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BEFORE THE ARIZONA CORPORATION COMMISSION  
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6 IN THE MATTER OF THE INVESTIGATION  
OF THE COST OF TELECOMMUNICATIONS  
7 ACCESS.

DOCKET NO. T-00000D-00-0672

8 The Residential Utility Consumer Office ("RUCO") hereby provides notice of filing the  
9 Direct Testimony of Dr. Ben Johnson, in the above-referenced matter.

10 RESPECTFULLY SUBMITTED this 28th day of June, 2002.

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Arizona Corporation Commission

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17  
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20  
21  
22  
23  
24

Lyn Farmer  
Chief Administrative Law Judge  
Hearing Division  
Arizona Corporation Commission  
1200 West Washington  
Phoenix, AZ 85007

Christopher Kempley, Chief Counsel  
Legal Division  
Arizona Corporation Commission  
1200 West Washington  
Phoenix, AZ 85007

Ernest Johnson, Director  
Utilities Division  
Arizona Corporation Commission  
1200 West Washington  
Phoenix, AZ 85007

Richard S. Wolters  
AT&T Communications of the Mountain States, Inc.  
TCG Phoenix  
1875 Lawrence Street, Suite 1503  
Denver, CO 80202

Eric S. Heath  
Sprint Communications Company L.P.  
100 Spear Street, Suite 930  
San Francisco, CA 94105

Steven J. Duffy  
Ridge & Isaacson, P.C.  
3101 North Central Ave., Suite 1090  
Phoenix, AZ 85012-2638

Timothy Berg  
Theresa Dwyer  
Darcy Renfro  
Fennemore Craig, P.C.  
3003 North Central Ave., Suite 2600  
Phoenix, AZ 85012

Michael M. Grant  
Todd C. Wiley  
Gallagher & Kennedy, P.A.  
2575 East Camelback Road  
Phoenix, AZ 85016-9225

Thomas L. Mumaw  
Snell & Wilmer, LLP  
One Arizona Center  
Phoenix, AZ 85004-2202

Joan S. Burke  
Osborn Maledon, P.A.  
2929 North Central Ave., Suite 2100  
Phoenix, AZ 85012-2794

Curt Huttsell, Ph.D.  
State Government Affairs  
Citizens Communications Company  
4 Triad Center, Suite 200  
Salt Lake City, UT 84180

Valley Telephone Cooperative, Inc.  
752 East Malley Street, PO Box 970  
Willcox, AZ 85644

Michael W. Patten  
Roshka Heyman & DeWulf, PLC  
One Arizona Center  
400 East Van Buren Street, Suite 800  
Phoenix, AZ 85004

Thomas H. Campbell  
Lewis and Roca, LLP  
40 North Central Ave.  
Phoenix, AZ 85004-4429

Teresa Tan  
Worldcom, Inc.  
201 Spear Street, 9th Floor  
Department 9976  
San Francisco, CA 94105

Dennis D. Ahlers  
Eschelon Telecom, Inc.  
730 2nd Ave. South, Suite 1200  
Minneapolis, MN 55402-2456

By Linda Reeves  
Linda Reeves

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IN THE MATTER OF THE INVESTIGATION OF THE COST OF  
TELECOMMUNICATIONS ACCESS

DOCKET NO. T-00000D-00-0672

DIRECT TESTIMONY

OF

BEN JOHNSON, PH.D.

ON BEHALF OF

THE

RESIDENTIAL UTILITY CONSUMER OFFICE

JUNE 28, 2002

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TESTIMONY  
OF BEN JOHNSON, PH.D.  
On Behalf of  
THE STATE OF ARIZONA  
RESIDENTIAL UTILITY CONSUMER OFFICE  
Before the  
ARIZONA CORPORATION COMMISSION

Docket No. T-00000D-00-0672

**Introduction**

**Q. Would you please state your name and address?**

A. Ben Johnson, 2252 Killearn Center Boulevard, Tallahassee, Florida 32309.

**Q. What is your present occupation?**

A. I am a consulting economist and president of Ben Johnson Associates, Inc., an economic research firm specializing in public utility regulation.

**Q. Have you prepared an appendix that describes your qualifications in regulatory and utility economics?**

A. Yes. Appendix A, attached to my testimony, will serve this purpose.

**Q. What is your purpose in making your appearance at this hearing?**

A. Our firm has been retained by the Residential Utility Consumer Office ("RUCO") to assist with RUCO's participation in this generic proceeding to investigate the pricing of intrastate switched access service. I have been asked to provide testimony responding to the issues identified by the Arizona Corporation Commission (the Commission). More

1 specifically, I will be discussing (1) whether interexchange carriers ("IXCs") may be at a  
2 competitive disadvantage if access charges are not reformed, (2) whether transferring cost  
3 recovery responsibility from IXCs (e.g. through carrier common line ("CCL") charges) to  
4 end users results in end user subsidies of incumbent local exchange carrier  
5 ("ILEC")-provided toll services, (3) whether transferring cost recovery responsibility from  
6 IXCs to end users results in end user benefits, and (4) what considerations make access  
7 charge reform in the public interest and, more specifically, why the reform plan  
8 recommended by RUCO is in the public interest.

9  
10 **Q. Would you please explain how your testimony is organized, and briefly summarize**  
11 **its major elements?**

12 **A.** Yes. Following this introduction, my testimony has seven sections. The first section  
13 contains a brief discussion of the background of this proceeding and the positions of the  
14 other parties, to the extent these positions can be anticipated based upon comments  
15 previously filed in this proceeding.

16 The second section sketches the historical context of key issues involved in this  
17 proceeding, including positions taken over the past century by the U.S. Supreme Court,  
18 other state public utility commissions, Congress, and the Federal Communications  
19 Commission ("FCC") concerning certain issues which are crucial to the outcome of this  
20 proceeding. By examining these issues in a long term historical context, the Commission  
21 can gain valuable insight into the advocacy efforts of various parties, and gain a deeper  
22 understanding of the public policy tradeoffs involved in these issues.

23 The third section examines the public policy goals that I believe should guide the  
24 Commission's decisions in this proceeding. These policy goals include universal service,  
25 inter-customer equity, rate continuity, economic efficiency, technological innovation, and  
26 effective competition.

27 The fourth section focuses on the universal service goal and relates this goal to the

1 issues surrounding access rates and costs. I explain that transferring cost recovery  
2 responsibility from IXC's to end users (through higher local rates or per-line end user  
3 charges) may result in net benefits for high toll users but low toll users may experience  
4 higher bills, which may discourage them from having phone service.

5 In the fifth section I discuss the economic characteristics of the networks which  
6 are used in providing local exchange, toll, access, and custom calling services, and  
7 explain in some depth the reason why the cost of providing switched access service has  
8 been declining rapidly. I also explain why the appropriate method of recovering these  
9 costs tends to be so controversial.

10 In the sixth section I comment on existing switched access rates and I compare  
11 Qwest's rates in Arizona with the corresponding rates charged in various other states. The  
12 final section of my testimony is devoted to a few concluding remarks.

13  
14 **Background**

15  
16 **Q. Let's turn to the first section of your testimony. Would you please start by outlining**  
17 **the history of this proceeding?**

18 **A.** Yes. The Commission opened this docket in September 2000 with the intent of analyzing  
19 the relationship between the rates charged and the costs incurred in the provision of  
20 access service. [Procedural Order, December 3, 2001, p. 1] Due to "significant changes"  
21 that it cites as having occurring in access markets, the Commission Staff ("Staff") filed a  
22 request for a procedural order in this docket on November 21, 2001. [Id.] In that request,  
23 Staff developed a list of 25 questions which it felt the Commission should seek comment  
24 on from the intervening parties. [Id., pp. 2-4] The Commission subsequently issued a  
25 Procedural Order on December 3, 2001. [Id., p. 5] In that Order, the Commission asked  
26 parties to comment on each of Staff's 25 questions and asked Staff to file a proposed  
27 procedural schedule. [Id., p. 2] The list of questions covered such topics as methods for

1 reforming intrastate access charges, implicit subsidies, monopoly power in access  
2 markets, universal service, and a host of procedural matters.

3 After having the time table to file comments extended by the Commission, the  
4 Arizona Local Exchange Carrier Association ("ALECA"), AT&T, Citizens  
5 Communications, Cox Telecom, Eschelon Telecom, Qwest, RUCO, Sprint, Table Top  
6 Telephone Company, Verizon, and Worldcom all filed responses to the Commission's  
7 questions by March 8, 2001. [Staff Recommended Procedural Order, March 28, 2002, pp.  
8 1-2] After reviewing the filed comments Staff recommended that the Commission open a  
9 generic proceeding in which the parties could file multiple rounds of testimony.  
10 [Procedural Order, May 21, 2002, p. 1] Staff felt that parties should be required to draft  
11 direct testimony that answered four general questions, similar to those asked in the first  
12 Procedural Order.

- 13
- 14 1. Whether IXCs may be at a competitive disadvantage if  
15 access charges are not reformed.
  - 16 2. Whether transferring cost recovery responsibility from  
17 IXCs through CCL charges to end users (through flat rate  
18 end user charges) results in end users subsidies of  
19 ILEC-provided toll services.
  - 20 3. Whether transferring cost recovery responsibility from  
21 IXCs (through CCL charges) to end users (though end flat  
22 rate end user charges) results in end user benefits.
  - 23 4. What considerations make access charge reform in the  
24 public interest and in addition what considerations make  
25 the interested party's proposed access charge reform plan in  
26 the public interest. [Id., pp. 1-2]
- 27

28 Following a Qwest response which sought to exclude the consideration of special  
29 access issues from this proceeding, the Commission issued its latest Procedural Order on  
30 May 21, 2002. The Commission declined to exclude discussion of special access, while  
31 recognizing that the primary focus of the investigation is switched access, and it adopted  
32 these four general questions for purposes of guiding the parties' testimony. [Id., p. 3] The

1 Order also set a procedural timetable for the filing of testimony.

2  
3 **Q. To provide some context for the detailed testimony which follows, would you please**  
4 **briefly summarize the similarities and differences in the comments of the parties**  
5 **filed on March 8, 2001?**

6 A. Yes. First, Verizon and RUCO did not provide detailed comments on the substantive  
7 questions, instead focusing their responses on the procedural matters of interest to the  
8 Commission. Realizing the complexities involved in these issues, RUCO was not in a  
9 position to file detailed comments on these substantive issues without performing detailed  
10 research, with the assistance of outside experts. (RUCO subsequently hired our firm to  
11 assist it in this regard). Each of the other interveners did file responses concerning the  
12 substantive issues, and provided some indication of where they thought the Commission  
13 should go with this investigation.

14 Eschelon Telecom alone took the position that the Commission should not use  
15 this proceeding to move towards restructuring access charges in Arizona. Citing "a time  
16 of great uncertainty in the telecommunications industry" and the pending nature of  
17 Qwest's 271 application and "other fundamental issues about access and universal  
18 service" on the federal level, Eschelon felt that the Commission could best handle its  
19 investigation on a case-by-case approach rather than a statewide proceeding. [Responses  
20 of Eschelon Telecom, March 8, 2002, p. 1]

21 Cox took a similar stance in that it asked the Commission to "consider  
22 maintaining existing access charges or deferring any decision until the FCC conducts a  
23 significant restructuring of access charges." [Cox Arizona Telecom Comments, March 8,  
24 2002, p. 1] When asked whether switched access charges contain implicit subsidies, Cox  
25 answered in the affirmative, stating that the CCL charge creates a subsidy that flows from  
26 high volume toll users to low volume toll users because the CCL recovers NTS costs with  
27 TS rates. [Id., p. 2] Cox favors using total element long run incremental costs (TELRIC)

1 to determine the presence of a subsidy and studies of costs and rates in both the access  
2 and local exchange markets to determine the most appropriate method for recovering the  
3 joint cost of the local loop. [Id., p. 3]

4 Citizens' approach to the subsidy issue is somewhat similar in that it advocates  
5 using total service long run incremental costs (TSLRIC) to determine whether one service  
6 is subsidizing another. Citizens states, for example, that "recent TSLRIC estimates of  
7 basic local exchange services for Citizens' three Arizona ILECs show these services are  
8 priced well below TSLRIC, strongly indicating they receive a cross subsidy." [Citizens  
9 Communications Company Comments, March 7, 2002, p. 3] In pricing switched access,  
10 the Company supports using TSLRIC as a measuring stick. [Id., p. 1] While Citizens  
11 didn't explain how it treated joint and common costs in the referenced TSLRIC studies, it  
12 proposed using revenues from an array of different ILEC services to recover its fixed and  
13 common costs. [Id.]

14 Sprint uses the "cost-causation" terminology and line of argument to justify its  
15 view of the issues in this proceeding. Cost-causation, according to Sprint "means that all  
16 access charges should have an access cost associated with them and that the method of  
17 charging for access should reflect the manner in which these costs are incurred by the  
18 provider." [Sprint Communications Company Responses, March 7, 2002, p. 1] In other  
19 words, "costs should be borne by the service that creates the cost." [Id., p. 2] This is one  
20 of the classic arguments used to justify shifting costs away from toll services onto local  
21 service. Although this argument has been advocated much more often than it has been  
22 accepted by regulators, it continues to have a persuasive ring to it, if for no other reason  
23 than because of the equity implications. It seems equitable to require those who "cause"  
24 the costs of the local network to pay those costs. Similarly, it doesn't seem as inequitable  
25 to allow IXC's like Sprint to gain free use of the local telecommunications networks, if it  
26 can successfully be argued that these carriers don't "cause" the network to exist, and they  
27 don't "cause" the various joint and common costs of that network to be incurred. Using

1 this line of reasoning, Sprint argues that the CCL should be eliminated and the costs  
2 which have historically been recovered by this charge should instead be recovered from  
3 consumers of local exchange service. [Id.]

4 In its comments, ALECA cautions the Commission against this approach to cost  
5 allocation and recovery. Like Citizens Telecom, ALECA argues that all users of  
6 telecommunications facilities should pay for joint and common costs like loops, citing  
7 Section 254(k) of the Telecom Act. [ALECA Responses, March 6, 2002, p. 1] It argues  
8 further that "shifting access costs from per-minute rates to flat monthly rates such as a  
9 Subscriber Line Charge (SLC) will have the same effect as a local rate increase in the  
10 opinion of the consumer." [Id., p. 2] While ALECA shows some willingness to consider  
11 reductions to the CCL and other rates paid by carriers like Sprint, it cautions against  
12 changes which have the effect of greatly increasing local rates in the rural areas served by  
13 its members:

14  
15 ALECA believes that, should the Commission decide to reduce  
16 ALECA members' access rates, ALECA members must remain  
17 revenue-neutral. In other words, ALECA is amenable to a  
18 redesigned access rate structure where per-minute access rates are  
19 reduced only if new revenue sources are made available and only if  
20 the Commission maintains affordable local pricing for consumers.  
21 [Id., p. 23]  
22

23 Worldcom also advocates a massive shift in cost recovery away from switched  
24 access charges, suggesting the Commission use the current level of interstate access rates  
25 as a guide in establishing a redesigned intrastate access structure. [WorldCom Comments,  
26 March 8, 2002, p. 5] It attempts to gain support for its position by citing the interstate  
27 rates and noting that those rates which have been agreed to by the major parties involved  
28 in this proceeding, including the large ILECs like Qwest. [Id., pp. 5-6] In the FCC's  
29 CALLS proceeding, large ILECs and large IXCs agreed that interstate access rates should  
30 be set at a target of \$0.0055. [Id., p. 5] Worldcom argues that the costs for interstate and

1 intrastate access are identical and, therefore, the rates can be set at similar, if not identical  
2 levels. [Id., p. 6] Worldcom also cites the presence of competition in certain portions of  
3 the access market as a reason why the Commission should undertake a rate redesign. It  
4 mentions Qwest's forthcoming 271 application and the growth in wireless and internet  
5 messaging as additional reasons why it is concerned about the current high level of  
6 intrastate switched access rates, and expressed concern that without substantial reductions  
7 it might encounter a price squeeze. [Id., pp. 2-3]

8 AT&T takes a similar position to that of Sprint and Worldcom, urging the  
9 Commission to undertake "swift prescriptive action" to reform switched access rates.  
10 [Answers of AT&T, March 8, 2002, p. 36] While it also cites Qwest's 271 application as  
11 a reason for concern, AT&T also worries about the potential for "re-monopolization of  
12 the industry," focusing its concern more on Qwest than new technology competitors. [Id.]  
13 AT&T offers four policy options that, in its view, the Commission should consider in  
14 approaching the question of access reform. The second of these options is similar to  
15 Worldcom's recommendation.

- 16
- 17 • Elimination of the non-cost based carrier common line
  - 18 ("CCL") as the initial action
  - 19 • Mirroring of interstate switched access rates – rural and
  - 20 non-rural
  - 21 • Use of a cost proxy model for the determination of
  - 22 switching and transport rates for all incumbent carriers
  - 23 • CLEC access capped at non-rural carrier rates (once
  - 24 reformed) [Id., p. 8]
  - 25

26 On the question of subsidy, AT&T apparently intends to assert that loop costs  
27 shouldn't be recovered from switched access services, and should instead be borne  
28 entirely by local exchange customers. It states that "whether residential customers are  
29 subsidized today depends solely on whether the revenue received from vertical and other  
30 services covers the cost to serve and connect them." [Id., p. 11] Implicit in this wording is

1           the notion that revenues from IXCs aren't a relevant part of the analysis, and that none of  
2           the costs associated with connecting residential customers to the IXCs should be borne by  
3           the IXCs. Like Sprint with its "cost causer" argument, AT&T apparently wants this  
4           Commission to believe that the costs of connecting residential customers to IXCs is  
5           entirely the responsibility of the residential customers, and that the IXCs should be given  
6           free use of the facilities which connect these residents to the public switched network.

7           Qwest advocates the first of AT&T's proposed approaches and, to the extent the  
8           second option is pursued by the Commission, asserts that it would require "a  
9           revenue-neutral restructuring within Basket 2" of Qwest's Price Cap Plan. [Qwest  
10          Response, March 8, 2002, p. 5, 7] Qwest apparently intends to use the familiar argument  
11          that non-traffic sensitive costs shouldn't be recovered through traffic sensitive rates,  
12          contending that the CCL is inefficient because it recovers fixed costs through per-minute  
13          charges. [Id., p. 5] It feels that these per-minute charges would be more efficiently  
14          recovered through a "flat-rate per-line charge to end users." [Id.] Qwest argues that  
15          eliminating the CCL and imposing higher monthly charges on end users will encourage  
16          competition, and it dusts off the "bypass" argument which was widely advocated (but  
17          rarely accepted) during the mid to late 1980s. Qwest claims that in the absence of rate  
18          restructuring, high access rates may cause some customers to "bypass" access providers  
19          and instead connect directly to toll carriers. [Id., p. 3] In its comments, Qwest stresses the  
20          importance of adopting an approach that is efficient and competitively neutral. [Id., p. 3]  
21          Perhaps due to the success of the CALLS program in convincing the FCC to shift costs  
22          away from IXCs, Qwest suggests an attempt at consensus building, in which parties to  
23          this proceeding would "be permitted to get together and recommend a combination of  
24          rates that satisfies criteria for efficiency and benefits all parties including consumers."  
25          [Id., p. 6]

1 **History of the Toll vs. Local Battle**

2  
3 **Q. Let's turn to the second section of your testimony. Would you please begin by**  
4 **providing a brief definition of intrastate access charges?**

5 A. Yes. These are rates charged by LECs and paid by IXC's for the origination and  
6 termination of long distance calls. When an end user places or receives a toll call, they  
7 typically use a phone line provided by their local exchange carrier. Although the IXC  
8 typically bills an end user for the phone call, the IXC normally pays one or more LECs  
9 for the use of network facilities which are used in processing the call. These inter-carrier  
10 billings are referred to as "switched access charges." The current system of access  
11 charges has evolved since the mid 1980's, but it represents a continuation of cost recovery  
12 process which has existed for a much longer period. Although this cost recovery process  
13 has undergone extensive review and modification, it continues to be an important source  
14 of revenues for the LECs, and is one of the reasons why local exchange rates remain as  
15 low as they are—particularly in rural areas. A brief discussion of the history of this cost  
16 recovery process is useful, if for no other reason than because it places the current  
17 controversy over access charges into a broader context.

18  
19 **Q. Can you briefly explain the difference between switched and special access charges?**

20 A. Yes. Intrastate access charges include multiple "rate elements" that are designed to  
21 recover different types of costs. These rate elements fall into two main categories,  
22 switched access and special access. Switched access rates are designed to recover the  
23 costs of originating and terminating toll calls using ordinary phone lines connected to the  
24 LEC's end office switch. The most controversial rate element is the "carrier common  
25 line" charge, or "CCL" which recovers a portion of the cost of the line connecting an end  
26 user to the LEC, as well as the "port" which connects the line to the LEC's end office  
27 switch. Other rate elements recover a portion of the end office switch which is used in

1 processing the call, and help. In contrast, special access service typically provides a  
2 dedicated circuit that connects the customer's premise directly to the IXC. The equipment  
3 used in providing special access service is similar to, and may be identical to, that used in  
4 providing switched access service. However, special access circuits are dedicated to a  
5 narrow purpose, rather than being used jointly for many different purposes. These circuits  
6 are often used in private networks, but they are also used to create a direct connections  
7 between a particular end user and their serving IXC, without going through an LEC's  
8 switch. Large users can sometimes choose between special and switched access service to  
9 accomplish essentially the same functions, but special access service typically isn't a  
10 cost-effective option for residential and small business customers.

11  
12 **Q. Is the debate over the relationship between access costs and access rates a new one?**

13 A. No. For more than 20 years, interexchange carriers have advanced the argument that they  
14 should be allowed to use the local networks without paying anything for this privilege.  
15 They have advanced many different arguments in support of this position, including the  
16 contention that the costs in question are "non-traffic sensitive" (NTS) and these costs  
17 shouldn't be recovered through traffic sensitive toll charges (or access charges), the  
18 argument that the costs of the local loop are entirely the responsibility of the end user who  
19 is connected to that loop, and the argument that economic efficiency, the competitive  
20 process, or some other desideratum will be furthered if cost responsibility is shifted from  
21 toll to local markets.

22 Over the years, carriers have continued to recycle these arguments, adapting them  
23 to fit changing market conditions and changing attitudes of their audience. Prior to  
24 divestiture, the argument was that toll competition was increasing, and that local rates  
25 needed to be increased in order to "level the playing field" and protect the financial  
26 viability of the local carriers in the face of increased toll competition. Rate revisions were  
27 proposed which would allow the LECs to cut prices in toll markets (where they

1           anticipated the strongest downward pressure on rates due to competition) and which  
2           would allow them to "finance" these price cuts with increases in markets where  
3           competitive entry was expected to be more difficult, and where competitive pressures  
4           were expected to be less severe. By the mid-1980's, this theme was amplified and  
5           repeated throughout the country, with an emphasis on the potential effect of equal access  
6           and divestiture. Some of the Bell Operating Companies even implied that unless local  
7           rates were dramatically increased at the time of divestiture, disaster would befall them.  
8           Many regulators allowed rate increases around the time of divestiture, in most cases,  
9           however, local rates were not increased as much as requested. Events subsequently  
10          proved that the "doom and gloom" arguments were fundamentally false, or at least greatly  
11          exaggerated. In the years since divestiture, LEC profits remained strong, "bypass" of the  
12          LEC networks never grew as rapidly as predicted, and in most markets the LECs enjoyed  
13          strong growth in demand for their switched access service, despite the fact that access  
14          rates were established at levels far in excess of the levels advocated by AT&T and the  
15          Regional Bell Operating Companies (RBOCs). Not only has history proven many of the  
16          arguments in favor of shifting cost responsibility from toll to local markets to be false, but  
17          the arguments in favor of drastic cost shifting tend to be inconsistent with both economic  
18          theory and common sense.

19                 According to this line of thinking, the local exchange networks are the  
20          responsibility of the LECs and their local customers, and the interexchange carriers  
21          should not be required to pay for using these networks, or at most they should make only  
22          token payments for their use of the local networks. By this reasoning, because the IXC's  
23          don't "cause" the costs of the local networks to be incurred, and/or because their usage is  
24          "incidental" to the primary purpose of those networks, and/or because the costs in  
25          questions are classified as "non-traffic sensitive" while access charges and retail toll rates  
26          are both "traffic sensitive" rates, access rates should be reduced towards zero. According  
27          to this argument, the cost of the loop, drop wire, line card, and channel connection are

1 exclusively part of the incremental cost of providing local exchange service, and none of  
2 these costs can properly be considered part of the cost of providing switched access. If  
3 one believes this line of reasoning, it would seem that the LECs are wrong to charge the  
4 IXC's anything more than the direct, out of pocket cost of providing switched access  
5 service.

6  
7 **Q. You mentioned the U.S. Supreme Court. Has it issued any ruling concerning this**  
8 **controversy?**

9 **A.** Yes. The U.S. Supreme Court handed down a landmark decision concerning the  
10 interpretation and recovery of the joint cost of access lines more than 75 years ago in  
11 Smith vs. Illinois Bell Telephone Company ("Smith"). Writing for the Court on the  
12 question of whether the entire cost of the access line could be charged to a single service,  
13 Chief Justice Charles Evans Hughes noted as follows:

14  
15 In the method used by the Illinois Company in separating its  
16 interstate and intrastate business, for the purpose of the  
17 computations which were submitted to the court, what is called  
18 exchange property, that is, the property used at the subscriber's  
19 station and from that station to the toll switchboard, or to the toll  
20 trunk lines, was attributed entirely to the intrastate service... While  
21 the difficulty in making an exact apportionment of the property is  
22 apparent, and extreme nicety is not required..., it is quite another  
23 matter to ignore altogether the actual uses to which the property is  
24 put. It is obvious that, unless an apportionment is made, the  
25 intrastate service to which the exchange property is allocated will  
26 bear an undue burden.... [282 U.S. 150, 151 (August 1923).]  
27

28 In the years since, this principle of fairly distributing the joint or fixed costs of the  
29 network to all of the users of that network has been upheld again and again. Despite  
30 decades of pressure to shift network costs from toll to local services, the policy of  
31 spreading these costs across multiple services has been affirmed by state public utility

1 commissions in numerous proceedings throughout the country.  
2

3 **Q. Can you provide some recent examples where state commissions have supported the**  
4 **cost sharing principles set forth in the High Court's ruling in Smith vs. Illinois Bell?**

5 A. Yes. In many cases, the issue has been resolved without much explicit discussion (e.g. by  
6 failing to adopt proposed rate changes). However, in some cases Commissions have  
7 discussed the issue in considerable detail. One prominent recent example is a April 11,  
8 1996 order by the Washington Utilities and Transportation Commission, which rejected  
9 tariff changes proposed by Qwest (then known as U.S. West Communications or USWC).  
10 [Commission Decision and Order Rejecting Tariff Revisions, Docket No. UT-950200.]

11 In analyzing various cost studies submitted in that proceeding, the Washington  
12 Commission found as follows:  
13

14 [T]he cost of the local loop is not appropriately included in the  
15 incremental cost of local exchange service. The local loop  
16 facilities are required for nearly every service provided by the  
17 Company to a customer. Neither local service nor in-state long  
18 distance service nor interstate long distance nor vertical features  
19 can reach a customer without the local loop. Should USWC cease  
20 to provide any one of these services, its need for a local loop to  
21 provide the remaining services would remain. The cost of the local  
22 loop, therefore, is not incremental to any one service. It is a shared  
23 cost that should be recovered in the rates, but no one service is  
24 responsible for that recovery. USWC's presentation that the local  
25 loop is appropriately and necessarily an element of the cost of local  
26 exchange service, made through the testimony of witness Farrow,  
27 is not credible in light of the purposes of a long run incremental  
28 cost study and is inconsistent with accepted economic theory  
29 regarding such studies. [Order, p. 78]  
30

31 The Washington commission's ruling is particularly significant because it was  
32 decided in a state in which local exchange competition had emerged early. The  
33 commission found that the advent of local competition had not altered the economic

1 character of the loop. Under conditions of competition, the loop was still a joint and  
2 common cost that should not be recovered solely from end users, but rather in the prices  
3 of all the services that use the loop.

4 The Pennsylvania Commission noted as follows:

5  
6 We agree with the PTA and the OCA that local loop costs are joint  
7 or shared costs since the local loop is jointly utilized to provide a  
8 wide array of telecommunications services...[Pennsylvania Public  
9 Utility Commission Order in Docket Nos. I-00940035,  
10 L-000950105, August 31, 1995, p. 12.]  
11

12 Likewise, in an order dated December 27, 1995, the New Mexico State  
13 Corporation Commission concluded that "it is inappropriate to include the full cost of the  
14 local loop in the determination of the cost of local exchange services." [Order in Docket  
15 No. 94-291-TC: In the Matter of the Application of GTE Southwest, Inc. and CONTEL  
16 of the West, Inc. to Restructure their Respective Rates, III.58 (p. 15).]

17 Similarly, in its Costing and Pricing Rules, the Colorado Commission has stated  
18 as follows:

19  
20 The access loop is not a separate service but rather is an input  
21 necessary for the provision of many telecommunications services.  
22 As such, costs associated with the access loop will not appear in  
23 the total service long run incremental cost of any single service  
24 requiring the access loop but will appear as part of the total service  
25 long run incremental cost of the entire group of services requiring  
26 the loop.... [Rule 4(2)(iii)].  
27

28 The Colorado Commission subsequently reaffirmed this position in its Order in  
29 Docket No. 96S-257T (issued January 27, 1997), in which it stated:

30  
31 Loop costs are shared and common and should be covered by all  
32 the services using the loop.... The inclusion of loop costs in the

1 TSLRIC for basic exchange service violates the definition of  
2 TSLRIC in the Commission's Costing and Pricing Rules.... Loop  
3 costs would not be avoided if basic exchange services were  
4 eliminated and the provision of all other services continued. The  
5 network would still be a part of USWC's costs even if basic local  
6 exchange service were discontinued. [pp. 42-3.]  
7

8 In a general rate case of USWC in Utah, that commission expressed its  
9 dissatisfaction with the repeated failure of USWC to treat the loop as a shared cost:  
10

11 We are troubled by the Company's failure to take into account  
12 Commission Past orders which deal with some of the pivotal issues  
13 and assumptions which go into the calculation of TSLRIC. One  
14 failure, in particular, is the Company's decision to assign all costs  
15 of access lines to basic residential service... . The Commission has  
16 already rejected the Company's premise that the only purpose of  
17 access lines, the local loop, the is for the customer to obtain a dial  
18 tone or local service. Without the local loop, the end user would  
19 not have access to switched access products or use of toll services.  
20 [US West Communications, Inc., Utah Public Service  
21 Commission, Docket No. 95-049-05, Report and Order, at 95  
22 (Issued November 6, 1995).]  
23

24 In the Commonwealth of Virginia, based upon the record which included a cost  
25 study prepared and presented by GTE South Incorporated (the Company), a senior  
26 hearing examiner found:  
27

28 While cost of service studies are not a precise science, I am  
29 unwilling to accept the results of the Company's LRIC studies in  
30 this case because I believe the studies significantly overstate the  
31 LRIC of basic local service. The loop is a utility asset which is  
32 used by a myriad of other services in additional to local service.  
33 Loop costs are, in every sense of the word, joint and common costs  
34 which should be allocated to all of the services utilizing the loop.  
35

36 Indeed, under the Company's proposal to allocate all loop costs to

1 local service, the traffic of interexchange carriers would essentially  
2 receive a "free ride" over the loop. That is not fair to local service  
3 customers. Local service customers should not be saddled with all  
4 the costs of an asset which is used by numerous services provided  
5 by the Company, interexchange carriers and others. [Glenn P.  
6 Richardson, Report of Glenn P. Richardson, Senior Hearing  
7 Examiner, Case No. PUC950019, March 14, 1997.]  
8

9 In its final order, the Virginia Corporation Commission adopted this portion of the  
10 examiner's 121-page report. [Application of GTE South Incorporated For revisions to its  
11 local exchange, access and intraLATA long distance rates, Commonwealth of Virginia  
12 State Corporation Commission, Case No. PUC950019, at 5,19-20 (August 7, 1997).]

13 In Iowa, the Utilities Board specifically found:

14  
15 Designating the access line as a separate service and allocating all  
16 of its costs to the local service customer continues to be a major  
17 problem with U.S. West's LRIC methodology. [U.S. West  
18 Communications, Inc., Iowa Utilities Board, Docket No.  
19 RPU-94-1, Final Decision and Order, at 13 (IUB November 21,  
20 1994).]  
21

22 Similar conclusions have been reached at one time or another by regulatory  
23 commissions in many other states, including Florida, Iowa, Louisiana, Minnesota, New  
24 Hampshire, Texas, and Vermont. Furthermore, both the National Association of  
25 Regulatory Utility Commissions (NARUC) and the National Association of State Utility  
26 Consumer Advocates (NASUCA) have expressed support for the position that loop costs  
27 are properly treated as joint or common costs of the various services using the loop, and  
28 that these costs should not be shifted entirely onto local customers. [Comments of  
29 NARUC, FCC Docket CC 96-45, at 20 (Filed April 12, 1996); Comments of NASUCA,  
30 FCC Docket CC 96-45, at 23-24 (Filed April 12, 1996).]

31 In summary, numerous state regulators have joined NARUC, and NASUCA in  
32 acknowledging that loop costs are properly treated as joint costs of the full family of

1 services that make use of the loop, including access, and they should not be loaded  
2 entirely onto just one of those services (e.g. basic local service). While many of the  
3 Arizona carriers believe it is in their economic interests to place 100% of the loop and  
4 port costs onto local exchange customers, this approach is neither economically sound nor  
5 fair. I provide an extended discussion of the joint and common cost concept in Appendix  
6 B to my testimony.

7  
8 **Q. Has Congress also spoken to the issue of shifting joint and common costs entirely**  
9 **onto local service customers?**

10 A. Yes. The appropriate treatment of these shared costs has been vigorously debated for  
11 many years in many different forums. Thus, it isn't surprising that Congress included  
12 some specific provisions relating to this issue in the 1996 Telecom Act. The Act adds an  
13 entirely new section to federal law dealing with universal service--Section 254. Within  
14 this context, a portion of ¶254(k) reads:

15  
16 [T]he States, with respect to intrastate services, shall establish any  
17 necessary cost allocation rules, accounting safeguards, and  
18 guidelines to ensure that services included in the definition of  
19 universal service bear no more than a reasonable share of the joint  
20 and common costs of facilities used to provide those services. [47  
21 U.S.C. § 254(k) (1996).]  
22

23 Congress was aware of the long standing debate over the proper treatment of these  
24 costs, and the desire of many carriers to shift these costs from toll to local services, as  
25 well as the propensity of monopolists to attempt to shift costs onto their most captive  
26 customers when faced with an increased threat of competition. The remaining parts of  
27 254(k) make it clear that the purpose behind these provisions is to prevent placing an  
28 excess cost burden on basic local service and other services included within the universal  
29 service category. While Congress hasn't mandated the specific allocation procedures to be

1 used, or specified exactly how much of the joint costs can be placed onto the basic  
2 exchange category, it is obvious that 100% allocation of these costs onto local exchange  
3 service would be contrary to the intent of this passage. Such an extreme shift of cost  
4 responsibility would force local exchange service to bear more than a reasonable share of  
5 the joint and common costs of facilities used in providing local, access, and other  
6 services.

7  
8 **Q. Historically, much of this debate has swirled around the Federal Communications**  
9 **Commission ("FCC"). What stance has the FCC taken with regard to the recovery**  
10 **of joint and common cost?**

11 A. The FCC's positions in this area have varied somewhat, depending upon the time frame  
12 and the context. The FCC has recognized that telecommunications carriers provide  
13 multiple services using a common network, and it realizes that this situation greatly  
14 complicates issues of cost recovery. As the FCC has explained:

15  
16 676. Certain types of costs arise from the production of multiple  
17 products or services. We use the term "joint costs" to refer to costs  
18 incurred when two or more outputs are produced in fixed  
19 proportion by the same production process (i.e., when one product  
20 is produced, a second product is generated by the same production  
21 process at no additional cost). [Implementation of the Local  
22 Competition Provisions in the Telecommunications Act of 1996,  
23 Interconnection Between Local Exchange Carriers and Commercial  
24 Mobile Radio Service Providers, CC Docket Nos. 96-98, 95-185,  
25 First Report and Order, FCC 96-325 (adopted August 1, 1996)  
26 (Local Competition Order) at ¶ 676.]  
27

28 The FCC has also recognized the fact that the loop is shared by multiple services.  
29 According to the FCC, the loop is "needed" and "used" by several telecommunication  
30 services--services which reside within both the interstate and intrastate jurisdictions. As  
31 previously acknowledged, dealing with costs associated with a shared facility can be

1           challenging. The FCC states:

2  
3           Determining the costs that an incumbent LEC incurs to provide  
4 interstate access services and that, consequently, should be  
5 recovered from those services, is relatively straightforward in some  
6 cases and problematic in others. ... Most facilities, however, are  
7 used for both intrastate and interstate services. ... By contrast, the  
8 cost of other facilities used for both interstate and intrastate traffic  
9 do not vary with the amount of traffic carried over the facilities,  
10 i.e., the costs are non-traffic sensitive. These costs pose  
11 particularly difficult problems for the separations process: The  
12 costs of such facilities cannot be allocated on the basis of  
13 cost-causation principles because all of the facilities would be  
14 required even if they were used only to provide local service or  
15 only to provide interstate access service. A significant illustration  
16 of this problem is allocating the cost of the local loop, which is  
17 needed both to provide local telephone service as well as to  
18 originate and terminate long-distance calls. [Access Charge  
19 Reform, Price Cap Performance Review for Local Exchange  
20 Carriers, Transport Rate Structure and Pricing and End User  
21 Common Line Charges, CC Docket Nos. 96-262, 94-1, 91-213,  
22 and 95-72, First Report and Order, FCC 97-158 (adopted May 7,  
23 1997) (Access Charge Reform Order) at ¶ 23. emphasis added.]  
24

25           Consistent with this view of common costs, in a recent trilogy of orders the FCC  
26 clearly recognized that the costs associated with the loop are shared costs of multiple  
27 services. In its initial First Report and Order concerning the implementation of local  
28 competition, the FCC recognized that the loop is a shared facility used to provide  
29 telecommunication services which gives rise to common costs. The FCC stated:

30  
31           As discussed in greater detail below, separate telecommunication  
32 services are typically provided over shared network facilities, the  
33 cost of which may be joint or common with respect to some  
34 services. The costs of local loops and their associated line cards in  
35 local switches, for example, are common with respect to interstate  
36 access service and local exchange service, because once these

1 facilities are installed to provide one service they are able to  
2 provide the other at no additional cost. [Local Competition Order  
3 at ¶678.]  
4

5 The FCC followed this first order with proposed rulemaking on access charge  
6 reform. In the context of this rulemaking process the FCC reaffirmed the concept that  
7 costs associated with the loop are common costs with respect to certain  
8 telecommunication services. [Access Charge Reform, Price Cap Performance Review for  
9 Local Exchange Carriers, Transport Rate Structure and Pricing and Usage of the Public  
10 Switched Network by Information service and Internet Access Providers, CC Docket Nos.  
11 96-262, 94-1, 91-213, and 96-263, Notice of Proposed Rulemaking, Third Report and  
12 Order, and Notice of Inquiry, FCC 96-488 (adopted December 23, 1996) (NPRM, Third  
13 Report and Order).] The FCC states:  
14

15 For example, interstate access is typically provided using the same  
16 loops and line cards that are used to provide local service. The  
17 costs of these elements are, therefore, common to the provision of  
18 both local and long-distance service.[¶237.]  
19

20 In an effort to respond to concerns about traffic sensitive recovery of NTS costs  
21 while maintaining consistency with the reasoning behind the Smith vs. Illinois Bell case,  
22 the FCC developed and announced the phase-in of an alternative to the CCL rate, called a  
23 "primary interexchange carrier charge" (PICC). The PICC was assessed on and paid by  
24 the end user's presubscribed interexchange carrier. The FCC believed that the PICC,  
25 along with the Subscriber Line Charge (SLC), would allow LECs to recover most of the  
26 interstate jurisdiction's portion of the loop cost through rates that weren't traffic sensitive.  
27 [Access Charge Reform Order at ¶54 and 55.]

28 In its decision to replace the Common Carrier Line Charge (CCL) with the PICC,  
29 the FCC stated:  
30

1 We reject claims that a flat-rated, per line recovery mechanism  
2 assessed on IXCs would be inconsistent with section 254(b) which  
3 requires "equitable and nondiscriminatory contributions to  
4 universal service" by all telecommunication providers. The PICC  
5 is not a universal service mechanism, but rather a flat-rated charge  
6 that recovers local loop costs in a cost causative manner.[Id.,  
7 ¶104.]  
8

9 The FCC has also rejected the argument that loop costs aren't attributable to long  
10 distance calling: "Much of the telephone plant that is used to provide local telephone  
11 service (such as the local loop, the line that connects a subscriber's telephone to the  
12 telephone company's switch) is also needed to originate and terminate interstate  
13 long-distance calls." [Id.] The FCC has varied its response over the years to the many  
14 parties who have advocated shifting costs away from interstate switched access rates. In  
15 the mid-1980's its response was to adopt the SLC rate, which shifted some of these costs  
16 away from per-minute access rates, onto per-line rates paid by local exchange customers.  
17 It's initial experience with the SLC was apparently not entirely positive, however, and for  
18 many years it refused to move entirely from the CCL rate to a higher SLC. It has only  
19 been recently that the FCC has agreed to reduce the interstate CCL rate to zero. And this  
20 movement has been somewhat circuitous, in which the FCC at first adopted the PICC,  
21 thereby rejecting proposals by carriers like AT&T, who have consistently urged a massive  
22 shift of cost responsibility from IXCs to end users.  
23

24 **Q. Has the FCC taken any more recent action in the area of access charge reform?**

25 **A.** Yes. Approximately three years and many rounds of debate later, the FCC issued what is  
26 commonly referred to as its CALLS order. This order was based on a proposal developed  
27 by Coalition for Affordable Local and Long Distance Service. According to its  
28 proponents, this plan was designed to reduce, and in most instances eliminate, implicit  
29 subsidies among end-user classes; make implicit universal service funding in access  
30 charges explicit and portable; provide significant benefits to consumers who make few or

1 no long-distance calls; and set carrier charges at reasonable levels. [Access Charge  
2 Reform, Price Cap Performance Review for Local Exchange Carriers, Low-Volume  
3 Long-Distance Users, Federal-State Joint Board on Universal Service, CC Docket Nos.  
4 96-262, 94-1, 99-249, and 96-45, Sixth Report and Order, FCC 00-193 (adopted May 31,  
5 2000) (CALLS Order) at ¶ 29.] The FCC felt that the CALLS Proposal was procedurally  
6 advantageous because it produced end user benefits, was pro-competitive and  
7 economically efficient. [Id.]

8 The primary features of the CALLS program are summarized below:

- 9
- 10 • Increased the primary residential and single line business  
11 subscriber line charge (SLC) caps to \$4.35 on July 1, 2000,  
12 and gradually increased the SLC caps thereafter to \$6.50 on  
13 July 1, 2003;
  - 14 • Removed \$650 million in implicit universal service support  
15 from carrier access charges;
  - 16 • Created an explicit portable interstate access universal  
17 service support mechanism;
  - 18 • Eliminated the residential Primary Interexchange Carrier  
19 Charge (PICC);
  - 20 • Required Interexchange Carriers (IXCs) to flow through  
21 reductions in access rates to residential and business  
22 customers;
  - 23 • Temporarily eliminated minimum usage rates for low-usage  
24 customers by long distance carriers; and
  - 25 • Provided additional lifeline assistance to low income  
26 customers to protect them from increases in the residential  
27 SLC.

1  
2           Later, on October 20, 2000, a diverse group of industry participants filed a plan  
3 with the FCC for improved regulation of interstate services of non-price cap incumbent  
4 local exchange carriers and interexchange carriers. The Multi-Association Group (MAG)  
5 members, consisting of the National Rural Telecom Association (NRTA), the National  
6 Telephone Cooperative Association (NTCA), the Organization for the Promotion and  
7 Advancement of Small Telecommunications Companies (OPASTCO) and the United  
8 States Telecom Association (USTA), claimed that its plan, or petition for rulemaking,  
9 would improve the Commission's access charge and universal support systems, as well as  
10 to enforce the geographic averaging requirements of the Act.

11           The MAG plan attempted a holistic approach in addressing the regulation of those  
12 ILECs that are not subject to price cap regulation. These rate of return carriers included  
13 most of the small and mid-sized LECs that serve U.S. rural and insular areas.

14           The basic recommendations of the MAG Plan were:

- 15
- 16           • to provide a more efficient cost recovery mechanism under
  - 17           the FCC's access charge system
  - 18           • to make universal service support explicit
  - 19           • to enforce the geographic averaging requirements of the Act
  - 20           • to ensure availability of broadband and advanced services
  - 21           to all Americans
  - 22           • to move in the same policy direction as the RTF plan,
  - 23           although subtle differences exist
  - 24           • to remove current caps on high cost loop support
  - 25           • to provision two paths of implementation thereby
  - 26           recognizing the diversity of non-price cap carriers
  - 27           • to adopt the Federal-State Joint Board on Jurisdictional

1 Separations' recommendation for freezing jurisdictional  
2 factors  
3

4 The MAG Plan was intended to be compatible with the CALLS plan and gained  
5 support from the FCC because the reforms were designed to establish a "pro-competitive,  
6 deregulatory national policy framework" for the United States telecommunications  
7 industry, and fulfill universal service provisions in the 1996 Act. [Multi-Association  
8 Group (MAG) Plan for Regulation of Interstate Services of Non-Price Cap Incumbent  
9 Local Exchange Carriers and Interexchange Carriers Federal-State Joint Board on  
10 Universal Service Access Charge Reform for Incumbent Local Exchange Carriers Subject  
11 to Rate-of-Return Regulation Prescribing the Authorized Rate of Return for Interstate  
12 Services of Local Exchange Carriers, CC Docket Nos. 00-256, 96-45, 98-77, and 98-166,  
13 Second Report and Order, FCC 01-304 (adopted October 11, 2001) (MAG Order) at ¶ 3.]  
14 Specifically, through the MAG Plan the FCC hoped to "align the interstate access rate  
15 structure more closely with the manner in which costs are incurred, and create a universal  
16 service support mechanism to replace implicit support in the interstate access charges  
17 with explicit support that is portable to all eligible telecommunications carriers." [Id.]  
18

19 **Q. Why is it beneficial for the Commission to examine the manner in which the issues**  
20 **involved in this proceeding have evolved over time?**

21 **A.** The Commissioners can learn a great deal from both past arguments that parties have put  
22 forward concerning access cost-related issues and the ways in which other regulatory  
23 bodies have investigated and ruled in similar proceedings. For many years there has been  
24 a wide consensus among federal and state regulators rejecting attempts to shift joint and  
25 common costs entirely onto local exchange service. While responses to this debate have  
26 changed and evolved over time (e.g. the FCC's establishment and later repeal of PICC  
27 charges), in most cases decision makers have responded similarly, rejecting as fallacious

1           the varied arguments claiming that the costs of the local network are the sole  
2           responsibility of local exchange service, and generally refusing to adopt extreme shifts in  
3           costs away from IXCs to local customers.  
4

5    **Public Policy Goals**  
6

7    **Q.    Please turn to the third section of your testimony. Would you please briefly explain**  
8           **the policy goals you feel should guide the Commission's decision-making process in**  
9           **this proceeding?**

10   **A.**    Certainly. Briefly stated, the Commission should strive to ensure that the public receives  
11           high-quality telephone service at the lowest practicable cost and that the  
12           telecommunications infrastructure not only keeps pace with, but also actively stimulates  
13           economic growth and technological progress in Arizona. More specifically, I believe the  
14           following specific public policy goals are particularly important, and should guide the  
15           Commission's deliberations in this proceeding:  
16

- 17           (1)    The preservation and promotion of affordable, high-quality,  
18           universal, basic telecommunications services.
  - 19           (2)    The maintenance of fair, just, and reasonable rates (inter-  
20           customer equity).
  - 21           (3)    The maintenance of a reasonable level of rate continuity.
  - 22           (4)    The promotion of economic efficiency.
  - 23           (5)    The promotion of technological innovations.
  - 24           (6)    The encouragement of effective competition.
- 25  
26  
27

1 **Q. Please explain the first of these six goals. What is universal service and why is this**  
2 **important as a policy goal in developing rates?**

3 A. Universal service is a situation in which virtually every household and business is  
4 connected to a common communications network, so that everyone can conveniently and  
5 inexpensively communicate with everyone else—including those who are not inclined to  
6 have a phone, because their disposable income is so limited, or they simply don't place  
7 much value on having telephone service. This has been a major policy goal for legislators  
8 and regulators for the past 70 years, and it continues to be a very important goal. Society,  
9 ratepayers, and the Company all benefit from maximum subscriber participation on an  
10 interconnected telephone network. It has long been clear that the more users a network  
11 links together, the more valuable the service is for each and every user.

12  
13 **Q. Would you next discuss the second of your recommended policy goals--that of equity**  
14 **between rate classes?**

15 A. Yes. While much of the debate in this proceeding is likely to play out in terms of cost  
16 theory, economic efficiency, and other technical arguments, behind the surface of these  
17 debates are fundamental questions of equity. For instance, regulators have often rejected  
18 seemingly plausible costing approaches which exclusively allocate loop costs onto basic  
19 local exchange service, because this seems fundamentally unfair to local exchange  
20 customers. Loops (which connect customers to their central office) are used in the  
21 provision of the entire range of telephone services, including access, toll and custom  
22 calling. Hence, most observers will agree that it is equitable for subscribers to all these  
23 services to share in the cost of the construction and maintenance of these facilities.  
24 Giving a completely "free ride" to the IXCs violates fundamental notions of fairness.

25 Interestingly, in a competitive industry, the burden of joint costs primarily  
26 depends upon the relative strength of demand for each service--the price of more valuable  
27 services will incorporate a larger share of the joint and common costs than the price of

1 services considered to be less valuable. In a regulated industry, there are many factors  
2 that should influence the share of joint and common costs recovered from each service,  
3 and one can reasonably debate the appropriate resolution of this issue. However, it clearly  
4 would be inequitable for all of these costs to be paid by basic local exchange customers,  
5 or for none of these costs to be borne by custom calling, toll and switched access  
6 customers. Yet, if history is any guide, we can anticipate that some of the parties in this  
7 proceeding will attempt to justify shifting all of the cost burden away from the IXCs and  
8 toll markets generally. I discuss the concept of joint costs and the manner in which these  
9 costs are recovered in competitive industries in more depth later in my testimony.

10  
11 **Q. How can the Commission's decision making be guided by the equity goal?**

12 A. Yes. There are many aspects of equity, and I won't attempt to catalog them here, but I  
13 would note that equity requires consideration of more than simply whether some  
14 customers are paying less than the cost of serving them, or less than they would be  
15 willing to pay, if forced to do so. Drastic rate increases should not be imposed on  
16 ratepayers who do not have adequate alternatives—in other words, the principle of rate  
17 continuity is consistent with basic principles of fairness. Just as our country's founding  
18 fathers felt that taxation without representation was inequitable, customers who have been  
19 protected from monopoly power will feel that extreme rate increases are inequitable,  
20 unless they have adequate opportunities to select lower cost alternatives. To the extent  
21 access reform involves substantial rate increases for some customers, the Commission  
22 should consider phasing in the rate changes, thereby reducing the adverse impact and  
23 providing time for customers to seek out competitive alternatives.

24 Equity also suggests that while the concept of "revenue neutrality" (protecting  
25 individual carriers from adverse changes in their revenues) has some appeal, it isn't  
26 necessarily an appropriate basis for constructing an optimal policy. Why should carriers  
27 be protected from any reduction in their revenues, if customers aren't going to be

1           protected from any increase in their rates? A more equitable approach would protect both  
2           carriers and customers from extreme changes, while requiring both groups to share the  
3           burden of needed reforms. Thus, for example, if carriers are currently recovering an  
4           excessive share of the joint and common costs from switched access rates, it may be  
5           appropriate to reduce those charges—without necessarily increasing other rates on a  
6           dollar-for-dollar basis. Basic principles of equity requires a careful and deliberate  
7           approach to policy changes, but it doesn't mean that carriers should be totally protected  
8           from any changes while customers are given little or no protection. Stated differently,  
9           equitable treatment of individual carriers should not be pursued to the point where  
10          individual customers are treated inequitably.

11           Of course, in urging the Commission to maintain rate continuity, I'm not  
12          suggesting that it should protect every customer from any adverse changes in their bills. If  
13          every carrier or every customer were to be "held harmless" the Commission's hands  
14          would be tied, making it impossible to fully advance the goal of universal service. It is  
15          certainly possible that IXC's are paying too much for switched access service, and for that  
16          matter some customers may be paying too little for local exchange service. Hence, some  
17          reduction in access rates may be appropriate, and some increase in local rates may be  
18          merited. However, an optimal resolution of the issues in this proceeding may require  
19          gradual changes, with some of the burden of access rate reductions being absorbed by  
20          customers (e.g. through changes to the Arizona Universal Service Fund) and some of the  
21          burden being absorbed by carriers (e.g. by reductions in profit margins).

22           Equitable treatment of carriers doesn't necessarily mean equal treatment, nor does  
23          it imply that every carrier should be treated identically, regardless of circumstances.  
24          Rather, equity implies a mechanism that avoids unduly favoring or disadvantaging any  
25          carrier or class of carriers. For example, while all carriers should participate in the effort  
26          to maintain or achieve universal service, one cannot reasonably expect every carrier to  
27          carry an equal share of the overall burden. Large carriers obviously can and should

1 contribute more to the support of universal service than small carriers. Similarly, the  
2 "carrier of last resort," function would normally be assumed by the incumbent LEC,  
3 which alone possesses the ubiquitous network and other infrastructure necessary to carry  
4 out that responsibility. Incumbency confers many competitive advantages on its  
5 possessor, such as ownership of ubiquitous facilities, a dominant market share, and name  
6 recognition. In developing equitable policies, the Commission can and should recognize  
7 the advantages of incumbency, while also recognizing offsetting burdens and obligations.

8 In this proceeding, the Commission has sought comment on "whether transferring  
9 cost recovery responsibility from IXCs (through CCL charges) to end users (through end  
10 flat rate end user charges) results in end user benefits." [Procedural Order, May 21, 2002,  
11 p. 2] If the CCL is reduced or eliminated, the most direct beneficiaries will be the IXCs,  
12 who will experience an immediate reduction in their cost of doing business. Even if they  
13 pass this cost reduction through to their customers in the form of lower rates, the IXCs  
14 will benefit because rate reductions will stimulate additional demand for their services,  
15 from which they will benefit. Since this is a declining cost industry, traffic growth tends  
16 to translate into lower unit costs and higher profits. For this same reason, local exchange  
17 carriers like Qwest may benefit from access rate reductions—particularly if they are  
18 allowed to impose offsetting increases in other rates. As access and toll rates decline, long  
19 distance traffic volumes will be further stimulated, resulting in higher revenues and  
20 profits for Qwest and other carriers.

21 From a customer perspective, the benefits from lower access rates will vary in  
22 importance, depending upon several factors—most importantly the extent to which  
23 customers make long distance calls. When access rates are reduced, toll carriers are likely  
24 to reduce at least some of their rates. However, they may find it profitable to leave some  
25 rate plans relatively unchanged, while reducing other rates more substantially.  
26 Furthermore, even if reductions in access rates were passed through to customers on an  
27 equal per-minute basis (which is unlikely), the benefits won't be spread uniformly to all

1 customers. To the contrary, customers who are heavy toll users are likely to benefit much  
2 more than low volume toll users. In actual practice, those high volume toll customers who  
3 show the least loyalty to their existing carrier and are the most sensitive to price  
4 differences are likely to gain the lion's share of the benefit from any toll rate reductions  
5 which follow from access reform.

6 In general, a flat monthly rate paid by end users will tend to shift costs away from  
7 large toll users, particularly large business customers, onto those end users who place  
8 relatively few toll calls, particularly residence customers and those small businesses that  
9 do not need, or cannot afford, to place large numbers of toll calls. Hence, the Commission  
10 must recognize that a program of rate "rebalancing" which is revenue neutral will  
11 unquestionably not have neutral impact on individual customers. To the contrary, any  
12 such "reform" will result in both "winners" and "losers." While the carriers may all be  
13 winners, many customers will be losers, because any toll rate reductions they experience  
14 will not be sufficient to offset the increases they experience in other portions of their  
15 monthly bill. The Commission should, therefore, proceed with caution and carefully  
16 weight the consequences of any plan which might be proposed to lower access and toll  
17 rates while increasing other rates.

18  
19 **Q. Would you please discuss the third of your recommended policy goals--the**  
20 **maintenance of reasonable rate continuity?**

21 **A.** Yes. Another longstanding principle of rate making is that customers should not be  
22 subjected to sudden and extreme increases in rates, particularly if the increases are  
23 unrelated to improvements in service quality or expansions in service offerings, and even  
24 more particularly if no reasonable substitute for the service is readily available. In the  
25 present context, it is worthwhile to separately state the goal of rate continuity, because it  
26 reinforces the importance of the universal service and equity goals. If the traditional rate  
27 continuity principles were ignored, the abrupt nature of the potential increases to local

1 rates could cause subscribers to drop off the system, to the detriment of the universal  
2 service goal. Similarly, regulatory commissions often have found that "rate shock" should  
3 be avoided, or minimized for both equitable and other reasons. Where customers do not  
4 have other viable options (e.g., where effective competition does not exist), extreme or  
5 abrupt rate increases are particularly inappropriate and undesirable. In this regard, it is  
6 important to realize that the goal of rate continuity doesn't preclude changes to the status  
7 quo—it merely requires that changes be well justified, and that they be implemented in a  
8 gradual manner.

9  
10 **Q. Would you next discuss the fourth of your recommended policy goals--the**  
11 **promotion of efficiency through pricing?**

12 **A.** Yes. Efficiency is a well recognized goal in utility rate design. Economics describes it as  
13 a state in which an optimal level and mix of goods and services is produced, using  
14 optimal production methods. In the context of telecommunications regulation, this  
15 objective implies that rates should not induce wasteful and inefficient methods of  
16 production (either by the utility or by other producers), nor lead to over- or  
17 under-consumption of the telecommunication firm's services.

18 Under the widely accepted approach of Vilfredo Pareto, economic efficiency or  
19 inefficiency can be defined in terms of waste. When economic efficiency has been  
20 maximized, any change will increase waste. To the extent the Commission seeks to  
21 improve or maintain economic efficiency, the logical focus is on marginal cost. This is  
22 the type of cost that is most relevant to discussions of economic efficiency, and an  
23 understanding of the marginal cost concept is essential to any effort to maximize  
24 economic efficiency.

1 **Q. Would you please discuss the fifth goal--the promotion of economic growth and**  
2 **technological progress?**

3 A. Certainly. If universal service is defined merely as applying to voice grade dial tone at the  
4 end of a customer's line, then in the coming age of the broadband "telecommunications  
5 superhighway" local exchange companies like Qwest will surely have no problem  
6 supplying it at a marginal cost considerably below current rates. I say this because basic  
7 voice communications require a small fraction of the total bandwidth required for video  
8 on demand, high speed internet access, and other advanced services. Thus, for example, if  
9 broadband services are widely available at affordable prices, then the marginal cost of  
10 carrying ordinary voice traffic on such a network will be very small. In turn, if the price of  
11 basic local service were set at its marginal cost level, it would be easy to ensure that  
12 nearly everyone has voice grade telephone service at extremely low prices. Needless to  
13 say, however, that is not the method of cost recovery envisioned by most of the parties to  
14 this proceeding. To the contrary, they view the basic local exchange customer as the "cash  
15 cow" that can be most effectively forced to cover the fixed costs of the network. All other  
16 services, including toll and switched access, video services, high speed internet access  
17 and the like, are given the benefit of being classified as "ancillary services" which carry  
18 little or none of the fixed cost burden.

19 The past decade has seen a continued downward trend in telecommunications  
20 costs. Technological improvements and increasing scale economies have resulted in sharp  
21 reductions in the cost of providing most telecommunications services. As costs have  
22 declined, profits have generally increased and many prices have also decreased in various  
23 parts of the industry. A proposal to increase local rates runs counter to this overall trend.  
24 While some shifting of costs from toll to local services may be the inevitable  
25 consequence of recent policy shifts in the federal jurisdiction, I would suggest that the  
26 Commission should not view these two issues--toll rate reductions and local rate  
27 increases--as inextricably linked. To the contrary, the benefits of increasing economies of

1 scale and technological innovation, as well as surging demand for telecommunications  
2 services creates a declining cost environment in which access charges and toll rates can  
3 be reduced substantially without necessarily requiring an offsetting increase in basic local  
4 exchange rates.

5 RUCO's resistance to proposals for extreme reductions in access charges does not  
6 stem from a preference for basic over enhanced services. To the contrary, both types of  
7 services are important, and an optimal policy will result in low prices for both  
8 conventional and enhanced services. Telecommunications, as an industry, is undergoing a  
9 competitive technological revolution, which is gradually extending the definition of what  
10 services are considered to be "basic" or "vital" to consumers. While there is considerable  
11 uncertainty concerning the timing and extent of this trend, I consider it likely that what  
12 POTS (plain old telephone service) has been for the 20th century, some form of  
13 broadband service will be for the 21st.

14 The economic benefits to be derived from universal service are inherent to the  
15 very nature of two-way communications networks. In resolving public policy issues, it is  
16 important to remember that the concept of universal service is not simply a question of  
17 equity, or the desire to ensure that everyone in society enjoys a minimum standard of  
18 living. The strength and efficiency of our economy depends in part on how successful we  
19 are in developing and maintaining key elements of our nation's infrastructure--including  
20 two-way communications networks in which nearly everyone participates.

21 Society as a whole benefits from the flow of communication. Many systems,  
22 including markets, become more efficient when the flow of information improves.  
23 Economic theory suggests that such positive externalities should be considered in  
24 resolving policy issues, such as the rate rebalancing proposals in this proceeding.  
25 Although externalities are not reflected in the development of costs, they have historically  
26 been acknowledged by regulators, at least implicitly, when decisions have been made to  
27 keep the price of certain services low enough to encourage nearly everyone to join the

1 network, regardless of how low their income may be, or how little they may value a  
2 telephone.

3  
4 **Q. You mentioned that one of the goals is advancement towards "effective"**  
5 **competition. What do you mean by this term?**

6 A. When attempting to decide whether a product is produced and marketed under  
7 competitive conditions, one must consider pricing behavior. In a fully competitive  
8 marketplace, both buyers and sellers view price as a given. All participants in the market  
9 behave as if market prices are unaffected by their own decisions regarding how much they  
10 should purchase or produce. If either buyers or sellers recognize that they can control  
11 prices, competitive conditions do not fully prevail. The greater the degree of control  
12 exercised by a buyer or seller, the less competitive forces will prevail.

13 Usually, four conditions are considered sufficient to assure that sellers will behave  
14 as "price takers," or effectively compete with each other. If any one of these  
15 conditions is absent, the prospects for effective competition are diminished or eliminated.

16 First, no one firm can have a dominant share of the market. If a firm engages in  
17 price leadership, dominant firm pricing, or price discrimination, its behavior is  
18 inconsistent with competitive behavior. Needless to say, this condition is violated in the  
19 provision of any service where a firm's market share is greater than that of all its  
20 competitors combined.

21 Second, the products of the supplying firms must be generally uniform (from the  
22 perspective of the buyers in the market). If consumers view the product or service as  
23 unique, the firm will not need to behave as a "price taker."

24 Third, the number of supplying firms must be large enough so that the total  
25 amount supplied to the market cannot be restricted. It always is in the interest of suppliers  
26 to limit the total amount supplied to the market, because by limiting supply, they can  
27 charge a higher rate and earn greater returns (economic profits) than under the conditions

1 of competition.

2 Fourth, as noted in the criteria cited above, firms must be free to enter and exit the  
3 market. If any firm decides to produce the service, no substantial legal, financial, or other  
4 barrier must stand in its way. Patents or trademarks (such as brand names) and other legal  
5 barriers can preclude effective entry.

6  
7 **Q. How do you think the Commission should respond in this docket to the trend  
8 towards competition?**

9 A. This is not the appropriate forum for resolving the many complex issues that arise from  
10 this trend, but I believe that the Commission needs to make sure that its decisions in this  
11 docket are consistent with the public interest in moving this trend forward towards  
12 effective competition (rather than allowing the trend to evolve towards a cartel-like

---

13 oligopoly, or an unregulated monopoly). Furthermore, while the trend towards increased  
14 competition is important, the Commission should not feel pressured to adopt rate changes  
15 merely because of this trend. During the transition towards a more competitive market,  
16 the Commission continues to have great flexibility in adopting appropriate public  
17 policies, and it should continue to establish rates which advance the broad public interest,  
18 rather than the narrow corporate interests of the carriers participating in this proceeding.  
19 The trend toward increased competition can appropriately be accommodated and  
20 encouraged through a variety of different policy approaches—there is no requirement that  
21 the Commission mirror the recent actions of the FCC, or to reduce the CCL to zero  
22 merely because some carriers believe that such a change would make it easier for them to  
23 compete against Qwest once it gains 271 approval.

24  
25 **Q. How would you apply these policy goals and objectives in an evaluation of access  
26 rate design proposals?**

27 A. In analyzing proposals, I would support an approach which attempts to strike a reasonable

1 balance among the six public policy goals rather than seek to achieve one goal to the  
2 exclusion of all others.

3 For example, it is often argued that economic efficiency will be encouraged if  
4 rates are moved toward their marginal cost, and I agree with this premise. However, if  
5 such movement would require drastic rate increases for particular groups of customers, I  
6 would recommend moderation of the suggested rate change. In my opinion, efforts to  
7 promote economic efficiency should not take precedence over considerations of rate  
8 continuity and avoidance of disruptive rate changes.

9 Likewise, it would not be in the public interest to risk the universal service  
10 objective by adopting rate design proposals that would shift a large share of the revenue  
11 burden from toll and access to residential basic exchange services. Some may argue that  
12 such a shift will encourage efficiency, by bringing the toll and access rates closer to  
13 marginal cost. But to determine if such a shift would truly result in a net gain in  
14 efficiency, the Commission would also need to consider any offsetting efficiency losses  
15 that would result in the local market, where prices would be increased farther above  
16 marginal cost, consideration of network externalities would diminish, and universal  
17 service would suffer.

18 The pricing arrangements of the past several decades, which have required toll  
19 users to shoulder a sizable share of the joint costs of the network, have been very  
20 successful in creating and maintaining a ubiquitous telephone system that is unparalleled  
21 anywhere else in the world. In the United States, nearly everyone is connected to a  
22 common telecommunications network. While some changes to the traditional pricing  
23 arrangements and rate relationships might be needed to reflect changing conditions (e.g.,  
24 increased competition), the Commission should not rush to abandon a longstanding  
25 pricing approach which has been so successful in benefitting the public.

26 It is also important to carefully evaluate the potential consequences of proposed  
27 realignments of telecommunications prices at this early stage in the transition toward a

1 more competitive market. While reducing access rates may benefit some carriers,  
2 increases in local rates won't necessarily help new entrants gain a foothold in the market,  
3 and there may be unintended consequences of such a policy, which may make progress  
4 towards effective competition less likely to be achieved.

5  
6 **Universal Service and Access Reform**

7  
8 **Q. Let's turn to the fourth section of your testimony, concerning universal service. Why**  
9 **is this an appropriate policy goal?**

10 A. As I indicated earlier, universal service is realized when nearly everyone is connected to  
11 the public switched telephone network, regardless of how low their income, or how little  
12 they value telephone service. Universal service is a desirable goal because it facilitates the  
13 free flow of communications within society. This benefits everyone--including the people  
14 who would otherwise not have a telephone, as well as everyone who needs to  
15 communicate with them.

16 While this goal is widely accepted, it sometimes gets less attention than it  
17 deserves. Because of the rapid changes taking place in the telecommunications  
18 industry--including increased competition, deregulation, and changing federal  
19 policies--many state regulators are hard pressed to balance the goal of universal service  
20 with other policy objectives. Even so, it should never be forgotten that all of  
21 society--including business and residential end users as well as both local and long  
22 distance carriers--benefits when nearly everyone participates on a universal, fully  
23 interconnected telephone network.

24 There is no inherent conflict between the goal of universal service, and the idea of  
25 opening the local telephone markets to competition--provided that all carriers are required  
26 to interconnect with each other on reasonable terms and conditions. In other words, nearly  
27 everyone can be connected to a universal public switched network, yet portions of that

1 overall network may be owned and operated by competing firms. Stated differently, a  
2 global network of interconnected networks can achieve the goal of universal service just  
3 as effectively as a smaller group of monopoly networks. However, individual customers  
4 and carriers do not necessarily have the incentive to advance the goal of universal service.  
5 For instance, incumbent carriers may seek to discourage entry by competitors by making  
6 it difficult, or unduly costly for the newer firms to interconnect with, or utilize portions  
7 of, the established firm's network. Accordingly, the Commission should establish  
8 appropriate policies to ensure that all of the networks are interconnected and compatible  
9 with each other, and to encourage every business and every household to connect to this  
10 network of networks.

11  
12 **Q. Can you please explain what you mean by the "positive externalities" associated**  
13 **with universal service?**

14 **A.** Yes. The provision of telephone service (particularly the connection of individual  
15 subscribers to the telephone network) involves significant benefits that are not recognized  
16 by the individual consumers who sign up for the service. In other words, they involve  
17 what economists refer to as "positive externalities."

18 For instance, numerous individuals benefit when a new customer joins the system,  
19 because the value of having a telephone increases as the number of subscribers rises. (If  
20 none of your friends, relatives, and/or business associates were connected to the telephone  
21 system, you would place little value on having telephone service for yourself.) Moreover,  
22 society as a whole benefits from the flow of communication facilitated by universally  
23 available telephone service.

24 Since a ubiquitous telephone infrastructure is important to economic growth and  
25 development, economic theory suggests that the price of connecting to the system should  
26 be maintained at a relatively low level, to ensure that nearly everyone will  
27 connect--including those with very low incomes, those who rarely use the phone, and

1 those who don't value phone service very highly. Positive externalities are an important  
2 consideration in shaping regulatory policy, and they should not be ignored in favor of a  
3 narrow calculation of incremental costs and revenues.

4 Historically, a wide variety of different policies have been adopted by regulators  
5 and carriers to advance the goal of universal service. These policies include lifeline  
6 programs, cross-industry cost sharing, averaging of costs across urban and rural areas, and  
7 rate structures that are specifically designed to encourage maximum levels of  
8 participation in the network.

9  
10 **Q. In what ways do these programs advance the goal of universal service?**

11 **A.** In the absence of special regulatory policies, like lifeline programs, designed to achieve  
12 the universal service goal, the carriers do not have sufficient incentive to achieve that  
13 goal. They may opt for profit-maximization, rather than maximization of the rate of  
14 network participation.

15 For instance, in the relative absence of competitive pressures in rural areas, an  
16 incumbent carrier might be tempted to raise basic rates in rural areas. Such a pricing  
17 policy might advance that carrier's profit interests, but it would run counter to the  
18 universal service goal. Because of their smaller local calling scopes, many rural  
19 customers may be unwilling to pay high rates—particularly if they were raised to the lofty  
20 levels which would be required to recover the full cost of rural networks. Historically,  
21 rural rates have not reflected the full impact of the high costs per line which are incurred  
22 in low density rural areas. If the goal is to have nearly everyone in the state connected to  
23 the public switched network, a laissez faire approach will not suffice. Carriers have  
24 financial incentives to charge relatively high rates to customers in low density, high cost  
25 locations, and the inevitable consequence of a laissez faire approach would be a loss of  
26 participation, with relatively few customers purchasing telephone service in these areas.

27 Similarly, in the absence of pro-active government policies, carriers might make

1           little effort to sign up low income customers, and those people who don't greatly value  
2           telephone service. Efforts to connect these marginal customers to the network will fall  
3           short of the universal service goal, if they are perceived by carriers as being not an  
4           especially profitable market segment (e.g. due to problems with uncollectible bills, or an  
5           inability to purchase high volumes of high-margin discretionary services like custom  
6           calling). Just as retail prices are sometimes higher and alternatives fewer in low income  
7           neighborhoods, there is reason to be concerned that carriers will not aggressively seek to  
8           expand into low income markets, if they believe that profit margins will not be as high in  
9           these locations.

10                   That is not to say that telephone service would disappear if the universal service  
11           goal were eliminated. Absent regulatory policies designed to help advance the goal of  
12           universal service, one can easily envision a set of circumstances in which nearly all  
13           businesses and perhaps 70% of the residential households would purchase telephone  
14           service, at much higher prices. This figure can be compared with the participation rate  
15           achieved by the cable television industry in a nearly unregulated monopoly environment.  
16           Most cable carriers have achieved about 60% penetration, or buy up, while operating in a  
17           regulatory environment that has not stressed ubiquitous or universal service and which  
18           has generally allowed carriers to skim the cream of the overall market. Lower income  
19           customers and those who do not value cable service highly tend not to join the network.  
20           However, with a different price structure, or a government mandate, it would undoubtedly  
21           feasible to entice nearly everyone to connect with the cable network--including many  
22           viewers now contented with the over-the-air signal and some households that rarely watch  
23           TV. However, the cable industry hasn't chosen to aggressively pursue these customers,  
24           perhaps because it would have to cut the prices charged some of the core customers  
25           below the monopoly profit maximizing level. While society may not be harmed by  
26           policies which allow cable carriers to pursue profit maximizing pricing strategies, which  
27           result in relatively high monthly charges and relatively low participation rates, applying a

1 similar "hands off" regulatory approach to the telecommunications industry would have  
2 drastic consequences for society. Unlike with cable TV service, the rate of participation  
3 on the telephone network is of vital importance to society. Any substantial reduction  
4 below today's nearly universal participation rate would have serious adverse  
5 consequences not only for those former customers who are forced off the network, but  
6 also for those who want and need to communicate with them.

7  
8 **Q. In light of the universal service goal, are there specific requirements that local rates  
9 must be "just, reasonable, and affordable"?**

10 A. Yes. The Consumer Protection clause of the 1996 Federal Act provides that both the  
11 FCC and the states "should ensure that universal service is available at rates that are just,  
12 reasonable, and affordable." [§ 254(i)]. This is the first time that Congress has used the  
13 term "affordable" in the context of universal service. The extent to which people can  
14 afford telephone service is typically measured through telephone penetration rates, and  
15 percentages of income spent on telephones.

16  
17 **Q. What is the penetration rate for household telephone service in Arizona?**

18 A. According to the latest FCC Telephone Penetration Report [Telephone Penetration by  
19 Income by State, FCC, Released April 2002, Table 4, p. 2], 94.3% of the households in  
20 Arizona have a telephone. This percentage, which represents a state-wide average, nearly  
21 matches (within 0.2%) the national average penetration rate for the same time period. [Id.,  
22 p. 24] However, telephone penetration rates can vary significantly for smaller geographic  
23 areas. In general, telephone penetration rates are higher in more affluent urban areas and  
24 lower in poorer rural areas. Telephone penetration rates also have been found to vary  
25 with a wide variety of social and demographic measures such as income, education, and  
26 household size.

27 For example, as shown Schedule 1, telephone penetration rates in Arizona differ

1 markedly depending on the household's income level. In 2001 over 98% of Arizona  
2 households with income over \$40,000 had a telephone; just 88.2% of households with  
3 income under \$10,000 had a telephone. Id., p. 2] Over the past 17 years – since the FCC  
4 has been tracking penetration rates – Arizona households with incomes under \$20,000  
5 have consistently had penetration rates lower than the statewide average. The reverse has  
6 been true for households with incomes over \$20,000, with the highest income levels  
7 having the highest telephone penetration rates. There has been some variation in  
8 penetration rates in Arizona within income groups over time. For incomes under \$10,000  
9 the highest penetration listed was 88.6% in 2000 compared to a lowest value of 69.4% is  
10 found for 1985. [Id., p. 1, 2] This data indicates that over the past 17 years substantial  
11 progress has been made in bringing lower income households onto the network. While  
12 small year to year variations in penetration values are not necessarily statistically  
13 significant, there has unquestionably been a positive trend in telephone participation,  
14 particularly amongst those with low levels of income—those who would be most affected  
15 if local service prices were to increase substantially.

16  
17 **Q. Schedule 1 indicates that over the past 15 years telephone penetration rates have**  
18 **been essentially flat in Arizona for households with incomes over \$20,000 but have**  
19 **risen for lower income households. Why is this?**

20 **A.** The demand for telephone service is a function of many factors, including price, income,  
21 household size, and the like. The telephone penetration rates for the upper income levels  
22 have been consistently high since 1984. [Id.] For these upper income level households,  
23 changes in the factors that impact telephone demand over the past 17 years have had only  
24 a small effect. Where telephone service is nearly ubiquitous, most changes in factors like  
25 price or income will have little effect on demand. Household income and education  
26 levels have increased since 1984. Meanwhile—in real terms—the end use price of telephone  
27 service has tended to be flat or decreasing. All of these factors have tended to maintain or

1           increase telephone penetration rates. Increases have been concentrated amongst lower  
2           income level households because this group has been more responsive to the decline in  
3           real prices, among other factors.

4                     As I mentioned earlier, the 94% plus buy-up rate that currently exists in Arizona is  
5           partly driven by the effects of regulatory policies which have emphasized universal  
6           service, and partly by the historical absence of good substitutes for telephone service. To  
7           understand the importance of these policies, consider a simple comparison with the TV  
8           industry. The vast majority of households have at least one color television. Yet, usage of  
9           cable TV service is relatively low—with an average participation rate of perhaps 60%.  
10          Cable providers have chosen to maximize profits by charging prices which are not  
11          considered affordable or reasonable by many people. Considering this example, I think it  
12          is reasonable to assume that telephone usage could decline to nearly that low a level  
13          (perhaps 70%) in the absence of pricing philosophies and regulatory policies designed to  
14          promote universal service. The much higher level of participation which currently exists  
15          is due to the presence of rate regulation which has limited the price of basic local  
16          exchange service and encouraged nearly universal participation on the network.

17                    Even with the regulated prices, penetration rates never reach 100% in any wire  
18          center in the nation. This is attributable not to any single cause but to at least three--each  
19          associated with a particular group or category. The primary groups who tend not to  
20          maintain telephone service are (1) impoverished residents (e.g., with annual incomes  
21          under \$5,000) found in all geographic areas but concentrated in minority neighborhoods  
22          in the inner cities; (2) residents and small businesses in areas where costs and rates are  
23          high relative to the value of the service provided; (3) a structural residue of customers that  
24          are not inclined to have a telephone, either because they are transients, or because they  
25          don't place much value on having a telephone in their home or place of business.

26                    To maximize network participation, each of these distinct groups must be  
27          targeted. In particular, regulatory policies can and should target high cost areas and low

1 income customers, to encourage continued and/or expanded participation on the public  
2 network, even though such policies provide benefits to the targeted groups that aren't  
3 available to others.

4  
5 **Q. Please relate your discussion of the goal of universal service to the investigation of**  
6 **switched access charges at hand in this proceeding?**

7 A. Yes. These two issues are intimately connected. Switched access service is an important  
8 source of revenues that has historically been used to help pay for the costs of providing  
9 Universal Service. If these rates are greatly reduced, as some parties are advocating, there  
10 will be increased pressure to replace this revenue stream with an alternative source of  
11 funding, such as higher local exchange rates. This type of "rate rebalancing," as it has  
12 been called, may endanger the universal service goal, particularly if it is implemented in  
13 an extreme manner.

14  
15 **Q. Can policy decisions regarding access charges have an effect on universal service?**

16 A. Yes, particularly to the extent access rate reductions are offset by increases in the fees  
17 paid by local exchange customers. It is difficult, if not impossible, to separate concerns  
18 about the level of access charge from concerns about universal service support, despite  
19 the fact that these issues are often dealt with in separate proceedings. The FCC  
20 recognized this linkage in its Access Charge Reform Order:

21  
22 [T]hrough this First Report and Order in our access reform docket  
23 and our Universal Service Order, we set in place rules that will  
24 identify and convert existing federal universal service support in  
25 the interstate high cost fund, the dial equipment minutes (DEM)  
26 weighting program, Long Term Support, Lifeline, Link-up, and  
27 interstate access charges to explicit federal universal service  
28 support mechanisms. [ ¶ 5 ]  
29

30 Care must be exercised to ensure that the intrastate mechanisms used to maintain

1 support for affordable local rates are sustainable in the long run, achieve their intended  
2 purpose, and do not unduly distort the market. In this regard, the support mechanisms  
3 which help maintain affordable rates in high cost rural areas are of particular importance.  
4 One way to reduce market distortions and ensure long term sustainability is to use support  
5 mechanisms which are explicit and carefully focused. Thus, for example, implicit support  
6 embodied in the existing access charges might be replaced with a more explicit form of  
7 support provided through an expanded version of the Arizona Universal Service Fund.

8 The Commission is responsible for ensuring that the intrastate support  
9 mechanisms are not only sustainable and consistent with evolving market conditions, but  
10 that they comply with the requirements of the 1996 Telecom Act, including the  
11 requirement that the services which are vital to the universal service goal are not  
12 burdened with an excessive share of the joint and common costs of the network:

13  
14 **SUBSIDY OF COMPETITIVE SERVICES**

15 **PROHIBITED-** A telecommunications carrier may not use services  
16 that are not competitive to subsidize services that are subject to  
17 competition. The Commission, with respect to interstate services,  
18 and the States, with respect to intrastate services, shall establish  
19 any necessary cost allocation rules, accounting safeguards, and  
20 guidelines to ensure that services included in the definition of  
21 universal service bear no more than a reasonable share of the joint  
22 and common costs of facilities used to provide those services.  
23 [Section 254(k).]  
24

25 In determining the scope of this provision, the FCC concluded that this provision  
26 of the 1996 Telecom Act protects not only basic local exchange service but also the  
27 ability to access long distance carriers. However, it does not protect toll services provided  
28 by those carriers. As the FCC points out, this provision does not prevent universal  
29 service support for access:  
30

31 Regarding GCI's argument that interexchange service should not be

1 supported because it is a competitive service, we emphasize that  
2 universal service support will be available for access to  
3 interexchange service, but not for the interexchange or toll service.  
4 [note omitted] We find that the record does not support including  
5 toll service among the services designated for support, although, as  
6 discussed in section V below, we find that the extent to which rural  
7 consumers must place toll calls to reach essential services should  
8 be considered when assessing affordability. Nevertheless,  
9 universal service should not be limited only to "non-competitive"  
10 services. One of the fundamental purposes of universal service is  
11 to ensure that rates are affordable regardless of whether rates are  
12 set by regulatory action or through the competitive marketplace.  
13 GCI's argument implies that, if there were multiple carriers  
14 competing to provide, for example, basic dialtone service at \$1000  
15 per month, there could be no universal service support because the  
16 price was set through competition. Such a result would be  
17 inconsistent with Congress's intentions to preserve and advance  
18 universal service in adopting section 254. We note that section  
19 254(k), which forbids telecommunications carriers from using  
20 services that are not competitive to subsidize competitive services,  
21 is not inconsistent with our conclusion that it is permissible to  
22 support competitive services. [note omitted] [Access Charge  
23 Reform Order, ¶ 77]  
24

25 There are undoubtedly a variety of different ways the Commission can ensure  
26 compliance with this provision of the 1996 Telecom Act. Where doubt exists concerning  
27 the best policy to adopt, or the most appropriate distribution of the burden of joint and  
28 common costs, it is clear that priority must be given to ensuring that universal service is  
29 protected—even if that results in long distance toll rates which are higher than would  
30 otherwise be desired. Stated another way, the Commission will undoubtedly receive  
31 conflicting advice in this proceeding concerning the most appropriate way of spreading  
32 the burden of joint and common costs between basic local exchange service and long  
33 distance toll services. In evaluating this conflicting advice, it would be appropriate to err  
34 in the direction of ensuring that the "price of entry" onto the telephone network remains at  
35 attractively low levels—thereby helping to maintain very high penetration rates. That is not

1 to say that the Commission should be unwilling to deviate from the status quo, or that it  
2 should refuse to consider any reductions to access charges for fear of the consequences.  
3 However, the Commission should place a very high burden of proof on parties that are  
4 urging extreme changes to cost recovery patterns which have proven so successful for so  
5 many years.

6  
7 **Efficiency and Economic Costs**

8  
9 **Q. It is sometimes argued that reductions in access rates can enhance economic**  
10 **efficiency, because rates are far in excess of economic costs. Please respond?**

11 **A.** Yes. Economic theory suggests that allocative efficiency is most readily achieved when  
12 prices are set equal to marginal cost, assuming this can be achieved while still allowing  
13 the firm an opportunity to recover its total costs. In an industry where economies of scale  
14 and scope are pervasive, pricing at marginal cost may not allow the firm to recover its  
15 total costs, and thus some mark up above marginal cost will generally be necessary to  
16 ensure the long run viability of the firm. While there is certainly some merit to this line of  
17 reasoning, there are also problems with using this logic as a basis for lowering access  
18 rates—particularly if this is done at the expense of higher local rates.

19 It would not be in the public interest to adopt proposals that would shift a large  
20 share of the revenue burden from toll and access to residential basic exchange services, if  
21 this would risk the universal service objective. Some may argue that such a shift will  
22 encourage efficiency, by bringing the toll and access rates closer to marginal cost. But to  
23 determine if such a shift would truly result in a net gain in efficiency, the Commission  
24 would also need to consider any offsetting efficiency losses that would result in the local  
25 market, where prices would be increased farther above marginal cost. As well, in  
26 evaluating questions of efficiency, it is important to take into consideration the  
27 phenomena of network externalities, which suggests that society greatly benefits from

1 pricing policies which encourage high network participation rates.

2  
3 **Q. The debate over economic efficiency is generally couched in terms of cost recovery.**  
4 **Briefly explain the types of costs which are currently recovered through access**  
5 **rates?**

6 A. Switched access rates have been designed to recover the costs of both the traffic-sensitive  
7 (TS) and non-traffic-sensitive (NTS) functions performed by the LEC in processing IXC  
8 calls. The TS costs are those that vary depending upon the usage placed over the network  
9 (e.g., the portion of the switching equipment which varies in size and cost, depending  
10 upon call volumes). In comparison, NTS costs are those costs that do not tend to increase  
11 as the number of calls placed over the network increases (e.g. the cost of ordinary copper  
12 loops is largely fixed, regardless of the volume of traffic carried by the loop).

13 Most of the NTS costs have another important characteristic: they are joint or  
14 common costs which are not only necessary for the provision of intrastate switched  
15 access service, but also are necessary for the provision of interstate switched access, local  
16 exchange and custom calling services. Common costs are incurred when production  
17 processes yield two or more outputs. Joint costs are a specific type of common cost. The  
18 classic definition specifies that joint costs are incurred when production processes yield  
19 two or more outputs in fixed proportions. More intuitively, joint costs arise in situations  
20 where there are production factors that, once acquired for use in producing one good, are  
21 costlessly available for use in the production of others. Thus, for example, cattle feed that  
22 is acquired for use in producing hamburgers is costlessly available for use in producing  
23 leather shoes.

24 Despite any contrary claims that might be made by other parties to this  
25 proceeding, the local loop fits the definition of a joint cost because, except when  
26 congestion is present, there is no trade-off between the joint uses of the loop. If an access  
27 line is acquired for purposes of placing local calls, it is costlessly available for use in

1 placing long distance calls, as well. When an additional access line is installed, it  
2 simultaneously increases the intermediate output (access) available to both toll and local  
3 markets (as well as the market for other services, such as custom calling). Even if a line is  
4 intended strictly for local calls, it can also be used to place and receive toll calls, and vice  
5 versa. Accordingly, local loops are analogous to cattle feed in the production of steaks  
6 and leather coats. Even if feed is strictly intended to increase the amount of available  
7 beef, it concurrently increases the amount of hides which are available.

8 To be more precise, one can say that the access line connecting a residence or  
9 business to the LEC's central office yields at least two joint products: access to customers  
10 within the same locality (local access) and access to customers within other cities (toll  
11 access). Since the latter form of access is provided via toll carriers, one can think of the  
12 access line as providing access to the local and toll networks. Of course, since  
13 communication is generally two-way, we can also say that at least two other joint  
14 products are also provided: access to the customer installing the line is provided to other  
15 customers within the same locality, and access is provided to toll carriers and to their  
16 customers who have a potential interest in talking with the business or household that  
17 installed the line.

18 To assign the entire amount of these joint costs to local exchange service is not  
19 appropriate, and the resulting total cannot meaningfully be arrayed beside the revenues  
20 derived from basic local exchange service. The LECs have many revenue sources which  
21 help cover these joint costs, including toll, switched access, and custom calling. Carriers  
22 have long relied upon all of these different revenue sources in order to pay their loop  
23 costs. The loop facilities used in providing local exchange service are also required for  
24 (and used by) other services that local carriers provide, including interstate switched  
25 access, intrastate switched access, intrastate toll, custom calling, and Caller ID service.  
26 The poles, cable, drop wire, line card, and channel connection are equally required for the  
27 provision of these other services, and there is no logical reason to impose the entirety of

1           these costs onto just one of the services benefitting from them.

2           Generally, when a customer is connected to the public switched network, that  
3           customer is provided with access to the other lines situated within the same city, but  
4           access is simultaneously provided to the toll carriers with points of presence in that city;  
5           and via their facilities, access is provided to millions of lines located in hundreds of other  
6           cities around the state and country. It makes no economic sense to impose the entire cost  
7           of the access line, as part of the price of local service, on the particular end user who  
8           requests installation of the line. Rather, it is appropriate to recover the cost from all of the  
9           beneficiaries of that line--including the other local customers in that city and the toll  
10          carriers that also benefit from the new line, whether directly or indirectly.

11  
12       **Q.    You have distinguished between NTS and TS costs, and explained the important**  
13       **concept of joint and common costs. Briefly discuss the concept of "economic costs"**  
14       **and distinguish this from "embedded cost"?**

15       **A.    Many of the parties in this proceeding will agree that prices ought to be based on**  
16       **economic costs. The September 1996 NRRI study distinguishes economic costs from**  
17       **embedded or historical costs:**

18  
19                   First, in cases before both the Federal Communications  
20                   Commission (FCC) and state public utilities commissions, parties  
21                   have argued over the merits of basing rates on incremental  
22                   (economic) costs versus embedded (historical), fully distributed  
23                   costs. [Competition-Enhancing Costing and Pricing Standards for  
24                   Telecommunications Interconnection, NRRI, p. 1.] And it states  
25                   that The notion of the embedded cost of service has less and less  
26                   meaning in today's evolving telecommunication markets. [Id., p.  
27                   15]

28  
29                   While I would argue that embedded cost data can still be useful, the view  
30                   expressed in this NRRI report is certainly consistent with the trend in most jurisdictions.

1 Most state commissions are continuing to move away from embedded cost allocation  
2 approaches, and placing increased reliance upon economic or incremental costing  
3 methods instead.

4 Accountants are concerned primarily with the proper recording and measuring of  
5 historical costs based upon a uniform set of rules. The data, recorded in the books and  
6 records of a firm, are referred to as "accounting" or "embedded" costs. Economists, on the  
7 other hand, have developed a comprehensive set of theories concerning cost, which they  
8 use to describe, explain, and predict the behavior of firms and individuals (e.g.,  
9 consumers). While embedded costs--the accountant's measure of cost--are quite practical,  
10 readily available, and fairly consistent from firm to firm, the economist's idea of cost is  
11 more useful in analyzing the critical decisions made by management and government.

12 In some jurisdictions, the linkage between embedded cost and telephone rates has  
13 at times been very direct and near-absolute: the embedded costs were allocated to various  
14 service categories, and this largely determined the rates charged. At least in recent years,  
15 however, most jurisdictions have followed procedures in which the linkage is less direct  
16 and more flexible. Embedded costs remain important, but they largely influence or  
17 control the overall revenue level, without necessarily controlling the rates charged for  
18 specific items. A variety of information is used in determining specific rates, including  
19 "economic" cost estimates.

20 For instance, the target revenue stream is often determined by embedded rate of  
21 return data and then divided between the various service categories on the basis of  
22 historic rate relationships, value of service patterns, relative levels of economic cost, and  
23 other considerations. Many jurisdictions rely increasingly upon some form of estimated  
24 economic cost (e.g., long run incremental cost), but regulators have typically allowed a  
25 substantial mark-up, or contribution, above cost, to give the carrier an opportunity to earn  
26 a fair rate of return on its embedded investment.

27

1 **Q. Are there different types of economic cost?**

2 A. Yes. The form of economic cost that is, at present, perhaps the most widely advocated is  
3 TSLRIC, which stands for total service long run incremental cost. TSLRIC is defined as a  
4 firm's long-run total cost of producing all its goods and services except the service in  
5 question, subtracted from the firm's long-run total cost of producing all its goods and  
6 services including the service in question. In effect, it measures the difference between  
7 producing a service and not producing it.

8 However, TSLRIC is by no means the only relevant type of economic cost.  
9 Marginal cost, for example, is of great importance in the economic literature, among  
10 other reasons because it is of vital importance in understanding pricing behavior by  
11 unregulated firms and in evaluating the extent to which economic efficiency is being  
12 achieved in a particular situation. I provide an extended discussion of the TSLRIC  
13 concept, as well as other important costing concepts in Appendix C to my testimony.

14  
15 **Q. Briefly elaborate on the TSLRIC concept, and explain how it relates to the concept  
16 of joint and common costs?**

17 A. Yes. An appropriately prepared TSLRIC study will almost invariably show a very low  
18 level of costs—typically the cost results are a small fraction of existing rate levels. For  
19 instance, a TSLRIC study for call waiting service will typically show costs that are at  
20 most a few pennies a month, primarily related to the cost of billing and collection. In  
21 contrast, the service is typically priced at a far higher level—typically \$5 or more per  
22 month. There are many factors contributing to the gap between current rates and TSLRIC,  
23 including the benefits of changing technology and increased economies of scale, which  
24 have improved since rates were initially established. However, the most important factor  
25 explaining the gap between TSLRIC and current rates is the manner in which joint and  
26 common costs are treated in properly developed TSLRIC calculations. Where network  
27 elements are required for multiple telecom services, the cost of these elements will

1 generally not be reflected in the TSLRIC calculations for any single service.

2 When properly developed, TSLRIC studies will exclude joint costs. This follows  
3 directly from the TSLRIC definition, which focuses attention entirely on costs which  
4 increase or decrease with the presence or absence of the specific service being studied.  
5 Recall that in a multi-product firm, additional services can be added to the mix without  
6 incurring any additional joint cost. (These are costs which, if they are incurred in  
7 providing any one service can costlessly be used in providing other services as well).  
8 Since TSLRIC only focuses on the additional cost of each product, the joint cost does not  
9 appear in a properly computed TSLRIC amount. Stated differently, if the cost of a  
10 particular network element remains the same regardless of whether or not any particular  
11 telecom service is produced using that element, the cost of that element will not be  
12 reflected in the TSLRIC of the individual services which benefit from the presence of that  
13 element. In mathematical terms, the cost of the element drops away from the TSLRIC  
14 calculations, and thus the TSLRIC of each individual service will exclude the cost of that  
15 element.

16 A large gap between TSLRIC and price is typical for most telecom services. For  
17 instance, when the TSLRIC concept is applied to a service like Call Waiting, the  
18 estimated cost is likely to be just a few pennies per month. Similarly, when the TSLRIC  
19 concept is applied to switched access, the same pattern exists: the TSLRIC amount is a  
20 small fraction of the established price.

21 Although TSLRIC calculations for individual services do not include the full  
22 amount of joint and common (shared) costs that are incurred by the firm, this does not  
23 mean these costs are not recovered from customers. To the contrary, both regulated and  
24 unregulated firms recover their joint and common costs through the rates they charge for  
25 their products and services. In unregulated markets this is accomplished by setting rates  
26 which reflect demand conditions—services with strong demand are priced far above  
27 TSLRIC in order to ensure recovery of the firm's total costs.

1 Under competitive conditions, an efficient firm has an opportunity in the long run  
2 to recover its total costs, including its joint and common costs. The extent to which the  
3 joint and common costs are recovered through the prices charged for particular services,  
4 or recovered from particular groups of consumers will not be uniform. In unregulated  
5 markets, the pattern of cost recovery will be heavily influenced by demand conditions,  
6 including relative levels of perceived value, the extent to which close substitutes exist for  
7 particular products or services, and the price of those alternatives.

8 In regulated markets total cost recovery is also achieved, but the specific pricing  
9 pattern may differ. Whether by allowing a substantial mark-up above TSLRIC, by setting  
10 prices on the basis of cost allocation procedures, or by using some other procedure to  
11 reconcile rates with the firm's overall revenue needs, regulators have historically given  
12 carriers an opportunity to recover their joint and common costs. While the pattern of  
13 recovery may differ, the overall result is similar to that achieved under competition: joint  
14 and common costs are typically recovered from the array of services that require or  
15 benefit from these costs.

16  
17 **Q. Observers have often characterized telecommunications as a declining cost industry.**  
18 **Does this have relevance to the issues in this proceeding?**

19 A. Yes. Because this is a declining cost industry, rates which were initially designed to  
20 recover a reasonable level of unit costs currently recover much more than the actual level  
21 of costs—assuming the per-minute rates haven't declined as rapidly as the per-minute  
22 costs. In recent years, we have seen an explosion of technological improvements as the  
23 industry has evolved away from analog technology into digital technology. There have  
24 been tremendous improvements in the areas of fiber optic cables, digital multiplexing and  
25 transmission systems, operations support computers, digital cross connect systems, digital  
26 central office switches, and more. Not only do these technologies permit substantial  
27 reductions in labor and maintenance costs, but the prices of these items been declining.

1 As these new technologies are increasingly utilized by carriers, their impact becomes  
2 increasingly significant. All of these technologies allow carriers to generate more output,  
3 (e.g., minutes of use and numbers of access lines in use), per unit of input (e.g., hours of  
4 employee time expended). The benefits of new technology combine with the benefits of  
5 economies of scale and scope to create an environment in which unit costs have been  
6 rapidly declining.

7  
8 **Q. Do you have any evidence that average costs per unit of output decline as a**  
9 **telecommunications network expands?**

10 A. Yes. In the course of my work in other jurisdictions, I have developed economic cost  
11 estimates that demonstrate this phenomenon, and the pattern is very strong. As a carrier  
12 expands its output, it will tend to experience a downward trend in its average cost per  
13 loop or per minute. This pattern of declining costs confirms the fact that both the IXCs  
14 and the LECs participating in this proceeding are operating in a declining cost industry.  
15 Even if some of a carrier's input prices are increasing (e.g. salaries) its unit costs are likely  
16 to be decreasing, because the uptrend in input costs tends to be more than offset by the  
17 benefits of new technology and economies of density and scale, all of which tend to  
18 increase over time, as telecommunications markets expand.

19  
20 **Switched Access Rates**

21  
22 **Q. Let's turn to the sixth section of your testimony. Up to this point you have**  
23 **emphasized the fact that costs are declining in the telephone industry. Have access**  
24 **rates also been reduced, consistent with this decline in costs?**

25 A. Rates have declined, but not necessarily to the same degree as costs. In the interstate  
26 jurisdiction, the FCC has generally required frequent access rate reductions, which have  
27 had the effect of periodically passing through some of the benefits of unit cost decreases.

1           This was initially accomplished through periodic cost-based rate reductions, then through  
2           the "X" factor in the FCC's price cap mechanism, as well as provisions which required  
3           LECs to share their excess profits with their interstate customers. More recently, rate  
4           reductions have resulted from the CALLS program. In Arizona, as in most state  
5           jurisdictions, the policy with regard to cost reductions has been more sporadic. In some  
6           cases LECs have lowered their switched access rates, thereby passing through some of the  
7           benefits of economies of scale and technological change, and in other cases they have  
8           retained the benefits of these cost reductions in the form of higher profits.

9           In Schedule 2, I have estimated the average level of Qwest's interstate and  
10          intrastate access rates, by dividing Qwest's Arizona access revenues by its corresponding  
11          switched access minutes. For convenience in comparing trends in several data series, I  
12          have graphed this data on an indexed basis, where the 1991 value of each data series  
13          equals 100. A review of this graph shows that the Company's interstate access rates have  
14          declined by over two-thirds over the past decade. The intrastate rates have also declined,  
15          but not as sharply. From 1991 to 1997, the average level of the intrastate access rates  
16          declined by roughly 20%. In subsequent years, rates were more nearly flat. As a result,  
17          Qwest's intrastate access rates in 2001 were about 25% below the 1991 level.

18          The more rapid decline in Qwest's interstate rates reflects multiple factors,  
19          including policies in the federal jurisdiction which have passed cost reductions through to  
20          access customers on a more frequent and consistent basis, as well as recent policy  
21          changes which have had the effect of shifting cost responsibility away from the  
22          per-minute access rates. For instance, the FCC increased the SLC ceiling from \$6.00 to  
23          \$9.00 for multi-line business customers beginning July 1, 1997 and from \$3.50 to \$5.00  
24          for non-primary lines beginning January 1, 1998. [Access Reform Order, ¶78] More  
25          recently, the FCC decided to eliminate the PICC and CCL charges, shifting the cost  
26          burden entirely onto end users through the SLC. In the FCC's 2000 CALLS order, it  
27          raised the cap on the SLC for primary residential and single-line business lines from

1           \$3.50 to \$4.35 beginning July 1, 2000, to \$5.00 as of July 1, 2001, to \$6.00 as of July 1,  
2           2002, and then finally to \$6.50 as of July 1, 2003. [CALLS Order, ¶70] The effect of this  
3           shifting of revenue flows is reflected in the end user access revenues per line, which  
4           remained nearly flat during the period 1991 through 1996, then increased rapidly from  
5           1997 through 2001. This shift in revenue responsibility accelerated the decline in  
6           interstate per minute rates during those same years. The net result of these divergent  
7           regulatory policies—with intrastate rates showing little or no decline in recent years, while  
8           interstate rates have declined sharply—is a widening of the disparity between Arizona  
9           intrastate and interstate access rate levels.

10  
11   **Q.   Have you conducted any research into intrastate switched access rates in other**  
12   **jurisdictions?**

13   A.   Yes. Schedule 3 of my exhibit summarizes the current intrastate switched access rates in  
14   various other states. This schedule contains switched access rates from 83 sets of tariffs,  
15   including rates for Alltel, Bell South, Sprint, Qwest, Verizon, SWBT and several SBC  
16   companies. In judging whether access rates might be reduced in Arizona, and if so, how  
17   substantial a reduction might be appropriate, the Commission might find value in looking  
18   at rates charged in other jurisdictions.

19           As shown on page 2, Qwest-Arizona's total intrastate switched access rate is  
20   \$0.0345. This compares to a high of \$0.1166 for Century Tel-Missouri and a low of  
21   \$0.0032 for Pacific Bell-California. Qwest's total Arizona rate is moderately higher than  
22   the average rate, which is \$0.0296. In terms of the component access rates,  
23   Qwest-Arizona has the 55th highest CCL rate, the 66th highest end office switching rate,  
24   and the 22nd highest transport rates within this nationwide group. Only Qwest's intrastate  
25   transport rate falls towards the low end of the range.

1 **Concluding Comments**

2  
3 **Q. Do you have any response to the proposals of other parties, to the extent those have**  
4 **been described in the comments which were submitted earlier in this proceeding?**

5 A. No. I will reserve judgment on the details of the other parties' proposals until after I have  
6 an opportunity to review a more detailed explanation of their proposals, as set forth in  
7 their direct testimony and exhibits. At this point I would simply note that given the  
8 reasoning included in some of the comments, the proposals of some parties are likely to  
9 be too extreme to be in the public interest.

10  
11 **Q. Are you opposed to reductions in intrastate switched access rates?**

12 A. No. Given the pattern of sharply declining unit costs in recent years, it should be feasible  
13 to reduce intrastate access rates without any offsetting increase in the monthly fees paid  
14 by local customers, while still maintaining the financial integrity of the LECs.  
15 Furthermore, competition, as it increases, will eventually drive down the overall level of  
16 telecommunications rates. There is every reason to anticipate that competitive forces will  
17 create downward pressures on the underlying costs of all local services, including both  
18 switched access and basic local exchange service. And, as costs trend downward, carriers  
19 will be forced to share the benefits of that downward trend—to the extent competitive  
20 pressures intensify.

21 While the competitive pressures may not be as immediate, or as strong, in  
22 residential markets, there is no reason to assume residential local rates ought to be  
23 increased substantially, given the overall downward trend in costs incurred by the LECs.  
24 To the contrary, if competition starts being more effective, it will undoubtedly erode  
25 profit margins, creating downward pressure on nearly all rates, including those paid by  
26 residence customers.

27 Simply stated, if regulation is effective in restricting monopoly profits over the

1 longer term, or if competition intensifies enough to serve this same function, there is  
2 every reason to anticipate that both toll and local prices will decline over time, as a result  
3 of continued technological improvements, increasing efficiency, greater economies of  
4 scale and scope, and the elimination of supra-normal profit levels.

5 Given the declining cost characteristics of the industry, and the fact that many  
6 incumbent LECs throughout the country have recently been enjoying extraordinarily high  
7 profit levels (far exceeding their cost of equity), there is reason to be skeptical about the  
8 necessity of adopting regulatory policies which have the effect of substantially increasing  
9 local rates. Certainly, there is no need to increase local rates to offset intrastate switched  
10 access rate reductions on a dollar-for-dollar basis.

11  
12 **Q. Do you have any other concluding comments?**

13 **A.** Yes. Some parties may argue that because the interstate per-minute rates are declining  
14 towards near-zero levels, the intrastate access rates should follow a similar trajectory.  
15 There is certainly merit to the notion that the Arizona intrastate rates can't be viewed in a  
16 complete vacuum. In a market environment in which interstate rates are rapidly declining,  
17 intrastate rates should also be declining—at least to pass through some of the benefits of  
18 declining costs which are being enjoyed by the LECs.

19 However, proposals for extreme reductions in access rates are not in the public  
20 interest, if they involve substantial increases in basic local rates, or the introduction of  
21 other rate elements which significantly increase the cost of joining, or staying on, the  
22 network. The minimum cost of having a telephone in Arizona is already increasing  
23 substantially, as the FCC phases in higher SLCs as part of the CALLS program. The  
24 Commission should be careful about exacerbating the impact of the CALLS program by  
25 adopting rate changes which contribute to an even steeper increase in the cost of having a  
26 phone.

27 Competition in the toll market has largely been a "win-win" scenario for most

1 consumers. As the toll market share commanded by the dominant carriers has fallen, rates  
2 have likewise fallen. While the dominant carriers' market share has declined, these  
3 "losses" have been offset by increased revenues from industry-wide traffic stimulation.  
4 Intensifying competition and declining costs have led to declining prices, which have led  
5 to increased traffic, which has allowed the carriers to benefit from increased economies of  
6 scale, which has led to still further reductions in prices. The competitive process has also  
7 contributed to traffic growth, by encouraging volume discounts and by increasing  
8 customer awareness through intensive advertising. While the lion's share of the benefits  
9 from toll competition have been enjoyed by large toll users, and those who are the most  
10 sensitive to price differences, the benefits of declining costs have been spread quite  
11 widely. Few, if any, customers have been forced to pay more for toll service.

12 The LECs have also shared in the bounty, since they receive large amounts of  
13 revenue from the long distance carriers in the form of access payments. These payments  
14 have been growing, allowing the LECs to generate strong profits in recent years. Toll  
15 competition has driven down costs and prices, and it clearly has benefitted most  
16 consumers, providing them with increased choices, resulting in increased diversity of  
17 supply, and encouraging a variety of different technical and marketing innovations.

18 In evaluating proposals in this proceeding, the Commission should keep this  
19 example in mind. Rates which are currently at relatively high levels can and should be  
20 reduced—but those reductions can be accomplished without necessarily requiring sharp  
21 increases in other rates. In a declining cost environment, rate reform can be accomplished  
22 largely through substantial reductions in some rates, while other rates remain unchanged,  
23 or decline less sharply.

24  
25 **Q. Does this complete your direct testimony, which was prefiled on June 28, 2002?**

26 **A. Yes, it does.**

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**Arizona Telephone Penetration Rates**  
*Percentage of Households with Telephone Service*

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Year	Income Level	Penetration Rate
1984	\$9,999 or less	73.6
	\$10,000 to \$19,999	91.7
	\$20,000 to \$29,999	94.1
	\$30,000 to \$39,999	97.3
	\$40,000 or more	99.6
	All Households	90.0
1985	\$9,999 or less	69.4
	\$10,000 to \$19,999	90.0
	\$20,000 to \$29,999	88.9
	\$30,000 to \$39,999	92.5
	\$40,000 or more	97.7
	All Households	86.6
1986	\$9,999 or less	82.9
	\$10,000 to \$19,999	84.2
	\$20,000 to \$29,999	94.5
	\$30,000 to \$39,999	97.2
	\$40,000 or more	95.4
	All Households	90.3
1987	\$9,999 or less	76.6
	\$10,000 to \$19,999	83.5
	\$20,000 to \$29,999	92.3
	\$30,000 to \$39,999	93.5
	\$40,000 or more	97.0
	All Households	88.4
1988	\$9,999 or less	80.4
	\$10,000 to \$19,999	85.2
	\$20,000 to \$29,999	92.5
	\$30,000 to \$39,999	98.9
	\$40,000 or more	97.3
	All Households	90.7

---

**Arizona Telephone Penetration Rates**  
*Percentage of Households with Telephone Service*

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Year	Income Level	Penetration Rate
1989	\$9,999 or less	73.6
	\$10,000 to \$19,999	87.9
	\$20,000 to \$29,999	95.7
	\$30,000 to \$39,999	98.1
	\$40,000 or more	98.4
	All Households	90.6
1990	\$9,999 or less	74.6
	\$10,000 to \$19,999	91.5
	\$20,000 to \$29,999	92.6
	\$30,000 to \$39,999	98.2
	\$40,000 or more	99.5
	All Households	91.2
1991	\$9,999 or less	83.5
	\$10,000 to \$19,999	93.0
	\$20,000 to \$29,999	94.2
	\$30,000 to \$39,999	99.0
	\$40,000 or more	100.0
	All Households	93.5
1992	\$9,999 or less	84.2
	\$10,000 to \$19,999	90.7
	\$20,000 to \$29,999	97.0
	\$30,000 to \$39,999	97.7
	\$40,000 or more	99.1
	All Households	93.6
1993	\$9,999 or less	79.3
	\$10,000 to \$19,999	94.6
	\$20,000 to \$29,999	98.2
	\$30,000 to \$39,999	97.2
	\$40,000 or more	98.9
	All Households	93.3

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**Arizona Telephone Penetration Rates**  
*Percentage of Households with Telephone Service*

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Year	Income Level	Penetration Rate
1994	\$9,999 or less	87.5
	\$10,000 to \$19,999	91.9
	\$20,000 to \$29,999	94.3
	\$30,000 to \$39,999	96.5
	\$40,000 or more	100.0
	All Households	93.7
1995	\$9,999 or less	81.9
	\$10,000 to \$19,999	91.3
	\$20,000 to \$29,999	94.3
	\$30,000 to \$39,999	98.7
	\$40,000 or more	96.9
	All Households	92.0
1996	\$9,999 or less	86.9
	\$10,000 to \$19,999	88.4
	\$20,000 to \$29,999	98.0
	\$30,000 to \$39,999	99.1
	\$40,000 or more	98.1
	All Households	93.0
1997	\$9,999 or less	82.4
	\$10,000 to \$19,999	86.8
	\$20,000 to \$29,999	96.4
	\$30,000 to \$39,999	95.2
	\$40,000 or more	95.7
	All Households	90.3
1998	\$9,999 or less	79.5
	\$10,000 to \$19,999	92.0
	\$20,000 to \$29,999	95.0
	\$30,000 to \$39,999	95.6
	\$40,000 or more	97.9
	All Households	91.5

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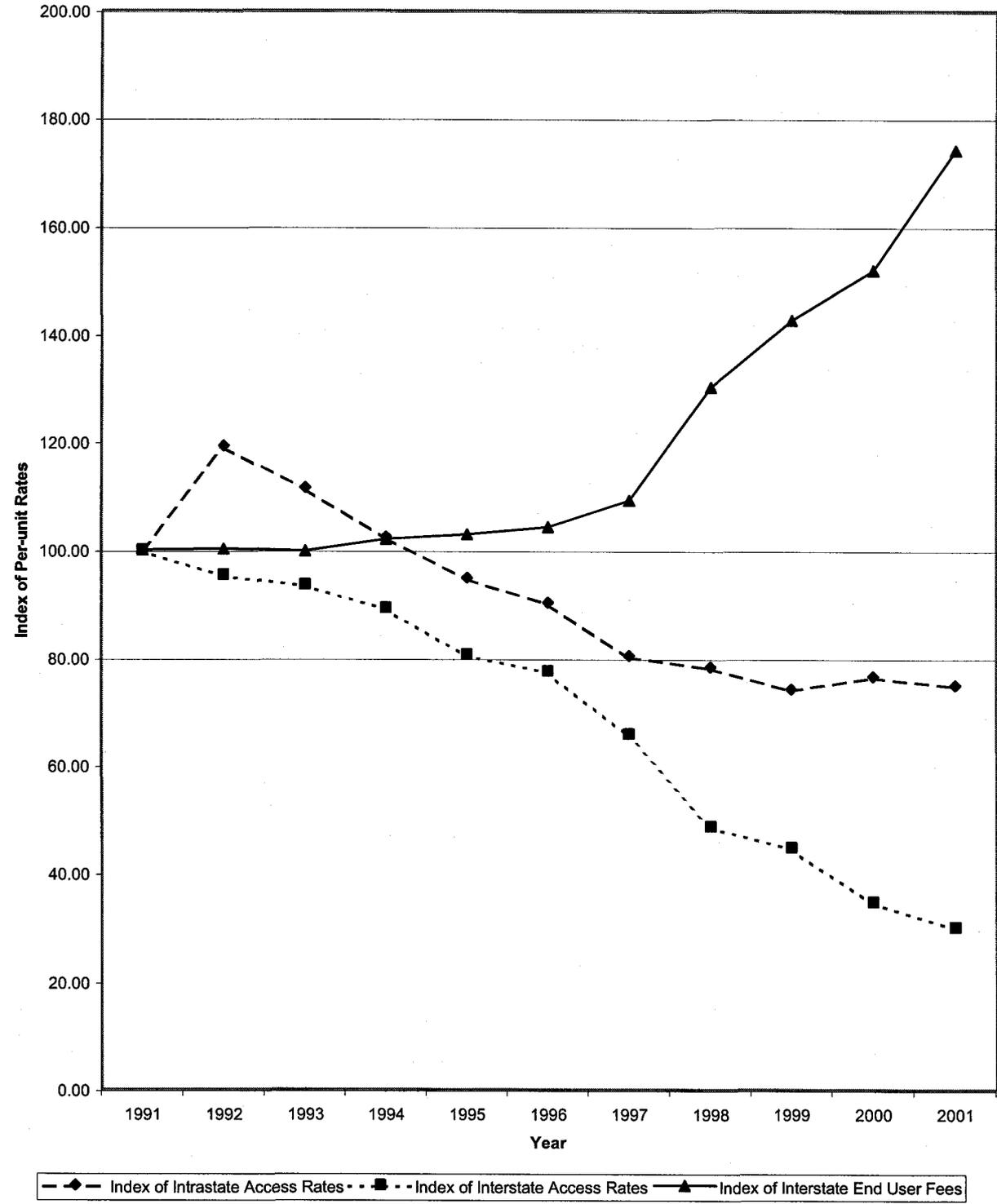
**Arizona Telephone Penetration Rates**  
*Percentage of Households with Telephone Service*

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Year	Income Level	Penetration Rate
1999	\$9,999 or less	79.1
	\$10,000 to \$19,999	90.2
	\$20,000 to \$29,999	94.8
	\$30,000 to \$39,999	94.0
	\$40,000 or more	98.8
	All Households	91.7
2000	\$9,999 or less	88.6
	\$10,000 to \$19,999	90.8
	\$20,000 to \$29,999	97.4
	\$30,000 to \$39,999	96.3
	\$40,000 or more	99.2
	All Households	94.4
2001	\$9,999 or less	88.2
	\$10,000 to \$19,999	91.6
	\$20,000 to \$29,999	96.1
	\$30,000 to \$39,999	97.2
	\$40,000 or more	98.3
	All Households	94.3

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Index of Access Rates (1991=100)



**Total Switched Access Rates - Other States***Per switched access minute Local Transport @ 25 Miles*

State	Company	Rate
GA	BellSouth	0.0029
KY	BellSouth	0.0029
CA	Pacific Bell	0.0032
WV	Verizon	0.0033
KS	SWBT	0.0035
MS	BellSouth	0.0035
TN	BellSouth	0.0037
IN	Indiana Bell	0.0038
MI	Michigan Bell	0.0038
OH	Ohio Bell	0.0038
WI	Wisconsin Bell	0.0038
NV	Nevada Bell	0.0040
IL	Illinois Bell	0.0044
OR	US West	0.0051
AL	BellSouth	0.0065
WY	Qwest	0.0065
OK	SWBT	0.0071
LA	BellSouth	0.0077
IN	Verizon	0.0082
SC	BellSouth	0.0083
PA	Contel	0.0087
PA	GTE	0.0087
AR	SWBT	0.0087
NE	Alltel	0.0106
VA	Verizon	0.0109
SC	Contel	0.0113
NC	BellSouth	0.0114
NE	Qwest	0.0128
IA	Qwest	0.0130
MI	Verizon	0.0132
MD	Verizon	0.0140
SC	GTE	0.0145
PA	Alltel	0.0145
KY	Verizon South	0.0149
IN	Sprint	0.0149
KY	Verizon Kentucky	0.0150
MN	Qwest	0.0163
CA	Verizon	0.0164
TN	Sprint	0.0166
TX	GTE SoWest	0.0166
WA	Qwest	0.0167
MT	Qwest	0.0170

**Total Switched Access Rates - Other States***Per switched access minute Local Transport @ 25 Miles*

State	Company	Rate
RI	Verizon	0.0172
MA	Verizon	0.0184
UT	Qwest	0.0185
TX	Contel	0.0187
OR	Verizon	0.0188
VT	Verizon	0.0190
DE	Verizon	0.0213
FL	BellSouth	0.0219
GA	Alltel	0.0231
OR	Malheur Bell	0.0233
AL	Verizon Mid-States	0.0276
SC	Alltel	0.0286
AL	Verizon South	0.0291
TX	SWBT	0.0292
NH	Verizon	0.0292
FL	Verizon	0.0297
MO	Southwestern Bell	0.0297
WA	Verizon	0.0301
NY	Alltel	0.0310
CO	Qwest	0.0312
ND	Qwest	0.0320
AL	Alltel	0.0338
NJ	Verizon	0.0340
AZ	Qwest	0.0345
GA	Georgia Alltel	0.0355
ID	Qwest S. Idaho	0.0358
NC	Alltel	0.0361
NV	Verizon	0.0395
ID	Qwest N. Idaho	0.0408
KS	Sprint	0.0417
ID	Verizon	0.0429
NE	Sprint	0.0429
NM	Qwest	0.0430
OH	Alltel	0.0438
OH	Western Reserve	0.0443
KY	Alltel	0.0458
SD	Qwest	0.0482
GA	Georgia Tel Corp.	0.0507
OK	Alltel	0.0508
NC	GTE South	0.0516
FL	Alltel	0.0534
GA	Standard Telephone	0.0538

**Total Switched Access Rates - Other States**

*Per switched access minute Local Transport @ 25 Miles*

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State	Company	Rate
AR	Alltel	0.0575
NC	Contel	0.0646
TX	Sugar Land	0.0752
MO	Verizon	0.0809
MO	Sprint	0.0992
MS	Alltel	0.0998
MO	Alltel	0.1118
MO	Century Tel	0.1166
	Average	0.0275

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**Carrier Common Line Rates - Other States***Per switched access minute*

State	Company	Rate
AL	Alltel	-
AL	BellSouth	-
AR	SWBT	-
CA	Pacific Bell	-
CA	Verizon	-
DE	Verizon	-
GA	BellSouth	-
IL	Illinois Bell	-
IN	Indiana Bell	-
IN	Verizon	-
KY	Alltel	-
KY	BellSouth	-
KY	Verizon Kentucky	-
KY	Verizon South	-
LA	BellSouth	-
MD	Verizon	-
MI	Michigan Bell	-
MS	BellSouth	-
MT	Qwest	-
NE	Alltel	-
NE	Qwest	-
NV	Nevada Bell	-
NV	Verizon	-
NY	Alltel	-
OH	Ohio Bell	-
OR	US West	-
OR	Verizon	-
PA	Alltel	-
PA	Contel	-
PA	GTE	-
RI	Verizon	-
SC	BellSouth	-
SC	Contel	-
SC	GTE	-
TX	Contel	-
TX	GTE SoWest	-
VA	Verizon	-
VT	Verizon	-
WA	Qwest	-
WI	Wisconsin Bell	-
WV	Verizon	-
WY	Qwest	-

**Carrier Common Line Rates - Other States***Per switched access minute*

State	Company	Rate
NC	BellSouth	0.0001
KS	SWBT	0.0003
TN	BellSouth	0.0008
OK	SWBT	0.0008
IA	Qwest	0.0022
MN	Qwest	0.0071
TN	Sprint	0.0073
UT	Qwest	0.0074
MI	Verizon	0.0074
IN	Sprint	0.0075
GA	Georgia Tel Corp.	0.0076
GA	Alltel	0.0097
GA	Standard Telephone	0.0097
AL	Verizon South	0.0114
FL	BellSouth	0.0119
OK	Alltel	0.0122
AL	Verizon Mid-States	0.0127
AR	Alltel	0.0134
MO	Southwestern Bell	0.0138
WA	Verizon	0.0141
MA	Verizon	0.0141
AZ	Qwest	0.0163
SC	Alltel	0.0166
CO	Qwest	0.0176
ID	Qwest S. Idaho	0.0179
OR	Malheur Bell	0.0179
ND	Qwest	0.0193
NC	Alltel	0.0194
NE	Sprint	0.0200
FL	Verizon	0.0203
TX	SWBT	0.0214
NC	GTE South	0.0217
GA	Georgia Alltel	0.0221
KS	Sprint	0.0223
NJ	Verizon	0.0242
ID	Qwest N. Idaho	0.0254
NM	Qwest	0.0257
NH	Verizon	0.0265
OH	Alltel	0.0289
OH	Western Reserve	0.0297
ID	Verizon	0.0307
FL	Alltel	0.0343

**Carrier Common Line Rates - Other States**

*Per switched access minute*

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State	Company	Rate
MO	Verizon	0.0356
NC	Contel	0.0374
SD	Qwest	0.0389
MS	Alltel	0.0473
MO	Century Tel	0.0507
MO	Sprint	0.0539
TX	Sugar Land	0.0539
MO	Alltel	0.0685
	Average	0.0113

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**End Office Switching Rates - Other States***Per switched access minute*

State	Company	Rate
MA	Verizon	0.0016
CA	Pacific Bell	0.0019
NH	Verizon	0.0019
TN	BellSouth	0.0021
GA	BellSouth	0.0021
KY	BellSouth	0.0022
WV	Verizon	0.0025
MS	BellSouth	0.0027
KS	SWBT	0.0029
IN	Indiana Bell	0.0031
MI	Michigan Bell	0.0031
OH	Ohio Bell	0.0031
WI	Wisconsin Bell	0.0031
NV	Nevada Bell	0.0032
NE	Alltel	0.0039
IL	Illinois Bell	0.0040
MI	Verizon	0.0042
OR	US West	0.0044
OR	Malheur Bell	0.0048
AL	BellSouth	0.0051
OK	SWBT	0.0052
IN	Sprint	0.0053
WY	Qwest	0.0057
PA	Contel	0.0060
PA	GTE	0.0060
LA	BellSouth	0.0064
IN	Verizon	0.0065
TX	SWBT	0.0069
SC	BellSouth	0.0070
OH	Alltel	0.0070
TN	Sprint	0.0074
AR	SWBT	0.0077
MN	Qwest	0.0081
PA	Alltel	0.0081
MO	Southwestern Bell	0.0083
RI	Verizon	0.0084
SD	Qwest	0.0086
FL	BellSouth	0.0087
GA	Alltel	0.0087
GA	Georgia Alltel	0.0087
OR	Verizon	0.0089
FL	Verizon	0.0089

**End Office Switching Rates - Other States***Per switched access minute*

State	Company	Rate
NJ	Verizon	0.0089
NC	BellSouth	0.0099
IA	Qwest	0.0100
OH	Western Reserve	0.0100
VA	Verizon	0.0100
SC	Contel	0.0104
UT	Qwest	0.0104
ND	Qwest	0.0106
SC	Alltel	0.0110
TX	Sugar Land	0.0113
NE	Qwest	0.0118
OK	Alltel	0.0121
ID	Verizon	0.0122
CO	Qwest	0.0124
MD	Verizon	0.0126
SC	GTE	0.0137
AL	Verizon Mid-States	0.0138
KY	Verizon Kentucky	0.0138
KY	Verizon South	0.0142
ID	Qwest N. Idaho	0.0143
VT	Verizon	0.0151
WA	Verizon	0.0151
NC	Alltel	0.0154
MT	Qwest	0.0154
CA	Verizon	0.0156
NM	Qwest	0.0158
WA	Qwest	0.0159
TX	Contel	0.0163
TX	GTE SoWest	0.0163
KS	Sprint	0.0163
AL	Verizon South	0.0168
ID	Qwest S. Idaho	0.0169
AZ	Qwest	0.0173
FL	Alltel	0.0177
NV	Verizon	0.0181
NE	Sprint	0.0190
NY	Alltel	0.0193
DE	Verizon	0.0200
MO	Sprint	0.0228
NC	Contel	0.0261
MO	Alltel	0.0267
NC	GTE South	0.0293

**End Office Switching Rates - Other States**

*Per switched access minute*

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State	Company	Rate
AL	Alltel	0.0304
MO	Century Tel	0.0331
MO	Verizon	0.0331
GA	Georgia Tel Corp.	0.0404
AR	Alltel	0.0407
GA	Standard Telephone	0.0407
KY	Alltel	0.0412
MS	Alltel	0.0447
	Average	0.0127

---

**Transport Rates - Other States***Per Minute @ 25 miles*

State	Company	Rate
ID	Verizon	-
KS	SWBT	0.0002
TX	GTE SoWest	0.0004
IL	Illinois Bell	0.0004
FL	Verizon	0.0005
NC	GTE South	0.0006
OR	Malheur Bell	0.0006
KY	Verizon South	0.0006
IN	Indiana Bell	0.0007
MI	Michigan Bell	0.0007
OH	Ohio Bell	0.0007
WI	Wisconsin Bell	0.0007
OR	US West	0.0007
SD	Qwest	0.0007
NV	Nevada Bell	0.0007
WV	Verizon	0.0008
GA	BellSouth	0.0008
KY	BellSouth	0.0008
MS	BellSouth	0.0008
TN	BellSouth	0.0008
UT	Qwest	0.0008
CA	Verizon	0.0008
WA	Qwest	0.0008
NH	Verizon	0.0008
.TX	SWBT	0.0008
AZ	Qwest	0.0008
WY	Qwest	0.0008
IA	Qwest	0.0008
SC	GTE	0.0009
AL	Verizon South	0.0009
WA	Verizon	0.0009
NJ	Verizon	0.0009
SC	Contel	0.0009
VA	Verizon	0.0009
NE	Qwest	0.0010
AR	SWBT	0.0010
ID	Qwest N. Idaho	0.0011
ID	Qwest S. Idaho	0.0011
SC	Alltel	0.0011
OK	SWBT	0.0011
MN	Qwest	0.0011
AL	Verizon Mid-States	0.0012

**Transport Rates - Other States***Per Minute @ 25 miles*

State	Company	Rate
KY	Verizon Kentucky	0.0012
NC	Contel	0.0012
CO	Qwest	0.0012
DE	Verizon	0.0013
CA	Pacific Bell	0.0013
AL	BellSouth	0.0014
FL	Alltel	0.0014
FL	BellSouth	0.0014
LA	BellSouth	0.0014
NC	Alltel	0.0014
NC	BellSouth	0.0014
SC	BellSouth	0.0014
MD	Verizon	0.0014
NM	Qwest	0.0015
MI	Verizon	0.0015
MT	Qwest	0.0016
IN	Verizon	0.0018
TN	Sprint	0.0020
IN	Sprint	0.0020
ND	Qwest	0.0021
TX	Contel	0.0024
PA	Contel	0.0027
PA	GTE	0.0027
GA	Georgia Tel Corp.	0.0027
MA	Verizon	0.0027
KS	Sprint	0.0031
AL	Alltel	0.0034
AR	Alltel	0.0034
GA	Standard Telephone	0.0034
NE	Sprint	0.0039
VT	Verizon	0.0039
KY	Alltel	0.0046
OH	Western Reserve	0.0046
GA	Alltel	0.0047
GA	Georgia Alltel	0.0047
PA	Alltel	0.0064
NE	Alltel	0.0067
MO	Southwestern Bell	0.0075
MS	Alltel	0.0078
OH	Alltel	0.0078
RI	Verizon	0.0088
OR	Verizon	0.0099

**Transport Rates - Other States**

*Per Minute @ 25 miles*

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State	Company	Rate
TX	Sugar Land	0.0100
NY	Alltel	0.0117
MO	Century Tel	0.0133
MO	Verizon	0.0133
MO	Alltel	0.0167
MO	Sprint	0.0180
NV	Verizon	0.0214
OK	Alltel	0.0265
	Average	0.0033

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Appendix A  
**Qualifications**

***Present Occupation***

**Q. What is your present occupation?**

A. I am a consulting economist and President of Ben Johnson Associates, Inc.®, a firm of economic and analytic consultants specializing in the area of public utility regulation.

***Educational Background***

**Q. What is your educational background?**

A. I graduated with honors from the University of South Florida with a Bachelor of Arts degree in Economics in March 1974. I earned a Master of Science degree in Economics at Florida State University in September 1977. The title of my Master's Thesis is a "A Critique of Economic Theory as Applied to the Regulated Firm." Finally, I graduated from Florida State University in April 1982 with the Ph.D. degree in Economics. The title of my doctoral dissertation is "Executive Compensation, Size, Profit, and Cost in the Electric Utility Industry."

***Clients***

**Q. What types of clients employ your firm?**

A. Much of our work is performed on behalf of public agencies at every level of government involved in utility regulation. These agencies include state regulatory commissions, public counsels, attorneys general, and local governments, among

1 others. We are also employed by various private organizations and firms, both  
2 regulated and unregulated. The diversity of our clientele is illustrated below.

3

4 Regulatory Commissions

5

6 Alabama Public Service Commission—Public Staff for Utility Consumer Protection

7 Alaska Public Utilities Commission

8 Arizona Corporation Commission

9 Arkansas Public Service Commission

10 Connecticut Department of Public Utility Control

11 District of Columbia Public Service Commission

12 Idaho Public Utilities Commission

13 Idaho State Tax Commission

14 Iowa Department of Revenue and Finance

15 Kansas State Corporation Commission

16 Maine Public Utilities Commission

17 Minnesota Department of Public Service

18 Missouri Public Service Commission

19 National Association of State Utility Consumer Advocates

20 Nevada Public Service Commission

21 New Hampshire Public Utilities Commission

22 North Carolina Utilities Commission—Public Staff

23 Oklahoma Corporation Commission

24 Ontario Ministry of Culture and Communications

25 Staff of the Delaware Public Service Commission

26 Staff of the Georgia Public Service Commission

27 Texas Public Utilities Commission

28 Virginia State Corporation Commission

29 Washington Utilities and Transportation Commission

30 West Virginia Public Service Commission—Division of Consumer Advocate

31 Wisconsin Public Service Commission

1 Wyoming Public Service Commission

2

3 Public Counsels

4

5 Arizona Residential Utility Consumers Office

6 Colorado Office of Consumer Counsel

7 Colorado Office of Consumer Services

8 Connecticut Consumer Counsel

9 District of Columbia Office of People's Counsel

10 Florida Public Counsel

11 Georgia Consumers' Utility Counsel

12 Hawaii Division of Consumer Advocacy

13 Illinois Small Business Utility Advocate Office

14 Indiana Office of the Utility Consumer Counselor

15 Iowa Consumer Advocate

16 Maryland Office of People's Counsel

17 Minnesota Office of Consumer Services

18 Missouri Public Counsel

19 New Hampshire Consumer Counsel

20 Ohio Consumer Counsel

21 Pennsylvania Office of Consumer Advocate

22 Utah Department of Business Regulation—Committee of Consumer Services

23

24 Attorneys General

25

26 Arkansas Attorney General

27 Florida Attorney General—Antitrust Division

28 Idaho Attorney General

29 Kentucky Attorney General

30 Michigan Attorney General

31 Minnesota Attorney General

32 Nevada Attorney General's Office of Advocate for Customers of Public Utilities

- 1 South Carolina Attorney General
- 2 Utah Attorney General
- 3 Virginia Attorney General
- 4 Washington Attorney General

5

6 Local Governments

7

- 8 City of Austin, TX
- 9 City of Corpus Christi, TX
- 10 City of Dallas, TX
- 11 City of El Paso, TX
- 12 City of Galveston, TX
- 13 City of Norfolk, VA
- 14 City of Phoenix, AZ
- 15 City of Richmond, VA
- 16 City of San Antonio, TX
- 17 City of Tucson, AZ
- 18 County of Augusta, VA
- 19 County of Henrico, VA
- 20 County of York, VA
- 21 Town of Ashland, VA
- 22
- 23 Town of Blacksburg, VA
- 24 Town of Pecos City, TX

25

26 Other Government Agencies

27

- 28 Canada—Department of Communications
- 29 Hillsborough County Property Appraiser
- 30 Provincial Governments of Canada
- 31 Sarasota County Property Appraiser

- 1 State of Florida—Department of General Services
- 2 United States Department of Justice—Antitrust Division
- 3 Utah State Tax Commission

4

5 Regulated Firms

6

- 7 Alabama Power Company
- 8 Americall LDC, Inc.
- 9 BC Rail
- 10 CommuniGroup
- 11 Florida Association of Concerned Telephone Companies, Inc.
- 12 LDDS Communications, Inc.
- 13 Louisiana/Mississippi Resellers Association
- 14 Madison County Telephone Company
- 15 Montana Power Company
- 16 Mountain View Telephone Company
- 17 Nevada Power Company
- 18 Network I, Inc.
- 19 North Carolina Long Distance Association
- 20 Northern Lights Public Utility
- 21 Otter Tail Power Company
- 22 Pan-Alberta Gas, Ltd.
- 23 Resort Village Utility, Inc.
- 24 South Carolina Long Distance Association
- 25 Stanton Telephone
- 26 Teleconnect Company
- 27 Tennessee Resellers' Association
- 28 Westel Telecommunications
- 29 Yelcot Telephone Company, Inc.

30

1     Other Private Organizations

2

3             Arizona Center for Law in the Public Interest

4             Black United Fund of New Jersey

5             Casco Bank and Trust

6             Coalition of Boise Water Customers

7             Colorado Energy Advocacy Office

8             East Maine Medical Center

9             Georgia Legal Services Program

10            Harris Corporation

11            Helca Mining Company

12            Idaho Small Timber Companies

13            Independent Energy Producers of Idaho

14            Interstate Securities Corporation

15            J.R. Simplot Company

16            Merrill Trust Company

17            MICRON Semiconductor, Inc.

18            Native American Rights Fund

19            PenBay Memorial Hospital

20            Rosebud Enterprises, Inc.

21            Skokomish Indian Tribe

22            State Farm Insurance Company

23            Twin Falls Canal Company

24            World Center for Birds of Prey

25

1 ***Prior Experience***

2

3 **Q. Before becoming a consultant, what was your employment experience?**

4 A. From August 1975 to September 1977, I held the position of Senior Utility  
5 Analyst with Office of Public Counsel in Florida. From September 1974 until  
6 August 1975, I held the position of Economic Analyst with the same office. Prior  
7 to that time, I was employed by the law firm of Holland and Knight as a corporate  
8 legal assistant.

9

10 **Q. In how many formal utility regulatory proceedings have you been involved?**

11 A. As a result of my experience with the Florida Public Counsel and my work as a  
12 consulting economist, I have been actively involved in approximately 400  
13 different formal regulatory proceedings concerning electric, telephone, natural  
14 gas, railroad, and water and sewer utilities.

15

16 **Q. Have you done any independent research and analysis in the field of  
17 regulatory economics?**

18 A. Yes, I have undertaken extensive research and analysis of various aspects of utility  
19 regulation. Many of the resulting reports were prepared for the internal use of the  
20 Florida Public Counsel. Others were prepared for use by the staff of the Florida  
21 Legislature and for submission to the Arizona Corporation Commission, the  
22 Florida Public Service Commission, the Canadian Department of  
23 Communications, and the Provincial Governments of Canada, among others. In  
24 addition, as I already mentioned, my Master's thesis concerned the theory of the  
25 regulated firm.

26

1     **Q.     Have you testified previously as an expert witness in the area of public utility**  
2     **regulation?**

3     A.     Yes. I have provided expert testimony on more than 250 occasions in proceedings  
4     before state courts, federal courts, and regulatory commissions throughout the  
5     United States and in Canada. I have presented or have pending expert testimony  
6     before 35 state commissions, the Interstate Commerce Commission, the Federal  
7     Communications Commission, the District of Columbia Public Service  
8     Commission, the Alberta, Canada Public Utilities Board, and the Ontario Ministry  
9     of Culture and Communication.

10

11    **Q.     What types of companies have you analyzed?**

12    A.     My work has involved more than 425 different telephone companies, covering the  
13    entire spectrum from AT&T Communications to Stanton Telephone, and more  
14    than 55 different electric utilities ranging in size from Texas Utilities Company to  
15    Savannah Electric and Power Company. I have also analyzed more than 30 other  
16    regulated firms, including water, sewer, natural gas, and railroad companies.

17

18    ***Teaching and Publications***

19

20    **Q.     Have you ever lectured on the subject of regulatory economics?**

21    A.     Yes, I have lectured to undergraduate classes in economics at Florida State  
22    University on various subjects related to public utility regulation and economic  
23    theory. I have also addressed conferences and seminars sponsored by such  
24    institutions as the National Association of Regulatory Utility Commissioners  
25    (NARUC), the Marquette University College of Business Administration, the  
26    Utah Division of Public Utilities and the University of Utah, the Competitive  
27    Telecommunications Association (COMPTEL), the International Association of

1 Assessing Officers (IAAO), the Michigan State University Institute of Public  
2 Utilities, the National Association of State Utility Consumer Advocates  
3 (NASUCA), the Rural Electrification Administration (REA), North Carolina State  
4 University, and the National Society of Rate of Return Analysts.

5  
6 **Q. Have you published any articles concerning public utility regulation?**

7 **A.** Yes, I have authored or co-authored the following articles and comments:

8  
9 "Attrition: A Problem for Public Utilities—Comment." *Public Utilities*  
10 *Fortnightly*, March 2, 1978, pp. 32-33.

11  
12 "The Attrition Problem: Underlying Causes and Regulatory Solutions." *Public*  
13 *Utilities Fortnightly*, March 2, 1978, pp. 17-20.

14  
15 "The Dilemma in Mixing Competition with Regulation." *Public Utilities*  
16 *Fortnightly*, February 15, 1979, pp. 15-19.

17  
18 "Cost Allocations: Limits, Problems, and Alternatives." *Public Utilities*  
19 *Fortnightly*, December 4, 1980, pp. 33-36.

20  
21 "AT&T is Wrong." *The New York Times*, February 13, 1982, p. 19.

22  
23 "Deregulation and Divestiture in a Changing Telecommunications Industry," with  
24 Sharon D. Thomas. *Public Utilities Fortnightly*, October 14, 1982, pp. 17-22.

25  
26 "Is the Debt-Equity Spread Always Positive?" *Public Utilities Fortnightly*,  
27 November 25, 1982, pp. 7-8.

- 1           “Working Capital: An Evaluation of Alternative Approaches.” *Electric*  
2           *Rate-Making*, December 1982/January 1983, pp. 36-39.
- 3
- 4           “The Staggers Rail Act of 1980: Deregulation Gone Awry,” with Sharon D.  
5           Thomas. *West Virginia Law Review*, Coal Issue 1983, pp. 725-738.
- 6
- 7           “Bypassing the FCC: An Alternative Approach to Access Charges.” *Public*  
8           *Utilities Fortnightly*, March 7, 1985, pp. 18-23.
- 9
- 10          “On the Results of the Telephone Network's Demise—Comment,” with Sharon D.  
11          Thomas. *Public Utilities Fortnightly*, May 1, 1986, pp. 6-7.
- 12
- 13          “Universal Local Access Service Tariffs: An Alternative Approach to Access  
14          Charges.” In *Public Utility Regulation in an Environment of Change*, edited by  
15          Patrick C. Mann and Harry M. Trebing, pp. 63-75. Proceedings of the Institute of  
16          Public Utilities Seventeenth Annual Conference. East Lansing, Michigan:  
17          Michigan State University Public Utilities Institute, 1987.
- 18
- 19          With E. Ray Canterbury. Review of *The Economics of Telecommunications:*  
20          *Theory and Policy* by John T. Wenders. *Southern Economic Journal* 54.2  
21          (October 1987).
- 22
- 23          “The Marginal Costs of Subscriber Loops,” A Paper Published in the Proceedings  
24          of the Symposia on Marginal Cost Techniques for Telephone Services. The  
25          National Regulatory Research Institute, July 15-19, 1990 and August 12-16, 1990.
- 26

1           With E. Ray Canterbery and Don Reading. "Cost Savings from Nuclear  
2           Regulatory Reform: An Econometric Model." *Southern Economic Journal*,  
3           January 1996.

4

5           ***Professional Memberships***

6

7           **Q.    Do you belong to any professional societies?**

8           A.    Yes. I am a member of the American Economic Association and the Southern  
9           Economic Association.

10

**Appendix B**  
**Joint and Common Costs**

1  
2  
3  
4 **Q. Would you please explain joint and common costs in greater detail?**

5 A. Certainly. A firm that produces a single product sold in a single market incurs only direct  
6 costs. These include capital costs (cost of money, depreciation, income taxes) and all  
7 expenses exclusively attributable to a specific product or service. However, when the  
8 firm is engaged in producing multiple products or serving multiple markets, it normally  
9 also incurs joint and/or common costs.

10 The term "common costs" is used by economists to describe costs that are  
11 incurred in production of multiple products or services, and which are not directly  
12 attributable to a single service. Typical examples of common costs include salaries and  
13 other costs of the firm's upper level executives, regulatory and legal expenses, and audit  
14 expenses. The term "shared" costs is sometimes used to describe joint and common costs  
15 without distinguishing between these two terms. Joint costs are a particular type of  
16 common costs—those incurred when production facilities simultaneously serve two or  
17 more markets (or produce two or more products) in fixed proportions. Because  
18 proportions are fixed, it is impossible for the firm to increase or decrease the amount of  
19 output for one market without changing in the same proportion and in the same direction  
20 the output or capacity available for another market. Consequently, joint costs vary in  
21 proportion to the total available output of the joint production process, not the output of  
22 the individual joint products.

23 Joint production functions (and joint costs) have traditionally been defined by  
24 economists based upon "fixed proportions." However, this can lead to confusion, since it  
25 is difficult to find perfect examples of joint costs. There are few production processes  
26 which exhibit absolute fixity of proportion, except, perhaps, at intermediate stages of  
27 production. In the Handbook of Industrial Organization, a standard reference work edited

1 by Schmalensee and Willig, in an article entitled "Technological Determinants of Firm  
2 and Industry Structure," Dr. John C. Panzar explains joint costs in a cogent, and more  
3 intuitive, manner. He explains that joint costs arise when there are production factors that  
4 "once acquired for use in producing one good... are costlessly available for use in the  
5 production of others." Handbook at 17. This alternative definition clearly fits the  
6 familiar example of the joint production of beef and hides. Once the decision is made to  
7 produce more beef, the cattle feed used in fulfilling this process will costlessly also  
8 produce hides. Similarly, once the decision is made to install one more loop in order to  
9 produce any one output, such as local service, it is "costlessly available for the production  
10 of others," such as call waiting service.

11  
12 **Q. How are joint and common costs recovered in competitive markets?**

13 A. To the extent common costs vary with output of individual services, they are recovered in  
14 the same manner as direct costs--they directly affect the marginal cost of producing each  
15 service, and thus directly influence prices. (In competitive markets, prices tend to be  
16 most closely related to marginal cost). To the extent common costs do not vary with  
17 output of individual services (as is the case with joint costs), they have no impact on  
18 marginal cost, and thus do not directly determine prices in competitive markets.  
19 Nevertheless, purchasers of each of the joint products bear some share of the joint and  
20 common costs. The relative shares are not determined by arbitrary allocations of the  
21 costs, but rather by the relative strength of demand in the various markets. Stated another  
22 way, in competitive markets, each product is priced to maximize the contribution to the  
23 joint and common costs, within the constraints imposed by the product's demand.

24 For instance, in the example of beef and hides (which are joint products) leather  
25 coat buyers will obviously not be required to shoulder 100 percent of the feed costs, and  
26 consumers of beef none of these costs. Nor will the opposite occur. Since there is a  
27 considerable demand for both products, both will pay a share of the joint costs. The

1 portion of the joint costs of cattle production which is recovered from consumers of  
2 leather goods will depend on the amount they are willing to pay for leather; this is limited  
3 by the availability and price of substitutes (e.g. vinyl), income constraints, and other  
4 demand-related factors. Similarly, the amount of cattle production costs which is  
5 recovered from meat consumers depends upon how much they are willing to pay for  
6 hamburgers and steak; this is constrained by the relative popularity and price of  
7 substitutes, such as chicken and pork, as well as other factors (e.g. income).

8 To reiterate, in competitive markets joint costs are never recovered entirely from  
9 consumers of one of the joint products, to the exclusion of the others; rather, the costs are  
10 shared by both groups of consumers, with the respective proportions depending upon the  
11 relative strength of demand. The stronger the demand for a particular joint product, the  
12 greater the share of joint costs which will be borne by that product.

13  
14 **Q. You mentioned earlier that it isn't appropriate to expect revenues from just one**  
15 **service to recover all of the shared costs. Would you please elaborate on this point,**  
16 **particularly as it relates to loop and port costs?**

17 **A.** As the FCC and many state commissions have affirmed, loop and port costs are joint or  
18 shared costs necessary for the provision of toll, access, and custom calling service, as well  
19 as local exchange service. Even if a line is intended strictly for local calls, it can also be  
20 used to place and receive toll calls, and vice versa. Local loops are thus analogous to  
21 cattle feed in the production of beef and hides. Even if the feed is strictly intended to  
22 increase the amount of beef, it concurrently increases the amount of hides which are  
23 available. The economic literature clearly establishes that the cost of cattle feed won't be  
24 borne entirely by purchasers of steak and hamburger; some of the feed costs will  
25 inevitably be recovered from purchasers of leather coats and gloves.

26 In general, the more different products involved in the common production  
27 process, the more widely one would expect the costs to be spread. Thus, for example,

1 revenues from the sale of steak, ribs, hamburger, beef fat, and leather will all be involved  
2 in recovering cattle feeding costs.

3 The provision of a loop and port yields at least two joint products: access to  
4 customers within the same locality (local access) and access to customers within other  
5 cities (toll access). Since the latter form of access is provided via toll carriers, one can  
6 think of the loop and port as providing access to local and toll networks. Of course, since  
7 communication is generally two-way, we can also say that at least two other joint  
8 products are provided, as well: access to the customer installing the line by other  
9 customers within the same locality, and access to that customer by toll carriers and their  
10 customers. However, this does not end the list of services involving the loop and port. A  
11 LEC has many revenue sources which directly benefit from, and have generally helped  
12 recover, these shared costs, including custom calling and Caller ID and voice mail.

13 Generally, when a customer is connected to the public switched network, that  
14 customer is provided with access to the other lines situated within the same city, but  
15 access to that customer is simultaneously provided to the toll carriers with points of  
16 presence in that city; and via their facilities, access to that customer is provided to  
17 millions of lines located in hundreds of other cities around the state and country.

18 Notwithstanding strong advocacy efforts by both local exchange and  
19 interexchange carriers, most state regulatory commission have been reluctant to recover  
20 the entire cost of loops and ports as part of the price of local service. A share of these  
21 costs has historically been recovered from numerous other services, including switched  
22 access services provided to toll carriers, as well as the custom calling and other ancillary  
23 services related to the line.

24 This broad approach to cost sharing has long been used in Arizona, as well as in  
25 many other states. Not only is it consistent with the historic pattern in many  
26 telecommunications markets, it is also consistent with the normal practice in unregulated  
27 markets. Just as cattle feed costs are recovered through the price of steak and coats, loop

1 and port costs have historically been recovered through the price of toll, local, and many  
2 other services.

3  
4 **Q. Placing of 100% of loop costs on local service has sometimes been defended on a**  
5 **“cost-causative basis.” Would you discuss this argument?**

6 **A.** Yes. It is sometimes argued that the cost of the access line is effectively “caused” by the  
7 act of subscribing to local exchange service, and that all other services that may be  
8 provided over the line are made available costlessly and are thus economically irrelevant.  
9 That is, because the line is provided by the phone company on a bundled basis, in  
10 conjunction with local exchange service, it is argued that the full cost of that line should  
11 be attributed to the local exchange category.

12 This is an overly simplistic view of causation, one that can lead to misleading  
13 conclusions. In fact, if we want to really examine causation, the cost of a local loop as  
14 physical plant is incurred when someone--perhaps an aspiring subscriber in years past,  
15 perhaps a real estate developer or home builder, perhaps a phone company executive--  
16 makes a decision to install loop plant along a particular route. Some of this plant is  
17 dedicated to a particular neighborhood, or house, and other plant serves a broader  
18 geographic area. The decisions that lead to the act of installing these facilities can be  
19 seen as the proximate cause of the cost. Subsequently, if consumers don't decide to  
20 purchase telephone service, the plant will often sit idle; if they do decide to purchase  
21 service, it will be utilized. The actual loop cost incurred by the phone company may not  
22 vary much either way. The investment in loop plant accumulates carrying charges until a  
23 further decision is made to activate the circuit and supply the dial tone that enables the  
24 line to become an active part of the public switched network. At that time a billing cycle  
25 is initiated, and the cost of the loop begins to be recovered.

26 In general, however, “cause and effect” reasoning does not have any impact on the  
27 manner in which joint costs are recovered in competitive markets. To the contrary, all of

1           the joint products contribute to the joint costs, regardless of which one “caused” the joint  
2           costs to be incurred. Consider, for example, cotton and cotton seed. Cotton seed is a  
3           mere byproduct of the production of cotton, and people buying cottonseed oil arguably  
4           don’t “cause” cotton to be grown. Instead, one can plausibly argue that consumers of  
5           cotton cloth “cause” the various costs of growing raw cotton to be incurred. Yet, this  
6           causal relationship is irrelevant to recovery of the joint costs incurred by cotton farmers.  
7           Consumers of both cottonseed oil and cotton clothing contribute to the cost of growing  
8           and harvesting cotton. The mere fact that the planting of cotton is “caused” by demand  
9           for cotton cloth does not result in all of the joint costs being recovered from the clothing  
10          market, and none from the ancillary products like cottonseed oil. Customers in both  
11          markets share the joint costs, in proportions that are determined by the relative strength of  
12          demand for cotton cloth and cottonseed oil.

13                 Attempting to assign costs on the basis of “causal relationships” is even less  
14          logical in the context of telecommunications services. Undoubtedly, many consumers  
15          want to obtain and use an entire array of telecom services, including local, toll and  
16          custom calling. Any attempt to trace “cost causation” and to assign the loop and port  
17          costs to individual services on the basis of consumer motivation is bound to be  
18          meaningless, since these costs are often “caused” by the desire to use the full array of  
19          services, and the chain of causality cannot be uniquely traced to any single service within  
20          this array. If the access line were bundled with toll service, and local service were priced  
21          as an optional add-on, many consumers would still acquire an access line, to ensure that  
22          they can place and receive toll calls. Under these circumstances, it might appear that the  
23          access line is a direct cost of toll, and thus one could plausibly argue that the entire cost  
24          should be attributed to the toll category. However, this type of reasoning is not  
25          economically valid, regardless of which service is bundled with the access line, and  
26          regardless of which service provides the dominant or primary motivation for acquiring the  
27          line. So long as numerous different services require the use of the line, economic theory

1 suggests that all of these different services will contribute towards the cost of the line.

2  
3 **Q. Given the problems with shared costs, is it even possible to compare costs with**  
4 **revenues in a meaningful manner?**

5 A. Yes it is. While shared costs can be confusing, they do not pose an intractable problem.  
6 There are at least three ways in which revenues and costs can appropriately be matched in  
7 a context where shared costs loom large:

8 First, a pure incremental cost approach can be used: the direct cost of a particular  
9 service (or group of services) is compared to the revenues from that service or group.  
10 Costs that are shared with other services are excluded from the analysis. A calculation is  
11 then performed to determine the magnitude of the contribution generated by that service  
12 (or family of services). This contribution is available to help cover the joint costs, as well  
13 as any common costs which were excluded from the analysis. The resulting contribution  
14 can be evaluated, to see how large it is on an absolute basis, or relative to the analogous  
15 contribution provided by other services. In other words, the magnitude of the  
16 contribution from each service (in absolute or percentage terms) can be evaluated, to  
17 judge its profitability, but one would not expect any single service, or limited group of  
18 services, to recover the entire amount of shared costs.

19 Second, an allocated share of the shared costs can be added to the direct costs of  
20 the service (or group of services) in question, to arrive at a reasonable cost amount for  
21 comparison with the revenues from the service (or family of services) in question. This  
22 method differs from the first approach because it includes an allocated share of shared  
23 costs in the analysis.

24 Third, all of the shared costs can be included in the analysis. This is the approach  
25 followed in a Stand Alone cost study. Needless to say, one would not normally expect the  
26 revenues from a single service to be sufficient to recover all of the shared costs. However,  
27 it can be useful to see the degree of cost recovery—what portion of the cost needs to be

1 recovered from other services at current rate levels. Another approach is to focus on a  
2 larger group of services, thereby minimizing or avoiding the joint and common cost  
3 problem. For instance, the analyst could look at the entire family of services that benefit  
4 from the loop and port. By expanding the analysis to include revenues associated with  
5 this entire family of services, it becomes legitimate to include all of the loop and port  
6 costs, since these are matched with all of the associated revenue streams.

7  
8 **Q. Would you please elaborate on the second method, particularly with regard to the**  
9 **allocation of loop and port costs?**

10 A. Certainly. There is no universally accepted method for allocating these costs, and the  
11 differences in method can result in very significant differences in the cost study results.  
12 One of the difficulties with the second method is that the results are highly dependent  
13 upon the particular allocation approach that is selected, and there is no consensus  
14 concerning the “right” way to allocate loop and port costs. A category which is shown to  
15 have a very low return in one study can show a very high return in another study,  
16 depending upon the allocation approach that is used.

17 Perhaps the simplest and most stable approach is for the Commission to select one  
18 or more uniform percentage allocation factors. This is the approach currently used by the  
19 FCC in allocating loop costs between the federal and state jurisdiction—the interstate share  
20 is a uniform 25%, regardless of the specific circumstances applying to a particular carrier.  
21 Other options include revenue-based methods and usage-based methods. Revenue-based  
22 allocations assign shares of joint costs based upon the services' percentages of total  
23 revenues. For example, if basic local service accounts for 35 percent of total revenues, it  
24 might be allocated 35% percent of loop costs. Usage-based allocations assign shares of  
25 joint costs by relative minutes of use, perhaps weighted in some way to distinguish toll  
26 from local and/or peak from off-peak, etc.

27

1 **Q. Have other jurisdictions addressed this allocation issue?**

2 A. Yes. For instance, the Indiana Utility Regulatory Commission addressed this issue in a  
3 generic universal service proceeding. [Cause No. 40785]. As part of that proceeding, the  
4 Indiana Commission was concerned with the proper interpretation of paragraph 254(k) of  
5 the 1996 Federal Act, which provides in part:

6  
7 The Commission, with respect to interstate services, and the States, with  
8 respect to intrastate services, shall establish any necessary cost allocation  
9 rules, accounting safeguards, and guidelines to ensure that services  
10 included in the definition of universal service bear no more than a  
11 reasonable share of the joint and common costs of facilities used to  
12 provide those services.  
13

14 In its discussion of joint and common costs, the Indiana Commission rejected the  
15 principle of “cost causation”, stating that

16  
17 It seems reasonable that if two or more services require the presence of a  
18 particular facility in order to for each of the services to function, then this  
19 particular facility would be common or joint to each of the services. Even  
20 if it were true that one of the services may have initially caused the cost, it  
21 does not alter the fact that each of the services requires the availability and  
22 use of that facility and therefore each service benefits from the existence of  
23 the facility. [Id., October 28, 1998 Order, p. 36].  
24

25 The Indiana Commission further held that loop costs are properly included in the  
26 definition of joint and common costs. [Id., p. 39].  
27

28 **Q. Did the Indiana Commission consider a uniform percentage allocation approach?**

29 A. Yes, it did. The Indiana Commission noted that under the federal Part 36 separations  
30 procedures, 25 percent of loop costs are allocated to the interstate jurisdiction. [Id., p. 38].  
31 With regard to allocation of the remaining 75 percent, the Indiana Commission began by  
32 identifying three groups of intrastate services: those included in the definition of universal

1 service, those not included in the definition of universal service, and those not subject to  
2 its jurisdiction. [Id., p. 42]. The Indiana Commission discussed using fixed allocators and  
3 moving allocators, and concluded that if a fixed allocator were used, an appropriate  
4 approach would be to allocate one third of the intrastate joint and common costs to each  
5 group of services. [Id., p. 44]. This approach would result in the allocation of 25% of  
6 total joint and common costs to the services included in the definition of universal  
7 service, 25% to switched access, toll and other services subject to intrastate regulation,  
8 25% to services within the FCC jurisdiction, and 25% to unregulated services. Another  
9 approach it considered would have allocated 37.5% of total joint and common costs to the  
10 services included in the definition of universal service, 18.75% to other services subject  
11 to intrastate regulation, 25% to services within the FCC jurisdiction, and 18.75% to  
12 unregulated services.

13 Thus, the Indiana Commission considered use of a uniform percentage allocation  
14 factor for basic universal service ranging from 25% to 37.5%. However, it was reluctant  
15 to settle upon a uniform fixed percentage, since it recognized that “if the services in a  
16 particular category were to be dramatically reduced at some future time, such a fixed  
17 allocator might not continue to be a fair and reasonable method of allocating common and  
18 joint costs” [Id.]. Accordingly, the Indiana Commission indicated a preference for a  
19 moving allocator, which could vary over time, as circumstances changed. It discussed the  
20 possibility of using several different moving allocators, including revenues, minutes of  
21 use, number of users, and investment, but it found flaws with each of these approaches,  
22 and thus decided to let the parties present evidence on an appropriate moving allocator in  
23 a later phase of the Indiana proceeding. [Id., p. 47].

24  
25 **Q. What are the pros and cons related to revenue-based allocation methods?**

26 A. One advantage is that revenues are a common denominator which applies to every  
27 service. In contrast, a usage-based approach cannot readily be applied to custom calling,

1 Caller ID and similar services which generate revenues, but do not have associated  
2 minutes of use. Also, revenues tend to reflect the status quo regarding the manner in  
3 which shared costs are currently being recovered (services generating large revenues tend  
4 to contribute more to the shared costs than services generating low revenues).

5 One disadvantage is that revenues are essentially a function of pricing, and pricing  
6 may change, depending upon the outcome of the cost analysis, and the resulting pricing  
7 decisions. The allocations reflect existing prices. To the extent prices change, the  
8 allocations will also change, and thus a problem of circular reasoning may arise. (Prices  
9 are increased, which increases the revenue-based allocation of costs, which creates the  
10 appearance that prices must increase even further.) Given this potential problem with  
11 circularity, I prefer to use a uniform flat percentage approach, although some  
12 consideration of revenue relationships may be useful in establishing the uniform  
13 percentage factors.

14  
15 **Q. What are the major usage-based allocation methods?**

16 A. The two most familiar are use of a Subscriber Line Usage (SLU) factor and use of a  
17 Subscriber Plant Factor (SPF). Both SLU and SPF reflect differences in usage; however,  
18 there is a very significant difference in the two allocation approaches, which will  
19 substantially influence the resulting costs for the toll and local categories.

20  
21 **Q. What is the difference between SLU and SPF?**

22 A. SPF has long been used to allocate non-traffic sensitive costs (including the costs of the  
23 loop and port) for jurisdictional and cost recovery purposes. SPF is mathematically  
24 derived from SLU, which are simply traffic factors that reflect the relative minutes of use  
25 for the various services. For instance, an intrastate toll SLU factor would be calculated  
26 by dividing the intrastate toll minutes of use (originating and terminating) by total  
27 minutes of use (interstate toll, intrastate toll and local exchange) for the service area in

1 question. The SPF is more complex because it introduces weighting into the  
2 computations, the effect of which is to put greater emphasis on toll usage than on local  
3 usage.

4 The weighting is designed to reflect certain demand factors, such as distance, and  
5 the deterrent effect of attaching a price tag to toll minutes. Specifically, the SPF formula  
6 is:  $SPF = (.85 SLU) + (2 SLU * CSR)$ . For the interstate SPF, the Composite Station  
7 Ratio (CSR) is calculated as the nationwide average interstate 3-minute toll charge  
8 applicable to the average length of haul for interstate calls in the study area, divided by  
9 the nationwide average 3-minute toll charge applicable to the average length of haul for  
10 all toll traffic for the total industry. This component of the formula gives more weight to  
11 the toll usage ratio in areas where the price of toll calls is higher than the average. In the  
12 interstate environment where SPF and SLU were originally developed, the effect of this  
13 formula is to reflect differences in the average length of haul, and the associated  
14 differences in toll prices. The philosophy is straightforward: the higher value and price  
15 tag associated with the call, the greater the appropriate allocation of cost.

16 If one assumes that the CSR is equal to 1 (toll calls in the study area have a price  
17 that is equal to the overall average), the SPF for toll will be 2.85 times SLU. Similarly, if  
18 one assumes that the calls in question have a zero price, and thus the CSR is equal to  
19 zero, then SPF will be equal to .85 SLU.

20 While the formula is somewhat complex, the intention is clear: a greater portion  
21 of the costs should be allocated to a category in which the usage has a higher value per  
22 minute of use, and a greater portion of costs should be allocated to a category in which  
23 usage volumes have been suppressed due to high prices. When comparing toll and local,  
24 it is readily apparent that the average toll minute has a higher value than the average local  
25 minute (due to the differences in distance). It is also apparent that toll traffic volumes are  
26 reduced due to the fact that most toll service is not flat rated. SPF partially neutralizes the  
27 deterrent effect of a toll rate structure which imposes a charge for individual calls, unlike

1 local service, which is typically flat rated.

2 In contrast, SLU ignores these fundamental differences in the characteristics of  
3 toll and local usage. Bear in mind that the costs which are being allocated are not traffic  
4 sensitive. Thus, there is no particular reason why the costs should be allocated in strict  
5 proportion to usage. While usage is obviously relevant, there are other factors which are  
6 also relevant, such as the relative value of a minute of toll usage in comparison with a  
7 minute of local usage. In fact, the SPF approach is superior in this context, because it  
8 reflects differences in value, differences in benefit, and differences in the strength of  
9 demand for local and toll service. These differences are not adequately reflected by raw  
10 usage statistics, but they should be considered in an appropriate allocation process. When  
11 allocating joint and common costs it is appropriate to simulate to some degree the pattern  
12 in competitive markets, where the recovery of shared costs reflects differences in demand  
13 characteristics. This is accomplished much more effectively by SPF than by SLU.

14  
15 **Q. What are the pros and cons related to usage-based allocation methods?**

16 A. Usage-based methods potentially avoid the circular reasoning problem, and they are  
17 based upon readily available statistics. However, there is no single measure of “usage”  
18 which appropriately encompasses all of the many services supporting the access line. The  
19 use of custom calling service, for instance, cannot easily be measured in minutes of use.  
20 If someone has their phone programmed to forward calls to another number all day,  
21 should use of this service be measured for the entire time it is engaged? Or, just during  
22 the few seconds while a call is received and forwarded to the other number? Surely, the  
23 first alternative overstates the usage and benefits associated with Call Forwarding, while  
24 the latter measure understates the benefits. Thus, usage based allocation factors cannot  
25 readily deal with the myriad of different services that recover shared costs.

1 **Appendix C**

2 **Cost Definitions and Comparisons**

3  
4 **Cost Definitions**

5  
6 **Q. There are many different types of “cost” and thus many types of “cost” studies.**  
7 **Would you please identify and explain some of the major types of “cost” which can**  
8 **be studied?**

9 **A.** Certainly. In this context, the most fundamental and important types of cost are *fixed*  
10 *cost, variable cost, total cost, average cost, marginal cost, incremental cost, and stand-*  
11 *alone cost*—all of which are integral parts of economic theory—as well as certain more  
12 specialized cost concepts, derivative from these, which have recently come into use in  
13 discussions of telecommunications cost theory. The latter concepts include *long run*  
14 *incremental cost, total service long run incremental cost, average service long run*  
15 *incremental cost, and incremental service incremental cost.* For orientation purposes, I  
16 have provided brief definitions of these terms below. I will also make use of certain other  
17 familiar cost terms—*sunk cost, direct cost, joint cost, common cost, embedded cost, fully*  
18 *allocated costs, etc.,* that are prevalent in the literature.

19 **Fixed costs** do not change with the level of production, during the planning period  
20 or “run” under consideration. **Variable costs** change directly (but not necessarily  
21 proportionately) with the level of production. Together, these constitute **total cost**, which  
22 is the sum of all costs incurred by the firm to produce any given level of output. Dividing  
23 the total cost of producing a given quantity of output by the total number of units  
24 produced, one can calculate **average total cost**.

25 **Incremental cost** is the change in total cost resulting from a specified increase or  
26 decrease in output. In mathematical terms, incremental cost equals total cost assuming the  
27 increment of output is produced, minus total cost assuming the increment is not produced.

1 Incremental cost is typically stated on a per-unit basis, with the change in cost divided by  
2 the change in output. Incremental cost can vary widely, depending upon the increment of  
3 output which is being considered. If the entire increment from zero units to the total  
4 volume of output is considered, incremental cost is identical to total cost. Similarly,  
5 where the increment ranges from zero to total output, incremental cost per unit is  
6 identical to average cost per unit. Because a wide variety of different increments can be  
7 specified, a wide variety of different incremental costs can be calculated. Thus, in  
8 considering any estimate of incremental cost it is crucially important to determine  
9 whether or not the specified increment is relevant to the issues at hand.

10 **Marginal cost** is the same as incremental cost where the increment is extremely  
11 small (e.g. one unit) and the cost function is smooth and continuous. In mathematical  
12 terms, marginal cost is the first derivative of the total cost function with respect to output--  
13 that is, it is the rate of change in total cost as output changes. Conceptually, marginal and  
14 incremental cost are very similar; however, there are a wide array of incremental cost  
15 concepts, corresponding to the wide array of possible increments that can potentially be  
16 analyzed. In contrast, marginal cost corresponds to one small portion of this array--where  
17 the increment is narrowly defined and extremely small.

18 **Stand-alone costs** are those costs which would be incurred to produce only the  
19 item or service in question "standing alone". For example, the stand-alone cost of  
20 intrastate switched access service could be estimated as the cost associated with providing  
21 intrastate switched access in a stand alone context, without consideration of the additional  
22 costs which must be incurred in order to provide local or interstate switched access  
23 service. Stand-alone cost are those typically used in developing ceiling prices.  
24 Economies of scope (defined below) cause per-unit costs to be reduced when more  
25 customer groups are served, or when additional services are provided, over the same  
26 network. A comparison of long run stand alone costs (LRSAC) and total service long run  
27 incremental costs (TSLRIC) will generally display this phenomenon, and can be useful in

1           establishing the potential range of appropriate prices—with LRSAC representing the  
2           absolute ceiling and TSLRIC representing the absolute floor.

3           **Long run costs** are those calculated under the assumption that most, if not all,  
4           costs are variable, and few, if any, are fixed or sunk. In contrast, **short run costs** are those  
5           which arise in situations where most costs are fixed. The classic long run concept is  
6           sometimes known as a "scorched earth" approach—that is, no preexisting plant is  
7           considered in the analysis. Instead, the firm is free to build precisely the size and type of  
8           plant which best fits its assumed output level.

9           All of these cost concepts have well-established definitions in the economics  
10          literature, with characteristics and implications that are widely understood and accepted  
11          amongst economists. More recently, some related costing concepts have been developed  
12          that are of particular interest in the context of multi-product firms like  
13          telecommunications carriers. While a variety of different names have been used to  
14          describe these concepts, for convenience I will use those adopted on June 1, 1993 by the  
15          Colorado Public Utilities Commission, as set forth in their rules governing the costing  
16          and pricing of telecommunications services. [Statement of Adoption of Rules, Docket  
17          No. 92R-596T]. I've provided a copy of these rules as Appendix B to my testimony.

18          The **total service long run incremental cost** (TSLRIC) of a service (or group of  
19          services) is equal to the firm's total cost of producing all its services including the service  
20          (or group of services) in question, minus the firm's total cost of producing all its services  
21          except the service (or group of services) in question. Thus, it is a particular form of long  
22          run incremental cost (LRIC), in which the specified increment is the entire volume of  
23          output of a particular service, while all other services remain unchanged.

24          The **average service long run incremental cost** (ASLRIC) of a service (or  
25          services) is the total service long run incremental cost divided by the total number of units  
26          of the service(s) in question. The **incremental service incremental cost** (ISIC) of a  
27          service is the change in total cost resulting from increasing (or decreasing) the quantity of

1 output of the service by a small number of units, divided by that small number. If the cost  
2 function is smooth and the increment is sufficiently small, ISIC will approximate  
3 marginal cost.

4 TSLRIC studies can be useful in determining the existence and extent of subsidies  
5 and in developing public policies for the preservation of universal service under  
6 circumstances where new entrants may engage in "cream skimming," or where barriers to  
7 entry may exist (e.g., in rural, high-cost areas). Other state commissions have endorsed  
8 the use of TSLRIC studies for this purpose. For example, the Pennsylvania Public Service  
9 Commission endorsed TSLRIC and rejected the use of embedded cost studies, which it  
10 concluded have been "increasingly discredited by most sectors of the industry and most  
11 outside observers" because their methodology is limited to embedded costs and fails to  
12 "provide for an adequate depiction of future economic costs of telecommunications  
13 networks." [Order, Docket No. I-00940035, at 11.]

14 In effect, TSLRIC measures the difference between producing a service and not  
15 producing it. This difference may not include certain of the firm's joint or common costs;  
16 hence, a firm that recovers in its prices only the TSLRIC of its services may find that its  
17 total revenues fall short of its total costs. In the case of many telecommunications  
18 services, the magnitude of this shortfall can be substantial, because these services use  
19 many of the same network facilities. Where facilities are required if any one of several  
20 services is produced, the portion of the firm's total cost attributable to the facility in  
21 question (or, at least certain portions of that cost) may not vary with the presence or  
22 absence of any single service. Where this phenomena exists, the cost in question drops  
23 away from the TSLRIC calculations, and thus the TSLRIC of each individual service will  
24 be quite low.

25 By definition, all costs can be classified as variable in a long run cost study.  
26 However, that doesn't necessarily mean that all costs vary in along every dimension of  
27 the cost function, or that they necessarily vary on a proportional basis. Thus, there can be

1 significant discrepancies between costs per unit developed on an average basis, and costs  
2 per unit developed on an incremental basis. For instance, while the investment in  
3 electronic equipment associated with fiber optic transport systems can be considered  
4 “variable” in the long run, that doesn’t mean that these costs necessarily vary in  
5 proportion to changes in the volume of traffic, or that all of the components of these costs  
6 will necessarily increase or decrease as one specific service is added or deleted from the  
7 array of services which use this equipment. Due to economies of scale and scope, the  
8 incremental fiber electronic investment which is attributable to an incremental service  
9 may be substantially lower than the average investment required for all services.

10 **An allocated cost** is a joint or common cost that has been divided among the  
11 firm's different customers, products, or services, in accordance with a particular formula  
12 or the judgments of a cost analyst. *Fully allocated costs* are the summation of direct and  
13 allocated costs for a customer, customer class, product, or product group, developed in a  
14 cost study in which none of the firm's joint and common costs are left unallocated. Fully  
15 allocated costs are often referred to as *fully distributed costs*.

16 **Common costs** are incurred when production processes yield two or more  
17 outputs. They are often common to the entire output of the firm but can be common to  
18 just some of the outputs produced by the firm. An increase in production of any one good  
19 will tend to increase the level of common costs; however, the increase will not necessarily  
20 be proportional, since economies of scope and/or scale may apply. A **joint cost** is a  
21 specific type of common cost--one incurred when production processes yield two or more  
22 outputs in fixed proportions. A classic example arises in the joint production of leather  
23 and beef. Although cattle feed is a necessary input for the production of both gloves and  
24 hamburgers, there is no economically meaningful way to separate out the feed costs that  
25 are required to produce each. If the quantity of leather and beef is reduced, there will be a  
26 savings in the amount of cattle feeding costs, but it is impossible to say how much of this  
27 change in cost results from the change in the quantity of leather and how much from the

1 change in the quantity of beef. Because the appropriate interpretation and handling of  
2 joint and common costs tends to be very controversial in regulatory proceedings, I have  
3 provided a more extensive discussion of this topic as Appendix C to my testimony.

4 **Economies of scale.** Economies of scale are achieved when a firm is able to  
5 lower the per-unit cost by producing additional units of the product or service—i.e., when  
6 marginal or incremental cost is lower than average cost. The ultimate example of  
7 economies of scale is a **natural monopoly**, where a single firm can supply the entire  
8 market for the product or service at a lower per-unit cost than any combination of two or  
9 more firms. Economies of scale appear in telecommunications in such plant elements as  
10 poles and trenches used to hold cables, where the increase in carrying capacity (e.g.,  
11 number of circuits) is disproportionately greater than any corresponding increase in the  
12 cost of the pole or trench. That is, it costs little more to install poles for 1,000 circuits  
13 along a particular route than to install poles for 100 circuits along the identical route.

14 **Economies of scope** result when the resources a firm uses in the combined  
15 production of two or more products are less costly than the resources it would use to  
16 produce the products separately, as measured by their combined total of their respective  
17 stand-alone costs. For example, if a telecom firm produces both toll and local phone  
18 service, it may gain some economies of scope. When the same pole route carries both  
19 intercity trunk lines and local loops, the firm can achieve economies of scope by using  
20 one set of poles instead of two.

21  
22 **Cost Comparisons**

23  
24 **Q. Can you elaborate on the differences between marginal and incremental cost?**

25 **A.** Yes. By definition, incremental costs can fall anywhere along the conceptual continuum  
26 from marginal to average cost, depending upon the specific methodology used and the  
27 specific increment which has been selected. As two academic experts in this field explain:

1  
2 Incremental cost is a generic concept... marginal cost can be approximated  
3 by incremental cost when the increment in question is small. But if the  
4 increment is large, marginal cost and incremental cost can differ  
5 substantially, because the ranges of outputs examined in the two  
6 calculations are not the same. [William J. Baumol and J. Gregory Sidak,  
7 *Toward Competition in Local Telephony*. Cambridge (MA): MIT Press,  
8 1994, p. 34. 57]  
9

10 As Baumol and Sidak also note, TSLRIC includes any fixed cost that must be  
11 incurred on behalf of that product alone.” Furthermore,  
12

13 incremental cost and stand-alone cost are intimately related, and either  
14 number can be deduced directly from the other. Specifically, when the  
15 firm earns no more and no less than the competitive rate of return, if each  
16 of the firm’s prices is above [TSLRIC], then each of those prices *must* be  
17 below its stand-alone cost, and vice versa. [58-9.]  
18

19 **Q. Would you provide an example to illustrate the distinction between analyzing**  
20 **average cost and analyzing incremental or marginal cost?**

21 A. Yes. The clearest distinction exists between marginal and average costs as these relate to  
22 the manner in which fixed costs are treated. Average total costs include the total of all  
23 fixed and variable costs, divided by the number of units of output. In contrast, marginal  
24 cost includes only the rate of change in variable costs as output increases.

25 Consider, for example, the treatment of the getting started cost of a switch. This  
26 is the minimum level of cost associated with a switch, even if it were not equipped with  
27 any lines, and even if it didn’t have enough capacity to handle any traffic. An average cost  
28 estimate would typically include the total getting started cost of the switch divided by  
29 some measure of output (e.g. the number of loops terminated on the switch). In sharp  
30 contrast, a marginal cost estimate would most likely exclude any of the getting started  
31 costs, because these costs would be considered largely, or entirely, fixed and they would

1           not vary with output.

2           The same principle holds true for other costs which are largely or entirely fixed,  
3           such as the cost of installing a cable on the pole. The cost of attaching a small cable, such  
4           as one containing 25 loops, will not differ greatly from attaching a much larger cable,  
5           such as one containing 900 loops. With the notable exception of splicing costs, most  
6           cable installation costs vary less than proportionally with variations in the size of the  
7           cable, and thus they should have little or no impact on marginal cost estimates.

8           Admittedly, some costs which are largely fixed may vary under some limited  
9           circumstances. For instance, the getting started costs of a small switch might be lower  
10          than the analogous costs of a much larger switch. The point is not whether a particular  
11          type of cost is absolutely fixed under any and all circumstances. Rather, the point is that if  
12          the increase in costs would normally be far less than proportional to the rate of increase in  
13          output, the marginal cost will tend to be less than the average total cost. Because of  
14          economies of scale and scope, it is often the case in the telecommunications industry that  
15          when properly estimated, TSLRIC will be substantially lower, and stand alone costs will  
16          be substantially higher, than average total cost.