  
22 relevant economic cost reflects the economic value of the resources  
23 that real providers will use to make services and functions available.

24

1 Q. ARE PRICES IN COMPETITIVE MARKETS DETERMINED BY A  
2 HYPOTHETICAL LEAST COST FIRM?

3 A. No, prices in competitive market do not reflect the costs of a  
4 hypothetical, or actual least-cost firm.

5  
6 Q. PLEASE EXPLAIN WHY PRICES IN COMPETITIVE MARKETS ARE  
7 NOT EQUAL TO THE COSTS OF THE LEAST-COST, MOST  
8 EFFICIENT ACTUAL FIRM IN THE MARKET?

9 A. Prices in competitive markets are not even determined by the lowest  
10 cost firm that actually exists. Prices in competitive markets reflect the  
11 full costs of the highest cost, least efficient actual firm that actually  
12 survives in the market. Other higher cost firms do not survive in the  
13 market. The most efficient, lowest cost firms in a competitive market  
14 have costs that are below the market price. Such firms are rewarded  
15 with higher than average accounting profits, called "rent" in the  
16 economic literature.

17  
18 The market process is a dynamic one in which every firms seeks to find  
19 new, better, and less costly methods of production. Successful firms  
20 are rewarded with above average accounting profits, while the least  
21 successful firms are likely to sustain losses.

22  
23 Q. ARE YOU SUGGESTING THAT COST ESTIMATES REFLECT  
24 INEFFICIENT OR IMPRUDENT PRACTICES?

1 A. No. TS/TELRIC estimates should reflect prudent practices and efficient  
2 forward-looking costs given the network constraints faced by the  
3 particular provider. In competitive markets, firms make different  
4 choices regarding location, scale, technology, labor intensity, and other  
5 factors. At any one point in time, one firm may have a lower per unit  
6 cost than a second firm, even though both firms are operating efficiently  
7 given their choices. At a different point in time, or under different  
8 circumstances, the positions of the firms may be reversed.

9  
10 This is part of the danger of attempting to estimate the costs of a  
11 hypothetically efficient firm. Even if one were to estimate an  
12 agglomeration of the "low cost" characteristics of several firms, such a  
13 result would be meaningless. Such a firm would not exist in reality.

14  
15 Q. SHOULD BELLSOUTH'S TSLRIC AND TELRIC COST MODELS  
16 REFLECT THE ACTUAL CHARACTERISTICS OF ITS NETWORK?

17 A. Yes. BellSouth's TSLRIC and TELRIC cost models and cost estimates  
18 should ideally reflect the characteristics of the network that determine  
19 the forward-looking costs of the resources it could use to provide  
20 services and unbundled network elements in the future. For example,  
21 its models and estimates should reflect actual and expected customer  
22 locations, its actual wire center locations and associated wire center  
23 boundaries, and the fact that its network design cannot ignore  
24 topography, rights-of-way and property boundaries.

25

1 Q. HOW SHOULD COSTS BE ESTIMATED WHEN ALL OF THE  
2 INFORMATION ABOUT THE ACTUAL NETWORK  
3 CHARACTERISTICS ARE NOT AVAILABLE?

4 A. In cost estimation models and practices (or in any model) there will  
5 always be instances in which collecting and evaluating additional  
6 information will create less value (by increasing the accuracy of the  
7 estimate) than additional costs caused such collection and evaluation.  
8 Models by their very nature and construction are not, and should not  
9 be, exact replicas of reality. In making cost estimates, sound  
10 judgement is required to find the right balance between increased  
11 accuracy and the cost of additional information used to approximate the  
12 costs that can exist in the future.

13

## 14 SECTION VI

### 15 THE ECONOMICS OF DEAVERAGING

16

17 Q. WHAT DOES "RATE DEAVERAGING" MEAN?

18 A. Rate deaveraging refers to charging different rates for the same or  
19 similar service based on geography (geographical deaveraging) or  
20 other characteristic.

21

22 Q. IS RATE DEAVERAGING ECONOMICALLY APPROPRIATE?

23 A. In general, it is best to establish rates that reflect costs; therefore, it is  
24 best to allow rates to vary when costs vary. For example, loop costs  
25 will vary based on the distance to the central office and/or other points

1 of aggregation (e.g., the feeder/distribution interface) and the density of  
2 customers served. Short loop lengths and high density lead to  
3 relatively low costs, while long loop lengths and low density lead to  
4 relatively high loop costs. Deaveraging could occur via rates based on  
5 distance and density or on some geographic characteristics that  
6 correspond to variations in distance and density.

7

8 Q. FOR WHICH UNES IS DEAVERAGING IMPORTANT?

9 A. Deaveraging is most important for unbundled loops, as well as for loop-  
10 based retail services. While other UNE costs may vary with geography,  
11 loop costs vary most significantly with geography, distance and density.

12

13 Q. DOES THE FCC INTERCONNECTION ORDER MANDATE  
14 DEAVERAGING OF UNES?

15 A. Yes. Deaveraging is discussed in section VII (pricing of interconnection  
16 and unbundled elements), B (Cost-Based Pricing Methodology), 3)  
17 (Rate Structure Rules), c) (Geographic/Class-of-Service Averaging).  
18 The FCC concludes: "Where such systems [zones or other forms of  
19 deaveraging] are not in existence, states shall create a minimum of  
20 three cost-related rate zones to implement deaveraged rates for  
21 interconnection and unbundled elements" (paragraph 765). BellSouth's  
22 witnesses Mr. Varner and Mr. Hendrix discuss, in their direct testimony,  
23 the delays in the FCC's consideration of UNE deaveraging, and  
24 BellSouth's proposal in this proceeding for two geographic zones.

25

1 Q. ARE BASIC LOCAL EXCHANGE RETAIL RATES PRESENTLY  
2 DEAVERAGED IN FLORIDA?

3 A. Yes, in a manner of speaking. BellSouth's basic local exchange rates  
4 in Florida currently are higher in urban areas than in rural areas. This  
5 pattern of rates is reversed from the pattern of basic local exchange  
6 costs. Urban areas tend to have shorter loop lengths and greater  
7 density and therefore lower costs. Rural areas tend to have longer loop  
8 lengths and lower density and therefore higher costs. The existing  
9 pattern of local rates therefore diverges from costs to an even greater  
10 extent than would a single state-wide average price for all loop-based  
11 retail services.

12  
13 While the existing retail rate structure for basic exchange service might  
14 be described as "deaveraged," for convenience I will use the term  
15 deaverage to mean moving toward a rate structure that more closely  
16 reflects costs. Here my use of the term deaverage is similar to the term  
17 rebalance.

18

19 Q. IS RATE DEAVERAGING SOUND ECONOMIC POLICY?

20 A. Rate deaveraging is generally sound economic policy. The change in  
21 rate structure should better reflect underlying costs and market  
22 conditions much as they do in deregulated markets. Because loop  
23 costs vary significantly based on distance and other factors, there are  
24 clearly opportunities to deaverage and rebalance the prices of  
25 unbundled loops and loop-based retail services in order to create

1 economically superior prices. If rates are not adequately deaveraged to  
2 align with costs, explicit subsidies (e.g., Universal Service subsidies)  
3 can be added to rates in a manner that accomplishes at least part of  
4 economic efficiencies that would occur with market prices.

5

6 Of course, the prudence of rate deaveraging and related subsidy  
7 structures must also be balanced against the administrative costs of  
8 any rate change and its affect on other regulatory objectives and public  
9 policy. Excessive administration burdens themselves can be a  
10 significant source of economic inefficiencies.

11

12 Q. WHAT IS THE ECONOMICALLY APPROPRIATE RELATIONSHIP  
13 BETWEEN UNBUNDLED LOOP RATES, THE RATES FOR LOOP-  
14 BASED RETAIL SERVICES, AND UNIVERSAL SERVICE FUNDING?

15 A. These three issues are closely tied together. Ideally, unbundled loop  
16 rates would be deaveraged at the same level (and in the same  
17 direction) as loop-based retail services. In addition, for any geographic  
18 area, unbundled loop rates should be consistent with loop-based retail  
19 services plus any universal service funding for that area. Moreover,  
20 unbundled loop rates and retail rates for loop-based services should be  
21 consistent with market conditions (as I discussed earlier in my  
22 testimony) in that area.

23

24 Q. ARE DEAVERAGED UNE RATES AND SIMULTANEOUSLY  
25 DEAVERAGED (AT THE SAME LEVEL AND IN THE SAME

1           DIRECTION) RETAIL RATES CONSISTENT WITH A COMPETITIVE  
2           RESULT?

3    A.    Yes. As I stated earlier, rates should reflect underlying costs and  
4           market conditions. Since loop costs are higher in long-loop, low-density  
5           rural areas, both unbundled loop rates and retail rates for loop-based  
6           retail services should be higher in such areas. Similarly, since loop  
7           costs are lower in short-loop, high-density urban areas, both unbundled  
8           loop rates and retail rates for loop-based retail services should be  
9           relatively lower in such areas. Such a result is consistent with  
10          economic efficiency and competitive markets.

11

12   Q.    ARE DEAVERAGED UNE RATES AND EXISTING RETAIL RATES  
13          CONSISTENT WITH A COMPETITIVE RESULT?

14   A.    No. Both retail rates and UNE rates should reflect underlying variations  
15          in costs. Properly deaveraged UNE rates in combination with averaged  
16          retail loop-based service rates (or those that are deaveraged in the  
17          wrong direction, as currently exists) is simply inconsistent with a  
18          competitive result. Such a structure would create the wrong price  
19          signals for ALECs choosing to make investments in facilities and/or  
20          choosing to lease incumbent facilities.

21

22          In high-cost rural areas, retail rates would be too low and UNE rates  
23          would be too high relative to retail rates. In low-cost urban areas, retail  
24          rates would be too high relative to UNE rates. In general, all prices of



1 network capabilities available to competitors should be related to  
2 encourage the provision of end service as efficiently as possible.

3

4 Q. WHAT IS APPROPRIATE PUBLIC POLICY FOR DEAVERAGING  
5 UNES AND RETAIL RATES?

6 A. Ideally, sound public policy would allow for the simultaneous  
7 rebalancing of retail rates and establishment of full universal service  
8 high cost funding, when UNE rates are deaveraged. UNE rates should  
9 not be deaveraged before retail rates are rebalanced and universal  
10 service funding issues are resolved. However, if UNE rates are  
11 deaveraged first, retail rate rebalancing (coordinated with associated  
12 subsidy funding) should occur with the shortest possible lag.

13

## 14 SECTION VII

### 15 SUMMARY

16

17 Q. PLEASE SUMMARIZE YOUR TESTIMONY.

18 A. The primary points of my testimony are as follows:

- 19 • Unbundling should only occur for those UNEs that are necessary for  
20 competitors and for which their absence would impair entry into the  
21 market, thereby reducing the competitive nature of that market. This  
22 standard is economically reasonable.
- 23 • Volume sensitive incremental cost should establish the lower bound for  
24 pricing any unit of volume. Total service, or total element, increment  
25 cost (TSLRIC or TELRIC, including volume insensitive costs specific to

1 the service or element) represents the lower-bound for the revenue a  
2 service or element should receive in order to prevent a cross subsidy.  
3 Since competition normally causes firms to abide by this rule, these  
4 constraints need not be imposed by regulation as competitive  
5 conditions fully develop.

6 • However, multiservice firms also have shared and common costs that  
7 are significant. ILECs must price services and elements so as to  
8 recover incremental costs, shared and common costs, and historical  
9 investments in order to earn a “profit” as described the  
10 Telecommunications Act. Prices must generally exceed incremental  
11 costs in order to earn such a profit.

12 • The Telecommunications Act uses the term cost over 30 times, but it  
13 does not discuss incremental costs. TELRIC is a term coined by the  
14 FCC, and the governing principles and methodology should be no  
15 different from a TSLRIC approach, only with a focus on an element as  
16 the cost object.

17 • Any incremental cost calculation should be fundamentally based on the  
18 principle of cost causation and should be: 1) forward looking; 2) long  
19 run in nature; and 3) reflective of economic rather than accounting  
20 costs.

21 • There has been some confusion in the industry regarding notions of  
22 least-cost efficient provision of service. Incremental cost estimates  
23 should reflect the costs that will actually be incurred in the future by the  
24 provider. The costs of hypothetically efficient firms are irrelevant. In

1 competitive markets, prices are determined by the full costs of the  
2 highest-cost, least efficient firm that actually survives in the market.  
3 • Rate deaveraging is economically sound when economic costs vary  
4 significantly. UNE deaveraging should occur at the same time as retail  
5 rate rebalancing and universal service high cost funding.  
6 • The level at which UNEs should be deaveraged largely depends on the  
7 level at which retail services will be deaveraged/rebalanced. The  
8 greater the underlying cost differences, the greater the benefits of  
9 deaveraging.

10

11 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

12 A. Yes it does.

1 ACRONYMS

2

- 3 ALEC = Alternate Local Exchange Carrier  
4 FCC = Federal Communications Commission  
5 ILEC = Incumbent Local Exchange Carrier  
6 LEC = Local Exchange Carrier  
7 TELRIC = Total Element Long-Run Incremental Cost  
8 TSLRIC = Total Service Long-Run Incremental Cost  
9 UNE = Unbundled Network Element

Summary of the Economic Cost Relationships

