Evaluating Proposals Changing the Carrier Common Line Pool

Carol L. Weinhaus
and
Mark L. Lemler

Program on Information Resources Policy

Harvard University

Center for Information Policy Research

Cambridge, Massachusetts

A publication of the Program on Information Resources Policy.

Evaluating Proposals Changing the Carrier Common Line Pool
Carol L. Weinhaus and Mark L. Lemler

January 1987, P-87-1

Mark Lemler, District Manager - Strategic Access Planning at AT&T Communications, prepared this paper as a research fellow with the Program, analyzing the telecommunications industry cost structure and the FCC's Access Charge Plan.

Carol L. Weinhaus is Research Analyst in the Program on Information Resources Policy.

Printing 5 4 3 2 1

January 1987

PROGRAM ON INFORMATION RESOURCES POLICY

Harvard University — **Center for Information Policy Research**

Affiliates

Action for Children's Television
American Telephone & Telegraph Co.
Ameritech Publishing
Anderson, Benjamin, Read & Haney, Inc.
Apple Computer, Inc.
Arthur D. Little, Inc.
Auerbach Publishers Inc.
Automated Marketing Systems
BellSouth Corporation
Bell Atlantic
Booz-Allen & Hamilton, Inc.
CBS Broadcast Group
Commission of the European Communities
Communications Workers of America
Computer & Communications Industry Assoc.
Copley Newspapers
Cowles Media Co.
Dai-Ichi Kangyo Bank, Ltd. (Japan)
Databit Inc.
Data Communications Corp. of Korea
Dialog Information Services, Inc.
Digital Equipment Corp.
Direction Generale des Telecommunications (France)
Dow Jones & Co., Inc.
Economics and Technology, Inc.
EIC/Intelligence Inc.
Gannett Co., Inc.
GTE Corporation
Hitachi Research Institute (Japan)
Honeywell, Inc.
IBM Corp.
Information Gatekeepers, Inc.
Information Industry Association
International Data Corp.
International Resource Development, Inc.
Invoco AB Gunnar Bergvall (Sweden)
Knowledge Industry Publications, Inc.
Lee Enterprises, Inc.
John and Mary R. Markle Foundation
Martin Marietta Corp.
MCI Telecommunications, Inc.
McKinsey & Co., Inc.
Mead Data Central
MITRE Corp.
Motorola, Inc.
National Telephone Cooperative Assoc.
The New York Times Co.
NEC Corp. (Japan)
Nippon Telegraph & Telephone Corp. (Japan)
Northern Telecom Ltd. (Canada)
NOVA Systems, Inc.
NYNEX
Ing. C. Olivetti & C., S.p.A. (Italy)
The Overseas Telecommunications Commission (Australia)
Pacific Telesis Group
Pitney Bowes, Inc.
Public Agenda Foundation
Reader's Digest Association, Inc.
Research Institute of Telecommunications and Economics (Japan)
RESEAU (Italy)
Salomon Brothers
Scaife Family Charitable Trusts
SEAT S.P.A. (Italy)
Seiden & de Cuevas, Inc.
Southern New England Telecommunications Corp.
State of California Public Utilities Commission
State of Minnesota Funding
State of Nebraska Telecommunications and Information Center
Telecommunications Research Action Center (TRAC)
Telecom Plus International, Inc.
Telematix International Ltd.
Third Class Mail Association
Times Mirror Co.
TRW Inc.
United States Government:
- National Telecommunications and Information Administration
- Department of Health and Human Services
  - National Library of Medicine
- Department of State
  - Office of Communications
- Federal Communications Commission
- Federal Emergency Management Agency
- National Aeronautics and Space Administration
- National Security Agency
- U.S. Army:
  - Office of the Assistant Chief of Staff for Information Management
- United States Postal Rate Commission

US West
United Telecommunications, Inc.
The Washington Post Co.

Acknowledgments

The authors thank Nathan Eigerman for his assistance in the development of the simulator on the computer and Ingrid Johnson for her skill and patience on the charts in this paper.

Special thanks are due to the following persons who reviewed and commented critically on drafts of this report. These reviewers and the Program's affiliates are not, however, responsible for or necessarily in agreement with the views expressed herein, nor should they be blamed for any errors of fact or interpretation.

John Arcate
Paul Berman
James D. Dunbar
Sam M. Epstein
Bailey M. Geeslin
Patrick A. Hanley
Walter Haug
Robin Holmes
Elwood R. Kerkeslager
Paul F. Levy
James M. McCraney
John R. Mulhearn, Jr.
L. F. Newens
Robert W. Nyswaner
John Vecchiarelli

Executive Summary

- This paper develops a simulator, or model, of the interstate carrier common line (CCL) pooling process, specifically representing the recovery of local loop costs. Although the simulator looks at only one piece of the large puzzle of jurisdictional cost allocations and revenue recovery, it may be used to evaluate the basic mechanisms of various proposals for changing the CCL pool. The simulator characterizes and describes relative impacts; it does not attempt to represent reality. The modeling is extremely simplified, reflecting structure and analysis. The simulator looks at a group of companies, the Bell operating companies (BOCs), to clarify relative positions under the various proposals.

- The five pooling methods are: the Ozark Plan, the Bell Atlantic proposal, the end-user charge, the end-user charge combined with a 25% cost allocation, and the French proposal.

- A fundamental assumption behind pooling is that some companies in the pool will benefit at the expense of others. A local exchange carrier (LEC) whose per-minute NTS costs are less than the nationwide average ends up remitting revenues into the NECA pool. This case gives rise to the perception that this low-cost LEC subsidizes LECs whose per-minute NTS costs exceed the nationwide average. Although this is not a direct payment of dollars (cash flows are handled through NECA), the low-cost LEC could charge the interexchange carriers a lower rate if the LEC only had to cover its own NTS costs. The subsidy issue hinges upon this fact. Despite changes between the pre-divestiture pools, many of the old mechanisms developed during the earlier monopoly remained, affecting the post-divestiture picture. The simulator can test whether a revenue pooling arrangement, such as the Ozark Plan or the NECA carrier common line pool, benefits one local company at the expense of another.

- The underlying issues of NTS cost recovery remain, regardless of the revenue recovery method. The positions of some stakeholders may change, their agendas may change, but the treatment of NTS cost recovery is central. The long transitional periods, such as the eight-year shift from SPF% cost allocation to 25% cost allocation, point out the difficulty companies may have in forming coalitions. With each year, the relative positions of the LECs shift. These may cause policy shifts in both the local and interexchange carriers.

- This paper demonstrates the difficulty any one stakeholder has in garnering widespread support for moving from the status quo. Any proposal that disproportionately advantages one group of companies over another is naturally subject to attack from the adversely affected companies. For example, the level of the cap in the Bell Atlantic proposal determines the position of the line distinguishing "payers" from "receivers" in the two pools. Acceptance of the Bell Atlantic proposal, or some other form of a cap, indicates a need to be sensitive to those states who would switch from receiving to paying, regardless of the reduction in the size of the pool.

TABLE OF CONTENTS

LIST OF FIGURES

I. Introduction

This paper develops a simulator, or model, of the interstate carrier common line (CCL) pooling process, specifically representing the recovery of local loop costs. The simulator looks at only one piece of the large puzzle of jurisdictional cost allocations and revenue recovery. This paper assumes knowledge of the separations and settlements process, access charges, and other traditional industry terms.*

The simulator may be used to evaluate the basic mechanisms of various proposals for changing the CCL pool. The simulator characterizes and describes relative impacts; it is not an attempt to represent reality. The modeling is extremely simplified, reflecting structure and analysis. The simulator looks at a group of companies, the Bell operating companies (BOCs), to clarify relative positions under the various proposals. A more comprehensive picture would include the independent companies, which represent approximately 20% of the CCL pool. The use of 1980 data reflects the lack of more timely, available public data that is detailed enough to present numbers as well as structure.

The purpose of the simulator is to present the situation and to raise issues, but to leave the interpretation up to those who have a stake in the pooling issues. Indeed, even before examining any of the pooling proposals, we could ask whether there should be pooling in the first place. A fundamental assumption behind pooling is that some companies in the pool will benefit at the expense of others. The next question is: Who should benefit?

While the paper presents simplified structures, any reader may modify the simulator with current data and with greater attention to detail. A computer disk containing the formulas for the simulator and the various simulations is available.**

*For definitions and explanations of basic terms and processes, see Carol Weinhaus and Anthony G. Oettinger, Behind the Telephone Debates, Volumes 1 through 3, Program on Information Resources Policy, Cambridge, MA; see also Mark L. Lemler, The FCC Access Charge Plan: The Debates Continue, Program on Information Resources Policy, Cambridge, MA, draft, February 1987.

**The simulator is on an IBM-compatible PC 5 1/4" disk, in Lotus 1-2-3 files (version 2.3). For information, contact the Program on Information Resources Policy, 200 Aiken, Harvard University, Cambridge, MA, 02138, 617-495-4114.

The next section of this paper sets the stage, describing the distribution of pooled revenues. Section III briefly describes the proposals applied by the simulator, followed by caveats in Section IV. These caveats emphasize that the simulator shows structure, not actual data. The later sections develop the simulator itself, explaining the effect of embedded Ozark Plan mechanisms and applying various proposals to the simulator. The summary outlines the Unity 1-A proposal and shows how the simulator may be used as a tool to examine the pooling mechanisms and to flag pertinent questions.

II. Distribution of Pooled Revenues

Before the introduction of long distance competition, there was nationwide averaging of interstate costs and there were uniform nationwide interstate toll rates. All the interstate costs, including the local loop costs, were pooled. The local and long distance companies shared their collected revenues, distributing this revenue by two processes: Settlements distributed revenues between pre-divestiture Bell operating companies (BOCs) and the independents; division of revenues distributed revenues among the BOCs and AT&T Long Lines.

In the traditional industry, AT&T, the independents, and their regulators achieved a compromise for sharing revenues. The Ozark Plan accommodated differences among companies and among states. While this compromise worked for the traditional industry, the breakup of AT&T and the introduction of interstate competition upset the balance. Only the local operating companies remained in the mandatory non-traffic sensitive (NTS) revenue pools, leading to exposure of fundamental differences among companies and among regions -- differences that had led to the Ozark Plan in the first place.

Post-divestiture, the National Exchange Carriers Association (NECA) took over the administration of the revenue pool from AT&T. This pool, which determines the nationwide average CCL rate, consisted of total* interstate NTS costs for all the local exchange carriers (LECs, or local operating companies). NECA administers settlements among the LECs, who bill the inter-exchange carriers for the CCL. The settlement is based on the net of the LECs' collections and their own interstate NTS costs,** using the same mechanisms that AT&T used to settle with

*Less the cost of the line-side connection at the end office (separations Category 6), the amount recovered from end-user charges, and the amount recovered from special access surcharges.

**The same considerations apply to these costs as to the total costs mentioned above.

the independents before divestiture. A LEC whose per-minute NTS costs are less than the nationwide average ends up remitting revenues into the pool. This case gives rise to the perception that this low-cost LEC subsidizes LECs whose per-minute NTS costs exceed the nationwide average. Although this is not a direct payment of dollars (cash flows are handled through NECA), the low-cost LEC could charge the interexchange carriers a lower rate if the LEC only had to cover its own NTS costs. The subsidy issue hinges upon this fact. Despite changes between the pre-divestiture and post-divestiture pools, many of the old mechanisms developed during the earlier monopoly remained, affecting the post-divestiture picture.*

III. The Simulator: Application of Various Proposals

The simulator begins with the relative positions of the LECs or local operating companies going into the revenue pool which, in turn, determines the nationwide rates. Relative to one another, some LECs have low costs and some LECs have high costs. In the revenue distribution process, low-cost companies pay into the pool and high-cost companies receive payments from the pool, giving rise to the perception that low-cost companies subsidize high-cost companies.

Our discussion covers several methods of cost recovery applied to the simulator. With each of these methods, the simulator reflects the mechanics of the pools; it does not specify which companies would change in real-life application of proposed changes. Furthermore, the simulation depicts only the end results. In reality different proposals involved different transition mechanisms. The five methods are:

*In the mid-1980s, the CCL pool was reduced by the extent to which company-owned local plant was reduced. Customers in 1986 owned their customer premises equipment (CPE), the interstate costs of which are being phased off the local operating companies' books over a period of five years (1982 through 1987), with customers in 1986 owning some inside wiring. In the post-divestiture pool, there are two components -- end user and CCL. The end-user component is recovered on a direct basis; local operating companies keep their own end-user component. As the size of the end-user component grows, the CCL component shrinks.

1. Ozark Plan[2]

On the eve of the AT&T divestiture, the division of revenues process divides the interstate revenue pool among the BOCs and AT&T Long Lines. A similar process called settlements divides the interstate revenue pool among the BOCs and the independent telephone companies. After divestiture the formula used to determine NTS costs (the SPF formula, or subscriber plant factor) determines the size of the interstate NTS pool.* The principles of the division of revenues process and settlements process are applied to this NTS pool as a basis for distributing NTS revenues among the LECs.

2. Bell Atlantic Proposal[3]

A "cap" limits the pool size and the participants. This proposal seeks to limit the CCL rate charged the inter-exchange carriers, thereby allowing low-cost companies to combat bypass in their operating territories. Recognizing that a reduction in the CCL pool is detrimental to high-cost companies, the proposal includes a transition. Each company recovers its own CCL revenue requirements up to a "cap". Companies whose NTS costs exceed this cap participate in a NECA-administered pool whereby a "surcharge" element charged to the interexchange carriers recovers costs of those companies who exceed the cap. The amount of money involved in this "surcharge" pool is substantially less than the amount involved in the 1986 NECA pool. The level of the cap determines the position of the line distinguishing "payers" from "receivers".

3. $2 End-User Charge[4]

This end-user charge reduces the pool through a monthly flat rate paid by the end user, a simplification of the interstate end-user charges levied by the FCC (Federal Communications Commission). By 1986 there was recovery of a portion of the local loop from the end user -- residential, single-line business, multi-line business, and Centrex customers. The simplified form assumes a flat rate of $2 per loop, ignoring the higher recovery per loop allowed for multi-line business and Centrex customers. As the end-user charge component of the NECA pool increases, the CCL component decreases. The Rochester proposal is another variation of an end-user charge.

*For definitions of NTS (non-traffic sensitive), TS (traffic sensitive), SPF (subscriber plant factor), SLU (subscriber line use), and CSR (composite station rate) ratio, see Behind the Telephone Debates, Volume 3.

4. $2 End-User Charge combined with a 25% Interstate Cost Allocation[5]

   This shows the additional effect of changing from SPF% to 25%. It includes the transition of cost allocation from SPF% to 25%, but excludes the Universal Service Fund (USF) -- a fund used to help high-cost companies recover their costs, also referred to as the High-Cost Fund.

5. French Proposal[6]

   The French proposal reduces the pool because the end user pays the difference between SPF% and SLU%. In this proposal, the NECA pool consists of interstate NTS costs based on interstate SLU% (subscriber line use). The remainder of the NTS costs (SPF% minus SLU%) are recovered directly from the end user. The pool size is reduced by the amount of this direct payment.

IV. Caveats Applying to the Simulator and a Rough Check on the Simulator

The following caveats apply to this simplified simulator. Several of these points indicate that the simulations limit the size of the revenue pool while in reality, in early 1987 the NECA pool consists of a large amount:

1. This simulator uses 1980 data from the FCC.[7] As shown later in this section, 1984 data provide a rough check on this simulator's evaluation of which companies pay net revenues and which companies receive net revenues from the interstate pool.

2. Only data for the BOCs appear in this simulator. With equivalent data for the larger independents, it is possible to expand the simulator. However, for simplicity, the discussion excludes independents' data because our purpose is to show basic mechanisms. This exclusion of the independents simplifies certain relationships, thus not reflecting reality.

   Because the simulator includes only 1980 BOCs, it omits Alaska and Hawaii, neither of which contains a BOC.

   Also note that in 1980 four states were served by more than one BOC: Idaho, Kentucky, Ohio, and Texas. Therefore, each of these states has two BOC listings.

3. The simulator only shows end results of various proposals, ignoring transition mechanisms. A more accurate picture

would include these transitions over time and their effects.

4. Some graphics depict only relative change, neither a correct alignment of ranks in the "before" nor "after" columns. Shifts in rank indicate structure, not real-life positions. In these figures shaded columns rank BOCs by local loop costs or by revenue recovery (e.g., Figure 3).

5. The simulator covers only interstate local loop costs and interstate revenue sharing. Generally, within each state, uniform state toll rates (which imply averaging across companies) encouraged similar processes for state toll revenue sharing among the BOCs and the various independents. Therefore, some questions arising out of nationwide practices also apply to statewide practices.

6. The simulator is limited to local loop cost data. In this example the term "local loop" includes all subscriber lines, drops, and blocks. The simulator excludes inside wiring, customer premises equipment (CPE), and central office equipment, all of which are other components of NTS plant. The exclusion of these categories brings the simulator closer to the post-divestiture competitive picture which encompassed (a) the removal of CPE from the rate base, (b) a transition period for the removal of inside wiring from the rate base, and (c) the recovery of NTS central office equipment via traffic-sensitive (TS) access rate elements. The simulator excludes all TS costs. The simulator also ignores direct assignment of WATS (Wide Area Telecommunications Services) lines and special access surcharges.

7. In reality the 1980 demand is measured by conversation minutes. However, the simulator uses interstate SLU (subscriber line use) minutes of use as demand to determine revenues, where:

   price x demand = revenues.

   With the introduction of access charges, demand would be measured in access minutes instead of in the simulator's SLU minutes.

8. The simulator uses a single nationwide average interstate toll rate. In reality, state and interstate rate schedules produce numerous prices. These schedules contain variables, such as distance called or direct dial versus operator assistance. The use of actual average rates per state instead of a single nationwide rate in the simulator might change the relationships of the states in terms of cost recovery. However, our check of the simulator to 1984 NECA data at the end of this section found the simulator to be a reasonable approximation.

9. In addition, the simulator is set so that prices exactly cover costs. The costs included the authorized rate of return (ROR). This means that the rate of return (ROR) was already set before the simulator developed the nationwide price, setting prices equal to costs. In reality, prices are designed to recover revenues above costs.

10. The simulator does not distinguish between premium and non-premium access minutes in setting the CCL charge. In other words, the simulator ignores the other common carrier discount.

11. Data were unavailable to break out the local loops by residential and single line business, by multi-line business, and by Centrex. Therefore, the use of a monthly $2 end-user charge per line is an extremely rough approximation. In reality, multi-line business customers have monthly end user charges of up to $6 per loop. Centrex charges have risen to $3 per month.[8]

12. In the simulation of the Bell Atlantic proposal using 1980 data, a "cap" was set using the simulator's average unit price. In reality, Bell Atlantic's proposal sets the "cap" at a rate designed to maximize the number of companies covering their own costs. This "cap" would change each year during a transition in which each company's interstate cost assignment transitions from a SPF% to a 25% cost allocation.

Some 1984 numbers released by NECA provide a rough check on the accuracy of the simulator.[9] Figure 1 compares the net dollars paid (indicated by parentheses) or received (indicated by no parentheses) from the interstate pool. The data for the model are from Appendix B, Figure 18, Column M.

With the increase in the cost allocation per state between 1980 and 1984, the NECA values should be larger. What is important in the comparison is whether a BOC pays or receives from the pool and the position of a BOC in relation to the others. With the exception of New York, the simulator checks out with the NECA data. Remember that the simulator is theoretical: It omits independent data which, if included, would change the unit price, which in turn would alter who "pays" and who "receives" money from the pool, altering the amount of money involved in this process. In the simulator, New York lies at the border between payer and receiver, receiving $2.54 per local loop. This BOC also has 7.9 million local loops, the second highest number of local loops. Multiplied by the number of local loops, even a small amount paid or received by New York produces an extremely large number. A slight shift upward in the average unit price would bring New York below the border, turning this BOC into a payer.

State BOC	Net Interstate Pool Dollars: Paid (-) or Received (+)	
	1980 FCC Data (Simulator)	1984 NECA Data
FL	$84.7 million	$148.4 million
CA	$85.6	$102.2
AZ	$24.3	$ 37.3
AK	-	$ 37.3
NH	$ 0.6	$ 1.5
MA	($32.5)	($ 57.8)
NY*	$20.1	($ 58.0)
PA	($61.6)	($ 67.4)
NJ	($63.6)	($110.9)

*In the model the New York BOC receives from the interstate pool; in reality this BOC pays into the pool.

Figure 1

Comparison of Model with 1984 NECA Data

V. The Pooling Simulator: Local Loop Costs and Interstate Cost Recovery

To analyze how a particular revenue-sharing method works, we need to look at the cost issues that these processes are meant to resolve. Do some companies have local loop costs significantly higher than those of other companies? If they do, should the high-cost companies be subsidized by low-cost companies? And if they are to be subsidized, by what method?

Figure 2 ranks the state BOCs by 1980 total local loop costs (state and interstate). The intensity of the shading indicates rank, with the darkest shading indicating the highest loop cost for the Wyoming BOC and the lightest shading indicating the lowest loop cost for the District of Columbia BOC. To simplify the text, the discussion refers to the various BOCs by their state name, ignoring that states may contain independent companies as well. Using a shaded column makes it possible to depict the repositioning of the companies, emphasizing the relative positions instead of the magnitude of the shift. In the simulator, the total of these BOC loop costs is $12.07 billion (indicated at the top of Figure 2). In Section VI, Figure 4 gives the dollar amounts associated with the total local loop costs of Figure 2 as well as the dollar amounts developed by the simulator for the various revenue recovery methods.

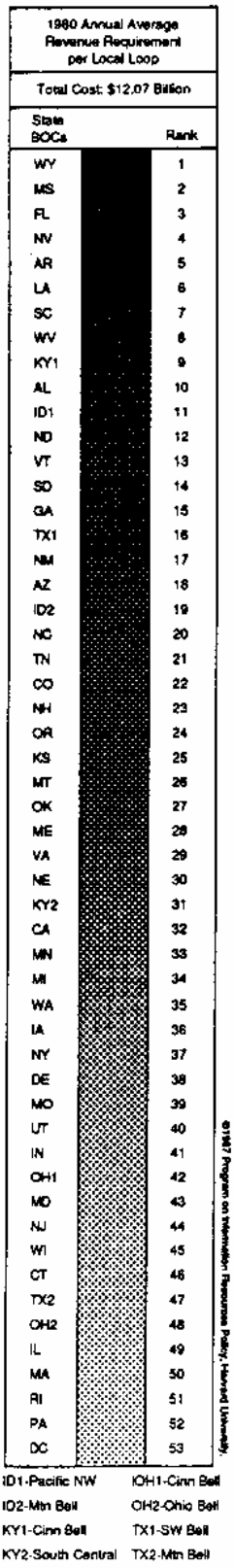

Figure 2

1980 Bell Operating Company
Annual Revenue Requirements per Local Loop

The simulator can test whether a revenue pooling arrangement, such as the Ozark Plan or the NECA carrier common line pool, benefits one local company at the expense of another. For example, if the choice is made to subsidize geographically all NTS costs through a pooling arrangement (a condition that is questionable given the Universal Service Fund or USF),* one would expect Wyoming to receive the greatest subsidy relative to its costs and the District of Columbia to make the greatest relative contribution.

In reality each company receives a payment from the revenue pool.[10] However, our simulator looks at the net position of a company comparing its costs and its collected revenues. "Receiver" refers to companies who collect revenues below their own costs, thereby receiving net "payments" from the pool. Conversely, "payer" or "contributor" refers to companies who collect revenues above their own costs, and therefore contribute additional revenues to the pool in support of the high-cost companies.

If companies were ranked from the highest net payment (a "receiver") to the lowest net payment (a "contributor"), a shaded column showing the state ranks for interstate revenue recovery would be identical to the column in **Figure 2**. The company with the highest costs would "receive" more dollars per loop, with the dollars per loop decreasing as you move down the column until the company at the bottom would "contribute" the largest amount of dollars per loop.

In **Figure 3**, the left-hand side shows the local loop costs (taken from **Figure 2**), while the right-hand side shows the simulation of the Ozark Plan's cost recovery mechanism. Note that the cost recovery covers only interstate NTS costs, which included the portion of the NTS revenue requirement allocated to the interstate jurisdiction and recovered from interstate rates. Each company recovers the remainder of its own NTS costs from state revenues. In the simulator, this interstate pool is $3.06 billion. **Figure 3** presents the picture at the time of divestiture scaled down to 1980 levels; it therefore excludes end-user access charges.

Because each company in **Figure 3** retains its shading in the transition from left to right, disparities jump out. A shift of more than three positions indicates a significant change. The dashed line between ranks 31 and 32 differentiates between "payers" into the simulator pool and "receivers" from the pool.

*The USF targets additional help for high-cost companies.

In Figures 2 and 3, and in similar figures in this paper, the graphics depict only relative change, not whether the local loop cost ranks or the revenue recovery ranks are the "correct" alignments. The shifts show structure and not real-life positions.

The overall pattern in the shadings in Figure 3 suggests that in general low-cost companies contribute to the support of high-cost companies. Wyoming continues to rank first and Washington, D.C. continues to rank last. But some shifts stand out. For example, California shifts from 32nd in terms of loop costs to 15th in terms of revenue recovery. This suggests that California is receiving more than its due. Similarly, West Virginia is adversely affected relative to other states. Even though West Virgina is a receiver, it receives significantly less (ranked 31st) than its loop costs suggest (ranked 8th). Therefore, the simulator indicates that some companies benefit more than others by the Ozark Plan. A company's position on a particular proposal changing the revenue recovery method depends on whether it benefits or loses in terms of its current status. Thus the Ozark Plan serves as a starting point for comparing various proposals.

The simulator is a simplified, closed system, whose limited scope avoids some of the complexities of the mid-1980s. It shows the shift in relative positions among LECs in the change from local loop costs to the interstate recovery of a portion of these costs.

While the simulator shows the structural effects of the Ozark Plan, it does not reflect specific results, either in the numbers or in their derivation. The numbers derived illustrate generic relationships. The original data used in the simulator are from the Federal Communications Commission (FCC).[11] For example, Figure 3 shows New York as receiving money from the interstate revenue pool. In truth, New York paid out money in the 1980 settlements process. This anomaly derives from the simulator's using the sum of only BOC costs and ignoring independents' costs. Had the simulator included interstate independent settlements, the average unit price would have changed and New York Telephone's position would have shifted from that of a receiver to that of a donor.

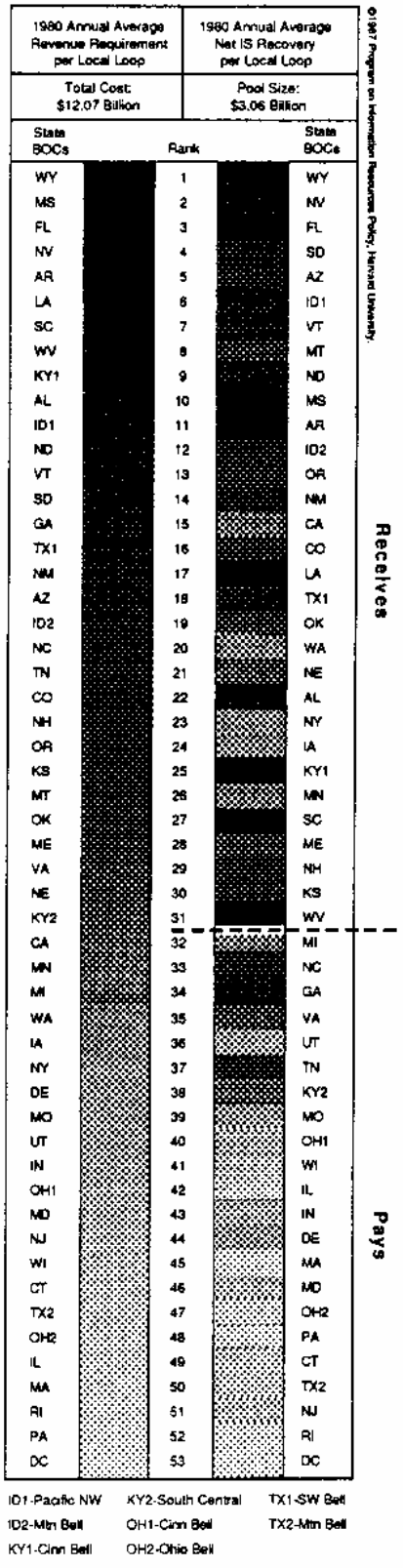

Figure 3

Comparison of Ranks:
Cost per Loop and Ozark Plan Revenue Recovery

VI. Summary of Simulated Costs and Revenue Pools

Figure 4 shows the simulated total costs and the revenue pool sizes for each of the five revenue recovery methods explored in this paper. These revenues pools are from the carrier common line charge levied by the BOCs on the interexchange carriers. The simulated revenue pools reflect assumptions made to develop the simulator and not reality. For example, application of actual per-loop end-user charges would exceed the $2 monthly flat rate. In a similar manner, the "cap" in the Bell Atlantic simulation shows how the structure of the proposal works but does not produce the actual NECA pool resulting from this proposal.

1980 Total Revenue Requirements	**Simulated Total Cost:** $12.07 Billion
Revenue Recovery Pools	**Simulated Pool Size:**
1980 Ozark Plan	$ 3.06 Billion
Bell Atlantic Proposal	0.37
$2 End User Charge	1.11
$2 End User Charge Combined with 25% Interstate Cost Allocation	1.07
French Proposal	0.91

Figure 4

Simulated Pool Sizes:
1980 Total Revenue Requirements
and Five Revenue Recovery Methods

VII. The Pooling Simulator: Ozark Plan Mechanisms

In the simulation of the Ozark Plan in Figure 3, four variables determined the shift in rank on the revenue recovery side: number of local loops, amount of interstate SLU minutes of use, SLU%, and SPF%.* No single variable accounts for a company's final rank in the revenue recovery column. The variables must be considered in tandem. Figure 5 compares the ranks of cost per loop [Column 1] with each of these four variables [Columns 2 through 5]. Appendix C contains the numerical background for the following discussion of these four variables.

1. Number of Local Loops:

   Aids comparisons between states by scaling costs and revenue recovery on a per-loop basis. For example, while New Jersey pays an amount into the pool almost nine times that of Rhode Island, the payments per loop into the pool are nearly the same.** Figure 5 compares the ranks of cost per loop [Column 1] with the ranks for the number of local loops [Column 2].

2. Interstate SLU Minutes of Use:

   Provides a measure of a company's participation in interstate commerce, because the simulator uses the amount of interstate SLU minutes of use as a measure of demand (price x demand = revenues). Figure 5 compares the cost per loop [Column 1] with the ranks for the interstate SLU minutes of use [Column 3].

   While the simulator uses just one nationwide price, in reality the state and interstate rate schedules produce numerous prices.

---

*Behind the Telephone Debates, Volume 3, provides details on the Ozark Plan for separations which includes the SPF (subscriber plant factor) formula and two of its components: SLU (subscriber line use) and CSR (composite station rate) ratio.

**See Appendix B, Figure 17, Column A, for local loop revenue requirements. See Appendix B, Figure 18, Column J, for interstate local loop revenue requirements. See Appendix C, Figure 19, Column 1, for revenue requirements per loop.

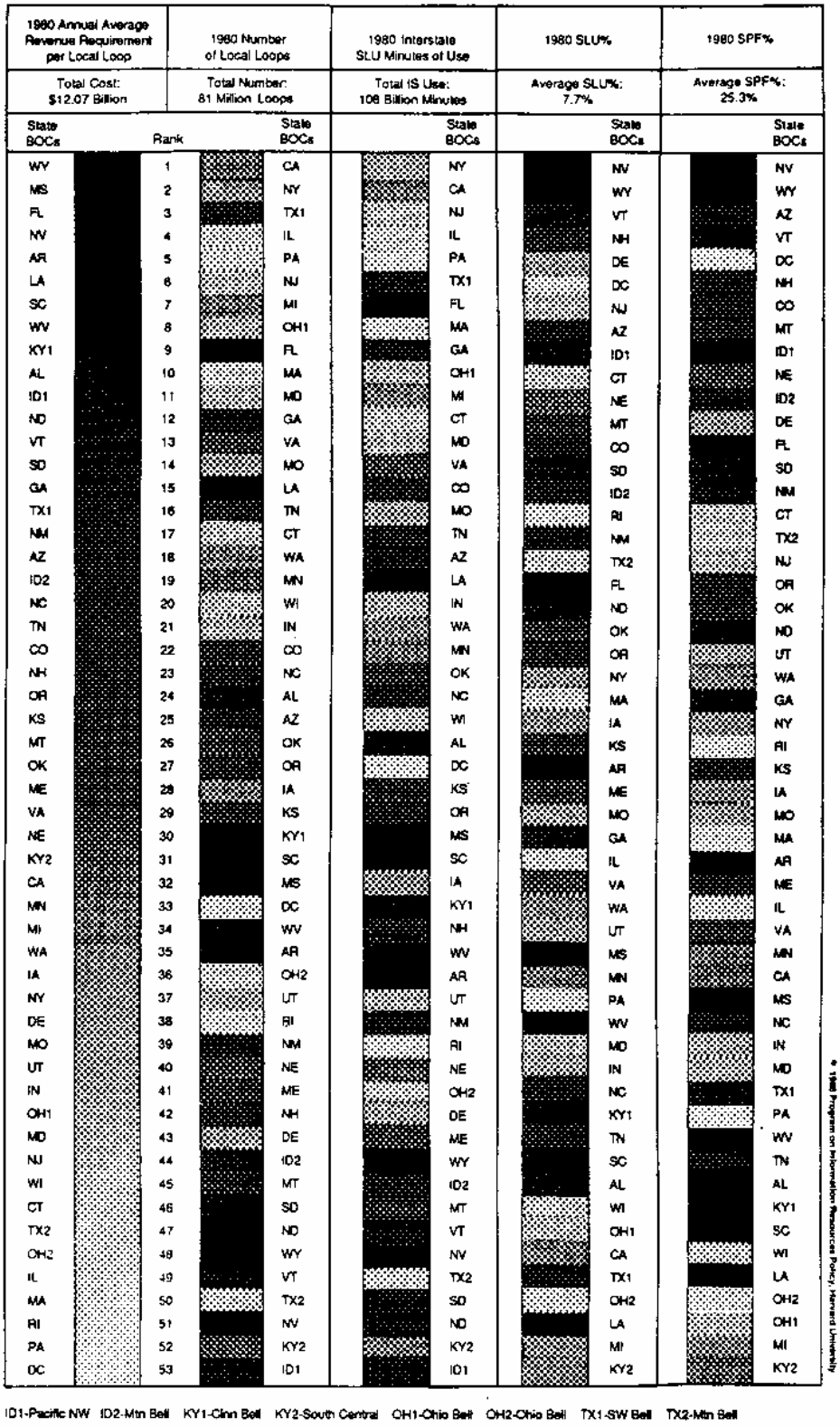

Figure 5

Comparison of Ranks:
Cost per Loop and Number of Local Loops, Interstate SLU Minutes of Use, Interstate SLU%, and Interstate SPF%

Seen in tandem, the above two variables give the interstate demand per local loop. For example, New Jersey has 1956 interstate SLU minutes of use per loop compared to Wisconsin, which had 1076 interstate SLU minutes of use per loop. All other elements being equal, the fact that New Jersey has a higher demand will make it contribute more into the pool than Wisconsin. With this higher demand New Jersey has a higher probability of covering its own costs and therefore becoming a contributor. (If a company pulls in revenues above its costs, it's more likely to pay into the pool.) This relationship counteracts New Jersey's advantage gained from a higher SPF% (ranked 18th) compared to Wisconsin's SPF% (ranked 46th).

3. SLU%

   Shows the relative importance of interstate subscriber line use compared to total (interstate toll, state toll, and exchange) subscriber line use. The higher the SLU%, the larger the interstate cost allocation. Two states with different amounts of interstate use may have similar SLU% values. California and Louisiana have roughly the same SLU% values (5.7% and 5.6%), yet California has nearly five times the amount of interstate traffic over its loops because California has five times the number of loops.

   Based on SLU% alone, Rhode Island with its 9.4% SLU would receive a relatively larger cost allocation than West Virginia with its SLU of 6.9%. Figure 5 compares the cost per loop [Column 1] with the ranks for the interstate SLU% [Column 4].

4. SPF%

   Shows the effect of the SPF multiplier which includes the effect of the CSR ratio on SLU%. SPF% multiplies the value of SLU% for all companies, but multiplies some companies by a greater amount than others. For example, California rises 12 places from 48th for SLU% to 36th for SPF%. Conversely, Rhode Island drops 10 places from 16th for SLU% to 26th for SPF%. Figure 5 compares the cost per loop [Column 1] with the ranks for the interstate SPF% [Column 5].

VIII. Simulation of the Bell Atlantic Proposal

The simulator may be used to compare the relative impacts of proposed modifications to the NECA common line pool. In the simulator, the 1980 loop costs and revenue recovery serve as the foundation for comparison with each of the various proposals.

On October 28, 1985, Bell Atlantic filed a petition with the FCC to limit the mandatory pool.[12] Bell Atlantic claimed that its large payment in the revenue sharing process ($135 million for New Jersey Bell alone) hampered the company's ability to combat bypass. The proposal sought to limit the CCL rate the Bell Atlantic companies charged the interexchange carriers. Essentially each company would recover only its own NTS costs. However, Bell Atlantic recognized that its proposal would be detrimental to high-cost companies, which received payments in the revenue-sharing process. Therefore, the proposal provides a transition in which a "cap" is set for recovering NTS costs through the CCL rates. Those company costs in excess of this cap define a NECA-administered pool for revenue sharing. In turn, this "excess cost" pool determines a "surcharge" element to be charged by all LECs to the interexchange carriers.

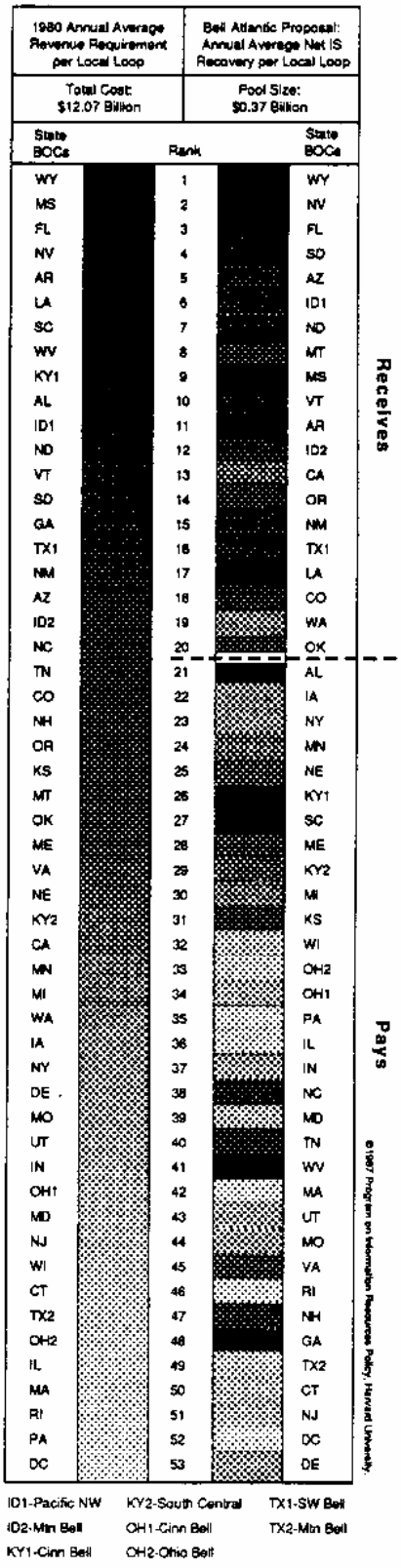

Figure 6

Comparison of Ranks: Cost per Loop
and Bell Atlantic Proposal for Revenue Recovery

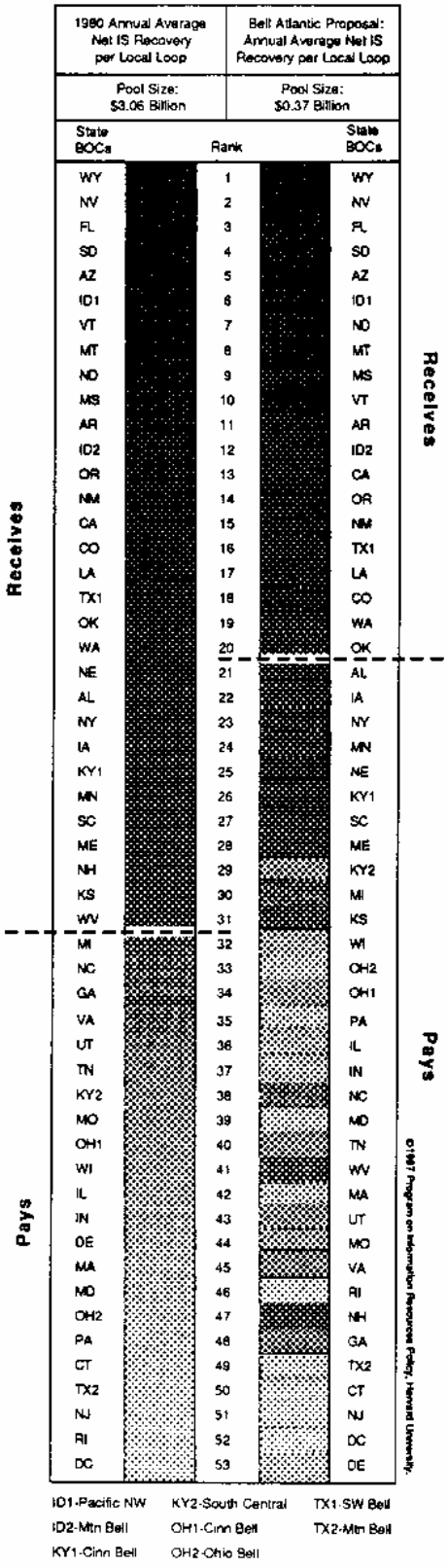

Figure 7

Comparison of Ranks: Ozark Plan Revenue Recovery
and Bell Atlantic Proposal for Revenue Recovery

As a result, the money involved in this surcharge pool is substantially less than the amount involved in the 1985 NECA pool. In addition, low-cost companies, such as the Bell Atlantic companies, charge the interexchange carriers a lower rate (the new CCL rate set by the cap plus the surcharge rate) than the 1985 CCL rate.

The Bell Atlantic proposal is far more complex than our simulation. First, the Universal Service Fund (USF) offsets the amount of money paid to the high-cost companies. Second, the Bell Atlantic proposal includes changes in the cap in 1987 and in 1988. A more accurate picture would include the effect of the USF, the transition over time from SPF% to 25% for cost allocation, and the changes in the cap.

Figures 4, 6, and 7 give the results of the simulation of the Bell Atlantic proposal. Appendix D provides the calculations for developing these figures. In Figure 4, the simulated "surcharge" pool of $0.37 billion is substantially lower than the NECA pool of $3.06 billion. There is a dramatic reduction because the BOCs directly recover their own interstate NTS revenue requirements that fall below the cap.

As in the earlier figures, Figure 6 compares the 1980 local loop costs (right-hand column) with the Bell Atlantic revenue recovery (left-hand column). Compared with the Ozark Plan revenue recovery [Figure 3], the boundary between payers and receivers shifts upward, with more companies paying in the revenue-sharing process. While the pattern of revenue recovery has not changed to a large degree, it is necessary to compare the two recovery methods to make sense of the shift of the boundary between payers and receivers.

Figure 7 compares the Ozark Plan revenue recovery (left-hand column) with the Bell Atlantic proposal for revenue recovery (right-hand column). The two dashed boundary lines can divide the left-hand column into three groups. The top group consists of Wyoming through Washington (ranks 1 through 20), the middle group consists of Nebraska through West Virginia (ranks 21 through 31), and the bottom group consists of Michigan through the District of Columbia (ranks 32 through 53).

Those companies in the top group remain receivers under the Bell Atlantic proposal, but they receive a significantly lower amount from the surcharge pool. Conversely, those companies in the bottom group remain payers, but pay significantly less under the Bell Atlantic proposal. However, those companies in the middle group suffer the biggest change. Not only do they shift from receiver to payer, but some, West Virginia and New Hampshire, also account for the largest drops in rank. These companies stand out in the otherwise smooth shading of the right-hand column.

The significance of the shift of the middle group from receivers to payers can be explained by their relationship to the cap and the surcharge rate. If the cap is set at a level in which a per-minute "excess" or unrecovered NTS cost is less than the average* per-minute "excess" costs,** then this company "pays" into the new "surcharge" pool. In the simulator, Nebraska through West Virginia changed from receivers to payers [Figure 7]. The simulator reflects the mechanics of the pools; it does not specify which companies would change in real-life application of the Bell Atlantic proposal. The level of the cap determines the position of the line distinguishing "payers" from "receivers" in the two pools. Acceptance of the Bell Atlantic proposal, or some other form of a cap, indicates a need to be sensitive to those states who would switch from receiving to paying, regardless of the reduction in the size of the pool.

IX. Simulation of $2 End-User Charge

In June 1986, the introduction of a direct monthly $2 end-user charge per loop reduced the size of the carrier common line component of the pool (the NECA-administered pool).[13] The LECs recovered their remaining interstate NTS costs from the interexchange carriers via a reduced CCL rate.

Applying this $2 end-user charge to the simulator produces a pool of $1.11 billion [Figure 4] -- a significant reduction from the Ozark Plan pool of $3.06 billion, but greater than the $0.37 simulated Bell Atlantic "surcharge" pool. Figure 8 compares the application of the $2 end-user charge to the cost per loop; Figure 9 compares the $2 end-user charge to the Ozark Plan revenue recovery. Appendix E provides the calculations for developing the simulation of the $2 end-user charge.

Although the CCL component of the pool is reduced, the percentage of this reduction will vary for each company and therefore may change the companies' rank order. While most of the states in Figure 8 retain their relative positions in the shift from costs to revenue recovery, some disparities emerge. If the end-user charges were made proportionate to loop costs (high-cost companies collect higher end-user charges than low-cost companies), then the right-hand revenue recovery column shadings and rank orders would be identical to those in the cost column. However, because the end-user charge is a flat per-loop rate subtracted from each company's interstate NTS costs, the relative positions of the companies change. The same four Ozark Plan variables [Figure 5] apply in this case, but the relationships among companies are different.

A glance at Figure 9 indicates the outliers. Delaware, which has a small number of loops, recovers only a small portion of its

*Average of all companies.
**Or surcharge per minute rate.

NTS costs from end-user charges. The greater proportion of its NTS costs come from the revenue-sharing process. Essentially, Delaware gets proportionally more from the pool under this method, as indicated both by its shift in rank from 44th to 22nd and by its shift from a payer to receiver. In contrast, California, which has a large number of loops, receives a higher proportion of its NTS costs from the end user and recovers less in the revenue sharing process. While remaining a receiver, California shifts in rank from 15th to 29th.

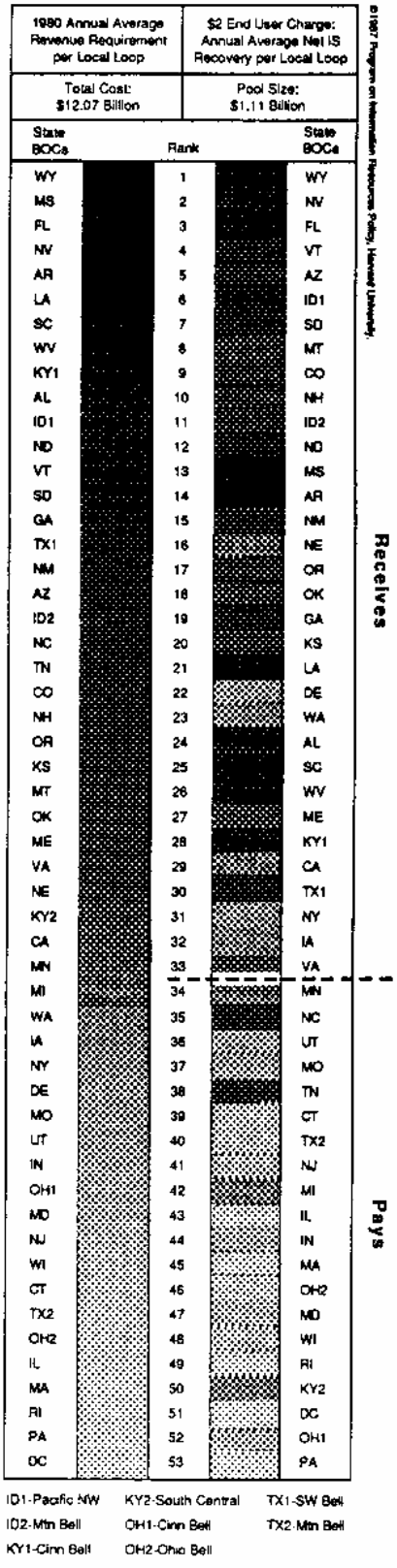

Figure 8

Comparison of Ranks:
Cost per Loop and $2 End-User Revenue Recovery

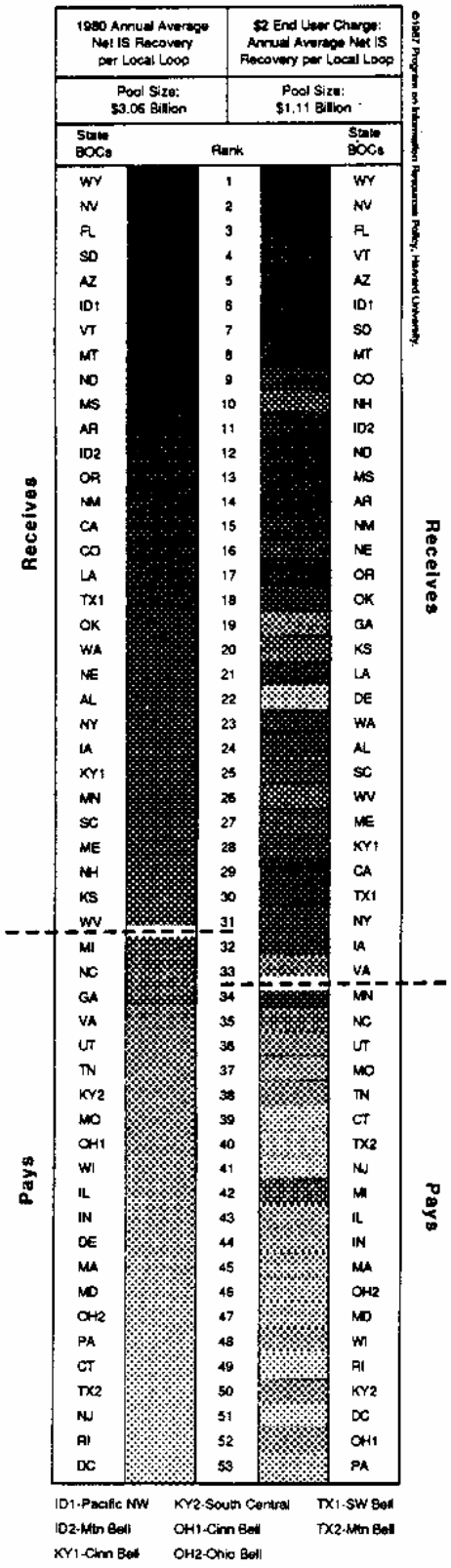

Figure 9

Comparison of Ranks: Ozark Plan Revenue Recovery
and $2 End-User Revenue Recovery

X. Simulation of $2 End-User Charge Combined with 25% Cost Allocation

End-user charges are not the only factors causing changes in the revenue pool. Separations changes, in the form of the transition from a SPF% cost allocation to a 25% cost allocation have, coupled with the $2 end-user charge, caused shifts between payers and receivers in the pool.

A look at the 25% cost allocation on its own and not coupled with end-user charges produces a chart with ranks identical to those of average local loop costs in Figure 2. This straight 25% application reflects individual differences in average local loop costs among the BOCs. The simulator also excludes the eight-year transition to 25%, a relatively long time for the relationships among companies to be in flux.

Figures 10, 11, and 12 in this section combine the effects of the $2 end-user charge with a 25% cost allocation.

The development of the simulator, Appendix B, Figure 17, gives a BOC average interstate SPF of 25.3%. This value is approximately equal to the actual 1980 average SPF of 25.8%. Because the transition is to an average, some companies will benefit, others will lose.[14]

Figure 10 compares the application of the $2 end-user charge combined with the 25% cost allocation with the rank orderings of cost per loop; Figure 11 compares this combined end-user charge and cost allocation to the Ozark Plan revenue recovery. Appendix F provides the calculations for developing the simulation of the $2 end-user charge combined with the 25% cost allocation.

Figure 12 compares the $2 end-user charge at 25% allocation pool with the previously simulated $2 end-user charge at 1980 SPF% allocation pool [Figures 8 and 9]. The pool size remains relatively unchanged ($1.07 billion versus $1.11 billion) because the average SPF% only moved from 25.3% for 1980 to 25% in this simulation. However, individual company SPF transitions resulted in major shifts in company rank order positions. For example, Arizona transitioned from a 42.8% SPF to a 25% cost allocation, dropping 25 positions in rank (from 5th to 30th). On the other hand, Wyoming transitioned from a 50.6% SPF to a 25% cost allocation. Yet, since Wyoming has relatively few loops, most of its interstate NTS cost recovery comes from the pool and not from the $2 end-user charge per loop. Thus, Wyoming maintains its position at the top of the chart (ranked first).

Some companies benefited from the transition to a 25% cost allocation. South Central Bell in Kentucky (KY2) increased its cost allocation from 12% at 1980 levels up to 25%. In addition to a larger interstate recovery, this company also had a relatively low demand per loop with 858 interstate SLU minutes of

use per loop compared to New Jersey's 1956 minutes. (All other elements being equal, a company collecting less than its own costs will receive money from the pool.) Therefore, Kentucky improved its position in rank 35 positions (from 50th to 15th) -- shifting from a relatively large "payer" to a relatively large "receiver".

The shifts in rank in Figure 12 illustrate the volatility in settlements as transitions in separations and end-user charges take place. While Figure 10 shows a relatively consistent recovery of loop costs at the end of the transition, the road there may be very rocky.

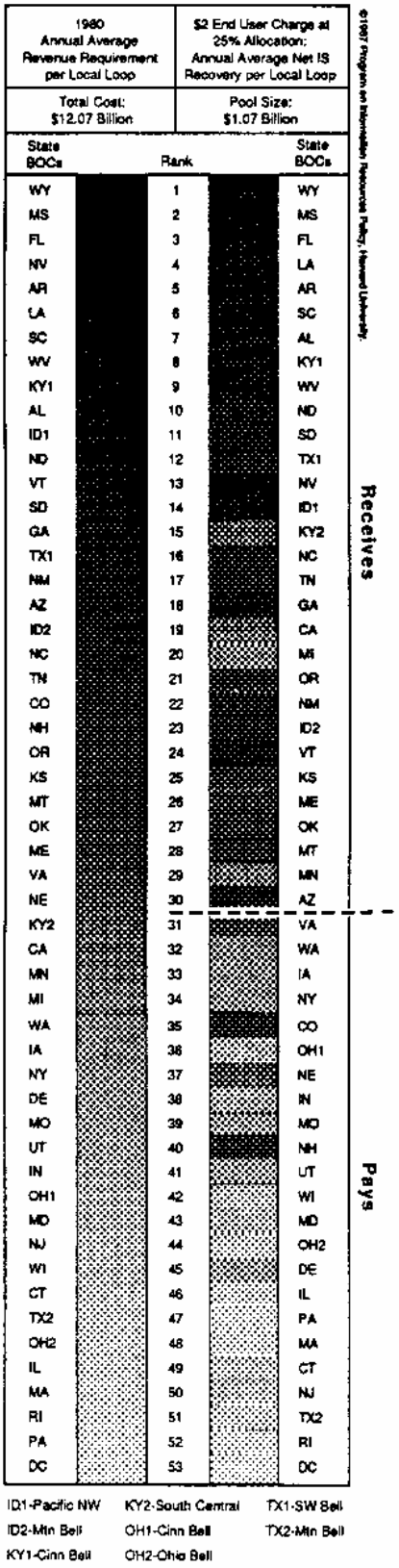

Figure 10

Comparison of Ranks: Cost per Loop and $2 End-User Charge Combined with 25% Cost Allocation Revenue Recovery

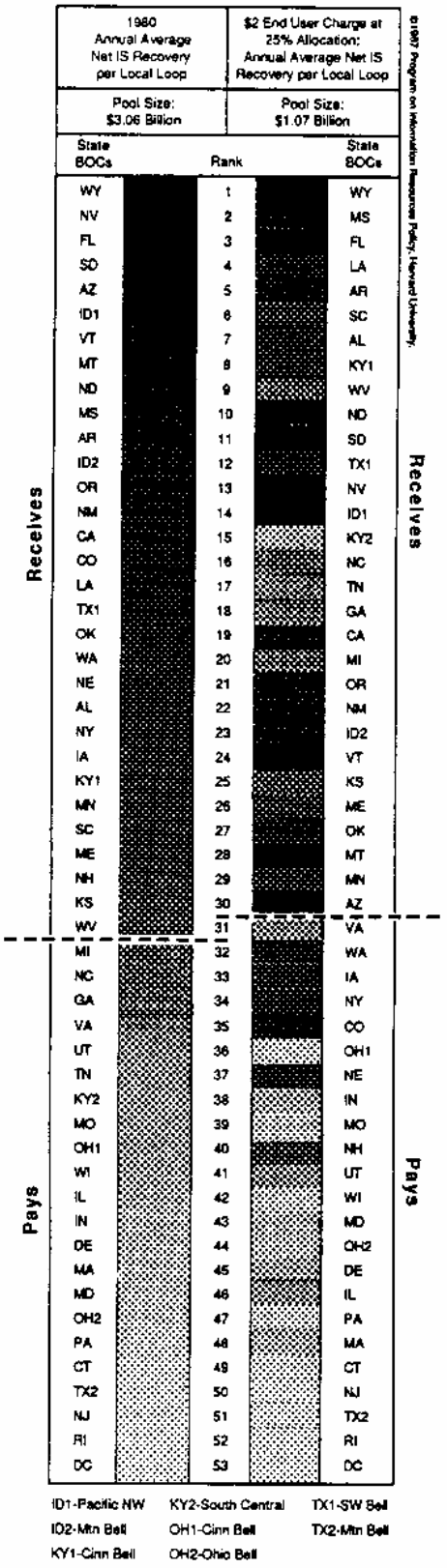

Figure 11

Comparison of Ranks: Ozark Plan Revenue Recovery and $2 End-User Charge Combined with 25% Cost Allocation Revenue Recovery

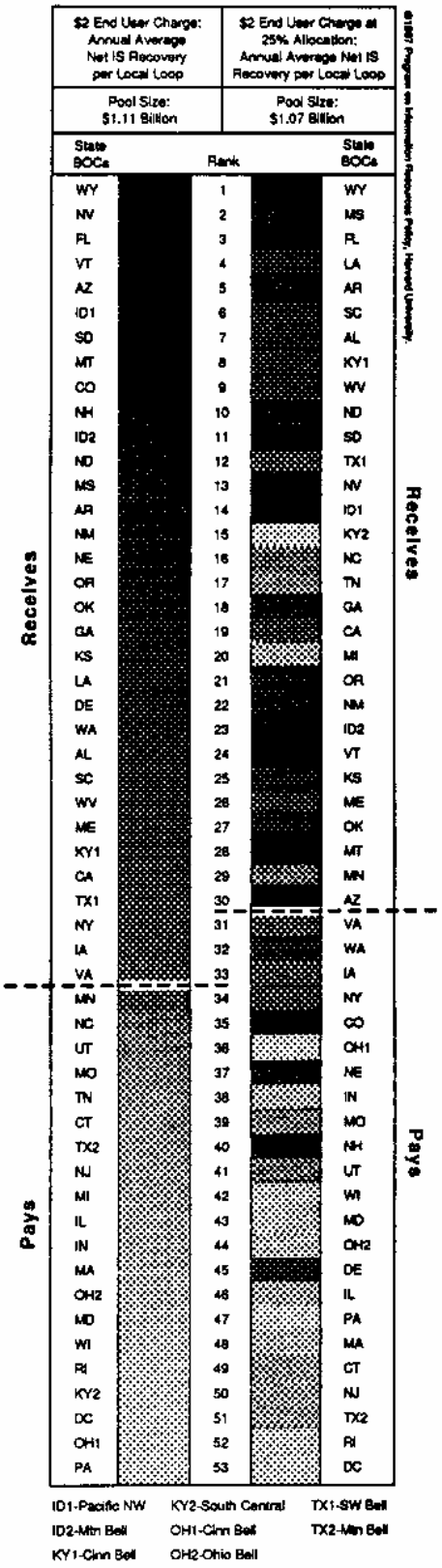

Figure 12

Effect of 25% Cost Allocation
on $2 End-User Revenue Recovery

XI. Simulation of French Proposal

When commenting on the Bell Atlantic proposal, Warren French, president of the Shenandoah Telephone Company, offered yet another NTS pool proposal.[15] In this proposal, the end user picks up the difference between the SPF and SLU cost allocations (SPF% minus SLU%). The NECA pool consists of only interstate NTS cost based on SLU%.

Among the simulations of proposals, the French proposal produces the greatest reduction in the NECA pool. In Figure 4, the simulated French proposal pool is $0.9 billion, compared to the original pool of $3.06 billion -- reducing the pool to a third. However, the simulator ignores the fact that since 1980, the interstate SLU% has grown, reducing the difference between SLU% and SPF%. Also, in reality, application of one of the other proposals might produce a greater reduction in pool size than what the simplified simulation shows.

As with the earlier recovery methods, Figures 13 and 14 compare the French proposal with the cost per local loop and with the Ozark Plan revenue recovery method. Appendix G provides the calculations for developing the simulation of the French proposal. The average SLU and SPF values in the simulator come close to real 1980 values,[16] thereby providing a rough check on the accuracy of the French proposal simulation.*

The French proposal rank order of payers and receivers [Figure 13] also exhibits anomalies in the shift from costs to revenue recovery. A comparison with the Ozark Plan revenue recovery shows that some of the same states that stood out in the $2 end-user charge [Figure 9] stand out in the French proposal [Figure 14]. Once again, and for similar reasons, Delaware rises in rank and California falls in rank. With the end user picking up the difference between SPF and SLU, the relationships among BOCs change.

*The development of the simulator, Appendix B, Figure 17, gives a BOC average SLU of 7.7% and an average SPF of 25.3%. In reality the 1980 values were an average SLU of 7.64% and an average SPF of 25.8%.

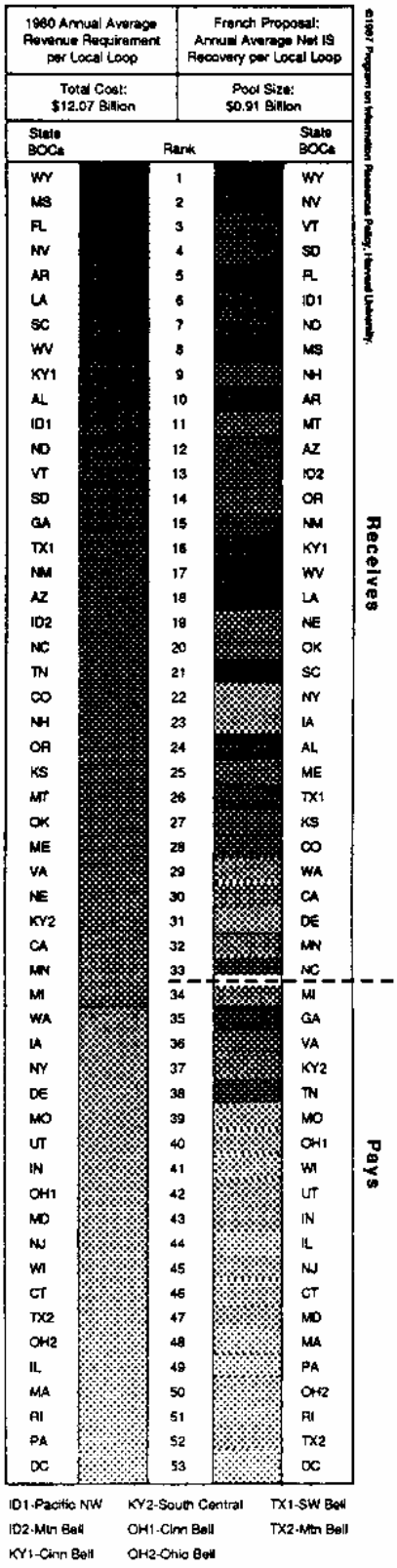

Figure 13

Comparison of Ranks:
Cost per Loop and French Proposal Revenue Recovery

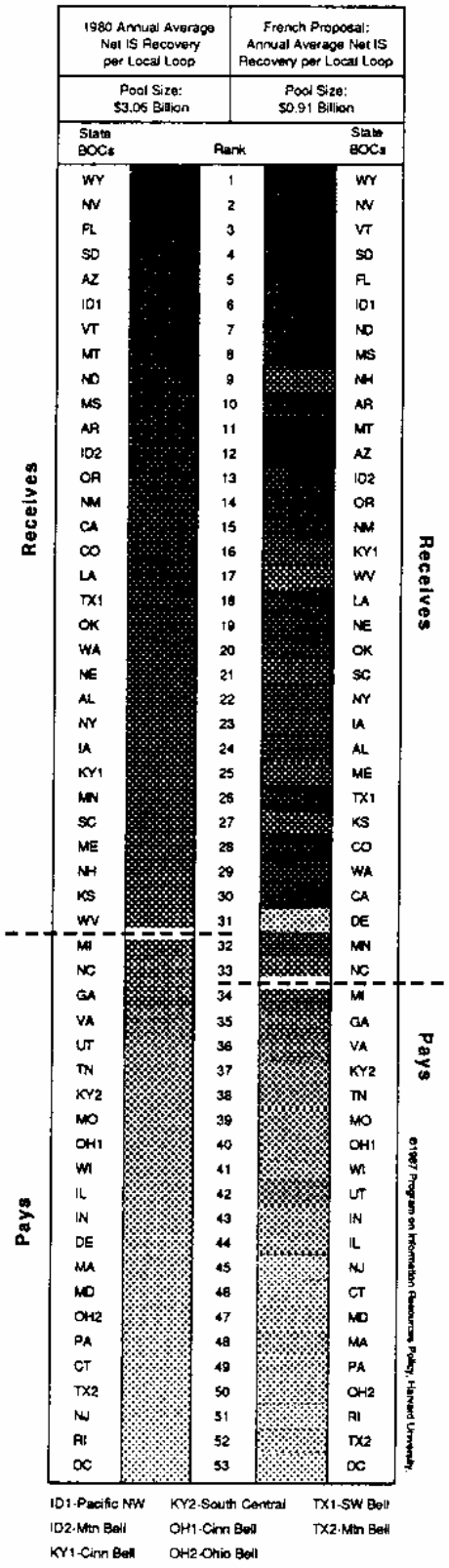

Figure 14

Comparison of Ranks: Ozark Plan Revenue Recovery
and French Proposal Revenue Recovery

XII. Summary

The FCC referred all proposals for modifying the carrier common line pool to a Joint Board, to be incorporated in their further proceedings on subscriber line charges in late 1986.[17] But the shaded figures in this paper demonstrate the difficulty any one stakeholder has in garnering widespread support for moving from the status quo. Any proposal that disproportionately advantages one group of companies over another is naturally subject to attack from the adversely affected companies. Indeed, it is precisely a series of compromises and paths of least resistance that led to the complex Ozark formula in the first place.[18]

The underlying issues of NTS cost recovery remain, regardless of the revenue recovery method. The positions of some stakeholders may change, their agendas may change, but the treatment of NTS costs recovery is central. The long transitional periods, such as the eight-year shift from SPF% cost allocation to 25% cost allocation, point out the difficulty companies may have in forming coalitions. With each year, the relative positions of the LECs shift. These may cause policy shifts in both the local and interexchange carriers.

This paper only looks at a narrow sliver of the whole question of federal/state cost allocations and revenue recovery. The broad picture needs to account not only for interstate prices and sources of revenue recovery but also to account for the separations process itself. In separations, dollars not assigned to the interstate jurisdiction for recovery must be recovered from state services. Therefore every reduction in interstate assignment increases the state assignment, and opens the question of how these additional costs might be recovered. Simplification of the simulator leaves out various factors that affect the question of pooling and subsidy, such as the inclusion of the independents, the Universal Service Fund, direct assignment of WATS lines, breakdowns of specific end-user charges, and special access surcharges.

In 1986, in anticipation of Joint Board proceedings, LECs, under general auspices of NECA, sought an industry consensus on major issues, including pooling.[19] These groups produced the Unity 1-A agreement, which contains provisions for pool size reduction and movement toward equalizing the burden of NTS cost recovery, enabling the LECs to obtain a consensus.

Like the Bell Atlantic proposal with its five-year phase-out, the Unity 1-A proposal also provides a phase-out of some company costs from the pooling process.[20] However, with the Unity 1-A proposal the phase-out occurs in a four-year period. In its four major components, this agreement:

1. Increases subscriber line end-user charges to first $3 per loop by June 1, 1987, and then to $4 per loop by June 1, 1988.

2. Eliminates mandatory pooling of NTS costs and provides pricing flexibility.

   A four-year period provides a transition for the removal of the large local operating companies from the NTS pooling process. Each year removes one-fourth of each company's net participation in the pool (paying or receiving). In return, the companies receive greater pricing flexibility to counter bypass and other forms of competition. If a company chooses to withdraw from the pool, then it must remove all its study areas.

3. Establishes a voluntary NTS pool.

   NECA administers the pool for the remaining companies, with a nationwide CCL (carrier common line) charge helping cover these costs. Therefore, carriers not in the pool would still contribute through this CCL charge.

4. Changes the Universal Service Fund (USF).

   The agreement divides the high-cost companies into two groups. Those companies with under 200 thousand lines receive increased support from the USF; the remaining high-cost companies receive substantially less from the USF.

Because our particular use of the simulator omits the independents, this paper presents no charts based on the Unity 1-A proposal. However, the FCC data source used for our simulator also contains numbers for the independents; therefore their addition would enable modeling of this proposal -- including the phase-out and removal of the large companies and the changes in the USF.

The simulator is a tool for framing questions about the relative impacts of alternative pooling methods. The following are questions that occurred to various reviewers of this paper. These questions are only illustrative and do not reflect the full range of issues:

Since a pooling mechanism benefits some at the expense of others in the pool, are the right companies targeted for benefits? Who decides this?

What is the impact of distinguishing between originating and terminating SLU minutes of use? Would a lower originating charge prevent bypass? If there is a big difference between interstate originating and interstate terminating minutes,

what is the impact on the relative positions among companies in the interstate pool?

Considering that high-cost companies are concentrated in rural America and receive a large portion of the subsidies, what value (intrinsic or extrinsic) does interaction with rural America provide to the metropolitan areas?

Should the carrier common line pool be viewed in a different light? For example, could subsidy or revenue flows be based on territory served rather than on overall company operations within a state?

What would be the basis, if any, for further deregulation in this area of interstate pooling?

What is the impact of alternative proposals on averaged toll rates? What is the likely impact on state rates as the interstate allocation of costs changes?

What is the role of pooling in reducing the level of risk associated with the local operating company planning process?

Given the shifts that occur during the transitions from one cost recovery method to another, what coalitions, if any, should companies develop?

APPENDIX A

XIII. Background Numbers for Loop Costs and Revenue Recovery Methods

Figure 15 summarizes the application of the simulator to the five revenue recovery methods discussed in Appendices B through G. Figure 16 provides a summary of BOC ranks for local loop costs and for the five revenue recovery methods.

In Figure 15, the numbers indicate the annual impact of each proposal on a per-loop basis. Comparing these amounts with those in column 2 shows how much an average subscriber would gain or lose under each proposal.

State BOCs	1 1980 Ozark Plan: Annual Average Revenue Requirement per Local Loop	Annual Net Interstate Dollars Paid (-) or Received (+) 2 1980 Ozark Plan: Average Interstate Recovery per Local Loop	3 Bell Atlantic Proposal: Average Interstate Recovery per Local Loop	4 $2 End User Charge: Average Interstate Recovery per Local Loop	5 $2 End User Charge with 25% Allocation: Average Interstate Recovery per Local Loop	6 French Proposal: Average Interstate Recovery per Local Loop
AK	no entry	no entry	no entry	no entry	no entry	no entry
AL	$204	$3.33	($1.05)	$2.64	$14.14	$1.29
AR	$215	$14.06	$9.11	$16.41	$15.23	$5.04
AZ	$171	$22.03	$15.89	$30.68	$0.83	$4.03
CA	$148	$8.89	$5.76	$1.55	$3.82	$0.61
CO	$168	$7.87	$1.17	$19.46	($1.75)	$0.70
CT	$117	($14.99)	($6.19)	($6.11)	($12.91)	($2.82)
DC	$74	($28.39)	($6.98)	($15.28)	($26.03)	($8.21)
DE	$141	($10.33)	($7.00)	$2.88	($9.21)	$0.60
FL	$231	$30.92	$25.24	$37.10	$16.98	$6.57
GA	$184	($1.59)	($6.08)	$6.74	$4.10	($0.49)
HI	no entry	no entry	no entry	no entry	no entry	no entry
IA	$141	$2.52	($1.63)	$0.56	($0.82)	$1.38
ID Mtn Bell	$171	$13.53	$8.17	$18.05	$2.94	$3.84
ID Pacif NW	$194	$20.42	$14.27	$29.12	$6.49	$6.00
IL	$109	($8.85)	($4.40)	($9.45)	($9.72)	($2.40)
IN	$132	($9.74)	($4.54)	($9.63)	($4.38)	($2.38)
KS	$161	$1.35	($3.57)	$3.53	$1.82	$0.75
KY Cinn Bell	$204	$2.43	($2.06)	$2.32	$13.85	$1.84
KY S. Cent	$153	($5.87)	($2.89)	($14.50)	$5.66	($0.97)
LA	$209	$5.76	$1.72	$3.23	$16.43	$1.62
MA	$108	($12.14)	($4.80)	($10.61)	($11.05)	($3.02)
MD	$124	($12.51)	($4.58)	($12.17)	($6.46)	($3.01)
ME	$156	$2.20	($2.35)	$2.38	$1.64	$1.27
MI	$145	($1.20)	($3.00)	($9.26)	$3.38	($0.26)
MN	$147	$2.33	($1.71)	($0.19)	$0.85	$0.33
MO	$137	($6.86)	($5.05)	($3.99)	($4.66)	($1.69)
MS	$239	$15.22	$10.40	$16.84	$21.68	$5.43
MT	$160	$17.29	$12.13	$20.69	$0.92	$4.10
NC	$170	($1.20)	($4.54)	($1.04)	$5.26	$0.23
ND	$193	$17.05	$12.40	$17.80	$10.60	$5.55
NE	$154	$4.15	($1.76)	$11.53	($2.89)	$1.55
NH	$167	$1.62	($6.04)	$18.32	($4.72)	$5.26
NJ	$122	($18.06)	($6.59)	($7.01)	($12.97)	($2.74)
NM	$175	$8.92	$3.24	$15.10	$2.98	$2.05
NV	$230	$67.18	$58.08	$91.57	$6.68	$20.89
NY	$141	$2.54	($1.66)	$0.83	($0.97)	$1.40
OH Ohio Bell	$129	($7.31)	($3.70)	($11.62)	($2.71)	($1.92)
OH Cinn Bell	$111	($13.11)	($4.00)	($15.82)	($8.06)	($3.69)
OK	$159	$5.39	$0.38	$7.97	$1.06	$1.49
OR	$164	$9.69	$4.99	$10.67	$3.16	$2.35
PA	$103	($14.50)	($4.25)	($15.93)	($10.84)	($3.44)
RI	$105	($16.49)	($5.52)	($13.12)	($14.08)	($3.98)
SC	$208	$2.32	($2.24)	$2.58	$14.50	$1.47
SD	$190	$23.98	$19.37	$24.54	$9.87	$7.81
TN	$170	($5.37)	($4.70)	($4.39)	$4.61	($1.22)
TX Mtn Bell	$116	($15.20)	($6.15)	($6.51)	($13.03)	($4.68)
TX SW Bell	$177	$5.69	$2.00	$1.36	$9.38	$0.84
UT	$136	($4.77)	($5.05)	($1.95)	($4.91)	($2.17)
VA	$156	($3.19)	($5.13)	$0.06	($0.15)	($0.67)
VT	$192	$17.56	$10.11	$33.18	$2.13	$9.42
WA	$142	$4.75	$0.63	$2.65	($0.59)	$0.64
WI	$117	($7.85)	($3.63)	($12.57)	($5.38)	($2.04)
WV	$205	$0.14	($4.80)	$2.41	$12.81	$1.82
WY	$291	$81.03	$73.12	$99.07	$25.49	$24.74

Figure 15

Summary of Application of Simulator in Dollars:
BOC Cost per Local Loop and Revenue Recovery Methods

State BOCs	1 1980 Ozark Plan: Annual Average Revenue Requirement per Local Loop	Annual Net Interstate Dollars Paid (-) or Received (+) 2 1980 Ozark Plan: Average Interstate Recovery per Local Loop	3 Bell Atlantic Proposal: Average Interstate Recovery per Local Loop	4 $2 End User Charge: Average Interstate Recovery per Local Loop	5 $2 End User Charge with 25% Allocation: Average Interstate Recovery per Local Loop	6 French Proposal: Average Interstate Recovery per Local Loop
AK	-	-	-	-	-	-
AL	10	22	21	24	7	24
AR	5	11	11	14	5	10
AZ	18	5	5	5	30	12
CA	32	15	13	29	19	30
CO	22	16	18	9	35	28
CT	46	49	50	39	49	46
DC	53	53	52	51	53	53
DE	38	44	53	22	45	31
FL	3	3	3	3	3	5
GA	15	34	48	19	18	35
HI	-	-	-	-	-	-
IA	36	24	22	32	33	23
ID Mtn Bell	19	12	12	11	23	13
ID Pacif NW	11	6	6	6	14	6
IL	49	42	36	43	46	44
IN	41	43	37	44	38	43
KS	25	30	31	20	25	27
KY Cinn Bell	9	25	26	28	8	16
KY S. Cent	31	38	29	50	15	37
LA	6	17	17	21	4	18
MA	50	45	42	45	48	48
MD	43	46	39	47	43	47
ME	28	28	28	27	26	25
MI	34	32	30	42	20	34
MN	33	26	24	34	29	32
MO	39	39	44	37	39	39
MS	2	10	9	13	2	8
MT	26	8	8	8	28	11
NC	20	33	38	35	16	33
ND	12	9	7	12	10	7
NE	30	21	25	16	37	19
NH	23	29	47	10	40	9
NJ	44	51	51	41	50	45
NM	17	14	15	15	22	15
NV	4	2	2	2	13	2
NY	37	23	23	31	34	22
OH Ohio Bell	42	40	33	46	36	40
OH Cinn Bell	48	47	34	52	44	50
OK	27	19	20	18	27	20
OR	24	13	14	17	21	14
PA	52	46	35	53	47	49
RI	51	52	46	49	52	51
SC	7	27	27	25	6	21
SD	14	4	4	7	11	4
TN	21	37	40	38	17	38
TX Mtn Bell	47	50	49	40	51	52
TX SW Bell	16	18	16	30	12	26
UT	40	36	43	36	41	42
VA	29	35	45	33	31	36
VT	13	7	10	4	24	3
WA	35	20	19	23	32	29
WI	45	41	32	48	42	41
WV	8	31	41	26	9	17
WY	1	1	1	1	1	1

Figure 16

Summary of Application of Simulator in Ranks:
BOC Cost per Local Loop and Revenue Recovery Methods

APPENDIX B

XIV. Development of Simulator: Ozark Plan Revenue Recovery

This appendix develops the simulator using 1980 FCC data and the Ozark Plan mechanisms. The development consists of two steps: first, an explanation of the basic data [Figure 17] underlying the rest of the model; second, the calculations needed to complete the model [Figure 18].

Using 1980 FCC data, Figure 17 provides the numbers for the closed theoretical system. Note the caveats listed in Section IV, particularly the point limiting the simulator to BOCs.

Column A provides the subscriber line (local loop) revenue requirement for each state BOC. The entries include costs for subscriber line plant including drops and blocks, but excluding customer premises equipment (CPE), inside wiring, and non-traffic sensitive central office equipment. Column B provides the number of local loops for each state BOC.

Columns C, D, and E provide the Ozark formula and its elements, or the mechanism that divides the subscriber line revenue requirement into state and interstate portions. This simulator considers only the interstate formula. The SPF (subscriber plant factor) results from a relationship between a BOC's SLU (subscriber line use) and its CSR (composite station rate) ratio.

State BOCs	A Revenue Requirement Subscriber Line	B Number Local Loops	C 1980 Interstate SPF %	D 1980 Interstate SLU %	E 1980 Interstate CSR Ratio
AK	no entry	no entry	no entry	no entry	no entry
AL	$230,050,988	1,127,256	19.6%	6.0%	1.21
AR	$120,325,609	559,250	25.8%	8.1%	1.17
AZ	$189,470,324	1,104,911	42.8%	11.3%	1.47
CA	$1,425,602,352	9,626,078	23.7%	5.7%	1.65
CO	$213,680,846	1,274,586	38.1%	10.4%	1.40
CT	$172,684,094	1,475,694	31.4%	10.8%	1.03
DC	$49,890,762	675,367	40.6%	12.5%	1.20
DE	$39,064,808	276,325	34.1%	12.8%	0.91
FL	$631,721,264	2,739,338	34.0%	9.0%	1.47
GA	$332,992,144	1,811,211	26.8%	8.0%	1.24
HI	no entry	no entry	no entry	no entry	no entry
IA	$119,077,743	842,052	26.3%	8.3%	1.17
ID Mtn Bell	$44,156,366	258,569	34.2%	10.1%	1.26
ID Pacif NW	$3,836,713	19,753	37.0%	11.0%	1.26
IL	$495,979,900	4,557,757	25.7%	7.9%	1.20
IN	$175,020,402	1,328,456	21.4%	6.8%	1.16
KS	$134,860,914	837,056	26.4%	8.1%	1.21
KY Cinn Bell	$158,461,588	776,017	19.6%	6.4%	1.11
KY S. Cent	$17,274,366	113,194	12.0%	4.1%	1.05
LA	$317,742,016	1,519,012	18.9%	5.6%	1.27
MA	$289,852,712	2,678,865	25.9%	8.3%	1.14
MD	$245,308,382	1,978,863	20.8%	6.8%	1.11
ME	$58,400,108	374,360	25.8%	8.1%	1.16
MI	$501,450,072	3,464,158	16.5%	5.0%	1.23
MN	$208,099,406	1,417,139	24.6%	7.1%	1.30
MO	$228,310,618	1,669,471	25.9%	8.0%	1.19
MS	$176,230,106	736,263	23.2%	7.3%	1.17
MT	$41,072,753	256,335	37.7%	10.6%	1.36
NC	$194,011,368	1,138,557	21.6%	6.8%	1.16
ND	$41,135,675	213,064	29.0%	8.9%	1.21
NE	$59,383,458	386,161	34.8%	10.6%	1.22
NH	$61,199,444	366,292	39.3%	14.6%	0.92
NJ	$427,891,228	3,519,908	30.5%	11.3%	0.92
NM	$73,142,207	418,828	32.3%	9.3%	1.32
NV	$31,425,937	136,830	62.4%	19.0%	1.22
NY	$1,117,490,768	7,903,416	26.6%	8.4%	1.16
OH Ohio Bell	$364,183,504	2,830,630	18.4%	5.7%	1.19
OH Cinn Bell	$60,964,506	550,268	18.4%	5.7%	1.19
OK	$174,085,320	1,094,982	29.7%	8.8%	1.26
OR	$139,097,814	848,911	29.9%	8.6%	1.32
PA	$435,884,500	4,252,177	20.5%	7.0%	1.05
RI	$43,851,843	419,281	26.5%	9.4%	0.98
SC	$160,226,210	771,790	19.5%	6.2%	1.15
SD	$40,838,719	215,200	33.0%	10.2%	1.19
TN	$254,003,174	1,497,280	20.0%	6.2%	1.19
TX Mtn Bell	$18,970,242	163,355	31.2%	9.2%	1.27
TX SW Bell	$844,792,704	4,773,602	20.7%	5.7%	1.40
UT	$71,288,146	525,666	27.6%	7.7%	1.36
VA	$264,483,516	1,699,549	25.5%	7.8%	1.20
VT	$33,577,611	174,820	41.6%	14.6%	1.00
WA	$203,069,434	1,429,591	27.6%	7.7%	1.38
WI	$165,158,858	1,410,520	19.2%	6.0%	1.17
WV	$115,527,238	562,752	20.2%	6.9%	1.04
WY	$53,137,895	182,696	50.6%	15.3%	1.23
Total	$12,069,438,675	80,983,462	25.3%	7.7%	1.22

Boxes indicate nationwide averages calculated from data in Figure 18.

Figure 17

The Simulator: Revenue Requirements,
Number of Local Loops, and Ozark Plan Cost Allocators

State BOCs	F Interstate SLU Minutes of Use	G State Toll SLU Minutes of Use	H Exchange SLU Minutes of Use	I Total SLU Minutes of Use
AK	no entry	no entry	no entry	no entry
AL	1,466,287,056	1,087,483,520	22,169,691,136	24,723,461,712
AR	822,258,952	882,240,232	8,254,921,984	9,959,421,168
AZ	2,013,047,984	763,842,224	15,455,652,480	18,232,542,688
CA	8,949,711,616	23,292,580,352	129,888,664,535	162,130,956,503
CO	2,532,224,960	1,199,868,688	19,979,857,152	23,711,950,800
CT	2,708,023,584	2,433,161,120	19,545,605,376	24,686,790,080
DC	1,398,579,104	0	12,190,194,816	13,588,773,920
DE	573,782,416	111,279,091	4,049,497,152	4,734,558,659
FL	4,614,584,448	2,836,645,120	42,114,445,408	49,565,674,976
GA	3,267,607,264	1,718,526,656	34,395,973,746	39,382,107,666
HI	no entry	no entry	no entry	no entry
IA	1,035,750,176	1,142,437,056	10,690,085,760	12,868,272,992
ID Mtn Bell	411,543,676	364,082,768	3,325,035,456	4,100,661,900
ID Pacif NW	36,044,731	28,748,812	281,273,680	346,067,223
IL	5,952,480,896	2,611,987,456	69,512,100,186	78,076,568,538
IN	1,787,572,288	1,238,074,496	22,872,494,080	25,898,140,864
KS	1,222,804,016	1,191,624,560	11,537,320,576	13,951,749,152
KY Cinn Bell	1,034,808,560	762,537,592	14,689,464,448	16,486,810,600
KY S. Cent	97,102,075	43,461,591	2,179,524,128	2,320,087,794
LA	1,820,102,544	1,862,769,600	29,852,705,536	33,535,577,680
MA	3,816,691,072	3,649,662,432	38,472,644,154	45,938,997,658
MD	2,688,094,912	1,111,241,952	37,117,069,644	40,916,406,508
ME	505,297,720	608,224,080	4,472,698,048	5,586,219,848
MI	3,081,944,576	5,327,288,960	56,350,852,222	64,760,085,758
MN	1,698,690,576	1,128,783,312	21,216,593,664	24,044,067,552
MO	2,503,609,472	1,574,815,168	29,332,289,024	33,410,713,664
MS	1,052,788,784	915,922,048	12,893,987,200	14,862,698,032
MT	392,086,056	443,121,800	2,756,619,968	3,591,827,824
NC	1,534,884,624	1,598,788,320	19,040,552,192	22,174,225,136
ND	294,265,452	282,349,988	2,739,642,848	3,316,258,288
NE	676,243,496	38,633,032	5,704,242,816	6,419,119,344
NH	832,131,464	505,229,600	4,005,944,000	5,343,305,064
NJ	6,884,224,960	9,947,543,040	43,628,713,497	60,460,481,497
NM	705,502,664	410,803,452	6,114,439,808	7,230,745,924
NV	369,537,388	80,449,221	1,631,640,672	2,081,627,281
NY	9,832,597,120	4,536,487,424	106,545,512,862	120,914,597,406
OH Ohio Bell	3,110,785,472	2,783,116,128	49,238,957,741	55,132,859,341
OH Cinn Bell	653,777,224	27,711,908	11,370,809,088	12,052,298,220
OK	1,624,844,896	1,692,021,040	15,335,177,984	18,652,043,920
OR	1,183,539,024	1,141,127,504	11,164,935,552	13,489,602,080
PA	5,356,744,320	4,656,879,488	67,129,614,979	77,143,238,787
RI	687,248,248	290,032,104	5,989,091,968	6,966,372,320
SC	1,044,777,896	767,684,216	14,330,969,856	16,143,431,968
SD	294,956,212	273,968,844	2,400,496,928	2,969,423,984
TN	2,087,173,184	1,315,459,120	29,449,767,424	32,852,399,728
TX Mtn Bell	298,018,388	79,611,039	2,233,166,080	2,610,795,507
TX SW Bell	5,238,760,832	6,964,392,192	77,518,845,666	89,721,998,690
UT	786,880,120	596,152,744	8,575,789,248	9,958,822,112
VA	2,584,649,152	1,581,832,384	28,793,267,200	32,959,748,736
VT	386,585,808	272,716,144	2,028,394,608	2,687,696,560
WA	1,747,228,688	1,719,933,680	18,991,522,560	22,458,684,928
WI	1,517,497,312	1,510,033,456	20,503,772,928	23,531,303,696
WV	824,974,824	770,750,392	10,257,479,424	11,853,204,640
WY	428,663,968	263,155,940	1,942,046,672	2,633,866,580
Total	108,470,014,250	102,437,273,086	1,242,262,056,160	1,453,169,343,496

Figure 17 (continued)

The Simulator: Revenue Requirements,
Number of Local Loops, and Ozark Plan Cost Allocators

The SLU% [Column D] is related to SLU minutes of use [Columns F,G,H, and I]. The SLU measure is the percentage of interstate minutes out of each BOC's total minutes of use. For example, each BOC carries interstate toll calls, state toll calls, and exchange calls. The minutes for each of these calls is totaled, giving columns of SLU minutes of use -- Column F for interstate toll, Column G for state toll, and Column H for exchange. Column I gives the total SLU minutes of use for each BOC. While the SLU% [Column D] is slightly different from the percentages derived by dividing interstate SLU minutes of use [Column F] by total SLU minutes of use [Column I], these differences are insignificant.

In Figure 17, the boxes around the last numbers in the SPF% and SLU% columns indicate two points: first, these percents are nationwide BOC averages and not totals; second, these two numbers were derived from the calculations for Figure 18. With these two exceptions, all other numbers in Figure 17 come directly from the FCC data.

The calculations for Figure 18 complete the simulator. The interstate subscriber line revenue requirement for each BOC [Column J] is the subscriber line revenue requirement [Column A] multiplied by the SPF% [Column C]. The entries in Column J are then totaled to give a total interstate revenue requirement. (Note that at this point the nationwide BOC average SPF has yet to be calculated.)

After the total interstate revenue requirement is determined, it is then possible to derive an average nationwide BOC unit price. This total interstate revenue requirement [Column J] is divided by the total interstate SLU minutes of use [Column F] to give a unit price of $0.02819. (Total interstate SLU minutes of use represents the demand for interstate access, where price x demand = revenues.)

Next a theoretical figure is developed [Column L] for each BOC's interstate revenues based on the unit price [Column K] multiplied by each BOC's interstate SLU minutes of use [Column F]. Within the closed simulator, these revenues are based on a single average price. In reality, while there is a nationwide price schedule, this schedule contains variables, such as distance traveled or direct dial versus operator assistance.

Continuing, subtract [Column J] from [Column L] to show which companies pay and which companies receive revenues from the interstate pool [Column M]. The "+" and "-" symbols in Column N also indicate which states pay or receive from the interstate pool.

State BOCs	J Interstate Subscriber Line Revenue Requirements	K Unit Price	L Unit Price x Interstate SLU Minutes	M Interstate Pool: Annual Net Dollars: Paid (-) or Received (+)	N Symbols: Paid (-) or Received (+)
AK	no entry	no entry	no entry	no entry	no entry
AL	$45,089,994	$0.02819	$41,336,460	$3,753,533	+
AR	$31,044,007	$0.02819	$23,180,505	$7,863,502	+
AZ	$81,093,299	$0.02819	$56,750,332	$24,342,966	+
CA	$337,867,757	$0.02819	$252,303,529	$85,564,229	+
CO	$81,412,402	$0.02819	$71,386,579	$10,025,824	+
CT	$54,222,806	$0.02819	$76,342,561	($22,119,756)	-
DC	$20,255,649	$0.02819	$39,427,689	($19,172,039)	-
DE	$13,321,100	$0.02819	$16,175,642	($2,854,542)	-
FL	$214,785,230	$0.02819	$130,090,889	$84,694,341	+
GA	$89,241,895	$0.02819	$92,117,923	($2,876,028)	-
HI	no entry	no entry	no entry	no entry	no entry
IA	$31,317,446	$0.02819	$29,199,089	$2,118,358	+
ID Mtn Bell	$15,101,477	$0.02819	$11,601,929	$3,499,548	+
ID Pacif NW	$1,419,584	$0.02819	$1,016,146	$403,438	+
IL	$127,466,834	$0.02819	$167,807,858	($40,341,024)	-
IN	$37,454,366	$0.02819	$50,393,892	($12,939,525)	-
KS	$35,603,281	$0.02819	$34,472,370	$1,130,912	+
KY Cinn Bell	$31,058,471	$0.02819	$29,172,543	$1,885,928	+
KY S. Cent	$2,072,924	$0.02819	$2,737,429	($664,505)	-
LA	$60,053,241	$0.02819	$51,310,960	$8,742,281	+
MA	$75,071,852	$0.02819	$107,597,280	($32,525,427)	-
MD	$51,024,143	$0.02819	$75,780,747	($24,756,604)	-
ME	$15,067,228	$0.02819	$14,244,973	$822,255	+
MI	$82,739,262	$0.02819	$86,883,860	($4,144,598)	-
MN	$51,192,454	$0.02819	$47,888,205	$3,304,249	+
MO	$59,132,450	$0.02819	$70,579,872	($11,447,422)	-
MS	$40,885,385	$0.02819	$29,679,428	$11,205,956	+
MT	$15,484,428	$0.02819	$11,053,395	$4,431,033	+
NC	$41,906,455	$0.02819	$43,270,311	($1,363,856)	-
ND	$11,929,346	$0.02819	$8,295,710	$3,633,636	+
NE	$20,665,443	$0.02819	$19,064,147	$1,601,296	+
NH	$24,051,381	$0.02819	$23,458,823	$592,558	+
NJ	$130,506,825	$0.02819	$194,074,885	($63,568,060)	-
NM	$23,624,933	$0.02819	$19,889,000	$3,735,933	+
NV	$19,609,785	$0.02819	$10,417,720	$9,192,065	+
NY	$297,252,544	$0.02819	$277,193,172	$20,059,372	+
OH Ohio Bell	$67,009,765	$0.02819	$87,696,921	($20,687,156)	-
OH Cinn Bell	$11,217,469	$0.02819	$18,430,795	($7,213,326)	-
OK	$51,703,340	$0.02819	$45,806,403	$5,896,937	+
OR	$41,590,246	$0.02819	$33,365,441	$8,224,806	+
PA	$89,356,323	$0.02819	$151,013,301	($61,656,979)	-
RI	$11,620,738	$0.02819	$19,374,385	($7,753,647)	-
SC	$31,244,111	$0.02819	$29,453,591	$1,790,519	+
SD	$13,476,777	$0.02819	$8,315,240	$5,161,538	+
TN	$50,800,635	$0.02819	$58,840,014	($8,039,379)	-
TX Mtn Bell	$5,918,716	$0.02819	$8,401,510	($2,482,794)	-
TX SW Bell	$174,872,090	$0.02819	$147,687,199	$27,184,890	+
UT	$19,675,528	$0.02819	$22,183,132	($2,507,603)	-
VA	$67,443,297	$0.02819	$72,864,482	($5,421,185)	-
VT	$13,968,286	$0.02819	$10,898,336	$3,069,950	+
WA	$56,047,164	$0.02819	$49,256,555	$6,790,609	+
WI	$31,710,501	$0.02819	$42,780,141	($11,069,640)	-
WV	$23,336,502	$0.02819	$23,257,069	$79,433	+
WY	$26,887,775	$0.02819	$12,084,572	$14,803,203	+
Total	$3,057,904,940	$0.02819	$3,057,904,940	$0	

Figure 18

The Simulator: Derivations of Interstate Revenue Requirements, Average Unit Price, Revenues Collected Based on Unit Price, and Dollars Paid or Received in Revenue Sharing

APPENDIX C

XV. Application of the Ozark Plan: Numerical Amounts and Ranks

Figure 19 gives the numerical amounts associated with the cost per local loop, the number of local loops, and the Ozark Plan elements (interstate SLU minutes of use, SLU%, and SPF%).

Figure 19, Column 1 consists of each BOC's subscriber line revenue requirement [Figure 17, Column A] divided by its number of local loops [Figure 17, Column B]. This column points out that the costs for local loops vary state by state. This disparity raises the initial question: Should companies with low local loop costs help pay for companies with high local loop costs?

Figure 19, Column 6 illustrates the average interstate payment per local loop. In the revenue sharing process, those BOCs with a negative amount pay out dollars (indicated by parentheses) and those with a positive amount receive dollars. To derive Column 6, divide each BOC's portion of the revenue sharing process [Figure 18, Column M] by its number of local loops [Figure 17, Column B].

Four columns in Figure 19 provide the variables that determine whether a company pays or receives from the interstate revenue sharing process, indicated by Column 6. These variables are the number of local loops [Column 2], the interstate SLU minutes of use [Column 3], the SLU% [Column 4], and the SPF% [Column 5].

Figure 20 provides the BOC ranks for each column of Figure 19. However, Figure 20 has an additional Column 7 which indicates whether or not a company changes its rank from its local loop cost position [Column 1] to its position in the revenue recovery process [Column 6]. For example, West Virginia has lost the most ground with a downward shift in rank of 23 places, while California has gained the most with an upward shift of 17 places.

State BOCs	1 1980 Annual Average Revenue Requirement per Local Loop	2 Number Local Loops	3 Interstate SLU Minutes of Use	4 1980 Interstate SLU %	5 1980 Interstate SPF %	6 Ozark Plan: Annual Net Interstate Recovery per Local Loop
AK	no entry	no entry	no entry	no entry	no entry	no entry
AL	$204	1,127,256	1,466,287,056	6.0%	19.6%	$3.33
AR	$215	559,250	822,258,952	8.1%	25.8%	$14.06
AZ	$171	1,104,911	2,013,047,984	11.3%	42.8%	$22.03
CA	$148	9,626,078	8,949,711,616	5.7%	23.7%	$8.89
CO	$168	1,274,586	2,532,224,960	10.4%	38.1%	$7.87
CT	$117	1,475,694	2,708,023,584	10.8%	31.4%	($14.99)
DC	$74	675,367	1,398,579,104	12.5%	40.6%	($28.39)
DE	$141	276,325	573,782,416	12.8%	34.1%	($10.33)
FL	$231	2,739,338	4,614,584,448	9.0%	34.0%	$30.92
GA	$184	1,811,211	3,267,607,264	8.0%	26.8%	($1.59)
HI	no entry	no entry	no entry	no entry	no entry	no entry
IA	$141	842,052	1,035,750,176	8.3%	26.3%	$2.52
ID Mtn Bell	$171	258,569	411,543,676	10.1%	34.2%	$13.53
ID Pacif NW	$194	19,753	36,044,731	11.0%	37.0%	$20.42
IL	$109	4,557,757	5,952,480,896	7.9%	25.7%	($8.85)
IN	$132	1,328,456	1,787,572,288	6.8%	21.4%	($9.74)
KS	$161	837,056	1,222,804,016	8.1%	26.4%	$1.35
KY Cinn Bell	$204	776,017	1,034,808,560	6.4%	19.6%	$2.43
KY S. Cent	$153	113,194	97,102,075	4.1%	12.0%	($5.87)
LA	$209	1,519,012	1,820,102,544	5.6%	18.9%	$5.76
MA	$108	2,678,865	3,816,691,072	8.3%	25.9%	($12.14)
MD	$124	1,978,863	2,688,094,912	6.8%	20.8%	($12.51)
ME	$156	374,360	505,297,720	8.1%	25.8%	$2.20
MI	$145	3,464,158	3,081,944,576	5.0%	16.5%	($1.20)
MN	$147	1,417,139	1,698,690,576	7.1%	24.6%	$2.33
MO	$137	1,669,471	2,503,609,472	8.0%	25.9%	($6.86)
MS	$239	736,263	1,052,788,784	7.3%	23.2%	$15.22
MT	$160	256,335	392,086,056	10.6%	37.7%	$17.29
NC	$170	1,138,557	1,534,884,624	6.8%	21.6%	($1.20)
ND	$193	213,064	294,265,452	8.9%	29.0%	$17.05
NE	$154	386,161	676,243,496	10.6%	34.8%	$4.15
NH	$167	366,292	832,131,464	14.6%	39.3%	$1.62
NJ	$122	3,519,908	6,884,224,960	11.3%	30.5%	($18.06)
NM	$175	418,828	705,502,664	9.3%	32.3%	$8.92
NV	$230	136,830	369,537,388	19.0%	62.4%	$67.18
NY	$141	7,903,416	9,832,597,120	8.4%	26.6%	$2.54
OH Ohio Bell	$129	2,830,630	3,110,785,472	5.7%	18.4%	($7.31)
OH Cinn Bell	$111	550,268	653,777,224	5.7%	18.4%	($13.11)
OK	$159	1,094,982	1,624,844,896	8.8%	29.7%	$5.39
OR	$164	848,911	1,183,539,024	8.6%	29.9%	$9.69
PA	$103	4,252,177	5,356,744,320	7.0%	20.5%	($14.50)
RI	$105	419,281	687,248,248	9.4%	26.5%	($18.49)
SC	$208	771,790	1,044,777,896	6.2%	19.5%	$2.32
SD	$190	215,200	294,958,212	10.2%	33.0%	$23.98
TN	$170	1,497,280	2,087,173,184	6.2%	20.0%	($5.37)
TX Mtn Bell	$116	163,355	298,018,388	9.2%	31.2%	($15.20)
TX SW Bell	$177	4,773,602	5,238,760,832	5.7%	20.7%	$5.69
UT	$136	525,666	786,880,120	7.7%	27.6%	($4.77)
VA	$156	1,699,549	2,584,649,152	7.8%	25.5%	($3.19)
VT	$192	174,820	386,585,808	14.6%	41.6%	$17.56
WA	$142	1,429,591	1,747,228,688	7.7%	27.6%	$4.75
WI	$117	1,410,520	1,517,497,312	6.0%	19.2%	($7.85)
WV	$205	562,752	824,974,824	6.9%	20.2%	$0.14
WY	$291	182,696	428,663,968	15.3%	50.6%	$81.03

Figure 19

Number of Local Loops, Costs, Ozark Plan Variables, and Ozark Plan Revenue Recovery

State BOCs	1 1980 Annual Average Revenue Requirement per Local Loop	2 Number Local Loops	3 Interstate SLU Minutes of Use	4 1980 Interstate SLU %	5 1980 Interstate SPF %	6 Ozark Plan: Annual Net Interstate Recovery per Local Loop
	RANK	RANK	RANK	RANK	RANK	RANK
AK	-	-	-	-	-	-
AL	10	24	26	45	45	22
AR	5	35	36	27	31	11
AZ	18	25	18	8	3	5
CA	32	1	2	48	36	15
CO	22	22	15	13	7	16
CT	46	17	12	10	16	49
DC	53	33	27	6	5	53
DE	38	43	42	5	12	44
FL	3	9	7	19	13	3
GA	15	12	9	30	24	34
HI	-	-	-	-	-	-
IA	36	28	32	25	28	24
ID Mtn Bell	19	44	45	15	11	12
ID Pacif NW	11	53	53	9	9	6
IL	49	4	4	31	33	42
IN	41	21	20	40	39	43
KS	25	29	28	26	27	30
KY Cinn Bell	9	30	33	42	46	25
KY S. Cent	31	52	52	53	53	38
LA	6	15	19	51	49	17
MA	50	10	8	24	30	45
MD	43	11	13	39	40	46
ME	28	41	43	28	32	28
MI	34	7	11	52	52	32
MN	33	19	22	36	35	26
MO	39	14	16	29	29	39
MS	2	32	30	35	37	10
MT	26	45	46	12	8	8
NC	20	23	24	41	38	33
ND	12	47	51	20	21	9
NE	30	40	40	11	10	21
NH	23	42	34	4	6	29
NJ	44	6	3	7	18	51
NM	17	39	38	17	15	14
NV	4	51	48	1	1	2
NY	37	2	1	23	25	23
OH Ohio Bell	42	8	10	47	51	40
OH Cinn Bell	48	36	41	50	50	47
OK	27	26	23	21	20	19
OR	24	27	29	22	19	13
PA	52	5	5	37	42	48
RI	51	38	39	16	26	52
SC	7	31	31	44	47	27
SD	14	46	50	14	14	4
TN	21	16	17	43	44	37
TX Mtn Bell	47	50	49	18	17	50
TX SW Bell	16	3	6	49	41	18
UT	40	37	37	34	22	36
VA	29	13	14	32	34	35
VT	13	49	47	3	4	7
WA	35	18	21	33	23	20
WI	45	20	25	46	48	41
WV	8	34	35	38	43	31
WY	1	48	44	2	2	1

Figure 20

BOC Ranks Associated with Number of Local Loops, Costs, Ozark Plan Variables, and Ozark Plan Revenue Recovery

APPENDIX D

XVI. Application of the Simulator: Bell Atlantic Proposal

Figure 21 applies the mechanism of the Bell Atlantic proposal to the simulator developed in Appendix B, Figures 17 and 18. In our simulation, the cap is arbitrarily set at the simulator's average unit price. In reality, the cap and surcharge rate are different from those in the simulator. Furthermore, the simulator ignores the effects of the High Cost Fund, the transition from SPF% to 25% cost allocation, and changes in the cap slated for 1987 and 1988.

In Figure 21, Column O is the average unit price per minute for each BOC. Each entry is a BOC's interstate revenue requirement [Column J, Figure 18] divided by its interstate SLU minutes of use [Column F, Figure 17]. If a BOC's entry in Column O is greater than the simulator's average unit price of $0.02819 [Column K, Figure 18], then the entry in Column P is the difference between the Column O entry and $0.02819. If a BOC's entry in Column O is less than or equal to zero, then the entry in Column P is equal to zero.

Column Q develops the size of the surcharge (or "excess cost") pool. The price above the cap multiplied by the interstate SLU minutes of use [Column F, Figure 17] determines the size of the surcharge pool. To develop the surcharge, divide the total surcharge pool of Column Q by the total interstate SLU minutes of use [Column F, Figure 17]. Thus, the average surcharge unit price is equal to $0.00337.

Next, Column R calculates the new prices. If a BOC's prices fell above the cap (the entry in Column P is greater than zero), then its entry is the cap (the average unit price) plus the surcharge. Otherwise, the BOC's entry is its own unit price in Column O plus the surcharge.

Column S produces the revenues for each BOC under the simulation of the Bell Atlantic proposal by multiplying the final unit price [Column R] by the interstate SLU minutes of use [Column F, Figure 17].

The final step is to calculate the dollars paid or received in the revenue sharing process. To derive Column T, subtract each company's simulated Bell Atlantic revenues [Column S] from its interstate subscriber line revenue requirements [Column J, Figure 18].

State BOCs	O For Each BOC: Average Unit Price (AUP)	P If Unit Price is Greater than AUP, Then Difference, Otherwise Zero	Q Price Above AUP (or Zero) x Interstate SLU Minutes of Use	R Final Price: If Above AUP, Then AUP + Surcharge, Otherwise BOC's Unit Price + Surcharge	S Final Price x Interstate SLU Minutes of Use	T Bell Atlantic Proposal: Interstate Pool: Annual Net Dollars Paid (-) or Received (+)
AK	no entry	no entry	no entry	no entry	no entry	no entry
AL	$0.03075114	0.00255989	$3,753,533	$0.03156181	$46,278,674	($1,188,681)
AR	$0.03775454	0.00956329	$7,863,502	$0.03156181	$25,951,981	$5,092,026
AZ	$0.04028384	0.01209259	$24,342,966	$0.03156181	$63,535,439	$17,557,860
CA	$0.03775180	0.00956056	$85,564,229	$0.03156181	$282,469,102	$55,398,655
CO	$0.03215054	0.00395929	$10,025,824	$0.03156181	$79,921,604	$1,490,798
CT	$0.02002302	0.00000000	$0	$0.02339358	$63,350,372	($9,127,566)
DC	$0.01448302	0.00000000	$0	$0.01785358	$24,969,649	($4,714,000)
DE	$0.02321629	0.00000000	$0	$0.02658685	$15,255,070	($1,933,970)
FL	$0.04654487	0.01835362	$84,694,341	$0.03156181	$145,644,640	$69,140,590
GA	$0.02731106	0.00000000	$0	$0.03068165	$100,255,573	($11,013,679)
HI	no entry	no entry	no entry	no entry	no entry	no entry
IA	$0.03023649	0.00204524	$2,118,358	$0.03156181	$32,690,151	($1,372,704)
ID Mtn Bell	$0.03669471	0.00850347	$3,499,548	$0.03156181	$12,989,064	$2,112,414
ID Pacif NW	$0.03938395	0.01119270	$403,438	$0.03156181	$1,137,637	$281,947
IL	$0.02141407	0.00000000	$0	$0.02478463	$147,530,051	($20,063,216)
IN	$0.02095264	0.00000000	$0	$0.02432321	$43,479,492	($6,025,126)
KS	$0.02911610	0.00092485	$1,130,912	$0.03156181	$38,593,909	($2,990,627)
KY Cinn Bell	$0.03001374	0.00182249	$1,885,928	$0.03156181	$32,660,432	($1,601,960)
KY S. Cent	$0.02134788	0.00000000	$0	$0.02471845	$2,400,213	($327,289)
LA	$0.03299443	0.00480318	$8,742,281	$0.03156181	$57,445,732	$2,607,509
MA	$0.01966936	0.00000000	$0	$0.02303992	$87,936,253	($12,864,401)
MD	$0.01898153	0.00000000	$0	$0.02235209	$60,084,539	($9,060,395)
ME	$0.02981852	0.00162727	$822,255	$0.03156181	$15,948,111	($880,883)
MI	$0.02684645	0.00000000	$0	$0.03021701	$93,127,153	($10,387,891)
MN	$0.03013642	0.00194517	$3,304,249	$0.03156181	$53,613,750	($2,421,296)
MO	$0.02361888	0.00000000	$0	$0.02698944	$67,571,025	($8,438,575)
MS	$0.03883532	0.01064407	$11,205,956	$0.03156181	$33,227,920	$7,657,464
MT	$0.03949242	0.01130117	$4,431,033	$0.03156181	$12,374,946	$3,109,482
NC	$0.02730267	0.00000000	$0	$0.03067324	$47,079,882	($5,173,426)
ND	$0.04053940	0.01234816	$3,633,636	$0.03156181	$9,287,550	$2,641,795
NE	$0.03055918	0.00236793	$1,601,296	$0.03156181	$21,343,469	($678,026)
NH	$0.02890334	0.00071210	$592,558	$0.03156181	$26,263,576	($2,212,194)
NJ	$0.01895737	0.00000000	$0	$0.02232794	$153,710,544	($23,203,719)
NM	$0.03348667	0.00529542	$3,735,933	$0.03156181	$22,266,941	$1,357,991
NV	$0.05306577	0.02487452	$9,192,065	$0.03156181	$11,663,269	$7,946,516
NY	$0.03023134	0.00204009	$20,059,372	$0.03156181	$310,334,567	($13,082,023)
OH Ohio Bell	$0.02154111	0.00000000	$0	$0.02491167	$77,494,865	($10,485,101)
OH Cinn Bell	$0.01715794	0.00000000	$0	$0.02052850	$13,421,067	($2,203,598)
OK	$0.03182048	0.00362923	$5,896,937	$0.03156181	$51,283,047	$420,293
OR	$0.03514058	0.00694933	$8,224,806	$0.03156181	$37,354,634	$4,235,612
PA	$0.01668109	0.00000000	$0	$0.02005165	$107,411,571	($18,055,248)
RI	$0.01690908	0.00000000	$0	$0.02027965	$13,937,152	($2,316,414)
SC	$0.02990503	0.00171378	$1,790,519	$0.03156181	$32,975,082	($1,730,971)
SD	$0.04569046	0.01749922	$5,161,538	$0.03156181	$9,309,415	$4,167,362
TN	$0.02433944	0.00000000	$0	$0.02771001	$57,835,585	($7,034,950)
TX Mtn Bell	$0.01986024	0.00000000	$0	$0.02323080	$6,923,205	($1,004,490)
TX SW Bell	$0.03338043	0.00518918	$27,184,890	$0.03156181	$165,344,777	$9,527,313
UT	$0.02500448	0.00000000	$0	$0.02837504	$22,327,758	($2,652,230)
VA	$0.02609379	0.00000000	$0	$0.02946436	$76,155,021	($8,711,725)
VT	$0.03613243	0.00794119	$3,069,950	$0.03156181	$12,201,348	$1,766,938
WA	$0.03207775	0.00388650	$6,790,609	$0.03156181	$55,145,701	$901,463
WI	$0.02089658	0.00000000	$0	$0.02426714	$36,825,322	($5,114,821)
WV	$0.02828753	0.00009629	$79,433	$0.03156181	$26,037,699	($2,701,197)
WY	$0.06272460	0.03453335	$14,803,203	$0.03156181	$13,529,411	$13,358,364
Simulator's Average Unit Price	$0.02819125		$365,605,097 $0.00337056	Total Surcharge Pool Average Surcharge Unit	$3,057,904,940	$0

Figure 21

Bell Atlantic Proposal:
Application of the Simulator

APPENDIX E

XVII. Application of the Simulator: $2 End-User Charge

Figure 22 presents the application of the simulator to the $2 end-user charge. As with the Bell Atlantic proposal, Figures 17 and 18 provide the basis for the simulation.

Since the $2 end-user charge is a flat, monthly, per-loop rate, Column U multiplies each BOC's number of local loops times the yearly payment of $24 ($2 per month). Breakdowns for the local loop numbers by residential and single line business, by multi-line business, and by Centrex were unavailable. In reality, both multi-line business and Centrex loops recovered end-user charges of up to $6 per loop.

Column V calculates the new interstate subscriber line revenue requirements by subtracting the end-user payments [Column U] from the simulator's interstate subscriber line revenue requirements [Column J, Figure 18].

The next step develops a new average unit price [Column W] by dividing the total of Column V by the total interstate SLU minutes of use [Column F, Figure 17].

Column X develops the interstate revenue pool based on the simulation of the $2 end-user charge: for each company, the revenues equal the new average unit price [Column W] multiplied by the company's interstate SLU minutes of use [Column F, Figure 17].

Column Y presents each company's contribution or receipt from the revenue sharing process. To derive Column Y, subtract each company's simulated $2 end-user interstate revenues [Column X] from its interstate subscriber line revenue requirements [Column J, Figure 18].

State BOCs	U Number of Local Loops x $2/month x 12 months	V End User Interstate Subscriber Line Revenue Requirements	W Unit Price	X Unit Price x Interstate SLU Minutes	Y $2 End User Charge: Interstate Pool: Annual Net Dollars Paid (-) or Received (+)
AK	no entry	no entry	no entry	no entry	no entry
AL	$27,054,144	$18,035,850	$0.01027	$15,063,024	$2,972,826
AR	$13,422,000	$17,622,007	$0.01027	$8,446,986	$9,175,021
AZ	$26,517,864	$54,575,435	$0.01027	$20,679,845	$33,895,590
CA	$231,025,872	$106,841,885	$0.01027	$91,939,512	$14,902,373
CO	$30,590,064	$50,822,338	$0.01027	$26,013,299	$24,809,039
CT	$35,416,656	$18,806,150	$0.01027	$27,819,262	($9,013,112)
DC	$16,208,808	$4,046,841	$0.01027	$14,367,466	($10,320,625)
DE	$6,631,800	$6,689,300	$0.01027	$5,894,411	$794,889
FL	$65,744,112	$149,041,118	$0.01027	$47,405,175	$101,635,943
GA	$43,469,064	$45,772,831	$0.01027	$33,567,810	$12,205,021
HI	no entry	no entry	no entry	no entry	no entry
IA	$20,209,248	$11,108,198	$0.01027	$10,640,160	$468,038
ID Mtn Bell	$6,205,656	$8,895,821	$0.01027	$4,227,748	$4,668,073
ID Pacif NW	$474,072	$945,512	$0.01027	$370,284	$575,228
IL	$109,386,168	$18,080,666	$0.01027	$61,149,254	($43,068,588)
IN	$31,882,944	$5,571,422	$0.01027	$18,363,555	($12,792,133)
KS	$20,089,344	$15,513,937	$0.01027	$12,561,746	$2,952,191
KY Cinn Bell	$18,624,408	$12,434,063	$0.01027	$10,630,487	$1,803,576
KY S. Cent	$2,716,656	($643,732)	$0.01027	$997,520	($1,641,252)
LA	$36,456,288	$23,596,953	$0.01027	$18,697,735	$4,899,218
MA	$64,292,760	$10,779,092	$0.01027	$39,208,494	($28,429,402)
MD	$47,492,712	$3,531,431	$0.01027	$27,614,536	($24,083,105)
ME	$8,984,640	$6,082,588	$0.01027	$5,190,874	$891,714
MI	$83,139,792	($400,530)	$0.01027	$31,660,515	($32,061,045)
MN	$34,011,336	$17,181,118	$0.01027	$17,450,482	($269,364)
MO	$40,067,304	$19,065,146	$0.01027	$25,719,335	($6,654,189)
MS	$17,670,312	$23,215,073	$0.01027	$10,815,196	$12,399,876
MT	$6,152,040	$9,332,388	$0.01027	$4,027,862	$5,304,526
NC	$27,325,368	$14,581,087	$0.01027	$15,767,720	($1,186,632)
ND	$5,113,536	$6,815,810	$0.01027	$3,022,960	$3,792,850
NE	$9,267,864	$11,397,579	$0.01027	$6,946,983	$4,450,596
NH	$8,791,008	$15,260,373	$0.01027	$8,548,405	$6,711,968
NJ	$84,477,792	$46,029,033	$0.01027	$70,720,970	($24,691,937)
NM	$10,051,872	$13,573,061	$0.01027	$7,247,560	$6,325,501
NV	$3,283,920	$16,325,865	$0.01027	$3,796,221	$12,529,643
NY	$189,681,984	$107,570,560	$0.01027	$101,009,309	$6,561,251
OH Ohio Bell	$67,935,120	($925,355)	$0.01027	$31,956,795	($32,882,150)
OH Cinn Bell	$13,206,432	($1,988,963)	$0.01027	$6,716,190	($8,705,152)
OK	$26,279,568	$25,423,772	$0.01027	$16,691,873	$8,731,899
OR	$20,373,864	$21,216,382	$0.01027	$12,158,381	$9,058,002
PA	$102,052,248	($12,695,926)	$0.01027	$55,029,311	($67,725,236)
RI	$10,062,744	$1,557,994	$0.01027	$7,060,034	($5,502,040)
SC	$18,522,960	$12,721,151	$0.01027	$10,732,901	$1,988,250
SD	$5,164,800	$8,311,977	$0.01027	$3,030,077	$5,281,900
TN	$35,934,720	$14,865,915	$0.01027	$21,441,326	($6,575,411)
TX Mtn Bell	$3,920,520	$1,998,196	$0.01027	$3,061,514	($1,063,318)
TX SW Bell	$114,566,448	$60,305,642	$0.01027	$53,817,278	$6,488,364
UT	$12,615,984	$7,059,544	$0.01027	$8,083,543	($1,023,998)
VA	$40,789,176	$26,654,121	$0.01027	$26,551,848	$102,273
VT	$4,195,680	$9,772,606	$0.01027	$3,971,358	$5,801,248
WA	$34,310,184	$21,736,980	$0.01027	$17,949,109	$3,787,870
WI	$33,852,480	($2,141,979)	$0.01027	$15,589,102	($17,731,081)
WV	$13,506,048	$9,830,454	$0.01027	$8,474,886	$1,355,568
WY	$4,384,704	$22,503,071	$0.01027	$4,403,623	$18,099,448
Total		$1,114,301,852	$0.01027	$1,114,301,852	$0

Figure 22

$2 End-User Charge:
Application of the Simulator

APPENDIX F

XVIII. Application of the Simulator: $2 End-User Charge Combined with 25% Cost Allocation

Given the above simulation of the $2 end-user charge, it is easy to calculate the replacement of a SPF% interstate cost allocation with a 25% cost allocation.

Column Z in Figure 23 replaces the SPF% column of the simulator [Column C, Figure 17]. The end-user interstate subscriber line revenue requirements [Column AB] are now the result of interstate revenue requirments based on a 25% cost allocation minus the $2 monthly charge per loop.

The development of the dollars paid or received in the revenue sharing process [Column AE] now follows the same steps as in the development of the $2 end-user charge in Figure 22.

State BOCs	Z 25% Interstate Cost Allocation	AA Local Loops x $2/month x 12 months	AB End User Interstate Subscriber Line Revenue Requirements	AC Unit Price	AD Unit Price x Interstate SLU Minutes	AE $2 End User + 25% Alloc. Interstate Pool: Annual Net Dollars Paid (-) or Received (+)
AK	no entry	no entry	no entry	no entry	no entry	no entry
AL	25.0%	$27,054,144	$30,458,603	$0.00990	$14,514,937	$15,943,666
AR	25.0%	$13,422,000	$16,659,402	$0.00990	$8,139,632	$8,519,771
AZ	25.0%	$26,517,864	$20,849,717	$0.00990	$19,927,383	$922,334
CA	25.0%	$231,025,872	$125,374,716	$0.00990	$88,594,178	$36,780,538
CO	25.0%	$30,590,064	$22,830,148	$0.00990	$25,066,773	($2,236,625)
CT	25.0%	$35,416,656	$7,754,368	$0.00990	$26,807,023	($19,052,655)
DC	25.0%	$16,208,808	($3,736,118)	$0.00990	$13,844,688	($17,580,806)
DE	25.0%	$6,631,800	$3,134,402	$0.00990	$5,679,935	($2,545,533)
FL	25.0%	$65,744,112	$92,186,204	$0.00990	$45,680,278	$46,505,926
GA	25.0%	$43,469,064	$39,778,972	$0.00990	$32,346,403	$7,432,569
HI	no entry	no entry	no entry	no entry	no entry	no entry
IA	25.0%	$20,209,248	$9,560,188	$0.00990	$10,253,005	($692,817)
ID Mtn Bell	25.0%	$6,205,656	$4,833,436	$0.00990	$4,073,916	$759,519
ID Pacif NW	25.0%	$474,072	$485,106	$0.00990	$356,811	$128,296
IL	25.0%	$109,386,168	$14,608,807	$0.00990	$58,924,262	($44,315,455)
IN	25.0%	$31,882,944	$11,872,157	$0.00990	$17,695,374	($5,823,218)
KS	25.0%	$20,089,344	$13,625,885	$0.00990	$12,104,671	$1,521,213
KY Cinn Bell	25.0%	$18,624,408	$20,990,969	$0.00990	$10,243,684	$10,747,305
KY S. Cent	25.0%	$2,716,656	$1,601,936	$0.00990	$961,224	$640,711
LA	25.0%	$36,456,288	$42,979,216	$0.00990	$18,017,395	$24,961,821
MA	25.0%	$64,292,760	$8,170,418	$0.00990	$37,781,844	($29,611,426)
MD	25.0%	$47,492,712	$13,834,384	$0.00990	$26,609,747	($12,775,363)
ME	25.0%	$8,984,640	$5,615,367	$0.00990	$5,001,998	$613,389
MI	25.0%	$83,139,792	$42,222,726	$0.00990	$30,508,508	$11,714,218
MN	25.0%	$34,011,336	$18,013,516	$0.00990	$16,815,525	$1,197,991
MO	25.0%	$40,067,304	$17,010,351	$0.00990	$24,783,505	($7,773,155)
MS	25.0%	$17,670,312	$26,387,215	$0.00990	$10,421,672	$15,965,543
MT	25.0%	$6,152,040	$4,116,148	$0.00990	$3,881,303	$234,845
NC	25.0%	$27,325,368	$21,177,474	$0.00990	$15,193,991	$5,983,483
ND	25.0%	$5,113,536	$5,170,383	$0.00990	$2,912,966	$2,257,417
NE	25.0%	$9,267,864	$5,578,001	$0.00990	$6,694,209	($1,116,208)
NH	25.0%	$8,791,008	$6,508,853	$0.00990	$8,237,361	($1,728,508)
NJ	25.0%	$84,477,792	$22,495,015	$0.00990	$68,147,699	($45,652,684)
NM	25.0%	$10,051,872	$8,233,680	$0.00990	$6,983,848	$1,249,831
NV	25.0%	$3,283,920	$4,572,564	$0.00990	$3,658,091	$914,473
NY	25.0%	$189,681,984	$89,690,708	$0.00990	$97,333,958	($7,643,250)
OH Ohio Bell	25.0%	$67,935,120	$23,110,756	$0.00990	$30,794,007	($7,683,251)
OH Cinn Bell	25.0%	$13,206,432	$2,034,695	$0.00990	$6,471,813	($4,437,118)
OK	25.0%	$26,279,568	$17,241,762	$0.00990	$16,084,518	$1,157,244
OR	25.0%	$20,373,864	$14,400,590	$0.00990	$11,715,983	$2,684,607
PA	25.0%	$102,052,248	$6,918,877	$0.00990	$53,027,000	($46,108,123)
RI	25.0%	$10,062,744	$900,217	$0.00990	$6,803,146	($5,902,929)
SC	25.0%	$18,522,960	$21,533,593	$0.00990	$10,342,371	$11,191,221
SD	25.0%	$5,164,800	$5,044,880	$0.00990	$2,919,824	$2,125,056
TN	25.0%	$35,934,720	$27,566,074	$0.00990	$20,661,157	$6,904,917
TX Mtn Bell	25.0%	$3,920,520	$822,041	$0.00990	$2,950,117	($2,128,076)
TX SW Bell	25.0%	$114,566,448	$96,631,728	$0.00990	$51,859,069	$44,772,659
UT	25.0%	$12,615,984	$5,206,053	$0.00990	$7,789,413	($2,583,360)
VA	25.0%	$40,789,176	$25,331,703	$0.00990	$25,585,726	($254,023)
VT	25.0%	$4,195,680	$4,198,723	$0.00990	$3,826,855	$371,867
WA	25.0%	$34,310,184	$16,457,175	$0.00990	$17,296,009	($838,834)
WI	25.0%	$33,852,480	$7,437,235	$0.00990	$15,021,873	($7,584,638)
WV	25.0%	$13,506,048	$15,375,762	$0.00990	$8,166,516	$7,209,245
WY	25.0%	$4,384,704	$8,899,770	$0.00990	$4,243,392	$4,656,378
Total			$1,073,756,581	$0.00990	$1,073,756,581	$0

Figure 23

$2 End-User Charge Combined with 25% Cost Allocation:
Application of the Simulator

APPENDIX G

XIX. Application of the Simulator: French Proposal

Figure 24 applies the simulator to the French proposal. Under this plan, the end user picks up the difference between the SLU% and SPF% interstate cost allocations.

To develop the SLU% allocation [Column AF], multiply the subscriber line revenue requirement [Column A, Figure 17] by the interstate SLU% [Column D, Figure 17]. Similarly, the SPF% allocation [Column AG] is the subscriber line revenue requirement [Column A, Figure 17] multiplied by a 25% interstate cost allocation [Column Z, Figure 23].

The end user pays the difference between SPF and SLU revenue requirements [Column AH]. Column AI shows the average end-user charge per loop. The remaining interstate subscriber line revenue requirements [Column AF] now determine the interstate subscriber line revenue requirements.

Column AJ provides a check to see if the simulation of the French proposal exceeds a $6 monthly, per-loop end-user charge [Column AH minus the product of $72 times the number of local loops, Column B, Figure 17]. Because all the results are negative, the simulation falls below a $6 end-user charge, which if instituted would substantially eliminate the need for revenue sharing.*

The application of the simulator then follows the pattern discussed in the above simulations: calculations of the average unit price of $0.00842 [Column AK], the interstate revenues [Column AL], and the dollars paid or received in the revenue sharing process [Column AM].

*Assuming the Universal Service Fund assists those companies with extremely high costs.

State BOCs	AF Subscriber Line Revenue Requirement x SLU %	AG Subscriber Line Revenue Requirement x 25% Interstate Cost Allocation	AH Total End User Interstate Recovery	AI Average End User Interstate Recovery per Loop	AJ End User Recovery Less End User Charge	AK Unit Price	AL Unit Price x Interstate SLU Minutes	AM French Proposal: Interstate Pool: Annual Net Dollars Paid (-) or Received (+)
AK	no entry	no entry	no entry	no entry	no entry	no entry	no entry	no entry
AL	$13,803,059	$57,512,747	$43,709,688	$38.78	($37,452,744)	$0.00842	$12,351,045	$1,452,014
AR	$9,746,374	$30,081,402	$20,335,028	$36.36	($19,930,972)	$0.00842	$6,926,173	$2,820,201
AZ	$21,410,147	$47,367,581	$25,957,434	$23.49	($53,596,158)	$0.00842	$16,956,603	$4,453,544
CA	$81,259,334	$356,400,588	$275,141,254	$28.58	($417,936,362)	$0.00842	$75,386,530	$5,872,804
CO	$22,222,808	$53,420,212	$31,197,404	$24.48	($60,572,788)	$0.00842	$21,329,811	$892,997
CT	$18,649,882	$43,171,024	$24,521,141	$16.62	($81,728,827)	$0.00842	$22,810,624	($4,160,741)
DC	$6,236,345	$12,472,691	$6,236,345	$9.23	($42,390,079)	$0.00842	$11,780,718	($5,544,372)
DE	$5,000,295	$9,766,202	$4,765,907	$17.25	($15,129,493)	$0.00842	$4,833,169	$167,127
FL	$56,854,914	$157,930,316	$101,075,402	$36.90	($96,156,934)	$0.00842	$38,870,248	$17,984,666
GA	$26,639,372	$83,248,036	$56,608,664	$31.25	($73,798,528)	$0.00842	$27,524,191	($884,820)
HI	no entry	no entry	no entry	no entry	no entry	no entry	no entry	no entry
IA	$9,883,453	$29,769,436	$19,885,983	$23.62	($40,741,761)	$0.00842	$8,724,484	$1,158,969
ID Mtn Bell	$4,459,793	$11,039,092	$6,579,299	$25.45	($12,037,669)	$0.00842	$3,466,575	$993,218
ID Pacif NW	$422,038	$959,178	$537,140	$27.19	($885,076)	$0.00842	$303,617	$118,421
IL	$39,182,412	$123,994,975	$84,812,563	$18.61	($243,345,941)	$0.00842	$50,139,815	($10,957,403)
IN	$11,901,387	$43,755,101	$31,853,713	$23.98	($63,795,119)	$0.00842	$15,057,342	($3,155,955)
KS	$10,923,734	$33,715,229	$22,791,494	$27.23	($37,476,538)	$0.00842	$10,300,103	$623,631
KY Cinn Bell	$10,141,542	$39,615,397	$29,473,855	$37.98	($26,399,369)	$0.00842	$8,716,552	$1,424,990
KY S. Cent	$708,249	$4,318,592	$3,610,342	$31.90	($4,539,626)	$0.00842	$817,925	($109,676)
LA	$17,793,553	$79,435,504	$61,641,951	$40.58	($47,726,913)	$0.00842	$15,331,356	$2,462,197
MA	$24,057,775	$72,463,178	$48,405,403	$18.07	($144,472,877)	$0.00842	$32,149,315	($8,091,540)
MD	$16,680,970	$61,327,096	$44,646,126	$22.56	($97,832,010)	$0.00842	$22,642,757	($5,961,787)
ME	$4,730,409	$14,600,027	$9,869,618	$26.36	($17,084,302)	$0.00842	$4,256,298	$474,110
MI	$25,072,504	$125,362,518	$100,290,014	$28.95	($149,129,362)	$0.00842	$25,960,290	($887,786)
MN	$14,775,058	$52,024,852	$37,249,794	$26.29	($64,784,214)	$0.00842	$14,308,681	$466,397
MO	$18,264,849	$57,077,655	$38,812,805	$23.25	($81,389,107)	$0.00842	$21,088,772	($2,823,923)
MS	$12,864,798	$44,057,527	$31,192,729	$42.37	($21,818,207)	$0.00842	$8,868,006	$3,996,792
MT	$4,353,712	$10,268,188	$5,914,476	$23.07	($12,541,644)	$0.00842	$3,302,677	$1,051,035
NC	$13,192,773	$48,502,842	$35,310,069	$31.01	($46,666,035)	$0.00842	$12,928,866	$263,907
ND	$3,661,075	$10,283,919	$6,622,844	$31.08	($8,717,764)	$0.00842	$2,478,700	$1,182,375
NE	$6,294,647	$14,845,865	$8,551,218	$22.14	($19,252,374)	$0.00842	$5,696,234	$598,413
NH	$8,935,119	$15,299,861	$6,364,742	$17.38	($20,008,282)	$0.00842	$7,009,332	$1,925,786
NJ	$48,351,709	$106,972,807	$58,621,098	$16.65	($194,812,278)	$0.00842	$57,988,219	($9,636,510)
NM	$6,802,225	$18,285,552	$11,483,326	$27.42	($18,672,290)	$0.00842	$5,942,694	$859,531
NV	$5,970,928	$7,856,484	$1,885,556	$13.78	($7,966,204)	$0.00842	$3,112,742	$2,858,186
NY	$93,869,225	$279,372,692	$185,503,467	$23.47	($383,542,485)	$0.00842	$82,823,382	$11,045,843
OH Ohio Bell	$20,758,460	$91,045,876	$70,287,416	$24.83	($133,517,944)	$0.00842	$26,203,227	($5,444,767)
OH Cinn Bell	$3,474,977	$15,241,127	$11,766,150	$21.38	($27,853,146)	$0.00842	$5,506,993	($2,032,016)
OK	$15,319,508	$43,521,330	$28,201,822	$25.76	($50,636,882)	$0.00842	$13,686,633	$1,632,875
OR	$11,962,412	$34,774,454	$22,812,041	$26.87	($38,309,551)	$0.00842	$9,969,360	$1,993,052
PA	$30,511,915	$108,971,125	$78,459,210	$18.45	($227,697,534)	$0.00842	$45,121,719	($14,609,804)
RI	$4,122,073	$10,962,961	$6,840,888	$16.32	($23,347,344)	$0.00842	$5,788,931	($1,666,858)
SC	$9,934,025	$40,056,553	$30,122,527	$39.03	($25,446,353)	$0.00842	$8,800,527	$1,133,498
SD	$4,165,549	$10,209,680	$6,044,130	$28.09	($9,450,270)	$0.00842	$2,484,535	$1,681,014
TN	$15,748,197	$63,500,794	$47,752,597	$31.89	($60,051,563)	$0.00842	$17,580,985	($1,832,788)
TX Mtn Bell	$1,745,262	$4,742,561	$2,997,298	$18.35	($8,764,262)	$0.00842	$2,510,312	($765,050)
TX SW Bell	$48,153,184	$211,198,176	$163,044,992	$34.16	($180,654,352)	$0.00842	$44,127,903	$4,025,282
UT	$5,489,187	$17,822,037	$12,332,849	$23.46	($25,515,103)	$0.00842	$6,628,165	($1,138,977)
VA	$20,629,714	$66,120,879	$45,491,165	$26.77	($76,876,363)	$0.00842	$21,771,398	($1,141,684)
VT	$4,902,331	$8,394,403	$3,492,072	$19.98	($9,094,968)	$0.00842	$3,256,347	$1,645,985
WA	$15,636,346	$50,767,359	$35,131,012	$24.57	($67,799,540)	$0.00842	$14,717,514	$918,832
WI	$9,909,531	$41,289,715	$31,380,183	$22.25	($70,177,257)	$0.00842	$12,782,407	($2,872,876)
WV	$7,971,379	$28,881,810	$20,910,430	$37.16	($19,607,714)	$0.00842	$6,949,050	$1,022,330
WY	$8,130,098	$13,284,474	$5,154,376	$28.21	($7,999,736)	$0.00842	$3,610,786	$4,519,312
Total	$913,680,616					$0.00842	$913,680,616	$0

Figure 24

French Proposal:
Application of the Simulator

APPENDIX H

XX. Acronyms

AT&T	American Telephone & Telegraph
BOC	Bell Operating Company
CCL	Carrier Common Line
CPE	Customer Premises Equipment
CSR Ratio	Composite Station Rate Ratio
FCC	Federal Communications Commission
GTE	General Telephone and Electronics
LEC	Local Exchange Carrier
NECA	National Exchange Carrier Association
NTS	Non-Traffic Sensitive
ROR	Rate of Return
SLU	Subscriber Line Use
SPF	Subscriber Plant Factor
TS	Traffic Sensitive
USF	Universal Service Fund
WATS	Wide Area Telecommunications Services

XXI. Notes

[1]New England Telephone Company, personal communication, October 14, 1986.

[2]National Association of Regulatory Utility Commissioners (NARUC), NARUC-FCC Committee on Communications, Separations Manual: Standard Procedures for Separating Telephone Property Costs, Revenues, Expenses, Taxes and Reserves, Washington, D.C., February 1971 [hereinafter cited as Separations Manual], codified at Title 47, Part 67, Code of Federal Regulations (1982). The FCC incorporated the Separations Manual in Prescription of Procedures for Separating and Allocating Plant Investment, Operating Expenses, Taxes and Reserves Between the Intrastate and Interstate Operations of Telephone Companies, FCC Docket No. 18866 [hereinafter cited as Ozark Plan]:

> Notice of Proposed Rulemaking and Order Convening Joint Board, 23 FCC 2d 465 (1970);
> Further Notice of Proposed Rulemaking, 25 FCC 2d 123 (1970);
> Recommended Report and Order of FCC-NARUC Joint Board on Jurisdictional Separations, 26 FCC 2d 248 (1970);
> Report and Order, 26 FCC 2d 247 (1970).

[3]In the Matter of Petition to Amend Part 69 of the Commission's Rules Concerning the Mandatory NECA Pool [hereinafter cited as Bell Atlantic Proposal]:

> Bell Atlantic Petition to Amend Part 69 of the Commission's Rules, October 28, 1985.

[4]MTS and WATS Market Structure Inquiry, CC Docket No. 78-72 [hereinafter cited as End User Charge]:

> Phase I: Third Report and Order (Access Charge Order), 93 FCC 2d 241 (1982). Proposes an access charge plan and invites comments; introduces end user charges of $2 per month minimum for residential users and $4 per month minimum for business customers; establishes the National Exchange Carrier Association (NECA) to prepare and file access charge tariffs and to administer revenue pools.

The Access Charge Order came four years after the FCC began the inquiry to determine whether the MTS and WATS markets should be served by the traditional industry or by a group of competitors. As part of the process, the FCC had established a Federal-State Joint Board to handle changes in the federal cost allocation between local and interstate carriers. Before issuing the Access Charge Order, the FCC had proposed four separate access charge plans for consideration.

Final Rule (Reconsideration Order), 48 Fed. Reg. 42984 (September 21, 1983). FCC modifies the Access Charge Order to provide for a $6 minimum end user charge per month for business customers; orders that the residential end user charge begin at $2 in 1984 and increase to $4 by 1986; introduces transitional $2 end user charge per line for embedded Centrex-CO service from 1984 to 1986; proposes to monitor the impact of end user charges on low-income subscribers and to consider assistance for high-cost telephone companies; aff'd in part, remanded in part, NARUC v. FCC, No. 83-1225, 737 F.2d 1095 (D.C. Cir. 1984); reh'g denied, August 23, 1984; petition for cert. filed, September 7, 1984, No. 84-504;

Memorandum Opinion and Order (Second Reconsideration Order), 49 Fed. Reg. 7810 (March 2, 1984). Defers end user charges for residential and single line business customers until June 1, 1985, and caps the charges at $4 at least until 1990; leaves the $2 Centrex-CO end user charge intact; agrees to conduct supplemental proceedings to devise exemptions for customers who cannot afford to pay end user charges; begins reevaluation of the end user charge transition plan and explores assistance to customers of small telephone companies.

Decision and Order, 50 Fed. Reg. 939 (January 8, 1985). FCC implements $1 end user charge per month for residential and single-line business customers effective June 1985 with an increase to $2 in June 1986, after which the charge is to be frozen at that level; directs Joint Board to study lifeline assistance further; solicits more comments on the effect of end user charges on small business customers.

Memorandum Opinion and Order, FCC Order No. 85-280 (May 29, 1985). Denies petitions of small businesses for reconsideration and other relief from the subscriber line charge;
Recommended Decision and Order, 50 Fed. Reg. 31750 (June 25, 1985), at p. 31754.
Order Inviting Comments, FCC Slip Opinion (February 21, 1986). The Rochester proposal contains an interstate end-user charge of $3.54 per line for residential and single line business customers. Unlike the above Access Charge Plan, these end-user charges are not part of the NECA pool. The CCL revenues continue to be pooled.

[5]In the Matter of Amendment of Part 67 of the Commission's Rules and Establishment of a Joint Board, Docket No. 80-286 [hereinafter cited as 25% Interstate Cost Allocation]:

Recommended Interim Order, 46 Fed. Reg. 63354 (December 31, 1981). Freezes SPF (subscriber plant factor) at the 1981 annual average level to prevent further growth in the interstate NTS (non-traffic sensitive) cost allocation;
Decision and Order, 89 FCC 2d 1 (1982);
Memorandum Opinion and Order, reconsideration denied, 91 FCC 2d 558 (1982), appeals pending sub nom., MCI Telecommunications Corp. v. FCC (D.C. Cir. 1982). Adopts both the interim SPF freeze with a number of technical modifications and a plan to phase CPE (customer premises equipment) out of the rate base;
Second Recommended Decision and Order, 48 Fed. Reg. 46556 (October 13, 1983). Proposes replacing the frozen SPF as the basis for allocating most NTS plant. The proposed plan is a 25% interstate allocation factor to be uniformly applied in all study areas. The transition from frozen SPF to the 25% base factor apportionment is to begin in 1986 and to be implemented in four steps;
Decision and Order, 96 FCC 2d 781 (1984). Changes procedures for allocating the NTS and TS (traffic-sensitive) plant.

[6]In the Matter of Bell Atlantic's Petition to Amend Part 69 of the Commission's Rules Concerning the Mandatory NECA Pool [hereinafter cited as French Proposal]:

Comments of Shenandoah Telephone Company, December 9, 1985.

[7]Federal Communications Commission, memorandum on data on NTS costs sent to the Committee on Energy and Commerce, U.S. House

of Representatives from Jack Smith, Chief, Common Carrier Bureau, FCC, September 20, 1983. Additional data on 1980 SLU minutes of use from FCC Common Carrier Bureau [hereinafter cited as 1980 FCC Data].

[8]End User Charge.

[9]"Winners and Losers: NECA's Mandatory Carrier Common Line Pool Favors FLA, Hurts NJ," Communications Daily, July 17, 1985, p. 1.

Data for simulator, Figure 20, from 1980 FCC Data.

[10]All BOCs are reimbursed for interstate local loop costs from revenues in the pool. The residual revenue is distributed among the BOCs in proportion to net investment so that all BOCs have the same interstate rate of return. For greater details on this process, see Carol Weinhaus and Anthony G. Oettinger, Behind the Telephone Debates, Volume 3: Federal/State Costing Methods: Who Controls the Dollars. Program on Information Resources Policy, Harvard University, Cambridge, MA, June 1986, pp. 59-62.

[11]980 FCC Data.

[12]Bell Atlantic Proposal.

[13]End User Charge.

[14]AT&T.

[15]French Proposal.

[16]AT&T.

[17]End User Charge, Phase I; and In the Matter of Amendment of Part 67 of the Commission's Rules and Establishment of a Joint Board, CC Docket No. 80-286:

> Decision and Order, 50 Fed. Reg. 939 (January 8, 1985) at note 7. The FCC, with minor changes, adopts the Joint Board's earlier recommendations on subscriber line charges for residential and single line business customers, tariff flexibility to combat bypass, assistance to aid small or high-cost companies, and assistance for lifeline service.

[18]Volume 3, Behind the Telephone Debates.

[19]Telecommunications Reports, Vol. 52, No. 16, April 21, 1986, at p. 12.

[20]Unity 1-A Agreement, June 12, 1986 (released June 24, 1986).