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Allocating and recovering jointly used local loop telephone costs

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EXPLANATION OF TERMS AND ABBREVIATIONS

AT&T - American Telephone and Telegraph Company

BOCs - Bell Operating Companies

CALC - Customer Access Line Charge

CCLC - Carrier Common Line Charge

ENFIA - Exchange Network Facility for Interstate Access

FCC - Federal Communications Commission

IXC - Interexchange Carrier

LATA - Local Access and Transport Area

LEC - Local Exchange Company

MFJ - Modification of Final Judgment

NARUC - National Association of Regulatory Utility Commissioners

NECA - National Exchange Carrier Association

NTS - Non-Traffic Sensitive

OCCs - Other Common Carriers

ORP - Originating Responsibility Plan

SLC - Subscriber Line Charge

SLU - Subscriber Line Usage

SPF - Subscriber Plant Factor

TVA - Tennessee Valley Authority

ABSTRACT

There is $2.3 Billion riding on the answer to a very critical question in the Virginia Telephone Industry. The question concerns who should pay for the embedded investment in jointly used wire and equipment connecting telephone customers to switching offices. This plant, many argue, is needed for access to the local and long distance network regardless of whether a call is made.

Answering this question is a two step process. First these costs must be allocated to the proper jurisdiction (intrastate or interstate) and the proper class of service (toll or local) within the jurisdiction. Second the costs must be recovered from customers (local customers, long distance customers, and interexchange carriers). In the days before long distance competition, a large portion of these costs were allocated to and recovered from toll so local rates were kept affordable. Competitive pressures and changes in the industry are forcing this practice to cease. There is no consenus and a large degree of controversy over the new allocation and recovery process.

In Virginia, existing recovery is based on interim guidelines. A more permanent policy and direction is needed on recovering these jointly used facilities. This research was designed to aid in developing poilcy and direction. Major findings include:

- All customers who use a service (including long distance companies who get local exchange access) should pay for the joint facilities used in furnishing that service.

- The two most logical allocation and recovery methodologies are
  - usage based and
  - stand alone
- Optimum allocation and recovery should be determined by competitive market conditions within a range bounded by stand alone at one end and usage at the other. The competition in this case is bypass.
- A more appropriate and more narrow range would be bounded by existing recovery at one extreme and usage based recovery with a 25% interstate (stand alone) allocation at the other. This is a usage-stand alone hybrid that combines advantages of both approaches.
- Moving from present recovery to the usage-stand alone hybrid would (based on nationwide data) shift about $4.70 in revenue requirements per line per month to end users. Of the $4.70, approximately $2.10 would be a federal Subscriber Line Charge increase. Local rates would only have to absorb about $2.60. Recovery from long distance companies would decrease nearly 60% ($6.5 Billion). The carrier common line charge would fall from 4.33 cents per minute to roughly 1.9 cents.
- Recovery from long distance companies should promote usage (preferably in off peak periods). This would be in the form of a flat rate "rent," or a usage based recovery with volume or tapered discounts. The present uniform usage recovery (carrier common line charge) has no incentive to stimulate usage.

INTRODUCTION

The Problem

Was the telephone network built to carry local calls or long distance calls? This fundamental question has remained unanswered for decades. Today, local calling prices are going up, and long distance rates are declining. Part of the reason has to do with that answer. A war is raging over that issue between the telephone industry, federal regulators, and state regulators. Federal regulators have their answer. The long distance telephone companies have theirs, and the local companies have theirs. State regulators are caught in the middle. In this paper, I will examine that question, and answer it from the perspective of a Virginia regulator.

There is a huge investment in telephone plant and equipment that goes from the telephone company's switching office to each customer's premise. It is commonly called the local loop, and was installed at the local telephone companies' expense. In Virginia, it exceeds $2.3 Billion. Many argue it is needed regardless of whether a call is made, and thus is considered non-traffic sensitive (NTS) or fixed plant. This same plant is used to make a local call or a long distance call. Also, the same line is used to make calls between states (interstate) or calls within a state (intrastate).

Traditionally, the Federal Communications Commission (FCC) set rates for interstate toll calls, and state commissions set rates for intrastate toll as well as local calls. At issue was

how much of the cost of the local loop should be charged to interstate long distance, how much to intrastate long distance, and how much to local.

Historically, less than 10 percent of all calls (local and toll) were interstate, but nearly 30 percent of the costs were allocated there. Substantial portions of the costs were also allocated to intrastate toll. This meant local loop costs for local calling could be kept down. In effect, a profit contribution from toll went to keep local service affordable. Thus, the price of a long distance or a local call bore no relation to the actual cost of providing it.

Overpricing toll to subsidize local worked fine in the monopoly days when the telephone industry was a partnership of the Bell System and the 1500 or so independent companies. That partnership crumbled when competition was allowed in the long distance market, and when the Bell System was broken up. With competition, the concept of sharing revenues vanished, and the need for rates based on economic costs has moved to the forefront. In addition, technology has advanced to the point that it is becoming increasingly affordable to build private networks which bypass portions, if not all, of the public network.

The result of all this leaves state regulators in a dilemma. The problem is determining how to pay for the fixed costs of jointly used local networks while toll competition grows and there is already upward pressure on local rates. The traditional method of cost and revenue allocations is being overhauled. Long distance companies are now paying local companies for the

privilege of accessing the local network (or for the customers' privilege of accessing the long distance network, depending from whose perspective one looks.) These payments are called access charges, and a portion is currently targeted to pay for fixed local loop costs. This, according to the FCC, is a temporary solution. The problem remains: who should pay for these fixed costs?

Objectives

First we must decide how much of the local loop costs should be allocated to the joint services that use it. Second we must determine how much the long distance companies should pay the local companies for having access to that network. Third, we must decide how much customers should pay towards recovering that fixed network. And finally, we should define how the recovery should be structured.

The objective of this investigation is to answer these questions and propose a NTS local loop recovery plan which is:

1. Simple and easy to administer.
2. Easy for customers to understand.
3. Fair to customers, local telephone companies, and long distance companies.
4. A deterrent to uneconomic bypass.

Significance

The Virginia State Corporation Commission began investigating access charges in 1983. That coincided with the overhaul at the Federal level. Companies in Virginia have been operating under interim guidelines since then. The Commission

permitted them to file their own tariffs to recover NTS costs. These filings, for the most part, mirrored FCC tariffs.

The significance of this research is to develop a specific strategy and plan for the Commission to consider for recovering NTS costs in Virginia. If adopted, interim guidelines may be replaced with more permanent Virginia specific procedures for allocating and recovering local loop costs.

HISTORY AND BACKGROUND OF THE PROBLEM

General

The history of this problem may be divided into two broad time periods: (1) before divestiture and (2) after divestiture. Divestiture, of course, was the unprecedented breakup of the Bell System on January 1, 1984 as part of the Consent Decree (Modified Final Judgment) between the Justice Department and American Telephone and Telegraph Company (AT&T). Under the settlement, AT&T agreed to give up ownership of its local telephone companies. It kept, among other things, its long distance business, its research arm (formerly known as Bell Labs), and its equipment manufacturing arm (known then as Western Electric). From this breakup came the concept of access charges. Prior to this, sharing toll revenues was done through a process known as separations, settlements, and division of revenues. The divestiture is significant because it was the end of the pre-competition era of revenue sharing (settlements and division of revenues), and the beginning of the post-competition era (access charges). Although toll competition was allowed years earlier, the cost allocation and revenue sharing procedures had not been revised to reflect it.

The telephone industry had evolved as a partnership of one national long distance company (AT&T Long Lines), 22 local Bell Operating Companies (BOCs) owned by AT&T, and several thousand independent local companies (independent in the sense they were not part of the Bell System). Most interstate long distance (toll) service was provided by AT&T Long Lines. Local service and most intrastate toll was furnished by the local companies.

For many calls, equipment owned by all of these was used, and a method to compensate each was needed. Since much of the plant could be used jointly for local and long distance, a cost allocation method was necessary to determine how much of the joint plant should be allocated to interstate toll, intrastate toll, and local. This cost allocation process was called separations. Once the allocation was done, a method was needed to divide the toll revenues. This cost recovery process was called settlements and division of revenues. Settlements was the process of sharing revenues with the independent companies, and division of revenues was AT&T's reimbursement to the BOCs. All interstate toll revenues were pooled with AT&T and later apportioned to the independents and BOCs based on their relative costs determined through separations studies. The BOCs acted as the clearing house for intrastate toll.

Underlying Factors

In the pre-divestiture days, there were two underlying factors that shaped separations and settlements policy. First was the controversy over two philosophically opposite separations approaches: (1) the Board-to-Board Theory and (2) the Station-to-Station Theory. Second was the phenomenon known as toll rate disparity.

The Board-to-Board principle came first. In calculating toll costs, it considered only the equipment investment between and including the originating and terminating toll switchboards. All local exchange plant, including the local switchboard and local loop, was excluded. The practical effect of this was toll

assumed none of costs of the jointly used exchange plant. All was assigned to local and recovered through local rates.

The Station-to-Station theory evolved later, and included the plant from the originating station (telephone set) to the terminating station in calculating toll costs. Thus, a portion of the jointly used exchange plant was assigned to toll, and exchange rates were relieved of this burden. I will discuss in more detail later how these two philosophies evolved in the separations process.

The second underlying shaper of separations and settlements was the toll rate disparity problem. Simply put, this is the difference in intrastate and interstate toll rates. It had several causes. Primarily, it resulted from the dual regulatory process in the United States where the FCC regulated interstate toll and the state public utility commissions regulated intrastate toll. Since the board-to-board method assigned all local exchange costs to the state jurisdiction, interstate toll was allocated none of these costs. This made interstate toll proportionally less expensive. In addition, advances in technology saw unit costs fall for long haul toll, whereas costs for short haul toll and local service stayed about the same. Most long haul toll is interstate and shorthaul toll is intrastate. Therefore, these economies enabaled interstate toll rates to be reduced over the years to the point that intrastate rates for calls of similar distances were significantly higher. Separations changes over the years reduced this disparity.

1910 - 1930 Period

The history of separations has roots to the early 1900's. In a 1913 Minnesota Rate Case (Simpson, et al. v. Sheppard, 230 US 352), the U.S. Supreme Court examined railroad property investment that had been allocated based on revenues. It found: "It would seem necessary to find a basis for total value of the property independently of revenue and this must be found in the use made of the property."(1) Thus, it said usage instead of revenue should be used to allocate property. The second applicable court decision was even more significant. It applied specifically to telephone cost allocations. In 1930, the Supreme Court in Smith v. Illinois Bell Telephone Company, (282 U.S. 133) held:

> ... While the difficulty in making an exact apportionment of the property is apparent, and extreme nicety is not required, only reasonable measures being essential ... it is quite another matter to ignore altogether the actual uses to which the property is put. It is obvious that, unless an apportionment is made, the intrastate service to which the exchange property is allocated will bear an undue burden ....(2)

In effect, the Court adopted the station-to-station basis of separation. However, AT&T did not rush to implement the Court's decision:

> The station-to-station theory of ratemaking was not accepted fully by the Bell System until 1943 with respect to interstate toll services, and in its intrastate toll services not until 1950, when the company amended those tariffs.(3)

At any rate, the period of 1910 through 1930 saw little interest in separations outside of these two court decisions. The state regulatory commissions as well as the Interstate Commerce Commission (which had interstate communications regulatory

responsibility at the time) paid little, if any, attention to separations matters.

1930 - 1945 Period

The creation of the FCC in 1934 changed that however. Since AT&T profits were excessive, the FCC initiated a long series of AT&T voluntary interstate rate reductions. For example, between 1935 and 1940 several rate reductions took place which cumulatively totaled $95 million. In 1941, over objections of state regulators, another $14 million reduction occured. A $50 million reduction came in 1943, $8 million in 1944, and $21 and $16 million in 1945.(4) These reductions were not duplicated at the state level, and the toll rate disparity problem began growing into a serious issue.

In 1941, the first formal investigation of separations was initiated by the FCC (Docket 6328). This came after urging by the Bell System and the National Association of Railroad and Utility Commissioners (NARUC; now called the National Association of Regulatory Utility Commissioners). Incidentally, and ironically, and this docket remained open for 25 years without a decision. The primary issue was the board-to-board versus station-to-station allocation principle.

A major breakthrough came in 1943 when the Bell System filed interstate tariffs using on the station-to-station principle:

> This reversal, following the adamant stand taken [by AT&T] the previous year, appears to be evidence of recognition by the Bell System of the two-fold character of separations and methods: the formal character, as precription for allocating property, revenues, and expenses to the jurisdiction; the political character governing the direction of costs and rates.(5)

Post War Era

Separations in the post-war era was influenced primarily through politically charged negotiation and compromise between the FCC, NARUC, and the Bell System. There were several highlights. First, the concept of proportionate usage (state verus interstate) was accepted as an appropriate allocation methodology. Second, the first Separations Manual was developed in 1947 as a joint effort of NARUC and the FCC. Third there was increasing pressure on state regulators to increase local rates, and the toll rate disparity problem grew. Hence, the states looked more and more to the interstate jurisdiction as a haven to shift costs. A series of changes (highlighted in Table 1) transferred increasingly more costs to interstate.

Table 1

Separations Changes: 1947 - 1971[6]

Year	Change	Increased Allocation to Interstate (as % of Total Revenues)
1947	Simplification in Methods	2.9%
1952	Charleston Plan	3.7%
1956	Modified Phoenix Plan	3.2%
1962	Simplification in Methods	2.3%
1965	Denver Plan	4.6%
1969	FCC Plan	2.2%
1971	Ozark Plan	2.2%

Unfortunately, states were not able to (or elected not to) take advantage of these shifts, and very few lowered toll rates. AT&T found itself in the anomalous position being able to absorb the increased costs while continuing interstate rate reductions. The demand elasticity for toll calling stimulated usage, and the

rate reductions were offset by increased volumes so total revenues actually increased. This continued into the 1960's and early 1970's when an entirely new force emerged. That was competition.

Competition

Suddenly, through a series of court and FCC decisions, AT&T found it had competitors such as MCI and Sprint in the long distance market. In addition, the local companies, both Bell and independent, found they had long distance companies other than AT&T asking for access to their networks to reach potential toll customers. In effect, the long time partnership ceased to exist because these new competitors were not part of, and by nature could not be a part of the traditional pooling process. These companies, called OCCs or Other (than AT&T) Common Carriers, argued they should not be required to pay the same as AT&T for access to local companies since their connections were inferior to AT&T's. (AT&T customers could make a call by dialing, at most, 11 digits while OCC customers had to dial up to 23 digits.) The OCCs said they should only pay the going business line rate, since that was the facility they used to access the local network. Thus, this nightmare was superimposed on the already controversial question of state versus interstate cost allocations.

The FCC made a somewhat futile attempt to resolve it by approving ENFIA tariffs (Exchange Network Facility for Interstate Access). These gave the OCCs access to local networks at rates that were roughly 35% of AT&T's. ENFIA tariffs and ensuing negotiations were extremely controversial.

Divestiture

Fortunately, (or unfortunately to some), the divestiture preempted ENFIA by ordering BOCs to "offer to all interexchange carriers exchange access on an unbundled, tariffed basis, that is equal in type and quality to that provided for ... AT&T ...."[7] Further, the court ordered the BOCs to file tariffs for exchange access to all carriers, and said these tariffs would take the place of the division of revenues process.

From the MFJ came three fundamental concepts that are paramount to today's industry structure. First, all BOCs were ordered to provide "equal access," and they are now modifying their switching offices to do this. Second, geographic boundaries were drawn to define the difference between exchange communications and interexchange communications. These somewhat arbitrary boundaries are called LATAs (Local Access and Transport Areas). BOCs may provide service only within a LATA, and are prohibited from providing service between them. The IXCs (interexchange carriers which include OCCs plus AT&T) primarily offer service between LATAs, but are not prohibited by the MFJ from serving within them. This is under state jurisdiction, and many states (Virginia included) do not yet permit intraLATA competition. Third, the BOCs were ordered to file exchange access tariffs.

Following the MFJ, the FCC developed an access charge plan which applied to all local exchange companies (LECs) and all interexchange companies. This plan, which will be discussed in the next section, was only for interstate access, and the states

were free to develop their own plans. State plans were needed both for intrastate, interLATA access, and for intrastate, intraLATA access.

The FCC Access Charge Plan

The FCC issued its original access charge plan on February 28, 1983 in its Third Report and Order in Docket 78-72. Interestingly, it did not attempt to change existing cost allocation or separation procedures. These are outlined in Part 67 of the FCC's Rules and Regulations. Part 67 was adopted from the NARUC-FCC Separations Manual. In concurrent proceedings, the FCC addressed the separations issue by: (1) freezing the Subscriber Plant Factor (interstate allocation percentage) as of December 31, 1983 at an average of approximately 28%, and (2) replacing the frozen SPF by a uniform 25% gross assignment factor that is to be phased in over eight years starting in 1986. Thus, ultimately 25% of fixed local exchange costs will be allocated to the interstate jurisdiction.

The FCC's plan deals specifically with cost recovery (formerly known as settlements and division of revenues) instead of cost allocations. It is detailed in Part 69 of its Rules and Regulations. The plan has eleven specific charges or elements that are designed to compensate local exchange companies for providing access to interexchange companies.

We are concerned only with the ones that recover the non-traffic sensitive loop costs. There are two, and they are called the carrier common line charge (CCLC) and the subscriber line charge (SLC; originally known as the customer access line charge or CALC). The basic premise and ultimate goal of the FCC's NTS

cost recovery plan is that most of these costs should no longer be recovered from long distance revenues. Instead, they should be recovered through monthly flat rates charged by local companies to all customers. In effect, the FCC side-stepped the sensitive cost allocation issue by allowing 25% of these costs to continue being allocated to interstate. However, by assigning all of the cost recovery to local instead of long distance customers, it has deviously accomplished the same result that would have occurred had it not assigned any of these costs to the interstate jurisdiction.

As a transition, the FCC is gradually shifting the cost recovery to local customers. The vehicle is the SLC access element. The interexchange carriers are temporarily paying the rest in usage based (per minute of use) payments to the local companies. This is the CCLC element. In theory, under the FCC's plan, as the CCLC goes down over time, the SLC will increase until ultimately the CCLC will approach zero and all loop costs will be recovered through SLCs. (The ultimate CCLC will be a nominal amount to pay for a Universal Service Fund which is a subsidy to high cost companies.)

Another important feature of the FCC's plan is the pooling arrangement for the CCLC. Participation is mandatory. Theoretically, all interstate CCLC payments made by long distance companies go into a pool. The local companies merely act as a conduit to channel the funds into the pool. (In reality, only the cash flow of revenues netted against costs goes into the pool.) The pool is administered by the National

Exchange Carrier Association (NECA), and funds are apportioned to each company according to its costs. The CCLC rate filed by NECA is uniform nationwide. A primary goal of the pool is to keep toll rates from being geographically deaveraged.

According to the FCC, an ideal access charge plan would:

(1) Promote Efficiency: The FCC argued that it is economically inefficient to charge customers based on usage for plant costs that do not vary with the amount of usage. It said the marginal cost of using the local loop was zero. Therefore, the price charged to interexchange carriers should also be zero.

(2) Eliminate Discrimination: The FCC contended that customers making few long distance calls did not make payments that would cover their fixed costs, whereas customers making a large volume of calls made payments that were in excess of their costs. Also, the same facilities were used for different services at different prices. In some cases, different prices were charged for essentially the same services. This, to the FCC, was illegal discrimination.

(3) Discourage Uneconomic Bypass: Customers may elect to use ways of making telephone calls other than the traditional telephone switched network. This is known as bypass. If prices are based on costs, and a customer finds and uses a less expensive alternative (such as constructing its own network), we have economic bypass. That is what competition is all about. However, if a service is priced artificially or arbitrarily high and the customer goes elsewhere, we have uneconomic bypass. The latter is inefficient, and the FCC wants to minimize it.

(4) Preserve Universal Service: A goal of the telephone industry for decades has been to make basic service available and affordable to anyone who wants it. The danger of uneconomic bypass is that the large and most profitable customers will leave the network. The remaining smaller customers would then be faced with large rate increases to make up the contribution of the departed large users. As rates go higher, more customers are forced to leave the network. This snowball effect puts the local companies into what is described by some as a "death spiral".

These are noble goals. The FCC's plan has been praised by some and criticized by many. It is scheduled to be reviewed

later this year. In the meantime, it is the roadmap that all must follow in the interstate arena. The intrastate arena, however, is the focus of this research.

Status in Virginia

The divestiture and the FCC's access charge plan caused the Virginia Commission in 1983 to begin an investigation into providing intrastate of toll service (Case No. PUC830020). Traditional toll settlement agreements ended on December 31, 1983, and the Commission needed a replacement. In its Interim Order of December 23, 1983, the Commission ordered access tariffs for Virginia LECs which were, with one exception, mirror images of their FCC tariffs. They applied for interLATA and intraLATA access.

For interLATA calls the local company bills the end user for, and turns the revenues over to the long distance company. (Some long distance companies bill directly.) The local comapny concurrently bills the long distance company access for originating and/or terminating the call, and keeps the access revenues. There is no intrastate pool similar to the interstate national pool. It is strictly an access "bill and keep" arrangement using, for the most part, tariffs that are mirror images of FCC approved interstate tariffs.

In addition, an originating responsibility plan (ORP) was implemented for intraLATA access. Competition in the intraLATA market is currently prohibited. Therefore, local companies provide intraLATA toll service on a regulated monopoly basis similar to local service. There are no interexchange carriers (with the exception of incidental calling for which the IXCs

reimburse the LECs). Under the ORP, the originating company bills the customer and keeps the revenue. If a different company completes the call, it is paid terminating access charges by the originating company.

All access tariffs were ordered on an interim basis. A subsequent order on November 30, 1984 allowed revisions, again on an interim basis. This order was significant because the Commission stated on page 2:

> However, the Commission is of the opinion that the "mirroring" of interstate access charges is only a temporary phenomenon bridging the transition from toll settlements to cost-based access charges. While each local exchange carrier may not now have its Virginia specific costs, Virginia companies, individually or collectively, should develop costs related to Virginia expenses and investments rather than relying upon costs developed nationally for application to interstate communications.(8)

Nevertheless, mirroring has continued and Virginia specific costs have not been developed. Current access tariffs continue to survive on an interim basis.

Conclusion

In examining the history of settlements, separations, and access charges, several things are apparent. This discipline is complex, arcane, politically charged, evolutionary, and has no hope of ever reaching an ultimate answer or method upon which all can agree. One authority described it this way:

> Telephone separations is a process of cost allocations. It is inherently an arbitrary process in that no absolute correctness or incorrectness can be attributed to the premises which underlie its principles. It all depends on where you want to go and what objectives you are trying to achieve.(9)

As Supreme Court Justice Douglas described it in 1945:

> A separation of properties is merely a step in the determination of costs properly allocable to the various classes of services rendered by a utility. But where as here several classes of services have a common use of the same property, difficulties of separation are obvious. Allocation of costs is not a matter for the slide-rule. It involves judgment on a myriad of facts. It has no claim to exact science.(10)

The primary goal, therefore, would appear to be to continue finding interim and arbitrary solutions that best appease the many interests of the involved parties.

METHODS OF STUDY

The approach of this study is both theoretical and practical. First I will seek a solution from a purely theoretical accounting, economic, and engineering approach. Next I will examine the practical effects of this solution. Industry and state specific data is used to aid in the theoretical and practical examination.

DISCUSSION

Cost Allocation

As pointed out under the Objectives section, the first question to answer concerns allocating the fixed costs to the appropriate jurisdictions and services. The FCC has already determined that 25% of the NTS local loop costs will ultimately be allocated to the interstate jurisdiction. Is this appropriate? How much of the remaining 75% should be allocated to intrastate toll and how much to local? Or is it necessary to allocate the intrastate portion between local and toll? Should the toll be allocated between intraLATA and interLATA? These are the issues.

Garfield and Lovejoy consider fixed costs to be demand costs or capacity costs. They say "in all, at least twenty methods or formulas have been developed for the allocation of demand costs to customer classes."(11)

Many of the same cost allocation theories and arguments similarly apply to cost recovery, that is, who pays and how much they pay. This discussion is limited to cost allocation issues, and will be followed by a separate cost recovery discussion.

I will explore four allocation methodologies: (1) usage based, (2) stand alone, (3) value of service, and (4) marginal cost.

(1) Usage Based Allocation

With this methodology, allocations are based on the relative amount and type of usage over a particular facility. Telephone separations, at least in part, considered usage as a criterion for many years. As pointed out earlier, a 1913 U.S. Supreme

Court case said that allocations should consider the use made of the property. The problem with this method, like most methods, was it never gave the answer everyone wanted. Interstate allocations have been done according to the Ozark plan since 1971. It embodies the usage concept, but a weighting factor is applied. The resulting answer, called the subscriber plant factor (SPF) is, on average, about 3.3 times the interstate subscriber line usage (SLU). Thus, even though usage is only around 8 or 9 percent, approximately 28 percent of subscriber loop costs are allocated to the interstate jurisdiction. The trend showing the evolution of actual usage versus allocation is shown in Figure 1.

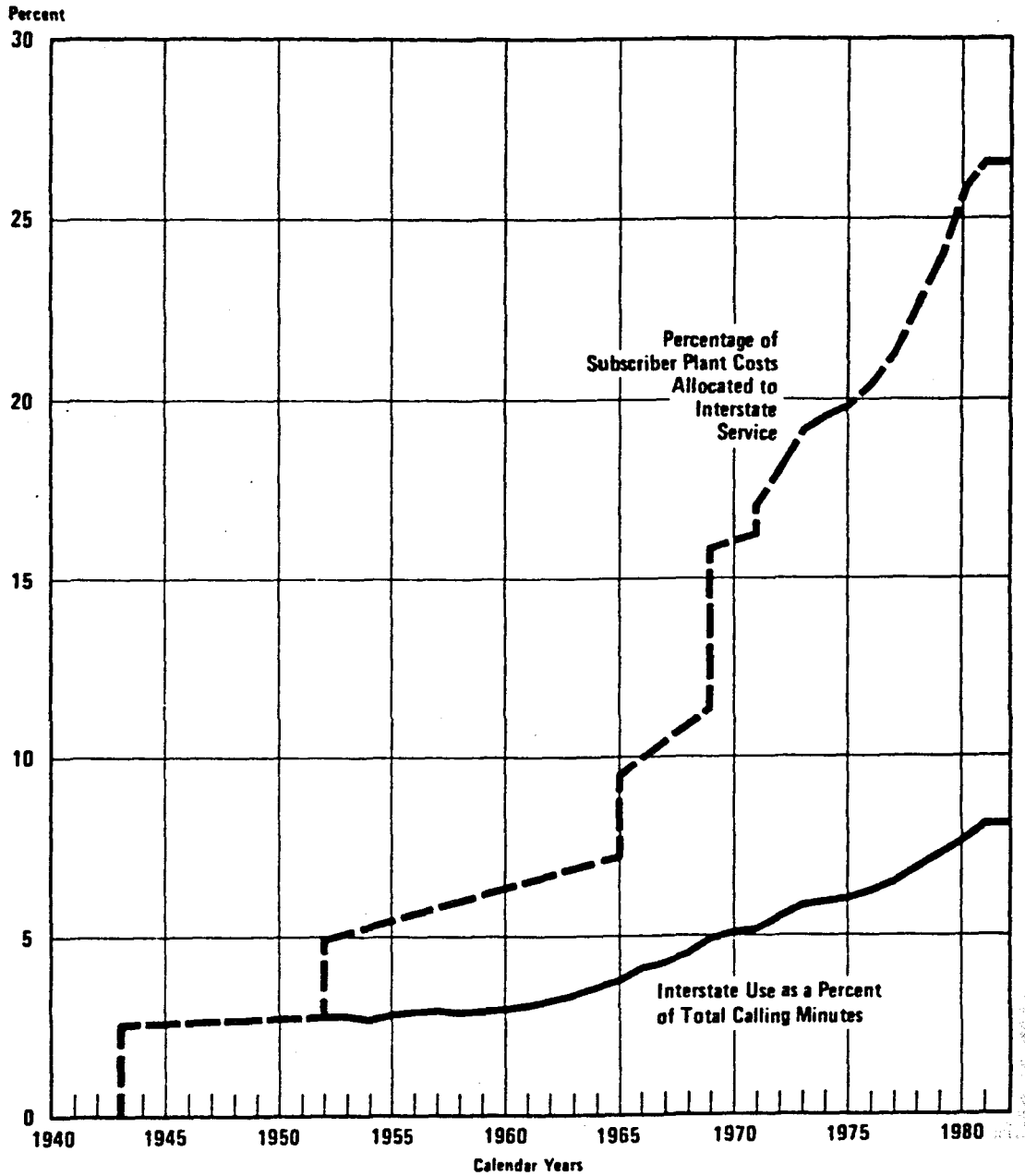
Usage has merit because it is quantitative. It is easy to explain and understand. Many products and services today are priced according to usage. It has not been workable, however, since, in many people's opinion, it does not assign enough costs to the interstate jurisdiction. Even the FCC recognized this when it ordered a 25 percent allocation to interstate.

(2) Stand Alone Allocation

This concept says if it were not possible to share loops, separate networks would have to be built for local calling and toll calling. The total cost of the local network is estimated and added to the estimated cost of the toll network. Allocations are based on the relative ratios of each to the whole. This theory was used as early as 1939 in allocating Tennessee Valley

Figure 1.

Percentage of Subscriber Plant Costs Allocated to Interstate Service (12)



SOURCE: AT&T data.

Authority (TVA) dam costs to joint activities such as (1) flood control, (2) navigation, (3) fertilizer, (4) national defense, and (5) developing power. It was called the "alternative cost avoidance" theory (Glaeser, 1939, p. 267).

There are few, if any, local loop costs that are specifically for either local or toll calling. This part of the network would be built much the same regardless of the service provided. Thus, the stand alone cost for each service is roughly the same. For example, if we assume the cost to build the local network is one unit, and the toll network is one unit, the stand alone allocation for each is 1 ÷ (1 + 1) = 50%. Once the 50 percent allocation to toll is made, the stand alone principle can be used again to further allocate the toll to the intrastate and interstate jurisdictions. Each would end up with 25 percent of the fixed local loop costs, and local service would get 50 percent. Ironically, this method allocates the same amount to the interstate jurisdiction (25%) as the FCC has ordered.

(3) Value of Service Allocation

The value of service principle means a customer pays in relation to the worth of the service to him or her. It has been used for many years in pricing local service. The rationale there (local service) says the more people one can call, the more valuable the service. For example, basic flat-rate local service in Pound, Virginia is $9.57. Pound has less than four thousand weighted main terminals (which are roughly equivalent to customers). The same service in Alexandria is $16.48, or seventy two percent higher. Alexandria customers can call over one

million others. Their service is theoretically more valuable than that of a Pound customer who can call less than one percent as many. Another example of value of service pricing is business rates being traditionally priced higher than residential service since a revenue producing business line is ostensibly more valuable than a residential line.

One problem is this method disregards costs when assigning rates. Even though rates are higher, the unit or per customer plant cost in Alexandria is most likely less than in Pound because the high customer density allows (1) less cable per customer and (2) finer gauge (less expensive) cable to be installed.

Using value of service as a cost allocation methodology requires determining (1) whether local or toll service is more valuable, and (2) whether interstate or intrastate toll is more valuable. This depends on the calling habits of each customer. Local service would be much more valuable to a taxi service, and long distance would be more valuable to a nationwide mail order catalog business. Thus, it is extremely hard to quantify the value of service concept for long distance. One may assume long distance service having the potential to call anyone on the telephone network is more valuable than service to only one particular customer. This is not necessarily true, however, if that person is the only one you call. Because of these difficulties, value of service is not a good cost allocation methodology.

(4) Marginal Cost Allocation

This methodology gets more attention in the context of cost recovery (pricing) as opposed to cost allocation. Not surprisingly, this paper gives it more coverage there as well. As an allocation tool, suffice it to say that marginal cost leads one into an endless circle. NTS local loop costs are, for all practical purposes, fixed (at least in the short run). (Some authorities make rather convincing arguments that local loop costs are not fixed and are not non-traffic sensitive. For a discussion, see Wilson, 1983.) Therefore, the short run marginal cost of making a long distance call (either interstate or intrastate) is zero. This implies the allocation to long distance should be zero. However, the marginal cost of making a local call is also zero, which says no costs should be allocated to local. If no cost is allocated to local and none to long distance, where does one allocate? Marginal cost, then, is not helpful except under the erroneous assumption that the network was built for local service and all NTS costs should be allocated to local since the marginal cost of toll is zero. (The same rationale could as easily prove all costs should be allocated to toll.)

Cost Allocation Conclusions

From the discussion, it is clear that the two methodologies with the most merit are the usage based and the stand alone. These are both quantifiable and logical. The value of service approach is entirely too subjective since it is impossible to get a consensus of all users and all classes of service regarding the relative value of each. Marginal cost (at least in the short

run) begs the chicken/egg question of which comes first -- local service or toll service. It is also impossible to get a consensus on that. The two remaining approaches compare interestingly as shown in Table 2:

Table 2

Comparison of Usage Based and Stand Alone Allocation Methodologies (Percentages of total NTS local loop costs to be allocated to each category)

Jurisdiction	Usage Based[a]	Stand Alone
Local	83.4%	50.0%
Toll:		
Intrastate:		
IntraLATA	2.9%	12.5%
InterLATA	3.6%	12.5%
Total Intrastate	6.5%	25.0%
Interstate	10.1%	25.0%
Total Toll	16.6%	50.0%

[a]Based on the combined minutes of use of the 5 largest Local Exchange Companies in Virginia: Chesapeake & Potomac, Centel, Continental, United Inter-Mountain, and General of the South. Since these companies serve 97% of the customers in Virginia, this is assumed to be representative of a statewide average. (Underlying minutes of use data was accumulated by Larry J. Cody of the Virginia SCC staff.)

These two methodologies give a range of allocation percentages which could easily be justified. I favor the stand alone for several reasons: (1) it is rational (2) it is easy to calculate (3) it is inexpensive to calculate (4) it doesn't change and (5) it is fair. Further, perhaps by coincidence and

perhaps not, the FCC has already determined the allocation to interstate is 25% which is consistent with the stand alone theory.

At this point it is not necessary to allocate the remaining 75% to the various intrastate classes. They are treated as one for ratemaking purposes. However, increased toll competition is evident, and intraLATA toll may be deregulated in the future (it is still regulated but faces competition from resellers). Also, there is increased pressure to price services closer to costs. All these factors point towards a necessity to further allocate intrastate costs between local, intraLATA toll, and interLATA toll. For example, if intraLATA competition is allowed (it is currently being investigated by the Virginia Commission in Docket PUC850036), it will be necessary for local companies to charge themselves access charges to originate and terminate intraLATA toll calls. They will be competing with the same long distance companies that are now their customers, and thus should charge themselves the same access charges they charge the long distance companies. The stand alone methodology is a reasonable way to further allocate NTS local loop costs to the interstate service classes.

Cost Recovery

Now that costs have been allocated, we must decide how they will be paid or recovered. Simply put, who should pay, how much should they pay, and how will they pay? To answer who should pay, there are two issues: (1) which classes of service should pay (e.g., toll or local), and (2) which customers within each class of service should pay (e.g., end users or long distance

companies)? After identifying who should pay, it is important to decide how much each should pay. Once this is determined, we must consider the method of payment, that is, whether it should be a flat rate, based on usage, or other.

In considering who will pay we first must decide over which classes of service or "products" the recovery (revenue requirements) will be spread. There are four: (1) local service, (2) intraLATA toll service, (3) interLATA (intrastate) toll service, and (4) interstate toll service. As a point of clarification, costs were allocated to "jurisdictions" (i.e., interstate versus intrastate), but now the revenue requirements will be spread over, and recovered from, generic classes or types of service (i.e., interstate toll versus intrastate toll) which, not unexpectedly, parallel the jurisdictions. Another point of clarification, for simplicity I will refer to intrastate intraLATA service as "intraLATA", intrastate interLATA as "interLATA" and interstate as "interstate".

The second step in deciding who will pay is identifying the customers within each generic class of service. For local service, there are local customers. Of course this could be further segregated into residential and business, but for sake of simplicity, we will consider local customers as one. The second type of customer is the intraLATA toll customer. The third is interLATA toll and the fourth is the interstate toll customer. These are all end users. (We could say there are only local and toll customers, but further segregating toll is consistent with the way we allocated costs. Also, long distance rates may vary

and in fact are different for most companies in Virginia for intraLATA, interLATA, and interstate toll.)

For the interLATA and interstate toll classes of service there is one other customer of special significance, that being the long distance companies. They are customers of the local exchange companies, and the service they receive is called access, that is, access to the end user customers who originate and terminate toll calls. Since they receive a service furnished over the jointly used local loop, the long distance companies are also candidates to pay for the local loop.

Of course, long distance companies have the option to build their networks directly to end users. In some cases they already have, especially for high usage customers. This is called "local exchange" bypass (opposed to "carrier" bypass when the customer builds its own private network and avoids both the local and the long distance carrier). It is impractical, however, for long distance companies to extend networks to reach <u>all</u> customers. They would have to duplicate that which the local companies already have in place. Thus, it is more economical and more logical for them to reach their customers through local companies' networks. The local companies offer this service to the long distance companies and charge "access" for it.

Long distance companies argue the "access" should work in the opposite direction. That is, the local companies should offer "access" service to end users so they can interconnect with the long distance companies. The end user customers, they say, should pay "access" to the local companies instead of the long distance companies paying it. In the end, of course, the same

customer is going to pay. Either the end user pays the local company direct for access, or the end user pays the long distance company indirectly for access. In the latter case, the access charges (paid to the local company by the long distance company) are an expense of doing business and are built into long distance rates.

The point of all this is to identify five candidates to pay for local loop non-traffic sensitive costs: (1) local service customers, (2) intraLATA toll customers, (3) interLATA toll customers, (4) interstate toll customers, and (5) long distance companies. All are receiving a service and something of economic value, so all should pay.

How much should each pay? As pointed out earlier, the FCC demonstrated that it really doesn't matter how much cost is allocated to the interstate jurisdiction if it is all paid by end users and none by interexchange carriers. Taking it to the extreme, you could theoretically allocate <u>all</u> NTS local loop costs to the interstate jurisdiction and recover <u>all</u> through flat monthly charges to end users. Therefore, the answer to this question is critical.

It is a classic rate design question. We know the revenue requirement (which equals costs determined from the cost allocation process plus a fair return) and we know who should pay. Now we must decide how much of the revenue requirement each customer (or class of service) must pay. In doing this, I will discuss six cost recovery or rate design theories: (1) usage based (2) value of service (3) stand alone (4) revenue based (5)

market based and (6) marginal cost. The first three and the last look very familiar. They are the same as the cost allocation methodologies previously examined. Thus, it is possible to apportion revenue requirements using the same theory used for allocating costs.

(1) Usage Based Recovery

The basic premise here is the same as in the usage based allocation discussion. That is, those using a service should pay for it in proportion to how much they use it. If for example, 10% of total usage is interstate toll (See Table 3), then 10% of NTS local loop revenue requirements should be recovered through interstate toll.

Table 3

Usage Based Recovery by Class of Service

Class of Service	Recovery based on Usage (% of Total Revenue Requirements)[a]
Local	83.4%
Toll:	
Intrastate:	
IntraLATA	2.9%
InterLATA	3.6%
Total Intrastate	6.5%
Interstate	10.1%
Total Toll	16.6%

[a] See Table 2 for reference to the source of these percentages.

Unfortunately, for two classes of service (interLATA toll and interstate toll), this does not answer the question of which customer within the class should pay (end users or long distance companies). This will be discussed later.

(2) Value of Service Recovery

Similar to value of service cost allocations, this says the more valuable the service, the more recovery should come from that service. Ergo, business rates historically have been roughly double residential rates. As I will discuss later in marginal cost recovery, economists say this is inefficient since it artifically supresses business calling and stimulates residential calling. It may be possible to get away with value of service pricing in a regulated world where there is no competition. Introduce competition and one will quickly see bypass if the rate is too high. Also, it is very subjective to quantify the precise value using this method. Is local service more value than interstate toll? For some it may be and for others it may not.

(3) Stand Alone Recovery

The same theory applies here as it did in stand alone allocation. Thus, access charges to interexchange carriers would be priced to recover 25% of the total revenue requirements from interstate toll and 12.5% from interLATA toll. The remaining 62.5% would be recovered through local rates (50%) and intraLATA toll rates (12.5%) (see Table 4).

Table 4

Stand Alone Recovery
by Class of Service

Class of Service	Stand Alone Recovery (% of Total Revenue Requirements)
Local	50.0%
Toll:	
Intrastate:	
IntraLATA	12.5%
InterLATA	12.5%
Total Intrastate	25.0%
Interstate	25.0%
Total Toll	50.0%

Again, as in usage based recovery, this method does not say whether interLATA toll and interstate toll recovery should come from end users or long distance companies.

(4) Revenue Based Recovery

This recovery principle says future recovery should come from the same customers in the same proportions as in the past. It gives no weight to whether past methodologies were correct or whether changing conditions exist. It has merit, nonetheless, when a transition is necessary to move from one plan to another radically different one to avoid abrupt changes that could force customer dislocations.

(5) Market Based Recovery

The idea here is to see what the competitive market will bear, as long as prices are above costs. Competitiors in this market are the end user customers, the IXC customers, and the LECs. The competing service is bypass. If recovery is excessive from certain customers, they will bypass. For example, if

excessive recovery comes from end users, they may build their own private networks to bypass the LECs. That is a signal to regulators and companies to reduce prices. The goal is to seek a market determined price that is above costs and low enough to prevent uneconomic bypass. The inherent danger is it may take bypass to prove rates are too high. Once bypass occurs, it is unlikely the customers will return, especially where the customer (either interexchange carriers or end users) builds its own network.

(6) Marginal Cost Recovery

This theory is important since it considers which customer within a class of service should pay. I will use this in attempting to answer whether end users or long distance companies should pay for local loop NTS recovery in the interLATA and interstate toll classes of service.

According to Kahn, (1970, p. 65 & 66), if economic theory is to have any relevance to public utility pricing, equating price and marginal cost must be the starting point. He says:

> ... marginal cost is the cost of producing one more unit; it can equally be envisaged as the cost that would be saved by producing one less unit. Looked at the first way, it may be termed incremental cost.... Observed in the second way, it is synonymous with avoidable costs....(13)

Economists argue that efficient competitive pricing would have prices equal short-run marginal costs. The problem is first identifying marginal costs, and second segregating short-run from long-run marginal costs. Kahn (1970, p. 71) says causal responsibility is the key to defining marginal costs. That is, the person who causes an additional unit of a commodity

to be produced and purchased should have to pay for the incremental cost of that unit. Conversely, the incremental cost of that unit is the marginal cost. At the surface, it appears easy to segregate short-run costs from long-run costs. For example, a short-run cost would include the material and production costs to manufacture one more unit of a product. The cost to expand or replace the production facility would not be a short-run cost unless that unit couldn't be produced without expansion or replacement. Any fixed costs would not be considered short-run marginal costs. In the long run, however, all costs are variable and thus marginal. A deeper look reveals several problems, especially in telephone utility pricing. Is depreciation a short-run marginal cost? Since it is typically the second highest operating expense (next to maintenance), it would be suicidal to ignore depreciation in telephone pricing. However, no accountant or engineer would agree that depreciation is a short-run marginal cost. It is a fixed cost. So it seems dangerous to argue prices should equal short-run marginal costs thereby ignoring the second highest operating expense. Kahn gets around this (1970 p. 72) by arguing depreciation is a variable cost since wear and tear on equipment varies with use. Service lives of today's technology equipment are largely a function of economic life due to obsolescence and not wear and tear, however. I point this out to illustrate the economic principle of setting price equal to marginal cost is somewhat ambiguous in telephone pricing.

Non-traffic sensitive local loop plant is (arguably) a fixed, as opposed to variable, cost in the short run. Therefore, its short-run marginal cost is zero, and this theory says there should be no charge to interexchange long distance companies for using this plant to originate and terminate calls. As Kahn points out, "Access costs are incurred when the subscriber subscribes -- not to interstate service, not to intrastate service, not to local service, but to the availability of any and all of these."[14] He says (1982, p. 4) the Smith Illinois Bell Supreme Court decision arrived at an economically false proposition that interstate usage should bear some of the non-traffic sensitive costs. Thus, he agrees (and applauds) the FCC philosophy and goal that these costs should not be assessed against long distance companies but should be levied directly on subscribers in a lump sum monthly charge for the availability of local, intrastate toll, and interstate toll.

Kahn (1982) makes a very appealing argument in favor of using marginal cost pricing for telephone service. He says local rates have been subsidized by toll for many years because toll rates are priced to include recovery of NTS costs. Further, it is wrong to recover costs that do not vary with usage (local loop costs) in usage charges (toll rates). He says (this was in 1982 so the prices are dated but the point is still applicable):

> ... people seem to believe that if something is regulated it can defy the principles of economics: the same people who may be paying $15 - $25 per month for cable TV, Home Box Office, and the like seem to regard a $6 - $10 rate for unlimited local calling as a God-given right.[15]

He also calls for deaveraging and unbundling:

> There's no reason why the people being served in existing service areas by existing drop lines, should be subsidizing the people who are causing the system to incur new, higher costs of access to the network.(16)

> ... by putting the burden of access charging on the operating companies, on the basis of their own, individual costs, the (Consent) Decree clearly encourages de-averaging ... which is also the direction economic efficiency dictates.(17)

Thus, the marginal cost pricing theory would have the long distance companies pay none of the NTS local loop cost, and the end users pay all. The person with "causal responsibility" gets the tab. In theory it sounds good, but it overlooks several critical points. First, telephone service, unlike electric, gas and other utilities, is two-way. Its value lies both in being able to make as well as receive calls. In fact, more value is probably placed in making calls which sharply contrasts with other utility services where you only receive electricity, etc. Telephone pricing has traditionally been designed by averaging and bundling to make the service affordable to all. The more people to call and receive calls from, the better and more valuable the service. If one customer's marginal cost is very small, it doesn't accomplish anything to deaverage and unbundle to make that customer's service cheap if others' service becomes prohibitively expensive. If others drop off the network and the first customer has no one to call, the value of his service is not much. This gets back to the "value of service" pricing theory. Of course there are exceptions where a customer may wish to make and receive calls from only one other customer or a limited number of customers. A typical example would be the

internal calling needs of a business with several locations. However, the vast majority of customers, I believe, desire to have the capability to make and receive calls from virtually everyone. Strict marginal cost pricing would not allow this.

Second, marginal cost pricing would permit the economic falacy of allowing someone to get something of value and pay nothing for it. There certainly is value for a long distance company in being able to have its calls originated and terminated without having to extend its network to interconnect directly with end users.

For these reasons, I conclude the marginal cost economic premise that end users should pay all NTS local loop costs and long distance companies should pay none is flawed. The long distance companies should pay some if not all NTS local loop costs allocated to the interLATA and interstate jurisdictions. A close analogy to this situation is a shopping mall or an airport. Both of these have common areas such as enclosed walkways, lounges, restrooms, etc. that are largely fixed costs. These areas are used jointly by customers going to the stores in the mall or by airline passengers. The marginal cost of that customer or passenger using the common area is zero (except for minor cleaning and maintenance). Therefore, the store customers and passengers are not charged a flat fee to enter the mall or airport. These fixed costs are recovered through the rent charged to the stores and airlines, and are passed on to customers in the cost of merchandise and plane fares. The jointly used area can be thought of as the local loop, and the stores and airlines are the long distance companies. It is

illogical to expect customers to buy tickets to enter a mall or airport. This would deter usage. It is equally illogical to expect telephone customers to pay local loop recovery in the form of a segregated flat rate charge. Instead the local companies should charge rent to the long distance companies. In turn, this would be built into prices of the LEC's merchandise -- toll calls.

The next question asks how the payment should be made. The most obvious forms are through fixed rates, uniform usage rates declining block or variable usage rates, or a combination of all. The underlying economic principle here, I believe, is to develop a rate schedule that has an incentive to promote usage and efficiency. The flat rate does this best. Present local service usage of over 80% (which for the most part is based on flat rates) is a prime example. (In fact, some argue this service has been over-promoted to the point of being economically inefficient.) The uniform usage rate is less desirable. If more calling means paying more at the same rate (for example, at 4.5 cents per minute), the less incentive there is to call. The declining block variable usage rate encourages more calling or at least rewards more calling by giving lower rates or volume discounts for high usage. Therefore, the preferred pricing scheme would be to use flat rates, variable usage rates, or a combination of the two. Since NTS local loop costs are fixed costs in the short run, it seems logical to recover these costs through fixed or flat rate charges.

Cost Recovery Conclusions

The original questions were: (1) Who should pay, (2) How much should each pay, and (3) How will they pay? From the foregoing discussion, we can conclude that (1) recovery for NTS local loop costs should come from local service, intraLATA toll service, interLATA toll service, and interstate toll service. The end user customers of the first two service classes should pay. For the last two, long distance companies should pay some, if not all, of the costs allocated to those jurisdictions. The amount of the payment depends on the revenue requirements assigned to each class of service. The two most logical assignment methods are (1) usage based and (2) stand alone. The form of payment should be flat rate.

RESULTS OF STUDY

With this theoretical and sometimes opinionated discussion behind us, I will now present a practical evaluation of the various allocation and recovery alternatives using empirical data. These results are designed to give zone-of-reasonableness answers and are not intended to be exact. They are rough estimates at best. Many assumptions were made, but the results give an accurate portrayal of the issues (with the potential risk of being over simplified).

Remember the present allocation and recovery guidelines:

- Allocation of NTS local loop costs is frozen at 1983 Subscriber Plant Factor (SPF) levels. This averages 28% nationwide.
- The interstate allocation will move (up or down) towards 25% for each company over 8 years.
- Current interstate recovery comes in part from a carrier common line usage charge of 4.33 cents per minute of use paid by the long distance companies to the local companies.
- The rest of the interstate recovery comes from a flat monthly subscriber line charge paid by end users. It equals $1 for residential and single line business, a maximum of $6.00 for multi-line business, and $2.00 for Centrex.

First I will look at this issue from a national perspective. The estimated 1985 NTS local loop revenue requirement is $35.6 Billion per year. (Goldberg, 1986, p. 1) This equals approximately $310 per line or $25.80 per line per month. Column (1) of Table 5 shows how this is presently recovered. Column (2) shows the recovery assuming costs are allocated and recovered based on usage. Column (3) assumes allocation and recovery based on stand alone costs. Column (4) assumes 25% of the costs will

be allocated to the interstate jurisdiction (as the stand alone theory would do and the FCC will do over 8 years). Recovery from long distance companies is based on usage. For interstate, the difference between the 25% cost allocation ($8.9B) and the usage recovery ($3.6B) is recovered through the SLC ($5.3B). For the 75% intrastate allocation ($26.7B), long distance companies pay the usage based CCLC ($1.3B) and the residual ($25.4B) is recovered from local and intraLATA toll.

Table 5

Nationwide NTS Local Loop Recovery Analysis
($ Billions)

Recovery Source	(1) Present Recovery[a]	(2) Usage Based[b]	(3) Stand Alone[c]	(4) Usage Bas With 25% Allocatc
End Users:				
Intrastate				
Local, Toll,[d] & SLC[e]	21.8	30.7	22.3	25.4
Interstate				
SLC	2.4	0	0	5.3
End User Subtotal	24.2	30.7	22.3	30.7
Long Distance Companies:				
Intrastate				
InterLATA Toll (CCLC)	3.1	1.3	4.4	1.3
Interstate				
Interstate Toll (CCLC)	8.3	3.6	8.9	3.6
Long Distance Company Subtotal	11.4	4.9	13.3	4.9
Grand Total	35.6	35.6	35.6	35.6
Intrastate Subtotal	24.9	32.0	26.7	26.7
Interstate Subtotal	10.7	3.6	8.9	8.9
Grand Total	35.6	35.6	35.6	35.6

[a] Present Recovery data is from J. J. Goldberg's "Recovery of Interstate NTS Revenue Requirements: Current and Projected Results"
[b] Based on percentages in Table 3.
[c] Based on percentages in Table 4.
[d] IntraLATA Toll
[e] Most states, including Virginia, do not have an intrastate SLC.

As shown in Table 6, moving from the present condition to a Usage Based plan (Column 2) would shift $6.5B to end users (about $4.70 per line per month), which is not an unbearable amount. It would also shift $7.1B from the interstate to the intrastate jurisdiction. In doing so, revenue requirements to long distance companies would reduce $6.5B or 57%. Using the current interstate CCLC of 4.33 cents per minute as a base, this rate would fall to 1.86 cents. [(1 - .57) x 4.33]

Moving from Column (1) to a Stand Alone plan (Column 3) would decrease end user revenue requirements by $1.9B. However, $1.8B would shift to the intrastate jurisdiction, and long distance company revenue requirements would increase $1.9B. The CCLC would increase to 5.05 cents. This could be a problem if long distance companies are correct in saying existing CCLC rates are inducing uneconomic bypass.

A shift from existing to a Usage Based Recovery with a 25% interstate allocator (Column 4) would increase end user revenue requirements the same as moving to Column 2 ($6.5B or $4.70 per line per month). However, $2.9B of the $6.5B will come from the interstate SLC. Thus, intrastate local rates will only have to absorb $3.6B or $2.60 per line per month. The long distance companies get the same $6.5B reduction (1.98 cents CCLC) and only $1.8B additional revenue requirements shift to intrastate. The advantages of this plan are very appealing.

Table 6

Nationwide NTS Local Loop Recovery Analysis
Changes from Present Recovery
($ Billions)

Recovery Source	(1) Present Recovery	(2) Usage Based	(3) Stand Alone	(4) Usage Ba: With 25% Allocatc
End Users:				
Intrastate				
Local, Toll & SLC	0	8.9	0.5	3.6
Interstate				
SLC	0	(2.4)	(2.4)	2.9
End User Subtotal	0	6.5	(1.9)	6.5
Long Distance Companies:				
Intrastate				
InterLATA Toll (CCLC)	0	(1.8)	1.3	(1.8)
Interstate				
Interstate Toll (CCLC)	0	(4.7)	0.6	(4.7)
Long Distance Company Subtotal	0	(6.5)	1.9	(6.5)
Grand Total	0	0	0	0
Intrastate Subtotal	0	7.1	1.8	1.8
Interstate Subtotal	0	(7.1)	(1.8)	(1.8)
Grand Total	0	0	0	0

CONCLUSIONS & RECOMMENDATIONS

There are two cost allocation and cost recovery techniques that have merit. They are the (1) usage based and (2) stand alone. A comparison follows:

Usage Based	Stand Alone
o Allocates more costs to intrastate than stand alone and more than existing	o Allocates less costs to intrastate than usage based and more than existing
o Recovers more from End Users than stand alone and more than existing	o Recovers less from end users than usage based and less than existing
o Recovers less from long distance companies	o Recovers more from long distance companies
o Has no End User SLC	o Has no End User SLC
o Recovers all interstate costs from long distance companies	o Recovers all interstate costs from long distance companies
o Interstate recovery would be less than existing	o Interstate recovery would be less than existing
o Intrastate InterLATA recovery would be less than stand alone and less than existing	o Intrastate InterLATA recovery would be more than usage based and more than existing

Using a usage based allocation and recovery method would appear to be the most objective and logical approach. However, this perhaps unnecessarily shifts significant revenue requirements to the intrastate jurisdiction and the end users. On the other hand, a stand alone allocation and recovery plan would require increased recovery from long distance companies, most likely through higher carrier common line charges. This approach is at odds with the current trend to reduce these charges. I suggest it is appropriate to adopt a range of

recovery with usage as one extreme and stand alone as the other. The optimum level within the range would be determined by competitive market conditions.

Unfortunately, however, a range with this variance is not all that helpful for the near term problem at hand. Therefore, I suggest a more narrow range that would be bounded by existing recovery on the upper end and usage based recovery with a 25% interstate allocation at the lower end. Again, optimal rates would be determined by market conditions (as discussed on pages 31 and 32) within this range. There are several advantages. First, this would require minimal changes to existing procedures. Part 67 of the FCC rules (cost allocations) would not have to be altered. Only Part 69 (cost recovery) would require change. Second, present recovery from long distance companies would be frozen. Therefore, if there truly is a bypass problem (and this has not yet been proven conclusively), it would not be made worse. Third, the usage based recovery with a 25% interstate allocation is extremely attractive as it is a hybrid of the stand alone allocation method and the usage based recovery method. It combines the advantages of both by having the long distance companies pay their fair share determined by usage without shifting additional revenue requirements to the intrastate jurisdiction. The disadvantage is it shifts additional revenue requirements to end users in the form of higher Subscriber Line Charges (slightly more than double present recovery) and it increases revenue requirements for local and intraLATA toll by roughly 16%. However, this is a worst case scenario. It is entirely possible that market conditions would support higher

recovery from long distance companies without significant bypass. Bypass could be easily monitored by looking at the usage trends from year to year. If total minutes of use increase at a stable rate, it is unlikely bypass is a problem. However, if minutes of use decline, bypass is a likely cause.

A variation of this proposal would be to treat originating and terminating minutes of use differently. Since bypass most easily and frequently occurs on the originating end, the originating CCLC rate could be reduced towards the lower end of the range (usage based). Since most customers wish to have the capability to call "the world", it is much more difficult to bypass on the terminating end of the call. Accordingly, the terminating CCLC rate could be kept at present levels. The FCC in fact recently issued guidelines that freeze the terminating CCLC at the present 4.33 cents per minute rate, and allow the originating rate to decline.

Concerning the form of recovery, I believe local companies should be given pricing flexibility that would stimulate usage. The preferred choice would be for the local companies to charge a flat rate "rent" to the long distance companies for use of the local loop. This rent could be renegotiated yearly or even monthly if conditions warrant. It could be calculated using the previously discussed parameters. That is, it would be market driven within a predetermined range. The second choice would be to continue a usage based recovery rate but institute volume

discounts or tapered rates to induce usage (preferably in off peak periods). The least preferred option is to continue the uniform CCLC.

In conclusion I emphasize there is not a single correct answer in the world of separations and access charges. This field is in a state of permanent change. I trust in this paper I have given insight to the history of the problem, the theory of current issues, as well as offering a workable plan for the future.

FOOTNOTES

(1) James W. Sichter, "Separations and Settlements and the Transition to Access Charges." Reference Material Handed Out at the 1985 NARUC Annual Regulatory Studies Program, p. 1.

(2) Ibid., p. 4.

(3) Richard Gabel, Development of Separations Principles in the Telephone Industry. East Lansing, Michigan. Institute of Public Utilities, Division of Research, Graduate School of Business Administration, Michigan State University, 1967, p. 155.

(4) James W. Sichter, "Separations and Settlements and the Transition to Access Charges." Reference Material Handed Out at the 1985 NARUC Annual Regulatory Studies Program, p. 4.

(5) Richard Gabel, Development of Separations Principles in the Telephone Industry. East Lansing, Michigan. Institute of Public Utilities, Division of Research, Graduate School of Business Administration, Michigan State University, 1967, p. 157.

(6) James W. Sichter, "Separations and Settlements and the Transition to Access Charges." Reference Material Handed Out at the 1985 NARUC Annual Regulatory Studies Program, p. 7.

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