Support Mechanisms: Issues and an Example of Potential Problems in the Future

Presentation at the July 27, 1992
NARUC Meeting
Seattle, Washington

Alternative Costing Methods Project

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Presentation at the July 27, 1992, NARUC Meeting, Seattle, Washington
P-92-6

The Program on Information Resources Policy is jointly sponsored by Harvard University and the Center for Information Policy Research.

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State Regulators	NARUC
Regional Holding Companies	Ameritech Bell Atlantic BellSouth NYNEX Pacific Telesis Southwestern Bell US West
Large Independents	Centel GTE Southern New England Telephone Sprint Local Telecom Division
Small Telephone Representative	NTCA
Interexchange Carrier	AT&T
Switch Manufacturers	Northern Telecom Philips Kommunikations
Harvard	

Assisting with *public* data:

Federal Communications Commission
National Exchange Carrier Association

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- U.S. General Accounting Office
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List of Acronyms

AT&T	American Telephone & Telegraph Company
CAT	Category
COE	Central Office Equipment
COE Cat 3	Local Switching Equipment
DAT	Data Analysis Tool
DEM	Dial Equipment Minutes
FCC	Federal Communications Commission
IXC	Interexchange Carrier
LEC	Local Exchange Carrier
NARUC	National Association of Regulatory Utility Commissioners
NECA	National Exchange Carrier Association
NTS	Non-Traffic Sensitive
ONA	Open Network Architecture
SLC	Subscriber Line Charge
SPF	Subscriber Plant Factor
TS	Traffic Sensitive
WDEM	Weighted Dial Equipment Minutes
USF	Universal Service Fund

I. Support Mechanisms

Introduction

The current telecommunications industry is characterized by increasing competition[1] in many areas and by new technologies and services[2] which blend the traditional distinction between voice and data. In addition, there have been fundamental changes in the past decade, such as the AT&T divestiture, the introduction of access charges, changes in non-traffic sensitive (NTS) and traffic sensitive (TS) cost recovery procedures, elimination of the mandatory Common Line Pool, and implementation of price caps and other incentive regulatory mechanisms. There is also increasing transparency between interstate and state services. In many cases, from the standpoint of the end user, the jurisdictional differences between services affect prices rather than the functions offered.

The current regulatory environment is characterized by codified rules created for a past environment. Some of these rules have increasingly less relevance to the changed picture and may exacerbate industry and end user problems as the future unfolds.

In 1991, the Federal Communications Commission (FCC) and the Federal-State Joint Board announced an interest in determining if a comprehensive reform of the separations process is necessary given the changing technological and competitive environment.[3] In addition, regulators are examining whether current access regulatory structures are optimal in light of this environment.

This paper provides background on the evolution of rules to promote specific policies and provides an example of potential problems arising from continued use of current rules. **Figure 1** provides a broad list of public policy goals covered by

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[1] *"New Wine and Old Wineskins", Modeling Effects of Competition and Expanded Interconnection in the Local Exchange, Harvard Alternative Costing Methods Project Paper* dated July 27, 1992.

[2] *Broadband Capable Network: Voice, Data, Video and Graphics*, Harvard Alternative Costing Methods Project dated July 27, 1992.

[3] Discussed during Federal/State Joint Board (CC Docket 80-286) report during NARUC Winter Committee Meetings in Washington, D.C., March 2, 1992.

Figure 1
Current Public Policy Goals: Some Support Mechanisms and Forms of Averaging Associated with the Regulated Telecommunications Industry

Rate and Cost Averaging to Achieve Public Policy Goals:

Provide "reasonable" rates on a non-discriminatory basis.
Average interstate transport costs to satisfy MFJ "equal charge for equal unit of traffic" requirement.
Use of fully distributed cost methodology to allocate common overheads.
Etc.

Financial Assistance to Ensure Universal Service for the Following:

Targeted high cost areas:
- Universal Service Fund.
- Long-term support.
- Transitional support.
- Small telephone company local switch support.
- REA loans.

Low income households:
- Lifeline programs.

Offshore areas:
- Assistance to Alaska, Virgin Islands, Puerto Rico, and Hawaii for interconnection to traditional industry network in the contiguous 48 states.

Requirement of Non-Discriminatory Interconnection to the Networks of Local and Interexchange Carriers:

Interstate services pay for a portion of shared local facilities costs through 25% interstate cost allocation:
- Subscriber line charge: local customer contribution for interstate access.
- Carrier common line charge: interexchange carrier contribution for interstate access.
- Special access surcharge: contribution from private line customers for interstate access.

Local interconnection rates for enhanced service providers.
Right to make an interstate or an international call.
Open Network Architecture (ONA).

Special Needs Assistance for Equivalent Access to Telecommunications Network:

Telecommunications services for hearing-impaired and speech-impaired individuals.

Oversight of Jurisdictional Shifts:

Participation through Federal-State Joint Board.
Maintain "reasonable" basic Local service rates.

Depreciation Policies to Meet Requirements of the *Communications Act of 1934.*

Participation through Three Way Meetings.

the current regulatory rules for the regulated telecommunications industry. One element from this list is explored in this paper:

- The use of weighted dial equipment minutes in the jurisdictional allocation of local switching investment - one mechanism to provide for additional allocation of local switching investment to interstate for those local exchange carrier study areas with fewer than 50,000 access lines.

The objective of this paper is to provide analytical references that may be useful for identifying issues as the industry, its regulators, and its customers examine separations reform. This paper does not intend to support any particular position with respect to changing or leaving alone current weighted dial equipment minutes separations rules.

Jurisdictional Separations: Evolution

The Communications Act of 1934 established the relationship between state and federal regulators of telephone service.[4] While assigning the FCC authority to regulate interstate services, this act specifically reserves for the states the authority over state toll and local exchange services.[5]

The challenge in permitting state and federal regulation of a telephone company's operation is to identify which portion supports state services and which

[4] Communications Act of 1934, 48 Stat 1064, Pub. L. No. 416 (1934). (Codified at 47 USC Section 151 et seq.). For a discussion on regulatory jurisdictions established by this act, see Carol L. Weinhaus and Anthony G. Oettinger, *Behind the Telephone Debates*, Ablex Publishing Corporation, Norwood, New Jersey, 1988, pages 49-50.

[5] Communications Act of 1934, Section 221(b), page 1080; Section 213(h), page 1075; and Section 3(t), page 1066.

portion supports interstate services. Since a large portion of a local exchange carrier's (LEC) equipment, facilities, and personnel support both interstate and state services, some process is required to provide state and federal regulators with the necessary data to perform their oversight.

During the 1930's, there was a major shift in philosophy as to how the allocation of costs between federal and state jurisdictions was performed. The court decision *Smith v. Illinois Bell*, established the view that local and toll services shared the local facilities.[6] It was not until the 1940's that the mechanisms for this philosophy of shared use were adopted for both interstate cost allocation and revenue recovery mechanisms.[7] This cost allocation process is called in short-hand "separations" and outlined in the *Separations Manual*.[8] Over time, this manual has been modified significantly by Federal-State Joint Board recommendations. The present format of this manual is codified.[9]

The fundamental basis on which separations is made is the use of telecommunications investment in providing state and interstate services. In 1930,

[6] *Smith v. Illinois Bell Telephone Co.*, 282 US 133 (1930). This decision and *Lindheimer v. Illinois Bell Telephone Co.*, 292 U.S. 151 (1933), extended federal authority over what were previously considered solely state costs.

[7] For a discussion of the history of cost allocation and revenue recovery methods, see *Behind the Telephone Debates*, pages 51-69.

[8] As a result of a resolution adopted at the 1946 National Association of Regulatory Utility Commissioners (NARUC) Convention, a review of separations procedures was made by a Federal-State Joint Board subcommittee. The subcommittee's recommendations were issued in NARUC, *Separations Manual -- Standard Procedures for Separating Telephone Property, Revenues and Expenses*, Washington, DC, October 1947.

[9] NARUC, NARUC-FCC Committee on Communications, *Separations Manual: Standard Procedures for Separating Telephone Property Costs, Revenues, Expenses, Taxes and Reserves*, Washington, DC, February 1971. Codified at Title 47, Part 36 - Jurisdictional Separations Procedures, of the *Code of Federal Regulations* (revised as of October 1, 1990)

the *Smith v. Illinois Bell*[10] decision required that the allocations be made on "the actual use to which the property is put." By the end of the 1940's, there was general acceptance among the regulated telecommunications industry and its regulators that amounts of investment, revenues, expenses, taxes and reserves applicable to each jurisdiction should fairly and reasonably reflect property and personnel use for the provision of interstate and state services.

Separations Rules Designed to Allow for the Evolution of Universal Service

During the decades of the '40s through the '70s, the direct cost of providing long distance declined significantly, primarily due to technological advances, tremendous growth in volume and economies of scale. During this same period per unit local service cost did not decrease proportionately to toll per unit cost. Also, many subscribers being added to local service were in rural areas and small towns. The network costs per telephone added were higher than the existing average per unit cost. At the same time, numerous service areas were being upgraded from multi-party service (some having ten or more customers per line) to two and four-party service. It soon became apparent that the separations allocation of the common costs used to support both state and interstate services resulted in increased cost recovery requirements for intrastate services. As a result of this situation, regulators became concerned that continued increases in local service rates would begin to make local service unaffordable for many people. Recognizing this problem, in 1947 the Federal and State regulators devised jurisdictional separations rules which shifted a portion of state costs to interstate, shifting recovery of these LEC costs to interstate customers. The intent of the separations rules was to maintain an environment in which universal service would continue to be viable. Numerous other Federal-State Joint Board separations plans were introduced between 1947 and 1980, all of which helped

[10] *Smith v. Illinois Bell*, pages 150-151.

achieve the public policy goal of maintaining local rates at affordable levels on a nationwide basis.[11]

Impact of a Competitive Environment

With the advent of competition in the interstate market, it became apparent that new long distance providers (interexchange carriers, or IXCs) could significantly price below the Bell System's nationwide averaged interstate rates. This created concern that loss of toll revenues and the additional recovery of costs in interstate rates (which provided support for intrastate cost recovery) would create pressure for the telephone companies to increase local rates. In addition, after Divestiture it soon became evident that the interstate access rates charged by LECs included the additional costs that were intended to relieve state cost recovery, thus contributing to access rates which were in excess of underlying costs. This created an environment conducive to bypass of the LEC exchange network, creating concern that loss of revenue due to alternative access arrangements would put additional pressure on the LECs to increase local rates.

Continuing Public Policy Goals in a Growing Competitive Environment

Throughout the years, some common public policy goals continue to remain in the regulatory fabric regardless of changes in regulatory rules. In an effort to maintain both competition and provision of universal basic service, the Federal-State Joint Board recommended changes, subsequently adopted by the FCC, to alter the separations process. The overall result reduced interstate allocations by recovering more of the local costs directly from all end users[12] instead of those

[11] See Weinhaus, *Behind the Telephone Debates*, pages 63-66, for a discussion of how local rates were kept at affordable levels.

[12] End users of switched services (residential and business customers) and end users with private lines.

making interstate calls. The new revisions to the separations process included the following changes:

- Transition of individual LEC allocators for NTS facilities (Subscriber Plant Factors, or SPF) to a fixed 25% for all LECs over an eight-year period (1986-1993).
- Phase-in of end user common line charges for switched services, usually referred to as subscriber line charges (SLC), and special access surcharges for private line services.
- Phase-in over eight years of a support mechanism (Universal Service Fund, or USF) for targeted LECs whose local loop costs are significantly higher than the national average.
- Transition over five years to measured dial equipment minutes as the interstate allocator for local switching investment and an additional weighting for smaller LECs (those with less than 50,000 access lines). This interstate allocator is referred to as weighted dial equipment minutes (WDEM).

Another example of existing public policy goals carried along with competitive market regulatory changes lies in the *Access Charge Plan*.[13] The goals were as follows:

- Eliminate unjust discrimination or unlawful preferential rates.
- Encourage network efficiency.

[13] CC Docket 78-72, Phase I, MOO (FCC 84-36), Released February 15, 1984.

- Prevent uneconomic bypass.
- Continue assurance of universal service.

As the telecommunications industry and its regulators contemplate a comprehensive review of separations and interstate access rules, it is likely that these public policy goals will remain as fundamental objectives. However, the mechanisms for achieving these goals or the definitions of these goals may change.

In order to clearly examine the continuing relevance of the support mechanisms which underlie the public policy goals, it is necessary to understand the patterns, characteristics and dynamics of such mechanisms in the changing telecommunications environment. There are three approaches which can be taken with respect to the current support mechanisms:

1 Leave the current support mechanism alone and let it run its course. If this approach is taken, it is possible that future impacts of the support mechanism may produce results which are contrary to the public policy goal that the support mechanism was originally established to support. The next section of this paper will provide an example of possible consequences of leaving a current support mechanism in place without adjustment.

2 Change the support mechanism to one which continues to appropriately support a public policy goal in the changing telecommunications environment.

3 Eliminate the support mechanism.

This paper will now examine the first of the above approaches, namely, the possible consequences of leaving a current support mechanism alone. This example, WDEM, is a current separations procedure for interstate allocation which might be a candidate for review, if comprehensive review occurs. This

paper will show how the continued use of this separations allocator, as currently applied, may hinder some public policy goals. The use of such a mechanism, which was intended for a less competitive environment, may actually work against the original public policy intent.

II. Potential Problems: Weighted Dial Equipment Minutes (WDEM)

Public Policy Goals Associated with WDEM

In 1987, the Federal-State Joint Board recommended changes in one of the separations allocators for local switching equipment. This new measure, called dial equipment minutes (DEM), represents the holding time for originating and terminating local switching equipment. "Holding time" is the time the local switching equipment is in use by either an end user or by an operator.

In addition to using measured dial equipment minutes as an interstate allocator, the revisions call for supplemental interstate support for small telephone companies. LECs with less than 50,000 access lines apply a weighting factor (or multiplier) to increase their measured dial equipment minutes.[14] **Figure 2** indicates the weighting factors for these smaller LECs.

The weighting factor is a mechanism to provide additional interstate support to these smaller LECs. The intent underlying this factor covers two aspects:

- Prevent a significant revenue requirement shift from the interstate jurisdiction to the state jurisdiction.

- Provide additional interstate cost support, reflecting higher costs by the smaller LECs for providing service.

The weighting factor for the smaller LECs accomplished another important FCC objective, the further simplification of separations rules. Prior to the adoption of WDEM, individual small LECs performed detailed toll weighting factor studies to identify the difference between their average cost per toll minutes

[14] It should be noted that for LECs with less than 50,000 access lines, the current separations rules limit the percentage of the interstate allocation for local switching investment to a ceiling of 85% of the total investment being allocated.

Figure 2
Dial Equipment Minutes Weighting Factors for LECs

LEC Access Lines	Weighting
0 - 10,000 Lines	DEM x 3.0
10,000 - 20,000 Lines	DEM x 2.5
20,000 - 50,000 Lines	DEM x 2.0
50,000 or Higher	DEM x 1.0

of use and the average cost of exchange minutes of use. The specific type of switching equipment in each end office (step-by-step, panel, crossbar, electronic-analog, or digital) provided the basis for these individual studies. In addition, these studies also identified the size of each end office and whether a majority of the traffic originating in the end office also terminated in the same office. The additional interstate support for smaller LECs reflects their higher costs and prevents significant revenue requirement shifts to the state jurisdiction. With modernization to digital technology, the additional interstate support reflects the higher costs incurred by smaller LECs in the provision of digital switching. Implementation of WDEM was a significant simplification from the toll weighting factor studies that were previously required.

Potential Impact of Continued Use of WDEM

The use of the DEM weighting in the future may pose problems for LECs with less then 50,000 access lines. These companies pool their traffic sensitive (TS) costs to develop a nationwide switched rate. (TS costs include investment and other expenses associated with local switching and tandem switching facilities and maintenance.) The National Exchange Carrier Association (NECA) administers this pool.

Recent data indicates that the DEM weighting accounts for a significant portion of the growth in the TS revenue requirement for companies in this cost pool.[15] A major portion of this TS revenue requirement growth is related to the interstate allocation of costs in central office equipment accounts. Since most of the study areas participating in NECA's TS pool have less than 50,000 lines (all

[15] In the April 2, 1992 NECA interstate access tariff filing for pooled TS switched access rates, the associated revenue requirement increased 18.1%, increasing from $634.5 million in 1991 to $814.6 million for the 1992/1993 test period. NECA, *Annual Access Tariff Filing*, Transmittal No. 489, Volume I, Section A - Summary of Changes, 1992.

II. Potential Problems: Weighted Dial Equipment Minutes (WDEM), cont.

but thirteen of the 1197 study areas), the weighting factor causes a significant increase in the interstate assignment of central office equipment costs. Correspondingly, the state revenue requirement decreases. In the projected test period, $270 million of the $815 million switched access revenue requirement — 33% of the total — is a direct result of the DEM weighting.

The effect of the DEM multiplier is as follows: for every one percent increase in interstate DEM, there is an addition to the interstate allocation of up to three percent.

If the interstate DEM for the smaller LECs exhibits significant growth over the next few years, it is possible that the resulting TS switched access rates for these companies will increase accordingly. As a result, there may be the following adverse consequences for these smaller LECs and their customers. Some of these consequences may include:

- An increase in TS switched rates that accelerates the loss of participants in the TS pool. The cost disparity between rates for those companies in the TS pool and those of the non-pool companies would increase. Therefore, the relatively larger LECs in the pool would have an incentive to leave and to develop their own rates. The remaining pool would have only the smallest LECs, thereby producing even higher TS switched rates for these companies.

- Over time, higher TS switched rates could increase the potential for bypass of small LEC facilities. If this occurs, revenues decrease, thereby increasing pressure to raise rates of local and other services to recover costs.

II. Potential Problems: Weighted Dial Equipment Minutes (WDEM), cont.

Analysis of Elements Influencing TS Interstate Allocations

This portion of the paper uses historical and projected public data to analyze the DEM weighting issue. What follows is an analysis of the dynamics of interacting elements that affect the interstate allocation of local switching investment for LECs with less than 50,000 access lines.

Since projections are merely estimates, the graphs providing projections indicate a range of 50 percent above and below the projected growth rates. This treatment allows for reasonable projected growth ranges within which lie the possible impacts of continued use of WDEM in separations.

Magnitude of WDEM Issue

Figure 3 shows the distribution pattern of all LECs in the industry by access line size. This chart indicates the magnitude of companies affected by the WDEM issue. Over 90 percent of all LECs have less than 50,000 access lines and, therefore, use a multiplier to increase their measured interstate DEM. Note that over 80 percent of all LECs use the maximum weighting of 3.0 because they have less than 10,000 access lines.

Figure 4 illustrates LEC annual growth rates for central office switching investment (Account 2210) by industry total and by distribution of access lines. As mentioned before, the DEM weighting is applied to a portion of this switching investment. This figure indicates that total switching investment is growing at approximately the same rate for all LECs. Those LECs with less than 50,000 access lines experience growth rates similar to the remaining LECs. At first glance, it appears that local switching investment may not be an area of concern in assessing the impact of the DEM weighting. However, since Account 2210 includes investment for both local switching and tandem switching, it is necessary to look at the relative proportions of local and tandem for each access line group, so as to understand if there is disproportionate growth between large and small

Figure 3
LEC Distribution By Access Line Size

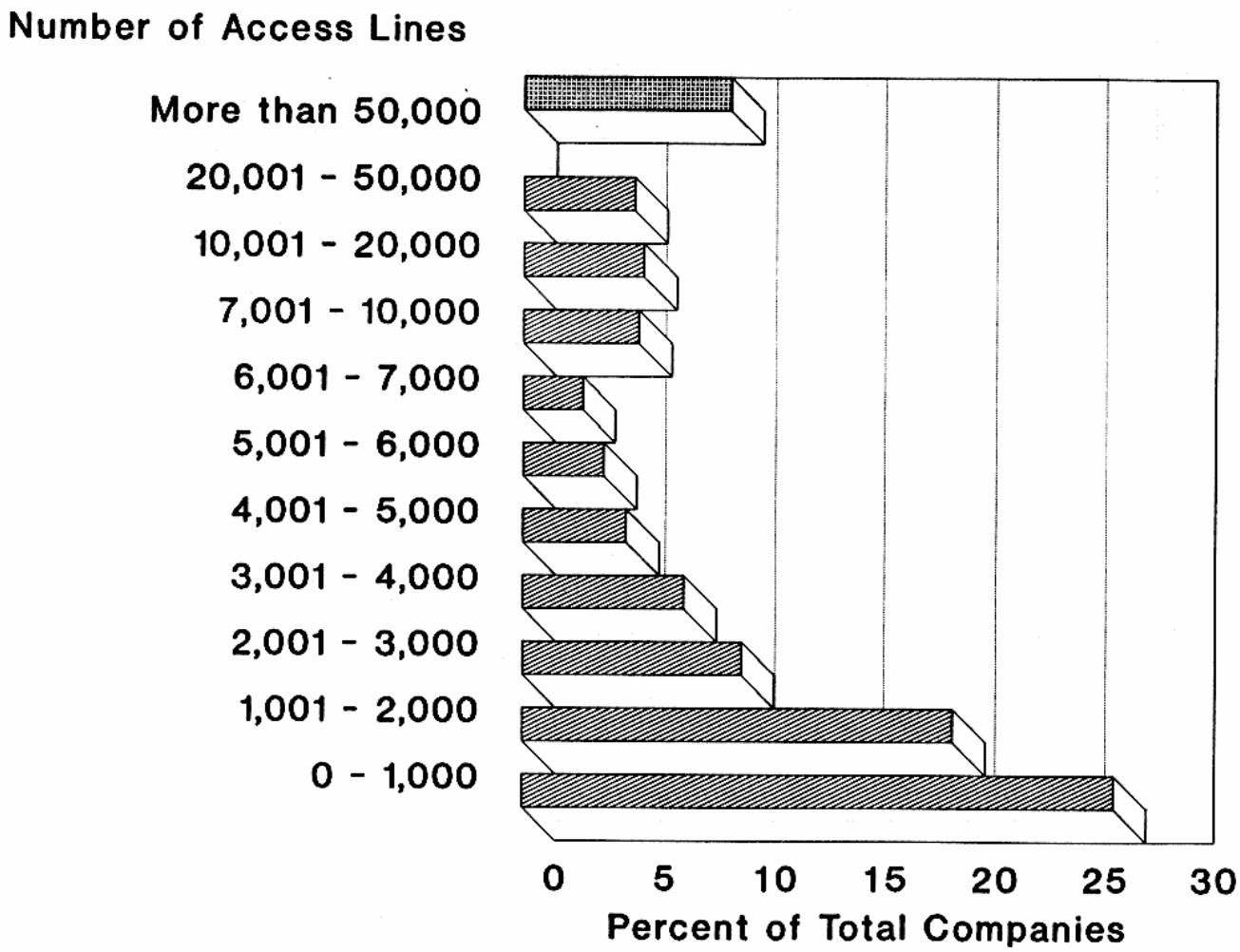
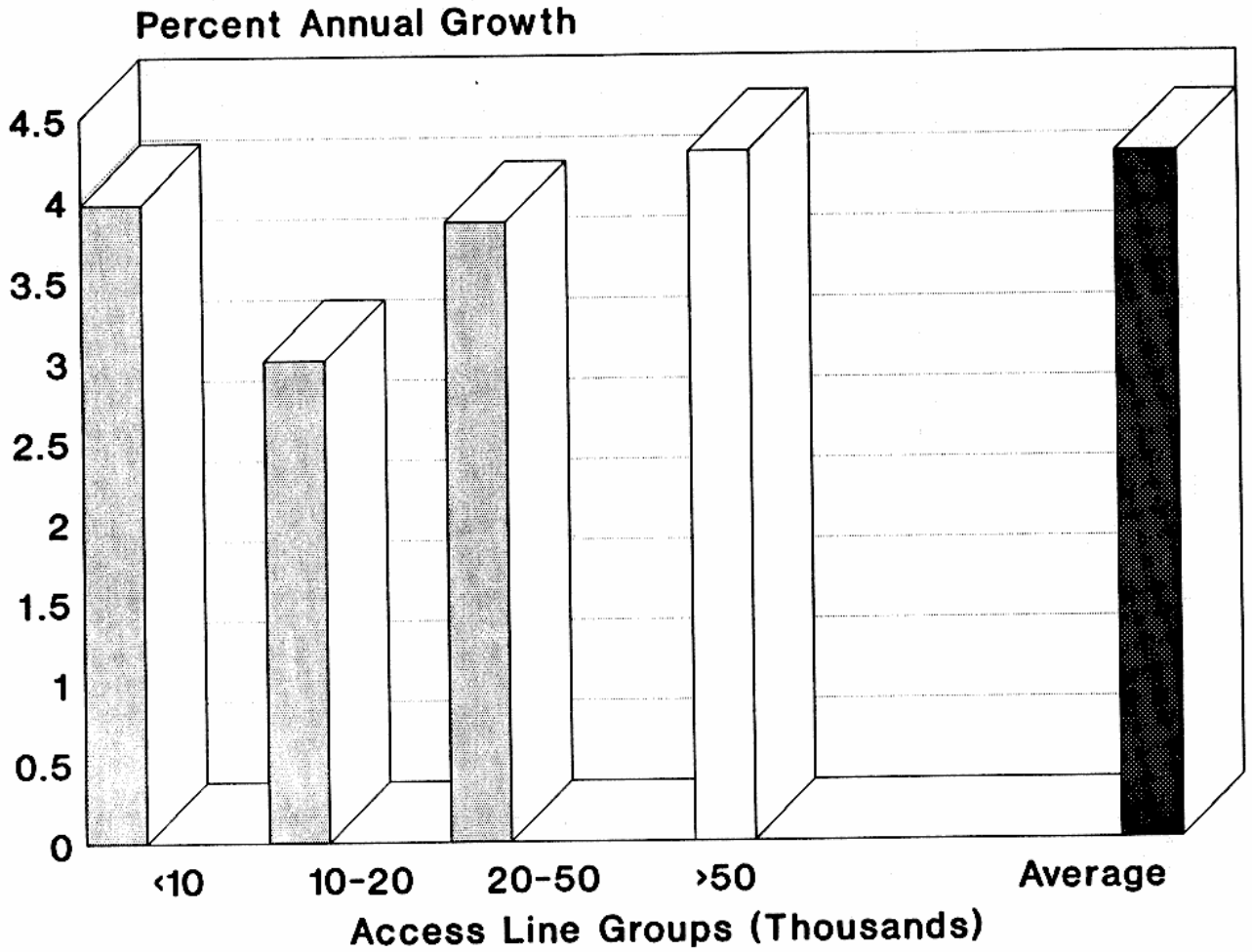


Figure 4
LEC Annual Growth Rates: Central Office Switching Investment, 1988 - 1990



companies in local switching investment. If the growth in local switching investment for small companies is significantly greater than that of large companies, the impact of WDEM could be substantial.

Another element in the WDEM issue is the growth of interstate measured DEM factors by LEC access line size (**Figure 5**). This figure illustrates the DEM factors before the weighting is applied to LECs with less than 50,000 access lines. **Figure 5** illustrates that LECs with less than 10,000 access lines — who also account for 80 percent of all LECs — experienced a growth rate of approximately nine percent.[16] In contrast, the total LEC growth rate was only approximately two percent. This disproportionate growth in DEM factors for the smaller LECs is magnified by the weighting factor.[17]

Impact of Projected Use of WDEM

Figure 6 compares projections for WDEM measured for LECs with less than 10,000 access lines with projections for DEM measured for LECs with more than 50,000 access lines. This figure captures the combined impact of growth in interstate DEM and of the 3.0 weighting applied to smaller LEC DEM.

The upper three lines in **Figure 6** indicate the projected interstate WDEM for smaller LECs (boldfaced line) bounded by upper and lower lines representing estimates for 50 percent above and below the projected trend. The projected interstate WDEM trend starts with 56 percent in 1991 and grows to 85 percent in 1996. (Note that 85 percent is the maximum interstate allocation factor allowed by current separations rules for local switching investment.) The upper bound of 1.5 reaches the 85 percent cap in 1994; the lower bound of 0.5 reaches approximately 78 percent by 1999.

[16] This growth rate was based on network usage DEM data for the period 1988 to 1990.

[17] While the relative growth rate for those LECs with less than 10,000 access lines is significantly higher than the industry, this group of LECs comprise less than one percent of the total industry dial equipment minutes.

Figure 5
LEC Annual Growth Rates: Interstate Dial Equipment Minutes Factor, 1988 - 1990

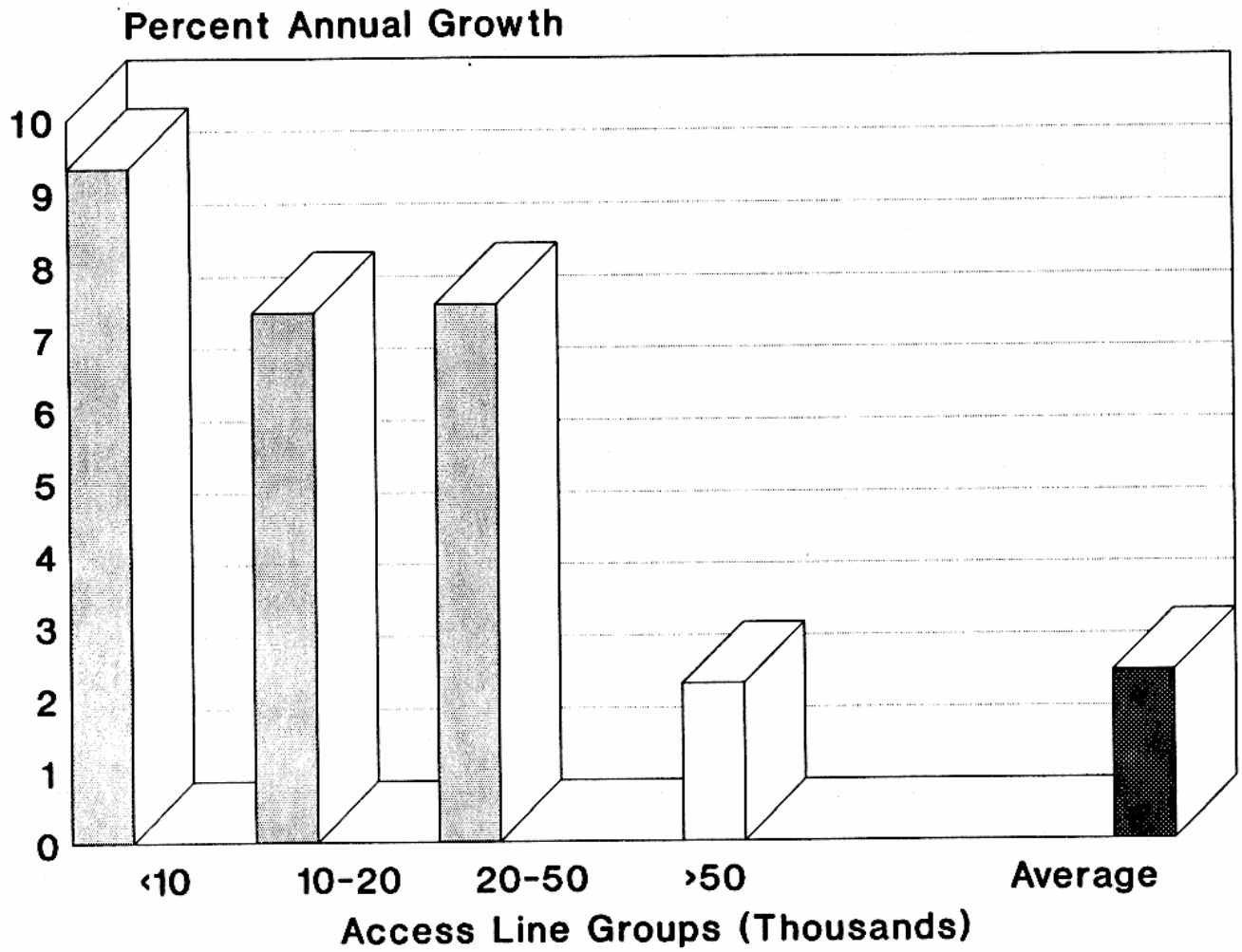
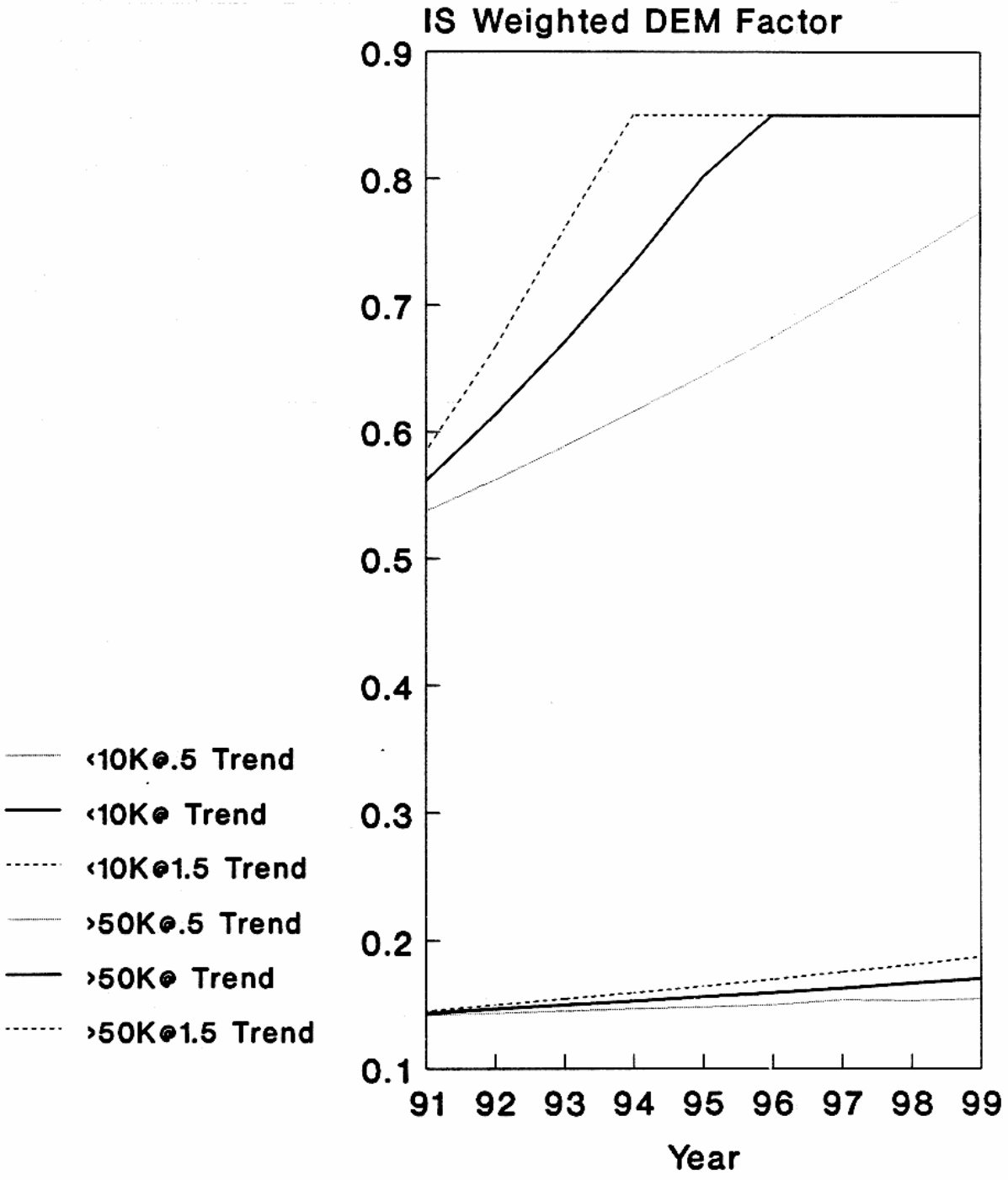


Figure 6
Impact of Interstate Dial Equipment Minutes Growth and the Weighted Dial Equipment Minutes Factor, 1991 - 1999



II. Potential Problems: Weighted Dial Equipment Minutes (WDEM), cont.

Figure 6 clearly indicates that 80 percent of the LECs (those with less than 10,000 access lines) would continue to receive a significantly higher interstate allocation for local switching investment as a result of their higher interstate DEM growth coupled with the weighting factor.

Figure 7 gives a comparison between large LECs (over 50,000 access lines) and smaller LECs (under 10,000 access lines) similar to that in **Figure 6.** In **Figure 7,** interstate switch investment is divided by interstate DEM to produce a cost per interstate DEM. At the starting point in 1991, the smaller LEC cost per interstate DEM is approximately 16 cents while that of the larger LECs is approximately 2.5 cents. At the end of the projections in 1999, the amount for the smaller LECs has risen to approximately 33 cents compared to the relatively small increase to 4 cents for the larger LECs.

The patterns in **Figure 7** raise the question of whether continued growth in the interstate allocation of local switching investment for these smaller LECs will have adverse consequences. As discussed earlier, there may be pressure for larger LECs within the TS pool to exit, increasing the nationwide TS switched rate for the remaining pool members and creating an environment which encourages bypass.

Figure 8 provides a break-out of cost characteristics among LECs using different weighting factors and compares relative local switching costs per DEM by a distribution pattern based on LEC number of access lines. The smallest LECs incur local switching investment costs in excess of 2 times that of the largest LECs (Tier 1 companies).[18] While the local switching investment grows as the company size (indicated by number of access lines) grows, the cost per minute decreases. **Figure 8** portrays an environment where it is significantly more expensive for smaller LECs to provide local switching equipment than it is for the largest LECs.

[18] Tier 1 LECs are those companies receiving over $100 million in revenues per year. In this paper, they also coincide with LECs with more than 50,000 access lines.

Figure 7
Cost Per Interstate Dial Equipment Minutes: Interstate Switching Investment/Interstate Dial Equipment Minutes, 1991 - 1999

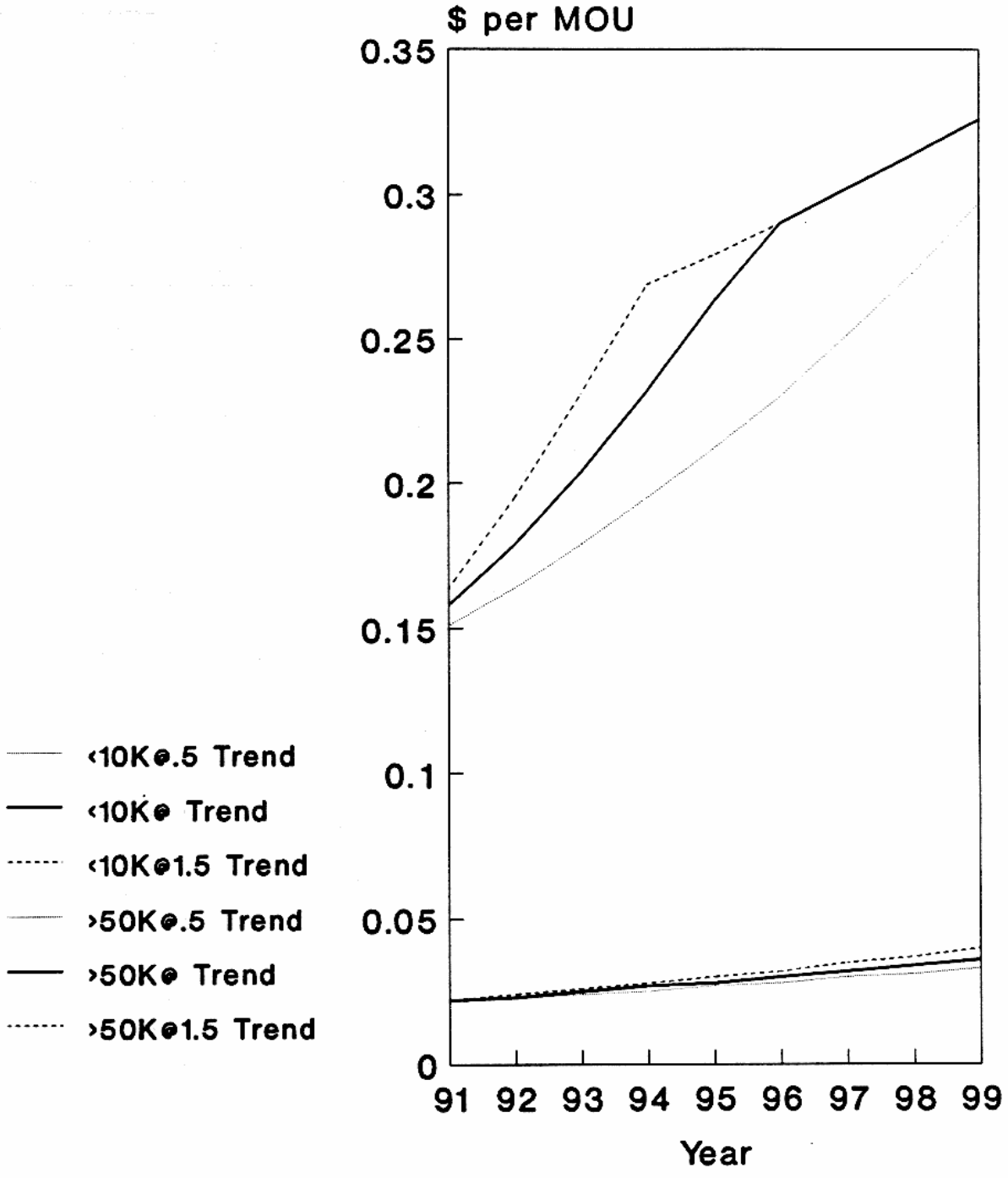


Figure 8
Relative Local Switching Investment Cost Per Dial Equipment Minutes: Total COE Cat 3 Investment/Dial Equipment Minutes, 1989

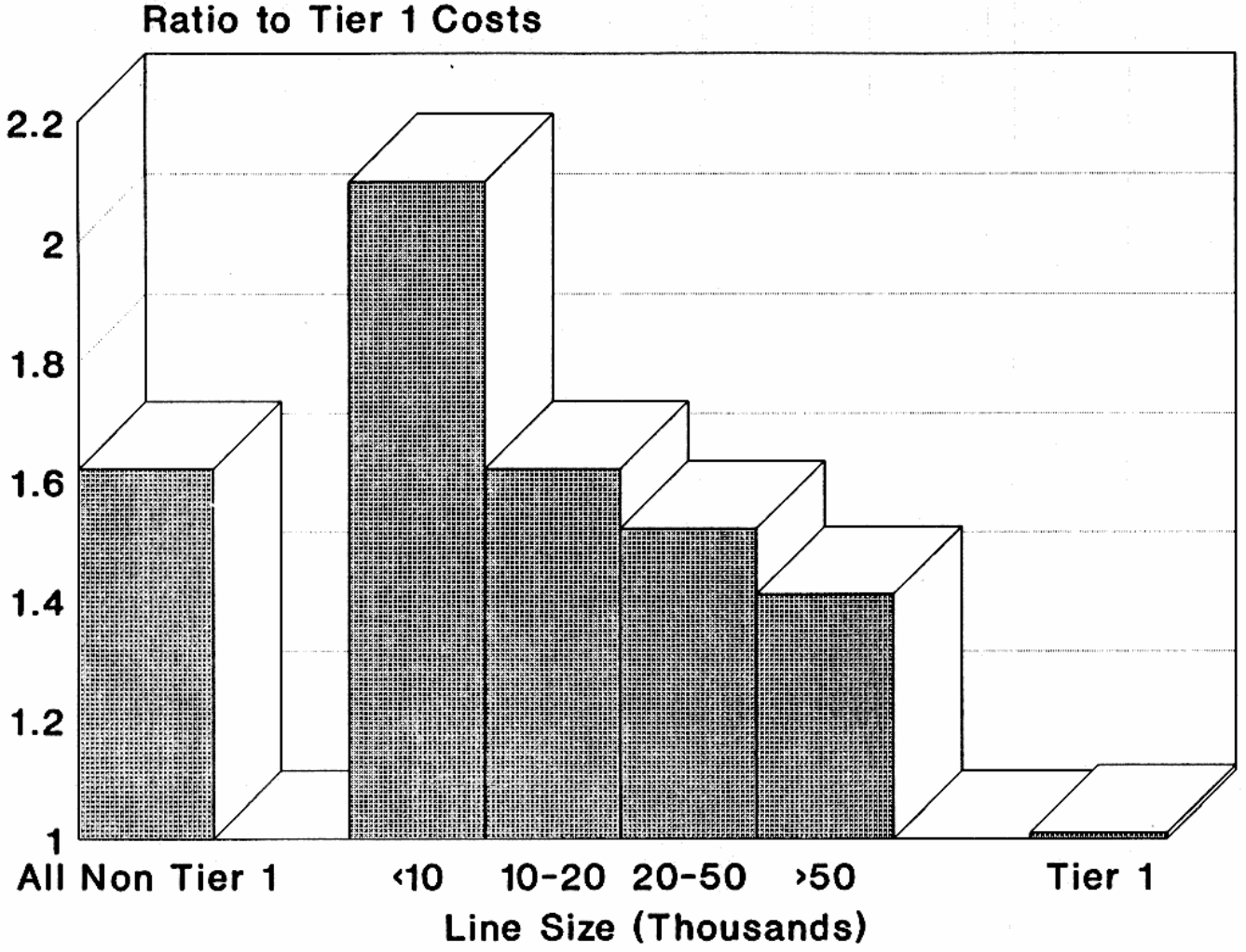


Figure 9 provides a comparison of the relative costs of digital switching equipment per access line, grouped in bands representing various line sizes of digital switches. The figure illustrates that the relative cost per access line increases significantly as the line size of digital switches become less than 10,000 access lines. This provides another example of the increased costs that smaller LECs incur in providing digital switching equipment when compared to the large LECs.

Summary of WDEM Patterns

The data in **Figures 3 through 9** shows that the regulatory intent to provide additional interstate support through the WDEM has occurred. These figures also indicate that the support will increase when the WDEM impact is projected into the future. The data also shows that local switching costs per dial equipment minute are much higher for the smaller LECs[19] (based on access lines served).

There are questions as to whether the continued use of the current methodology for the WDEM factor is appropriate in the future, particularly with respect to potential adverse consequences of a continual increase in interstate costs which provide the basis for TS switch access rates for TS pool members. These consequences might include bypass of facilities or relatively larger pool members exiting the pool, driving up the pooled rate even higher.

This analysis is the first step toward assessing whether the DEM weighting mechanism is appropriate for the future. The next step would be to test changes or alternative options using the Alternative Costing Methods project's data analysis tool (DAT).

[19] The higher costs are generally a result of the low density, rural areas served by smaller LECs. While the larger LECs also serve low density rural areas, those higher costs become transparent when higher and lower costs within the same study are averaged.

Figure 9
Normalized Switching Cost Relationships by Line Size

Lines Served by Digital Switch	Without Equal Access	With Equal Access	With Equal Access and SS7
100	15.7	15.8	19.3
500	3.8	3.8	4.5
1,000	2.3	2.4	2.7
10,000	1.0	1.0	1.0

Note: This table illustrates the relationship of switching costs to line size for a new model of digital switch. In order to protect the proprietary nature of the manufacturer's cost per line, the cost relationships are all normalized, with a 1.0 representing the costs of a switch serving 10,000 access lines without equal access or SS7.

III. Analyzing Potential Changes

Analyzing Potential Changes

While the previous sections looked at allowing the current support mechanisms to continue running their course, this section analyzes how to make changes in these mechanisms. In order to do this, we must take the list from **Figure 1** and ask the following questions:

- *What is the intent of each support mechanism?*

  For example, USF was established to assist companies with high loop costs to keep their local rates for basic service affordable.

- *What is the size of each mechanism?*

  The table below shows examples of sizing three support mechanisms from the list in **Figure 1.**

Mechanism	Year	Amount
USF[20]	1990	$588 Million
Long-Term Support[21]	1991-1992	$282 Million
Transitional Support[22]	1991-1992	$168 Million

[20] The USF amount is based on 1990 data for amounts to be received during 1992. This amount represents 7/8 transition of the USF. This amount was obtained from *The Monitoring Report*, CC Docket No. 87-339, January 1992, page 140.

[21] The long-term support amounts are based on the LECs tariffs that became effective on July 1, 1991. The tariff period is from July 1, 1991 through June 30, 1992. This amount was obtained from *The Monitoring Report*, CC Docket No. 87-339, January 1992, page 514.

[22] The transitional support amounts are based on the LECs tariffs that became effective on July 1, 1991. The tariff period is from July 1, 1991 through June 30, 1992. This amount was obtained from *The Monitoring Report*, CC Docket No. 87-339, January 1992, page 514.

- *Who funds each mechanism?*

  For example, USF is funded by the interexchange carriers (AT&T, MCI, Sprint, etc.)

Answers to the above three questions help shape the debate over the answers to this fourth question.

- *What should be changed and what is the impact of the change?*

To answer these questions requires three steps. First, the purpose of each support mechanism must be examined in light of whether or not it accomplishes the original intent and if the original intent is still valid in a changing telecommunications environment. As shown earlier in this paper, a support mechanism designed to assist a set of companies may have unintended adverse consequences for those same companies. In such cases, it may be necessary to examine more appropriate alternatives for dealing with these policies.

Second, the relative sizes of the mechanisms are important simply because the larger the amount of the support, the greater the impact of alternative mechanisms for it. In addition, the question of whether or not the size is appropriate and is targeted to the right companies or individuals needs to be examined. Inappropriate levels of support will cause certain companies to be advantaged relative to others and/or may produce a result contrary to the desired objective.

Third, the question of who pays for these supports needs to be raised. Historically, the regulated telephone industry has funded these support mechanisms while competitors, such as alternate providers or Cable television companies, have not. Some companies and some customers for specific services pay for supports not paid for by other companies or customers.

The reason this present pattern has arisen is discussed in **Section I.** The question for the future is: Are these mechanisms appropriate? For example, customers of companies with lower switched costs in the regulated industry support higher cost companies through rate averaging. A competitor's customers may not have to contribute to this support. There are two ways to look at this issue: One, the regulated industry's customers are explicitly providing support in the form of higher rates while the customers of their competitors are not; or two, the regulated industry has the advantage of economies of scale and an existing customer base.

Looking at the list in **Figure 1**, the items can be broadly divided into two categories: Those supports which explicitly support public policy goals (such as USF) and those such as averaging or use of the 25% gross interstate allocator which implicitly support public policy goals and which are more difficult to quantify. In the short term, certain of these mechanisms could be altered without overhauling the entire system.

In **Section I**, the discussion covers three options for dealing with the support mechanisms: let them continue as is, change some or all of them, or eliminate some or all of them. To examine changes in the mechanisms, four steps must be taken:

- Identify areas requiring support.
- Determine who should receive support (companies, customers or some mix of companies and customers).
- Determine the amount of support to be provided.
- Determine who should contribute to the support.

Changes in the support mechanisms might include some of the following: elimination of rate averaging and increased targeting for supports, insuring that all customers of telecommunications services and alternative services providers (Cable television, private networks, etc.) contribute equally to the supports, treat the local loop in a manner similar to electrical wiring (e.g. make it part of the mortgage for a home or rent payment for an apartment), use targeted taxes to provide support, or make supports part of the traditional welfare assistance programs.

While the above list is not all-encompassing, it provides some alternatives which could be evaluated using the data analysis tool (the DAT) and its associated Paradox database. The intended use of the DAT is to provide a common language and a useful mechanism for interested regulatory and industry representatives to further analyze the changing telecommunications environment. The value of the DAT is that it allows policy makers to model these or other alternatives to produce more informed decisions thus minimizing the potential for unforeseen negative consequences of changes to the current system.