



CIRF

**Converging Industries Research
Foundation**

Practical Solutions for Communications Policy

**Pick a Card: Cost Allocations and the
Impact on Service Competition**

October 7, 1997

*Presentation at the November 1997 NARUC Meeting,
Boston, MA*

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Telecommunications Industries Analysis Project:

Pick a Card: Cost Allocations and the Impact on Service Competition

Carol Weinhaus, Sally Simmons, David Charlton, *et al.*
October 7, 1997

Presentation at the November 1997 NARUC Meeting, Boston, MA.

The views expressed in this paper do not necessarily reflect the viewpoints of individual participants.

The Telecommunications Industries Analysis Project is associated with the Public Utility Research Center at the University of Florida College of Business Administration.

In addition to the work of project participants, the project appreciates the assistance of GVNW, Inc. with development of the telephone/cable TV model used in this paper.

Graphics were produced by Mark Carroll.

For information on this research, contact Carol Weinhaus at:
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List of Acronyms

List of Acronyms

ARMIS	Automated Reporting Management Information System
Cable TV	Cable Television
CAP	Competitive Access Provider
CATV	Cable Television
ENFIA	Exchange Network Facilities for Interstate Access
FCC	Federal Communications Commission
ICC	Interstate Commerce Commission
ILEC	Incumbent Local Exchange Carrier
IS	Interstate
IntraLATA	Intrastate Local Access and Transport Area
IXC	Interexchange Carrier
LEC	Local Exchange Carrier
NARUC	National Association of Regulatory Utility Commissioners
OVS	Open Video Systems
PCS	Personal Communications Services
POTS	Plain Old Telephone Service
PSN	Public Switched Network
ROR	Rate of Return
RTB	Rural Telephone Bank
Telco	Telephone Company
TRS	Telephone Relay Service
TV	Television
USOA	Uniform System of Accounts
VDT	Video Dial Tone
WATS	Wide Area Telecommunications Services

Project Information

List of Participants in the Telecommunications Industries Analysis Project

October 1997

State Regulators

NARUC Representatives from:
California Public Utilities Commission
Florida Public Service Commission
Illinois Commerce Commission
Iowa Utilities Board
Massachusetts Department of Public
Utilities

Companies and Governments

AT&T
Bell Atlantic
BellSouth
Corning
France
France Telecom
GTE
Kalona Cooperative Telephone
MCI
Nortel
NTT America
SBC Communications
Sprint
Sprint Local Telecom Division
360° Communications
U S WEST

Sponsors:

Corporation for Public Broadcasting

Assisting with *public* data:

Bellcore
Federal Communications Commission
National Exchange Carrier Association
National Telecommunications and Information Administration

Project Information, cont.

Background on the Telecommunications Industries Analysis Project

The Telecommunications Industries Analysis Project (TIAP), a seven-year-old research consortium, conducts and reports impartial research in the areas where network planning, business financials, and public policy (regulation and legislation) intersect. The participants actively work together to develop new options for telecommunications policies to meet the needs of consumers, governments, and companies in a changing, competitive environment. Participants include regulators, domestic and foreign telecommunications companies, materials and equipment manufacturers, and other communications-based organizations.

The purpose of the Project is to produce research and analysis that will assist policy makers in making informed decisions.

TIAP incorporates the following features:

- **Neutral setting**
The Project provides a neutral setting, free of partiality, thereby ensuring objective and independent research.
- **Multiple viewpoints**
Participants play an active role in the research and analysis, represent their own interests, and understand and assist in developing others' perspectives.
- **Analysis and results of alternatives**
The Project provides research data, tools, and models for critical decision making.
- **Public distribution of research**
Data used by this Project are publicly available. Research products become public domain information.

I. Introduction

Introduction

When a magician asks you to “Pick a card, pick any card,” out of a deck, you have fifty-two choices, any one of which will do the trick. However, once picked, your card limits the options available to the magician, who must use this particular card as the focus for the trick. In a similar manner, when a method of defining costs for regulatory purposes is at issue, you have a vast array of choices. However, once selected, your choice channels the result in a particular direction.

This paper examines the result of selecting a particular choice, called “cost allocations,” and its impact on service competition and on investment in networks that share services. When the same network carries two or more services, traditional communications regulatory rules, called cost allocations, distribute the common costs¹ of this network among the services. These rules currently divide, or “allocate,” costs of networks (and the associated overheads) along various service lines, such as voice (telephony) and video (cable TV).²

This paper shows the following two points:

- Arbitrary regulatory treatment (including retroactive regulation) of new services before they have even been developed may delay, or even prevent, the deployment of these services. (Regulatory uncertainty is a disincentive for investment).³
- Using cost allocations, which were developed for a regulated monopoly market, arbitrarily favors one industry over another and inhibits competition.

In terms of government oversight, the regulated world pays attention to costs and allowed rate of return on investment; the unregulated world focuses mainly on prices and anti-competitive behavior. This paper illustrates the consequences of applying thinking appropriate for a fully regulated environment to an environment where there is partial competition. Regulatory rules (such as cost allocations) established for one objective may have unintended consequences on another objective (such as the deployment of new services and/or technologies).

To show the impact of different allocations on the incentives to deploy voice and video services over a single network, this paper uses proposals from the Federal Communications Commission’s (FCC’s) 1996 *Open Video Systems (OVS) Proceeding* and a state filing under the FCC’s earlier 1992 *Video Dial Tone (VDT) Proceeding*.⁴ This paper focuses on the *OVS Proceeding* (which has superseded the *VDT Proceeding*) because a decision on *OVS* has yet to be made.

The simple model used in this paper compares three different cost allocation scenarios that allocate the common costs of a telephone company network between voice and video services. For each scenario, costs are modeled for representative urban, suburban, and rural facilities. The results for telephone company provision of video services are then compared to cable TV company provision of video services.

I. Introduction, cont.

The sections in this paper cover the following items:

- **Section II, What is OVS?:** Provides background on issues associated with the FCC's *OVS Proceeding*, which covers the transmission of voice and video services over the same facilities.
- **Section III, What are the Unintended Consequences and Issues?:** Explains some of the unintended consequences of using cost allocations which were developed for a monopoly structure. This section also describes current cost issues associated with the FCC's accounting rules.
- **Section IV, What are the Model's Inputs and Outputs?:** Describes a simple voice/video service model for a telephone network which is compared with a cable TV video network. Three scenarios are modeled.
- **Section V, What Do the Results Indicate?:** Explains why different allocation scenarios favor one industry over another for the provision of video services.
- **Section VI, What are Some New Options?:** Provides new options that might be used instead of cost allocations as the oversight mechanism for voice/video networks.
- **Section VII, Appendix A: What are Cost Allocations?:** Presents background on the use of cost allocations and indicates why cost allocations are arbitrary.
- **Section VIII, Appendix B: Calculations and Sources for Figure 1:** Provides the calculations and assumptions used to produce the dollar amounts in **Figure 1**.
- **Section IX, Notes:** Provides sources and additional background information.

II. What is OVS?

What is OVS?

In May 1996, the FCC initiated its *OVS Proceeding* to comply with the *Telecommunications Act of 1996*⁵ requirements aimed at eliminating barriers to entering the video services market, speeding up the development of video competition, and providing consumers with increased program choices.⁶ The focus of this proceeding was on the “provision of video programming by incumbent local exchange carriers.”⁷ In this proceeding, the FCC selected cost allocations (Part 64 of the regulatory accounting rules) as the method to protect customers using regulated telephone services and to protect companies entering the unregulated video services market.⁸ The FCC also indicated that it was considering an allocation of 50% voice (regulated) and 50% video (nonregulated) to split the costs of the telephone company local loop.⁹ The FCC asked for input on whether this was the right allocation.

“Specifically, we seek to amend our cost allocation rules and procedures to accommodate an incumbent local exchange carrier's use of the same network facilities to provide video programming service and other competitive offerings not subject to Title II regulation, as well as telephone and other Title II offerings. The basic problem addressed in this proceeding is how to allocate common costs between the nonregulated offerings that *will be* introduced by incumbent local exchange carriers and the regulated services they already offer. *Our current cost allocation rules were not designed for this task.*” [Emphasis added]¹⁰

The issue of OVS voice/video allocations has been left in limbo for over a year (since May 10, 1996).¹¹ In August 1996, the FCC had a draft OVS report that, instead of cost allocations, used a model based on current stand-alone costs for voice and stand-alone costs for video.¹² The FCC's change to another method for overseeing OVS costs was based on the following points:

- Voice/video allocations based on usage for loop facilities made no sense since high-capacity, digital data transfer was not comparable with voice transmission.
- It was hard to make projections for services which were yet to be offered.

As of September 1997, this draft report had yet to be issued. Any company providing OVS before the rules came out would have these rules applied retroactively. As of September 18, 1997, six companies had been certified by the FCC to provide OVS in selected cities.¹³

III. What are the Unintended Consequences and Issues?

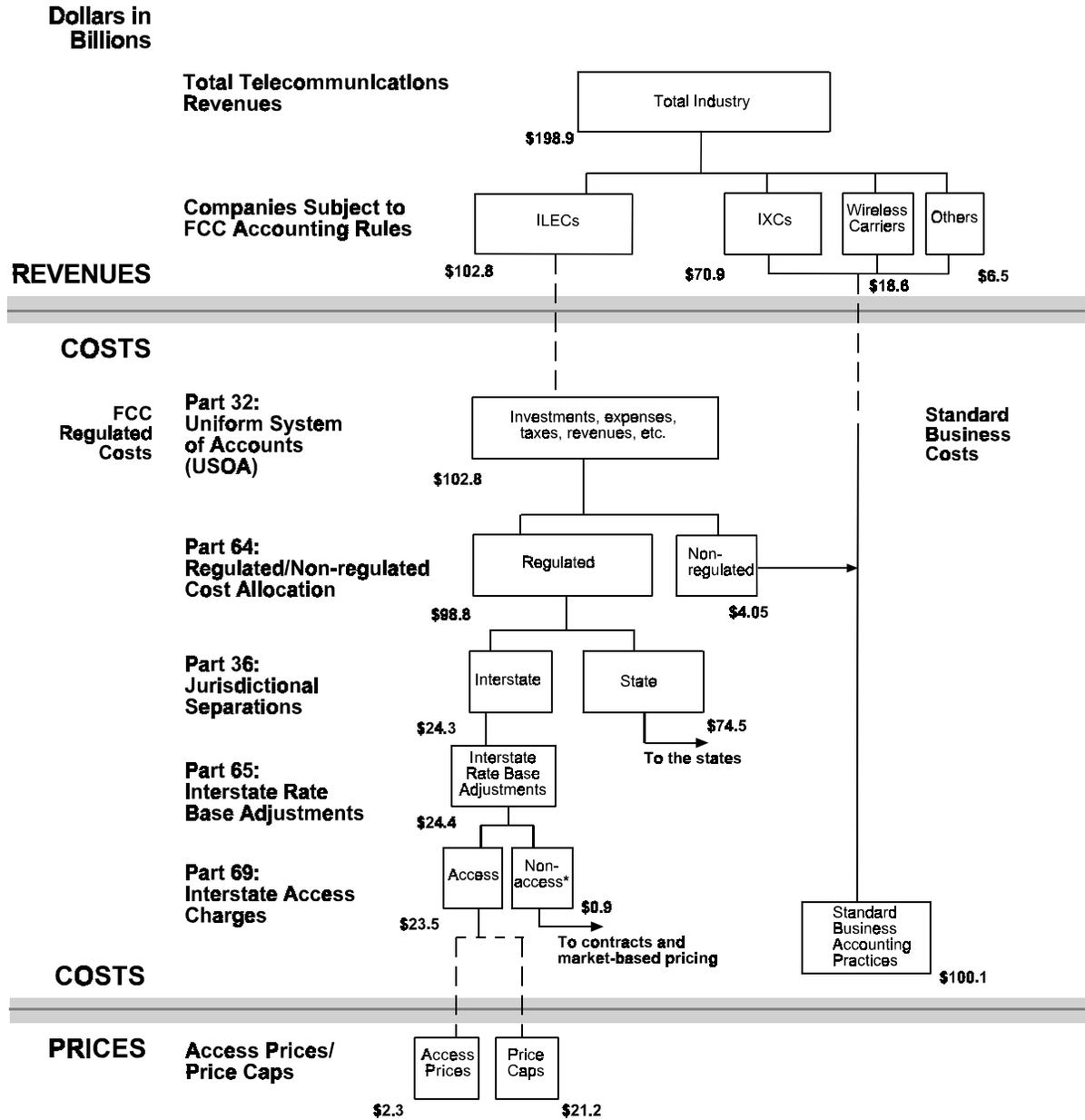
What Regulatory Accounting Rules Would Apply to OVS Allocations?

Figure 1 is a flow chart showing the relation between revenues, costs, and prices for telecommunications services. Only the traditional local telephone companies, called incumbent local exchange carriers (ILECs), are subject to regulation of costs, revenues, and prices. Other telecommunications companies, such as long distance companies (interexchange carriers, or IXC), wireless companies, and competitive access providers (CAPs), which include cable TV companies, are considered unregulated even if some of them are subject to price regulation. These companies follow standard business accounting practices.

The proposed FCC allocations for OVS fit into Part 64 of the regulatory accounting rules.¹⁴ These rules divide total ILEC costs between regulated and nonregulated categories. These categories, in turn, become the basis for setting regulated prices. For example, the cost of the line (local loop) that runs between the customer's location and the telephone company's local switch is currently recovered from regulated telephone services. If this loop were to carry both voice and video services, then the debate goes, "How much of this loop should be paid for by each service?"

III. What are the Unintended Consequences and Issues?, cont.

Figure 1: Flow Chart for 1996 Telecommunications Revenues, Costs, and Prices



*Non-access consists of two categories: (1) Billing & Collection and (2) Interexchange Category

III. What are the Unintended Consequences and Issues?, cont.

What are the Unintended Consequences of Regulatory Accounting Rules?

Using regulatory accounting rules whose origins lie in monopoly utility regulation for new competitive services, such as OVS, may have unintended consequences.¹⁵ **Figure 2** provides descriptions, objectives, and unintended consequences for the FCC accounting and cost allocations rules in **Figure 1**.

There are two aspects of the *OVS Proceeding* which may unintentionally reduce incentives for investment in network facilities. First, the allocation process itself increases regulatory uncertainty and increases the level of risk of recovery. Given the choice, companies are more likely to make investments with less risk, or with greater return on their investments at the same level of risk.¹⁶ Second, delays in setting the ground rules force companies to make investments in other areas. After issuing its first order in the *OVS Proceeding*, the FCC left the treatment of telephone companies offering OVS in limbo for well over a year.

It is also difficult to use cost allocations as the mechanism to reconcile the *Act of 1996* provisions to remove barriers to infrastructure investment with provisions to promote competition.¹⁷ In the FCC's *Access Reform Order*, the FCC tinkered with a number of cost allocations in Part 69 as a stated means to promote competition.¹⁸ However, fixing one area may create problems in another. The arbitrary nature of cost allocations limits incentives to promote the deployment of advanced facilities (also required by the *Act of 1996*).

III. What are the Unintended Consequences and Issues?, cont.

Figure 2: Current FCC Accounting Rules: Description, Objectives, and Unintended Consequences

Revenues:

Which revenues are subject to FCC accounting rules?	What rules apply?	What are the objectives?	What are the unintended consequences?
Total telecommunications revenues	Rules determine which communications companies are subject to FCC regulation, and determine the extent of this regulation.	Determines which companies are subject to price regulation and which companies pay subsidies to support telecommunications services.	Establishes barriers among communications companies based on earlier and emerging technologies, on historical industry practices, and on traditional monopoly regulation.
Companies subject to FCC accounting rules	The <i>Act of 1996</i> sets rules for the regulation of the incumbent LECs (ILECs).	Establishes a framework for funding explicit subsidies to provide universal service, the introduction of competition, and regulation of traditional local telephone companies.	May no longer be relevant in today's markets. Lacks mechanisms for transitions and/or elimination of rules when markets change.

III. What are the Unintended Consequences and Issues?, cont.

Figure 2: Current FCC Accounting Rules: Description, Objectives, and Unintended Consequences, cont.

Costs:

What are the names of the FCC cost accounting rules?	How do the cost accounting rules work?	What are the objectives?	What are the unintended consequences?
Part 32: Uniform System of Accounts (USOA)	Accounting rules place ILEC investments, expenses, taxes, revenues, and other items into specific USOA accounts.	Allows oversight of traditional regulated telephone monopoly and uniformity among providers.	<p>Accounts do not reflect reality since rapid changes in technology outstrip accounting changes.^a</p> <p>Since current accounting rules are based on historic, embedded costs, the amounts generated in cost allocations and access charge mechanisms do not reflect some form of forward-looking costs.</p> <p>Regulated companies need to keep several sets of books: one for telecommunications regulatory rules, one for the Securities and Exchange Commission, and one for internal operations.</p>
Part 64: Regulated/ non-regulated cost allocation	Removes non-regulated costs from the regulated rate base.	<p>Acts as a safeguard to keep the regulated monopoly customers from cross-subsidizing non-regulated services.</p> <p>Also ensures that the regulated company charges itself the same amount as it charges other companies.</p>	<i>All</i> costs are regulated in the process of determining what is non-regulated.

III. What are the Unintended Consequences and Issues?, cont.

Figure 2: Current FCC Accounting Rules: Description, Objectives, and Unintended Consequences, cont.

Costs:

What are the names of the FCC cost accounting rules?	How do the cost accounting rules work?	What are the objectives?	What are the unintended consequences?
Part 36: Jurisdictional separations	ILECs categorize all of their regulated costs into uniform categories defined in Part 36 and based on the USOA. The next step is to separate these costs between federal authority (interstate) and state authority. When possible, costs are directly assigned to categories and to jurisdictions. The remaining costs are assigned to categories based on their associated functions, and are allocated to the jurisdictions based on some representative measure of use, such as minutes.	Defines and sets jurisdictional boundaries for federal and state regulators on investments, expenses, taxes, revenues and other items subject to regulation. Assists regulators in setting interstate and state rates.	Standard regulatory reporting may be difficult to eliminate since it provides the basis for federal and state jurisdiction over costs. Companies and customers may use jurisdictional differences to game the system (<i>i.e.</i> , shop for the cheapest rate based on price differences between state and interstate services). This is because separations allocates costs uniformly: <i>e.g.</i> , dollars per minute of use are the same for state vs. interstate. Different ratemaking policies create different prices for arbitrage. Some states use Part 36 interstate rules for intrastate allocations between local and toll services.
Part 65: Interstate rate base adjustments	Performs interstate rate base adjustments to be made to access costs (Part 69) — allowances and disallowances.	FCC adjustments to Part 39 provide the basis for setting access rates.	Adjustments may occur on interstate costs without an equivalent adjustment on state costs; may create federal/state disparities.

III. What are the Unintended Consequences and Issues?, cont.

Figure 2: Current FCC Accounting Rules: Description, Objectives, and Unintended Consequences, cont.

Costs:

What are the names of the FCC cost accounting rules?	How do the cost accounting rules work?	What are the objectives?	What are the unintended consequences?
Part 69: Interstate access	Categorizes the interstate costs into access and non-access elements. Establishes rules for both price cap companies and for Rate of Return (ROR) regulated companies.	Sets the basis for the calculation of regulated interstate access prices for the ROR companies.	Existing Part 69 elements are historical categories that have less relevance to technology and services as the markets change.

Prices:

What are the names of the pricing rules?	How do the pricing rules work?	What are the objectives?	What are the unintended consequences?
Price Caps	Sets a ceiling for access prices and allows some pricing flexibility for those companies that choose the price cap option.	Reduces the tie to Part 69 costs on a going forward basis. Introduces some pricing flexibility.	Locks in prices based on historical Part 69 cost structures (including formulas for adjusting rates by productivity and other measures). Price structure lacks the flexibility to respond to on market demand.
Access Pricing	Determines access prices based on Part 69 allocated costs and units (<i>i.e.</i> , minutes). Used by ROR regulated companies.	Establishes a consistent range of prices for access services.	Prevents competitive pricing responses to market demand.

III. What are the Unintended Consequences and Issues?, cont.

Figure 2: Current FCC Accounting Rules: Description, Objectives, and Unintended Consequences

Overall Impact:

What are the overall results?	What are the overall regulatory rules?	What is the overall policy objective?	What are the unintended consequences?
Overall Results	A complex set of accounting rules set the framework: for regulated prices; for subsidizing services, customers, and some companies; for consumer protection (including quality of service); and for interconnection arrangements with regulated companies.	Meet the requirements of the <i>Communications Act of 1934</i> which includes the division of federal and state regulatory jurisdictions and services at “just and reasonable” prices. ^b	<p>Complexity of rules and regulations and conflicting line of authority make it easy for vested interests to game the system.^c</p> <p>It is easier to make small adjustments than to make broad, sweeping changes.</p> <p>Historic tracking of costs is not necessarily relevant in a competitive market.</p> <p>Applying traditional regulatory accounting to new entrants may be inappropriate and/or impossible in a competitive market.</p> <p>Regulatory tools developed for other purposes may affect investment decisions.^d</p>

Sources:

- ^a See **Section IV** for details on the impact of rapid technological change on regulatory accounting rules.
- ^b *Communications Act of 1934* (hereinafter referred to as the *Communications Act of 1934*), Pub. L. No. 416, 48 Stat. 1064, (1934), (Codified at 47 USC § 151 et seq.), § 202(a), page 1070.
- ^c Carol Weinhaus, Teresa Pitts and Rob McMillin, Mark Jamison, et al., *Abort, Retry, Fail? The Need for New Communications Policies*, presentation at the July 1994 National Association of Regulatory Utility Commissioners (NARUC) Meeting, San Diego, CA, Telecommunications Industries Analysis Project, July 11, 1994, page 16.
- ^d Carol Weinhaus, Paul Vasington, Sanford Berg, et al., *Regulatory Wild Cards: Unforeseen Impacts on Investment Decisions in Regulated Companies*, Presentation at the July 1996 NARUC Meeting, Los Angeles, CA, Telecommunications Industries Analysis Project, July 15, 1996, page 1.

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IV. What are the Model's Inputs and Outputs?

Overview of the Model

This paper uses a simple voice/video service model for a telephone network and for a cable TV network. The model uses inputs for service-specific costs (direct) and for shared costs (common). The model then divides, or allocates, the common costs based on various scenarios.

The model is in a Microsoft Excel spreadsheet, Version 5.0, Windows 95. The model consists of three spreadsheets: Input Cost Estimates (**Figure 3**), Investment by Service (**Figure 4**), and Cost Allocations (**Figure 5**).

The model uses three cost allocation scenarios for dividing telephone company common costs based on regulatory proceedings. The examples use early proposals (**Scenarios 1 and 3**) from the *VDT Proceeding* because this early proceeding was for a fully integrated voice and video network. It is important to note that a specific technology (in this case, a hybrid fiber/coaxial cable network) is less important than the impact of the allocation percentages. The reason for this is that the technology of choice in network planning is a moving target. Also, delays may make a technology obsolete before it's deployed.¹⁹

The example for **Scenario 2** is from the *OVS Proceeding*. This example was selected because it reflects the arbitrary assumption that the midpoint between the two conflicting views produces an acceptable result. In addition, the *OVS Proceeding* continues to have a major impact on any full service network deployment nationwide since the proposal to use cost allocations is still in the FCC's official public notice.

*Percent of Allocation
of Telephone Company
Common Costs*

<i>Service:</i>	<i>Voice:</i>	<i>Video:</i>	<i>Source:</i>
Scenario 1	24%	76%	This scenario was proposed by a Cable TV company in the <i>VDT Proceeding</i> . ²⁰
Scenario 2	50%	50%	FCC's original proposed allocator in its <i>OVS Proceeding</i> . ²¹
Scenario 3	78%	22%	This scenario was proposed by a local telephone company in the <i>VDT Proceeding</i> . ²²

IV. What are the Model's Inputs and Outputs?, cont.

Figure 3: Input Cost Estimates

Telephone Company Distance Insensitive	Cost Estimate	Penetration Assumptions	Cable TV Company Distance Insensitive	Cost Estimate	Penetration Assumptions
Voice:		100%	Voice:		
Host Digital Terminal/Line	\$125		Modem	\$0	
Line Card	\$100		Line Card	\$0	
Total	\$225		Total	\$0	
Video:		40%	Video:		65%
Laser/Line	\$100		Laser per subscriber	\$0	
Receiver	\$100		Receiver per subscriber	\$0	
Set Top	\$350		Set Top	\$350	
Total	\$550		Total	\$350	
Common:			Common:		
Network Interface	\$50		Not Available	\$0	
Multiple Distribution	\$25		Not Available	\$0	
Points			Not Available	\$0	
Coaxial Drop	\$35		Not Available	\$0	
Pedestal/Line	\$25		Not Available	\$0	
Total	\$135		Total	\$0	
			Other Common:		
			Total HeadEnd	\$0	
Telephone Company Density Sensitive	Cost Estimate		Cable TV Company Density Sensitive	Cost Estimate	
Urban:			Urban:		
Voice:			Voice:		
Switch/Line	\$230		Switch/Line	\$0	
Video:	\$0		Video:		
			HeadEnd/Subscriber	\$10	
Suburban:			Suburban:		
Voice:			Voice:		
Switch/Line	\$234		Switch/Line	\$0	
Video:	\$0		Video:		
			HeadEnd/Subscriber	\$10	
Rural:			Rural:		
Voice:			Voice:		
Switch/Line	\$299		Switch/Line	\$0	
Video:	\$0		Video:		
			HeadEnd/Subscriber	\$145	

IV. What are the Model's Inputs and Outputs?, cont.

Figure 3: Input Cost Estimates, cont.

Telephone Company	Cost	Cable TV Company	Cost
Distance Sensitive	Estimate	Distance Sensitive	Estimate
Urban:		Urban:	
Voice:	\$0	Voice:	\$0
Video:	\$0	Video:	\$0
Common:		Common:	
Power	\$0	Power	\$1
Coaxial	\$0	Coaxial	\$70
Fiber Optic	\$200	Fiber Optic	\$48
Total Common	\$200	Total Common	\$119
Suburban:		Suburban:	
Voice:	\$0	Voice:	\$0
Video:	\$0	Video:	\$0
Common:		Common:	
Power	\$0	Power	\$1
Coaxial	\$0	Coaxial	\$132
Fiber Optic	\$400	Fiber Optic	\$91
Total Common	\$400	Total Common	\$224
Rural:		Rural:	
Voice:	\$0	Voice:	\$0
Video:	\$0	Video:	\$0
Common:		Common:	
Power	\$0	Power	\$3
Coaxial	\$0	Coaxial	\$352
Fiber Optic	\$1,600	Fiber Optic	\$431
Total Common	\$1,600	Total Common	\$786

IV. What are the Model's Inputs and Outputs?, cont.

Figure 3: Input Cost Estimates, cont.

Telephone Company Demographic Assumptions			Cable TV Company Demographic Assumptions	
Average Loop Length	Feet	Miles	Homes per mile	Number
Urban	1,500	0.28	Urban	1,000
Suburban	3,000	0.57	Suburban	200
Rural	12,000	2.27	Rural	50

Telephone Company Density Parameters from A Snapshot in Time		Number of Lines	CATV Customers per HeadEnd	Number
Urban		25,000	Urban	100,000
Suburban		15,000	Suburban	100,000
Rural		1,200	Rural	1,200

Note: The Cable TV company has only video services since the policy question covered is on telephone company provision of voice and video over common, integrated facilities. This model does not examine the policy question of Cable TV entry into common carrier voice.

The large and small switch definitions in *A Snapshot in Time* are the basis for the number of lines in the urban and rural telephone company switches. The suburban number of lines were developed in a similar manner from data from various companies. These sizes reflect general patterns; actual switches will vary. Carol Weinhaus, Bob Lock, et. al., *A Snapshot in Time: LEC Switch Investment and Price Structures for Connections to the Switch Just before the Telecommunications Act of 1996*, Presentation at the July 1996 NARUC Meeting, Los Angeles, CA, Telecommunications Industries Analysis Project, May 10, 1996, pages 51 and 52.

Figure 4: Calculations for Investments by Voice, Video, and Common Service Categories

	Telephone Company Investment per Subscriber				Cable TV Company Investment per Subscriber
	Voice	Video	Common	Total	Video
Urban	\$455	\$550	\$335	\$1,340	\$548
Suburban	\$459	\$550	\$535	\$1,544	\$710
Rural	\$524	\$550	\$1,735	\$2,809	\$1,782

IV. What are the Model's Inputs and Outputs?, cont.

Figure 5: Results from the Three Cost Allocation Scenarios

	Telephone Company Investment: Scenario 1		Telephone Company Investment: Scenario 2		Telephone Company Investment: Scenario 3	
Allocation Assumptions						
Type of Service	Voice	Video	Voice	Video	Voice	Video
Percent Allocation of Common Costs	24%	76%	50%	50%	78%	22%
Investment per Line						
Telephone Company	Investment per Line Voice	Investment per Line Video	Investment per Line Voice	Investment per Line Video	Investment per Line Voice	Investment per Line Video
Urban	\$535	\$805	\$623	\$718	\$716	\$624
Suburban	\$587	\$957	\$727	\$818	\$876	\$668
Rural	\$940	\$1,869	\$1,392	\$1,418	\$1,877	\$932
Cable TV Company		Investment per Line Video		Investment per Line Video		Investment per Line Video
Urban		\$548		\$548		\$548
Suburban		\$710		\$710		\$710
Rural		\$1,782		\$1,782		\$1,782
Provider with Lowest Video Costs		Video Provider Selected		Video Provider Selected		Video Provider Selected
Urban		CATV		CATV		CATV
Suburban		CATV		CATV		Telco
Rural		CATV		Telco		Telco

IV. What are the Model's Inputs and Outputs?, cont.

Assumptions and Caveats

The following is a list of assumptions and caveats used in the cost allocations model:

- The model indicates patterns and provides a simplified overview. While the numbers used are based on current technology, the specific results are representative. Network deployment and maintenance costs are determined by a variety of factors, such as maturity of a technology, geography, density of customers, number of customers (market demand), and labor costs.
- The examples selected for the scenarios are representative of the impact of cost allocations regulation on an emerging service/technology. The specific technology is less important due to rapid technological change.
- The model is limited to examining voice/video allocations for a representative local telephone company. In reality, networks carry more than two services.
- The allocations used in the scenarios are representative of different viewpoints; their importance lies in the results rather than in the specific percentages selected.
- The cable TV company provides only video services, since the policy question covered is on the provision of voice and video over the same network. This model does not examine the policy question of cable TV entry into the telecommunications common carrier voice market.
- The model assumes that gross investment is an indicator of cost of service.
- Historical investment recovery is ignored.
- The markets are split into three distance-sensitive groups: urban, suburban, and rural. The urban category has the shortest lines running between the customer and the company's switch or headend. The rural category has the longest wires. The suburban category falls between the two.

Input Cost Estimates

Figure 3 shows the input cost estimates for telecommunications (telephone company) and cable TV networks. The telephone network services are traditional telephone voice service (called "plain old telephone service," or "POTS") and cable TV-like entertainment services. **Figure 3** indicates which network costs are service-specific (direct) and which network costs are common — the same network is used by both services.

IV. What are the Model's Inputs and Outputs?, cont.

The network costs are divided into three categories:

- *Distance Insensitive:*
The costs are the same regardless of the distance of the customer (called the end user) from the nearest telephone company switch or the cable TV company headend.
The penetration assumptions are based on current household penetration rates for traditional telephone service and cable TV service.²³
- *Density Sensitive:*
The cost estimates in this section reflect the fact that the size and density of the population served determines the type and cost of the network equipment.²⁴
- *Distance Sensitive:*
The costs vary with the distance of the customer. The model provides three representative distance-based categories: urban, suburban, and rural.

In addition, the model contains input areas for demographic assumptions for the urban, suburban and rural subcategories. These subcategories are based on average local loop length (telephone) and number of homes per mile (cable TV).²⁵ In addition, the model requires input assumptions for population density. These are based on the number of lines per telephone company switch for urban, suburban, and rural networks. The cable TV company's headend is assumed to be the same size regardless of the population density, and therefore its costs are included in the distance insensitive common costs.

Voice, Video, and Common Investments

Figure 4 shows the results of calculating telephone company and cable TV company investment per subscriber. Telephone company investment is divided into voice, video, common, and total categories. The voice and video categories contain only direct and density sensitive costs for the telephone company. The common category is all of the costs for the infrastructure that services both of these telephone company services.

In **Figure 4**, the cable TV investment is total costs (both common and direct), since only traditional video services are modeled.

Cost Allocation Scenarios

Figure 5 shows the allocation assumptions for three scenarios described earlier in this section. **Scenario 1** has a 24% voice and 76% video allocation of telephone company common investment. **Scenario 2** has a 50% voice and 50% video split; **Scenario 3** has a 78% voice and 22% video split.

The "Investment per Line" portion of the model allocates telephone company common costs by the assumed voice and video splits. The model then adds the direct costs for each service to their allocated amounts.

IV. What are the Model's Inputs and Outputs?, cont.

The cable TV company investment is the total costs (direct and common) from the "Investment by Service" section of the model (see **Figure 4**).

The model then compares the telephone company and the cable TV company video investment per subscriber. **Figure 5** indicates the provider with the lowest video cost based on these comparisons.

V. What Do the Results Indicate?

What Do the Results Indicate?

The charts in **Figure 6** show patterns and relationships resulting from the use of different allocation percentages. These charts are based on data from the three scenarios in **Figure 5**. **Scenarios 1 and 3** represent two different approaches to determining the percentage of costs allocated between video and voice. **Scenario 2** represents an attempt at a compromise. As the discussion below indicates, while one scenario may favor one industry over another, *the important point is the arbitrary nature of these allocations*. There is no “correct” allocator. None of these scenarios reflects the business case, since voice and video services are not equivalent. Furthermore, technology allows even more, significantly different services to be carried by these networks or by portions of these networks.

Scenario 1: A “Minutes of Use” Approach (24% Voice and 76% Video)

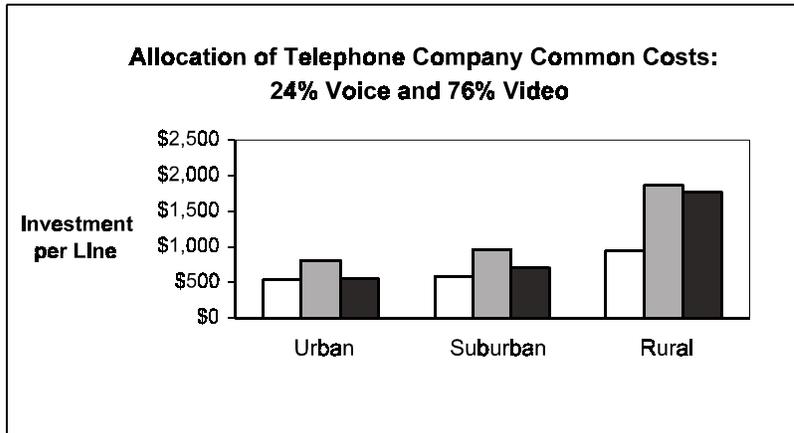
The results in **Scenario 1** indicate that in all three markets (urban, suburban, and rural), the cable TV provider has the lowest cost for video services. This choice favors the cable TV industry.

Scenario 1 represents an attempt to prevent the telephone company customers who pay for voice services from subsidizing lower rates for video services over the same network. The underlying assumption for this allocation is minutes of use. It assumes that a minute of talking on the phone is the same as a minute of watching television. This assumption makes one service prohibitively expensive in relation to the other. For example, movies priced on the per minute phone call basis would be prohibitively expensive. Conversely, phone calls priced by the fraction of a TV program transmission that these calls represent wouldn't cover the cost of sending the call.²⁶ The result is either extremely expensive television programs or extremely inexpensive telephone calls.

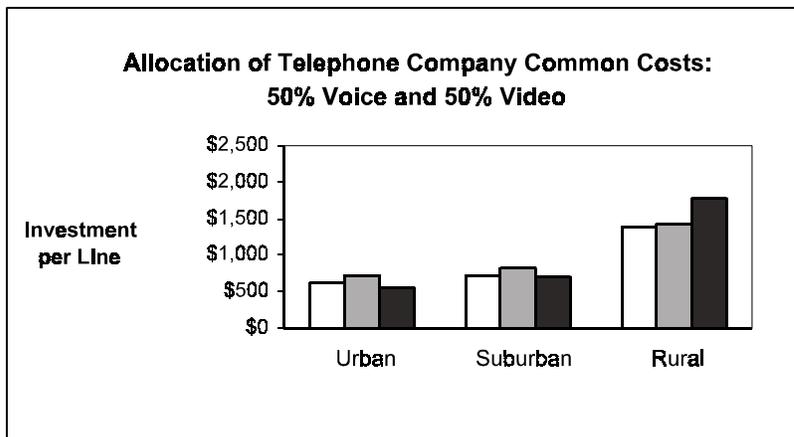
This scenario doesn't create a bridge to a fully competitive environment. There is no incentive for a telephone company to use a fully integrated network for voice and video services. Instead, the incentive is to build separate facilities for video. It should also be noted that if a cable TV company were to use its network for voice, the company would then be subjected to a whole new set of regulatory rules, including subsidies. Therefore, there is also no incentive for a cable TV company to use a fully integrated network for voice and video services.

IV. What are the Model's Inputs and Outputs?, cont.

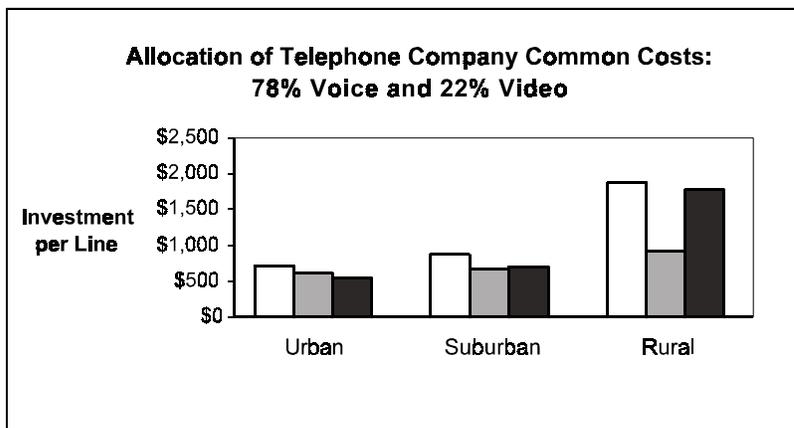
Figure 6: Comparison of the Three Cost Allocation Scenarios



Scenario 1: A "Minutes of Use" Approach



Scenario 2: A "Split the Difference" Approach



Scenario 3: An "Operational Savings" Approach



IV. What are the Model's Inputs and Outputs?, cont.

Scenario 3: An "Operational Savings" Approach (78% Voice and 22% Video)

The results from the model in **Scenario 3** indicate that in the suburban and rural markets, the telephone company has the lowest cost for video services. In the urban market, the cable TV company has the lowest cost. This choice favors the telephone company in suburban and rural markets and favors the cable TV industry in urban markets.

Scenario 3 represents an attempt to use a traditional regulatory approach. The underlying assumption for this allocation is that costs are regulated and any savings are passed on to the customer.²⁷ Therefore, the operational savings from implementing new technologies are passed on to the telephone customers. These operational savings include the costs for maintenance, for upgrades, and for additional lines to the same household. Once this new network is in place, it is then used for video services. In this scenario, the results are based on arbitrary allocators instead of on customer demand.

However, **Scenario 3** does not prevent the telephone company customers using voice services from cross-subsidizing the telephone company customers using video services where rate of return regulation exists.

Scenario 2: A "Split the Difference" Approach (50% Voice and 50% Video)

With **Scenario 2**, in the urban and suburban markets the cable TV company has the lowest cost for video service. In the rural market, the telephone company has the lowest cost for video services. In the *OVS Proceeding*, the FCC said that they couldn't make up their minds between the two approaches described above and, therefore, the recommendation was to split the difference.²⁸

In this case, the proposed allocator is a compromise between two traditional regulatory approaches that are increasingly irrelevant due to rapid technological change and to new market entrants.

Overall Results

The results from the model indicate the following points:

- Arbitrary regulatory treatment (including retroactive regulation) of new services before they have even been developed may delay, or even prevent the deployment of these services. (Again, regulatory uncertainty is a disincentive for investment).
- Using cost allocations, which were developed for a regulated monopoly market, arbitrarily favors one industry over another and inhibits competition.

VI. What are Some New Options?

What are Some New Options?

In a competitive environment, any rules governing the deployment of new services should reflect the market and how it works in the real world. These rules should also recognize that different geographic areas have different cost and demographic characteristics.²⁹

The following are new options that might be used instead of cost allocations for OVS. These may be looked at singly or in combination:

- Use regulatory forbearance as long as it is consistent with the public interest and as long as regulation is not necessary for “just and reasonable” service provision, or for consumer protection.³⁰
- Use antitrust rules and pricing oversight to police the competitive market. In terms of prices, the questions that need to be asked are: Is the price right? Is it affordable? What's the definition of and context for “affordable”?
- Allow new services to be introduced without the same regulatory constraints as the older ones.
- Regulate only access to basic voice service regardless of the technology, and deregulate all other services.
- Use the same set of rules for everyone (after a transition period).
- To the degree that it's possible, avoid rules that reward gaming which is based on the structure of the rules, including the use of the regulatory structure.

There is also the question of how fast the transition is to a new option. Abrupt changeovers can create greater shocks to customers and/or companies than gradual transitions. However, it should be kept in mind that gradual transitions may not be possible due to rapid technological change and the unpredictability of competitive markets.

VII. Appendix A: What are Cost Allocations?

What are Cost Allocations?

When the same network carries two or more services, traditional communications regulatory rules, called cost allocations, distribute the common costs of this network among the services. The origins of these rules lie in monopoly utility regulation. Over the years, these rules have been used to accomplish various policy goals, such as keeping local rates low, dividing costs between regulatory jurisdictions (state and interstate), determining which services are subject to regulation, and preventing anti-competitive pricing.

Various cost allocations rules currently divide, or “separate,” costs of networks (and the associated overheads) along the following service lines:

- Interstate and state regulatory jurisdictions,
- Regulated and unregulated,
- Voice (telephony) and video (cable television), and
- Basic (telephony) and enhanced (computer).

To understand the history of cost allocations, it is necessary to understand the link between costs and revenues. If an unregulated company wants to stay in business, at minimum its revenues need to cover its costs. Generally, the company needs to produce a profit as well. In this paper, costs include operating costs and overheads; revenues include a profit. Total revenues need to cover total costs. Under traditional monopoly regulation, by definition, a company always recovers its costs.

However, “because multiple services may share the use of the same equipment, it [is] nearly impossible to tie individual costs to individual services. In other words, you [can’t] trace the price of most services back to actual costs for equipment, maintenance, overhead, and construction.”³¹ This is due to the arbitrary nature of determining how to distribute costs over shared, or common, facilities. This is true regardless of whether a company is regulated or not.

In the 1940s, the FCC adopted a set of rules, called the *Separations Manual*,³² to divide regulated costs from the USOA accounts into state and interstate jurisdictions.

Why are the Current Regulatory Accounting Rules Outdated for a Competitive Market?

While cost allocations may have successfully met the objectives for a monopoly market structure, the arbitrary nature of this mechanism produces difficulties in a competitive market.³³

- *Even placing costs into accounts is arbitrary.*
Regulation of costs for various purposes adds additional arbitrary elements to the picture. **Figure 7** is a cost allocations time line for the cost allocations rules used in the telephone and cable TV industries. In 1935, the FCC adopted accounting rules, called the Uniform System of Accounts, based on accounts used by the Interstate Commerce Commission (ICC).³⁴ The arbitrary nature of these accounts is illustrated by rules that place what is

VII. Appendix A: What are Cost Allocations?, cont.

essentially the same tower into different cost accounts. The basis is more on a tower's location than on its function.³⁵ As the model in this paper illustrates, the percentage of an allocation has an impact on whether or not a technology is deployed. The allocation may also determine which industry is favored over another.

- *Rapid technological change makes accounting categories obsolete.*
The glacial rate of change in regulatory accounting rules ensures that changes in technology will outstrip the account definitions, often making revisions obsolete before they are instituted. Distinctions between accounts that may have been warranted based on old technology become very blurred when technological innovation creates network components that do not fit neatly into the old classification system.³⁶
- *It is difficult to make accounting categories technology neutral.*
Technologies and services are not necessarily comparable with one another. Applying the same measurement (such as minutes of use or length of connection time) to a piece of equipment used for two different services may not work.³⁷
- *The method of allocation of common costs leads to political debates over what is already an arbitrary process.*
For example, there is a debate over the method of distributing common costs — whether to use sensitivity to price changes (Ramsey pricing) or to use fixed allocators.³⁸

What is the Purpose of Cost Allocations?

Current cost allocations practices have evolved over time and can be seen as a response to an earlier swing from competition toward monopoly in the 1910s, and the creation of the public switched network (PSN). **Figure 7** indicates the key events associated with cost allocations.³⁹ This shift accompanied an increase in both federal and state regulation of the telephone industry. The *Communications Act of 1934* firmly established a monopoly philosophy for the next two and a half decades.⁴⁰

- *Cost allocations set the basis for jurisdictional oversight.*
Along with the monopoly philosophy came a shift in thinking about jurisdiction and interconnection pricing. Before the 1930s, all costs for facilities used to provide local telephone service were considered to fall under state regulatory jurisdiction. With the introduction of the monopoly philosophy, a portion of these same local facilities costs were allocated to federal regulation.⁴¹
- *Accounting rules set the basis for regulatory pricing.*
The reason for the use of USOA accounting rules (Part 32) in the traditional telephone industry was to help regulators determine exactly what constituted “just and reasonable” prices, as required by the *Communications Act of 1934*.⁴² In the 1930s, there was a court mandate to allocate local telephone company costs (previously falling solely under state jurisdiction) between federal and state jurisdictions. The court tied these allocations to the use of local telephone company facilities.⁴³ See **Figure 2** for where the USOA rules fit into

VII. Appendix A: What are Cost Allocations?, cont.

the cost allocations process. Since the late 1940s, the cost allocations process has been an area of conflict between the FCC and the state regulators. The FCC wants to reduce interstate prices and the states want low local service prices. The FCC's *ENFIA Agreement* and *Access Charge Proceeding* used the cost allocations process (Part 69) to set interstate interconnection rates with the local telephone companies. The objective of these rules was to set up mechanisms that migrated the cost allocations for long distance services from the monopoly market structure (AT&T Long Lines and the independent telephone companies) to a competitive interexchange carrier market structure.⁴⁴ The current *Interconnection Proceeding* continues to use regulatory accounting rules for setting prices.⁴⁵

- *Cost allocations applied to prevent anti-competitive pricing (anti-competitive cross-subsidies).*

With the introduction of competitors, cost allocations also became the basis for determining whether traditional telephone industry pricing was anti-competitive. The FCC's *Computer Inquiries* used cost allocations to determine which services were "basic" and which were "enhanced." In this case, "basic" services refer to telephone services, and therefore are subject to regulation. "Enhanced" services refer to computer services, and therefore are unregulated.⁴⁶ The cost allocations process requires that unregulated costs be subtracted from total costs (Part 64)⁴⁷ before the regulated costs are separated between federal (interstate) and state regulatory jurisdictions (Part 36). Recently, the FCC's *OVS Proceeding* used cost allocations to separate voice (telecommunications) and video (cable TV) services.⁴⁸ At the heart of all these proceedings is a war between competitors or a war between regulatory jurisdictions over pricing. Or, simply put, "Who gets the money? Who has oversight of prices?"

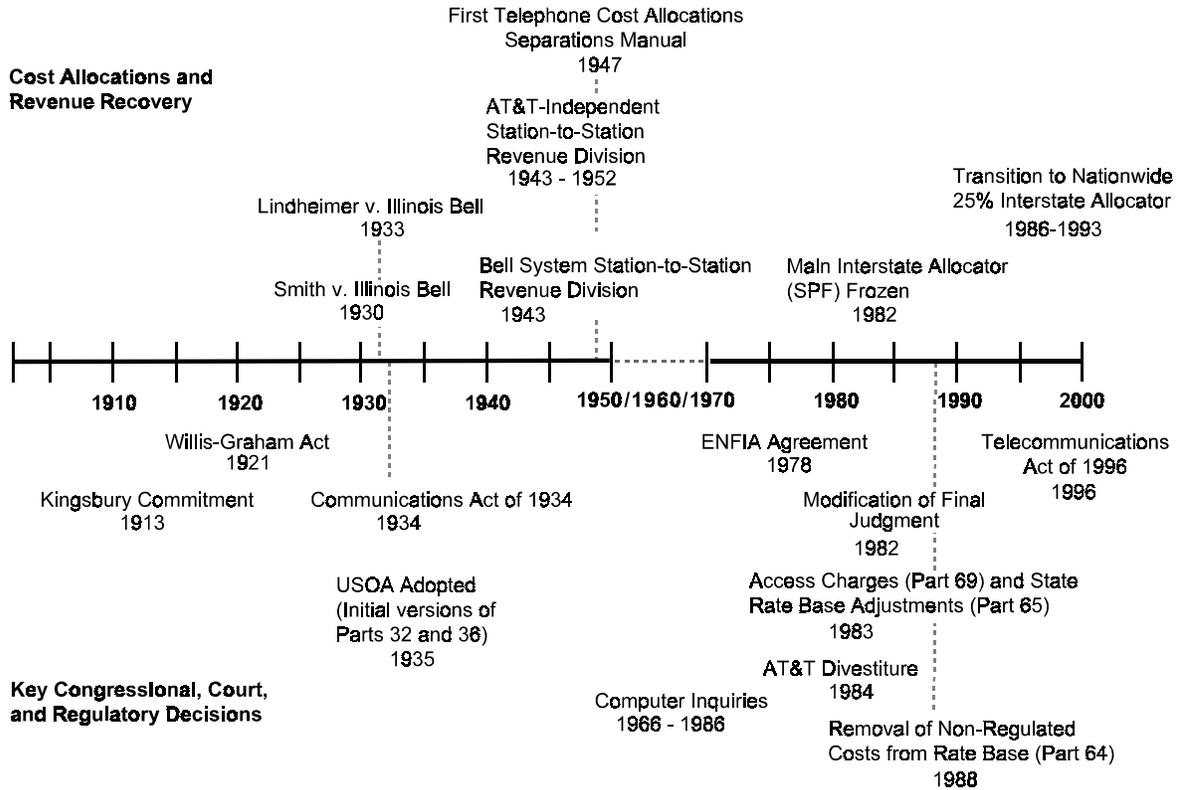
- *Cost allocations applied to keep basic service rates low.*

Before the breakup of AT&T in 1984, state regulators kept prices low for basic local service through a process called "residual pricing."⁴⁹ Generally, the first choice was to increase either prices for long distance or for other local services (called "vertical services," which at the time included touch-tone service and call waiting). The additional money from interstate long distance was also useful because it could be used to keep state toll rates lower as well.⁵⁰ The second choice was to raise the price of Yellow Pages advertising (called "directory, advertising, and sales"). Only when these first two choices were exhausted did state regulators allow increases in basic local service rates. An increase in the percentage of total costs allocated to interstate services resulted in higher interstate revenues and lower state revenues collected from customers.⁵¹ From the 1940s on, the percentage of interstate revenues distributed to the states grew until the pending breakup of AT&T and the institution of access charges required major changes in the cost allocations process.⁵²

- *Cost allocations, coupled with price averaging, contribute to the subsidy of high-cost areas.* Until the 1950s, there was a 19-year war over the use of the same telecommunications cost allocations rules for distributing revenues, both state and interstate, among companies. The solution used nationwide and statewide averaging to create revenue pools.⁵³ Specifically, averages of both urban and rural costs were the basis for calculating average costs and average prices. The overall pattern was that low-cost companies contributed to the support of high-cost companies.⁵⁴

VII. Appendix A: What are Cost Allocations?, cont.

Figure 7: Cost Allocations Time Line: Telecommunications Industry



VIII. Appendix B: Calculations and Sources for Figure 1

Sources

The sources for **Figure 1** are as follows:

FCC, Common Carrier Bureau, Industry Analysis Division, Jim Lande, *Telecommunications Industry Revenue: TRS Fund Worksheet Data* (hereinafter referred to as *TRS 1995 Revenues*), Washington, DC, December 1996, "Telecommunications Revenue Reported by Class of Carrier," Table 2; and "Local Exchange Carriers (LECs)," Table 14.

Data specifications and reporting requirements for the *ARMIS Joint Cost Report* (FCC Report 43-03) are described in the *Automated Reporting Requirements for Certain Class A and Tier 1 Telephone Companies (Part 31, 43, 67, and 69 of the FCC's Rules), Errata* (hereinafter referred to as *ARMIS 43-03*), CC Docket 86-182, DA 89-136, Released February 8, 1989.

Data specifications and reporting requirements for the *ARMIS Access Report* (FCC Report 43-04) are described in the *Automated Reporting Requirements for Certain Class A and Tier 1 Telephone Companies (Part 31, 43, 67, and 69 of the FCC's Rules), Errata* (hereinafter referred to as *ARMIS 43-04*), CC Docket 86-182, DA 89-136, Released January 16, 1990.

Differences between TRS and ARMIS Data

There are three main reasons for the differences between TRS and ARMIS data. These include differences in the percentage of interstate revenues for LECs:

1. TRS funding is based on total revenues. TRS leaves in uncollectibles. ARMIS subtracts uncollectibles.
2. Some nonregulated, non-telecommunications revenues are excluded from TRS but not from ARMIS. In ARMIS, nonregulated revenues are pulled out before the interstate/state split. In TRS, they just show up as state revenues. For example, Billing & Collection is intrastate in TRS. TRS uses similar treatment for inside wiring and for Yellow Pages. With TRS, the companies are under no obligation to include the non-telecommunications revenues. In the 5200 accounts, some RBOCs cross things off when they report the numbers to TRS.
3. ARMIS is reporting carriers only (large LECs). TRS is *all* LECs. Also note that the calculated ARMIS ratios are based only on the large LECs. While the interstate percentage is higher for the small LECs, the impact of this difference is minimal when looking at nationwide revenues.

VIII. Appendix B: Calculations and Sources for Figure 1, cont.

Figure 8: Calculations for Figure 1

Row No.	Type Industry:	Dollars (in Billions)	
		1995	Source:
1	IXCs	\$70.9	TRIS 1995 Revenues, Table 2.
2	Total Wireless	18.6	Sum of Line 3 and Line 4.
3	Cellular/PCS	17.2	TRIS 1995 Revenues, Table 2.
4	Paging and Other Mobile Carriers	1.4	TRIS 1995 Revenues, Table 2.
5	Others	6.5	Sum of Lines 6 through 9
6	CAPs	0.6	TRIS 1995 Revenues, Table 2.
7	Operator Service Providers	0.5	TRIS 1995 Revenues, Table 2.
8	Other Toll Carriers	0.8	TRIS 1995 Revenues, Table 2.
9	Pay Telephone Providers	0.3	TRIS 1995 Revenues, Table 2.
10	Pre-paid Calling Card Providers	0.0	TRIS 1995 Revenues, Table 2.
11	Toll Resellers	4.2	TRIS 1995 Revenues, Table 2.
12	ILECs	102.8	TRIS 1995 Revenues, Table 2.
13	Total Communications Industry	198.9	Sum of Lines 1, 2, 5, and 12.
14	Part 32: USOA	102.8	Since ILEC costs are based on revenue requirements and include a rate of return (ROR), costs are assumed to be equal to revenues.
15	Ratio for Part 64: Regulated	96.058%	Calculated from ratios developed from ARMIS 43-03 for Part 64 regulated costs.
16	Part 64: Regulated	\$98.77	Line 14 times Line 15.
17	Part 64: Non-regulated	4.05	Line 14 minus Line 16.
18	Ratio for Part 36: Interstate (IS)	24.599%	Calculated from ratios developed from ARMIS 43-04 for Part 36 Interstate costs.
19	Part 36: Interstate	\$24.30	Line 16 times Line 18.
20	Part 36: State	74.47	Line 16 minus Line 19.
21	Ratio for Part 65: Adjustments	1.004%	Calculated from ratios developed from ARMIS 43-04 for Part 65 Interstate Rate Base Adjustments.
22	Part 65: IS Rate Base Adjustments	\$24.40	Line 19 times Line 21.
23	Ratio for Part 69: Non-Access	3.66%	Calculated from ratios developed from ARMIS 43-04 for Part 69 Non-Access (Interstate Billing & Collection and Interexchange Category).
24	Part 69: IS Non-Access	\$0.89	Line 19 times Line 23
25	Part 69: IS Access	23.50	Line 22 minus Line 24.
26	Price Caps	21.24	Calculated from ARMIS 43-04 for Part 69 Price Caps.
27	Access Prices	2.27	Line 25 minus Line 26.
28	Total IXC, Wireless, & Other	96.0	Sum of Lines 1, 2, and 5.
29	Total Standard Business	100.1	Line 17 plus Line 28.

VIII. Appendix B: Calculations and Sources for Figure 1, cont.

Figure 9: Calculations for Ratios Based on ARMIS 43-03 and ARMIS 43-04 Data

1995 ARMIS 43-03			Part 64 1995 Dollars (in thousands)			
Line	Description	Study Areas	Total Company	Regulated	Subject to Separations	
370	Total Investment	126	296,402,795	292,638,338	279,657,805	
495	Total Reserves	126	176,132,619	172,474,413	147,287,863	
750	Total Expenses & Taxes	126	83,535,915	78,348,737	0	
	Return		13,530,395		14,891,618	
	Total Revenue Requirement		97,066,310	93,240,355		
	Percent Regulated			96.06%		

1995 ARMIS 43-04			Part 36 and Part 69 1995 Dollars (in thousands)			
Line	Description	Study Areas	Subject to Separations	Interstate	Billing & Collection	Interexchange
7351	Total Expenses	129	67,200,541	15,799,906	563,880	140,422
8030	Total Taxes	129	9,744,484	3,009,847	41,190	73,421
8040	Average Net Investment	129	128,033,526	32,544,174	0	29,266
	Total Revenue Requirement		91,348,797	22,470,973	605,070	217,135
	Percent Interstate			24.60%		
	Percent "Billing & Collection/Interexchange" of Interstate					3.66%

VIII. Appendix B: Calculations and Sources for Figure 1, cont.

Figure 9: Calculations for Ratios Based on ARMIS 43-03 and ARMIS 43-04 Data, cont.

1995 ARMIS 43-04			Part 65 1995 Dollars (in Thousands)			
Line	Description	Study Areas	Subject to Separations	Interstate	Billing & Collection	Interexchange
2210	RTB Stock	130	11,111	3,166	0	4
2221	Materials & Supplies	130	1,039,803	275,108	0	258
2230	Cash Working Capital	130	0	(145,728)	0	148
2250	Investment Allow/Disallow	130	0	515,313	(241)	620
3421	Deductions	130	0	1,406,838	0	1,467
7350	Expense Allow/Disallow	129	0	177,136	(59)	9
	Total Revenue Requirement		Not Applicable	91,751	(86)	(40)
	Ratio: Interstate to Rate Base			1.004088703		

1995 ARMIS 43-04			Price Cap: Part 36 and Part 69 1995 Dollars (in Thousands)			
Line	Description	Study Areas	Subject to Separations	Interstate	Billing & Collection	Interexchange
7351	Total Expenses	120	65,951,086	15,524,133	553,179	134,839
8030	Total Taxes	120	9,442,399	2,940,354	38,913	73,927
8040	Average Net Investment	120	124,841,201	31,775,507	0	23,753
	Total Revenue Requirement		89,438,120	22,039,232	592,092	211,438
	Interstate Access Revenue Requirement			21,235,701		

IX. Notes

Notes

- ¹ The FCC's definition is as follows: "Costs which cannot be directly assigned to either regulated or nonregulated activities will be described as common costs." FCC, *In the Matter of Separation of Costs of Regulated Telephone Service from Costs of Nonregulated Activities; Amendment of Part 31, the Uniform System of Accounts for Class A and Class B Telephone Companies to Provide for Nonregulated Activities and to Provide for Transactions between Telephone Companies and Their Affiliates* (hereinafter referred to as the *Regulated/Nonregulated Proceedings*), CC Docket No. 86-111, *Report and Order*, FCC No. 86-564, February 6, 1987, page 78, ¶ 161, § IV (C)(1)(b)(3).
- ² For a detailed discussion of the history of cost allocations in the telecommunications industry, see **Section VII, Appendix A.**
- ³ Carol Weinhaus, Paul Vasington, Sanford Berg, et al., *Regulatory Wild Cards: Unforeseen Impacts on Investment Decisions in Regulated Companies* (hereinafter referred to as *Regulatory Wild Cards*), Presentation at the July 1996 National Association of Regulatory Utility Commissioners (NARUC) Meeting, Los Angeles, CA, Telecommunications Industries Analysis Project, July 15, 1996, page 1.
- ⁴ FCC, *In the Matter of Allocation of Costs Associated with Local Exchange Carrier Provision of Video Programming Services* (hereinafter referred to as the *OVS Proceeding*), CC Docket No. 96-112, Notice of Proposed Rulemaking, May 10, 1996. The *OVS Proceeding* is based on the *Telecommunications Act of 1996*, which eliminated the video dial tone (VDT) model for provision of voice and video over a common network.
- FCC, *In the Matter of Telephone Company-Cable Television Cross-Ownership Rules, Section 63.54 to 63.58* (hereinafter referred to as *VDT Proceeding*), CC Docket No. 87-266, *Further Notice of Proposed Rulemaking, First Report and Order, and Second Further Notice of Inquiry*, FCC No. 91-334, November 22, 1991, 7 FCC Rcd 300 (1991).
- VDT Proceeding, In re Applications of Pacific Bell for Authority Pursuant to Section 214 of the Communications Act of 1934, and Section 63.01 of the Commission's Rules and Regulations to Construct and Maintain Advanced Telecommunications Facilities to Provide Video Dialtone Services to Selected Communities in Orange County, California, the Southern San Francisco Bay Area, California, the Los Angeles, California Area, and the San Diego, California Area, File Nos. W-P-C 6913, 6914, 6915, and 6916.*
- ⁵ *Telecommunications Act of 1996* (hereinafter referred to as the *Act of 1996*), Pub. L. No. 104-104, February 8, 1996.
- ⁶ U.S. Congress, House of Representatives, 104th Congress, 2d Session, Report 104-458, *Telecommunications Act of 1996, Conference Report to Accompany S. 652* (hereinafter referred to as the *Conference Report*), page 173. The *Act of 1996* offers the ILECs four ways to compete in the video programming service marketplace, *OVS Proceeding*, ¶ 1, pages 2 and 3. These are as follows:
1. Video Programming service using an open video system, *Act of 1996*, § 651(a)(3) and (4);
 2. Transmission of video programming as a telecommunications common carrier (Title II), *ibid.*, § 651(a)(2);
 3. Video programming service using radio communication (Title III), *ibid.*, § 651(a)(1); and
 4. Video programming service as a cable TV system (Title IV), *ibid.*, § 651(a)(3).
- The *Act of 1996* states, "A local exchange carrier may provide cable service to its cable service subscribers in its telephone service area through an open video system that complies with this section." *Act of 1996, Open Video Systems, Certificates of Compliance*, § 653 (a)(1).
- ⁷ Since this was "likely to be ... the first major competitive service that will be provided jointly with regulated telephone service." *OVS Proceeding*, ¶ 2, pages 3 and 4.

IX. Notes, cont.

- ⁸ “An over-allocation of common costs to regulated activities would cause regulated ratepayers to bear more costs than they would had the shared use facilities not been built. Conversely, an over-allocation of common costs to nonregulated activities, could dissuade companies from entering nonregulated competitive markets, thus depriving regulated ratepayers of any benefit from the economies of scope using facilities to provide both services might have created.” *Ibid.*, ¶ 20, page 10. “We seek to establish a system of cost allocation principles that inhibits carriers from imposing on ratepayers the costs and risks of competitive, nonregulated ventures, including nonregulated video service ventures.” *Ibid.*, ¶ 24, page 12.
- ⁹ The FCC stated, “We seek comment in particular on specific allocation factors, such as 50 percent that would split the costs of loop plant equally between regulated and nonregulated activities or some other factor,” *ibid.*, ¶ 39, pages 16 and 17.
- ¹⁰ *OVS Proceeding*, ¶ 1, page 3.
- ¹¹ The FCC's *In the Matter of Implementation of Section 302 of the Telecommunications Act of 1996*, CS Docket No. 96-46, *Second Report and Order*, FCC No. 96-249, June 3, 1996, does not cover the allocation issue.
- ¹² FCC Cable Bureau, June 18, 1997.
- ¹³ FCC's website: <http://www.fcc.gov/Bureaus/Cable/WWW/csover.html>. The cities are Dover, NJ; Boston, MA; New York, NY; and Westchester County, NY. Also, one company which had its certification approved withdrew its application.
- ¹⁴ *Regulated/Nonregulated Proceedings, Report and Order (Joint Cost Order)*, 2 FCC Rcd 1298 (1987), *modified on recon.*, 2 FCC Rcd 6283 (1987); *modified on further recon.*, 3 FCC Rcd 6701 (1988), *aff'd sub nom. Southwestern Bell Corp. v. FCC*, 896 F.2d 1378 (D.C. Cir. 1990). Codified at 47 C.F.R. § 64.901 to § 64.904.
- ¹⁵ For a description of these rules, see **Section VII, Appendix A**. For a time line, see **Figure 7**.
- ¹⁶ *Regulatory Wild Cards*, pages 1, and 11 through 13.
- ¹⁷ The *Act of 1996* states that the FCC “determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion. If the Commission's determination is negative, it shall take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.” *Act of 1996*, § 706(b). For more details, see the *Conference Report*, page 210. “Measures to be used [by the FCC] include: price cap regulation, regulatory forbearance, and other methods that remove barriers and provide the proper incentives for infrastructure investment.”
- ¹⁸ FCC, *In the Matter of Access Charge Reform*, CC Docket No. 96-262; *Price Cap Performance Review for Local Exchange Carriers*, CC Docket No. 94-1; *Transport Rate Structure and Pricing*, CC Docket No. 91-213; and *End User Common Line Charges*, CC Docket No. 95-72; *First Report and Order*, FCC 97-158, May 16, 1997.
- ¹⁹ See **Section VII** for the impact of rapid technological change on regulatory accounting rules.
- ²⁰ *OVS Proceeding, Comments of the California Cable Television Association*, May 31, 1996, page 17.
- ²¹ *OVS Proceeding, Notice of Proposed Rulemaking*, May 1996, pages 16 and 17, ¶ 39.
- ²² *VDT Proceeding, Pacific Telesis ExParte Filing with the FCC*, March 21, 1995. Exhibit III, Financial Analysis. The percentages are rounded.
- ²³ It should be noted that the percentage of 1995 households passed by cable TV companies, 93.5%, is approximately equal to the percentage of households that have telephone service, 94%. Also, 98% of households have a television. Carol Weinhaus, Pat McLarney, John Gomoll, et al., *Revving up the Communications Economic Engine: Household Services, Monthly Bills, and Barriers to Competition*,

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Presentation at the July 1997 NARUC Meeting, San Francisco, CA, Telecommunications Industries Analysis Project, July 20, 1997, Figure 1, page 3, and associated notes.

- ²⁴ For example, the number of lines and trunks have a significant impact on the cost of a switch. See Carol Weinhaus, Bob Lock, John Bosley, *et al.*, *A Snapshot in Time: LEC Switch Investment and Price Structures for Connections to the Switch Just before the Telecommunications Act of 1996* (hereinafter referred to as *A Snapshot in Time*), Presentation at the July 1996 NARUC Meeting, Los Angeles, CA, Telecommunications Industries Analysis Project, May 10, 1996, page 17 and Figure 5, page 16.
- ²⁵ For the urban and rural categories, see *ibid.*, pages 51 and 52. The suburban category is midway between these two and based on participants' data. Participating companies provided data for loop length and homes per mile.
- ²⁶ "If a television signal will require 45 mbps [megabits per second] ... and local telephone service is priced at a penny a minute — the marginal cost of an intraLATA call — a two hour movie would cost \$843.75 just for transmission.... Alternatively, if the broadband video transport is priced at a flat rate of \$15 per month — comparable to basic cable television rates today — then flat rate loop telephone service would be priced at two cents per month." Robert M. Pepper, *Through the Looking Glass: Integrated Broadband Networks, Regulatory Policies, and Institutional Change* (hereinafter referred to as *Through the Looking Glass*), Office of Plans and Policy, FCC, Washington, DC, November 1988, OPP Working Paper No. 24, page 47.
- ²⁷ Under this scenario, every time a new service is added to the old mix, the company needs to recalculate the regulated cost base.
- ²⁸ *OVS Proceeding, Notice of Proposed Rulemaking*, ¶ 39, pages 16 and 17; and communication with the FCC's Cable Bureau.
- ²⁹ For example, for a given technology, providing service to a customer living on a mountain in a remote area will, in general, be more expensive than providing the same service to a customer in a large, urban office building.
- ³⁰ *Act of 1996*, § 401(a). The *Act of 1996* requires that the competitive effect be weighed in determining whether regulatory forbearance is appropriate. The *Conference Report* states that this section "is not intended to limit or preempt State enforcement of State statutes or regulations," page 185.
- ³¹ Carol L. Weinhaus and Anthony G. Oettinger, *Behind the Telephone Debates* (hereinafter referred to as *Behind the Telephone Debates*), Ablex Publishing Company, Norwood, NJ, 1988, page 52. "Except at the level of grand totals, either at the federal level or at individual state levels, traditionally there has been no relationship whatsoever between costs and revenues. The entry of competition into the market has exerted pressure for relating costs to prices on a service-by-service basis. However, the definition of what exactly constitutes a cost is the result of accounting and regulatory decisions. In addition, the shared use of plant for various services makes the assignment of costs to services subject to debate over what constitutes a 'true' cost," page 177.
- ³² NARUC, *Separations Manual — Standard Procedures for Separating Telephone Property, Revenues and Expenses*, Washington, DC, October 1947. FCC, *In the Matter of Procedures for Separating and Allocating Plant Investment, Operating Expenses, Taxes and Reserves Between the Intrastate and Interstate Operations of Telephone Companies*, Docket No. 17975, *Report and Order*, 16 FCC 2d 317 (1969). 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 67, of the *Code of Federal Regulations* (revised as of October 1, 1982).

Regulated/Nonregulated Proceedings.

See also, *Behind the Telephone Debates*, pages 52 and 53. For a history of separations changes directly after the AT&T divestiture, see Carol Weinhaus and Jay Silberberg, *Telecommunications*

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Industry: Tactical Disputes, Elements of Change, and Strategic Outcomes, Program on Information Resources Policy, Harvard University, Cambridge, MA, March 1989, Figure 29, page 85.

- ³³ By their very nature, cost allocations rules are arbitrary since their objectives are political. In a 1987 article written after the introduction of access charges and increased competition in the long distance market, Baumol, Koehn, and Willig modeled the arbitrariness of fully allocated costs using railroad regulation as the example. These authors argue that “fully allocated cost figures and the corresponding rate of return numbers ... cannot pretend to constitute approximations to *anything*. The ‘reasonableness’ of the basis of allocation selected makes absolutely no difference except to the success of the advocates of the figures in deluding others (and perhaps themselves) about the defensibility of the numbers.” They consider fully allocated costs an “essentially random, or, rather, [a] fully manipulable calculation process.” William J. Baumol, Michael F. Koehn, and Robert D. Willig, “How Arbitrary is ‘Arbitrary’? — or Toward the Deserved Demise of Full Cost Allocation,” *Public Utilities Fortnightly*, September 3, 1987, page 21.
- ³⁴ *Behind the Telephone Debates*, pages 8 and 37, and Figure 5.4, page 38. Earlier, in 1910, the *Mann-Elkins Act* gave the ICC jurisdiction over interstate rates charged by telephone companies. In 1920, the *Transportation Act* restated the ICC’s authority to regulate interstate telephone traffic. *Mann-Elkins Act*, Pub. L. No. 218, 36 Stat. 539 (1910); *Transportation Act of 1920*, Pub. L. No. 152, 41 Stat. 456 (1920).
- ³⁵ “Equipment providing the same function may be recorded in different USOA accounts. Take, for example, two towers that support the equipment which transmits radio signals between these towers. If one tower is held upright by wires on a mountain top, this tower investment is entered under ‘pole lines (Account 241)’. If the other tower is rooted in concrete — the tower is self-supporting and lacks guy wires — this tower investment is entered under ‘buildings (Account 212)’.” *Behind the Telephone Debates*, page 37. This quote refers to an earlier version of the USOA. The accounts in the current version are Account 2411 and Account 2121, respectively.
- ³⁶ There is a continuing problem of USOA account definitions being outstripped by advances in technology. Often the revisions are outdated before they are even implemented. See *Behind the Telephone Debates*, pages 37 through 41.
- ³⁷ For example, routers are used for information that is serial in nature (conversations, music, TV, movies, etc.) and for information that is independent of timing (data packets). Using the same allocation measurement fails to account for this difference. Also, differences among services, such as voice and video, make the use of a single measure inappropriate. See the discussion in **Section V, What Do the Results Indicate?** See also, *Through the Looking Glass*, page 47.
- ³⁸ In its *Interconnection Proceeding*, the FCC states, “To the extent that joint and common costs cannot be entirely eliminated, we sought comment on various methodologies for assigning them, including the use of a fixed allocator or on the basis of inverse demand elasticity. FCC, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996* (hereinafter referred to as the *Interconnection Proceeding*), CC Docket No. 96-98; and *In the Matter of Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket No. 95-185, *First Report and Order*, August 8, 1996, FCC Order No. 96-325, ¶ 630, page 303. The FCC continues, “There is considerable disagreement in the record over the appropriate method of allocating joint and common costs....” *Ibid.*, ¶ 645, page 314.
- ³⁹ For a monopoly/competitive time line, see *A Snapshot in Time*, Figure 1, page 3, and its description in Appendix VI, pages 36 through 38.
- ⁴⁰ *Communications Act of 1934* (hereinafter referred to as the *Communications Act of 1934*), Pub. L. No. 416, 48 Stat. 1064, (1934), (Codified at 47 USC § 151 et seq.), § 202(a), page 1070. An FCC investigation of the telephone industry conducted between 1934 and 1939 used the term “natural monopoly” to characterize the industry. *Report of the FCC on the Investigation of the Telephone Industry in the United States*, H.R. Doc. 340, 76th Cong., 1st. Sess. 602 (1939), page 597. See also, *Behind the Telephone Debates*, pages 10 and 11.

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⁴¹ The pre-monopoly approach was called “board-to-board.” “Conceptually at least, the industry defined toll (interexchange) costs as only the costs of the toll boards and everything between them, including toll-connecting trunks and toll switching facilities — giving rise to the name ‘board-to-board’.

Generally, the toll board located in the central office marked the local-toll interface.... The local-toll interface presented a clear dividing line, with the assignment of toll costs ... nearly coincident with ownership” between the local companies (local and state toll) and interstate toll (AT&T Long Lines). *Behind the Telephone Debates*, pages 55 and 56.

The 1930s monopoly approach was called “station-to-station.” With this view, local and toll share local plant since toll calls must travel through the local facilities both at the origination and the termination points. Upon adoption of this approach in the 1940s, a portion of costs previously used to determine local rates were added to the costs that determined state and interstate toll rates.

⁴² *Communications Act of 1934*, Section 1, page 1064.

⁴³ *Smith v. Illinois Bell Telephone Co.*, 282 US 133 (1930). See also, *Lindheimer v. Illinois Bell Telephone Co.*, 292 US 151 (1933); and *Behind the Telephone Debates*, pages 61 through 63.

⁴⁴ FCC, *ENFIA Agreement (Interim Settlement Agreement)*, 43 Fed Reg. 59129, 59130 (December 19, 1978); *AT&T and the Bell System Operating Companies Tariff No. 8 (BSOC 8)*, Transmittal No. 53, *Exchange Network Facilities for Interstate Access (ENFIA)*, CC Docket No. 78-317, *Memorandum Opinion and Order*, 71 FCC 2d 440 (1979), through *Order on Reconsideration*, 93 FCC 2d 739 (1983). FCC, *MTS and WATS Market Structure Inquiry*, CC Docket No. 78-72, *Notice of Inquiry and Proposed Rulemaking*, 67 FCC 2d 757 (1978); *Phase I: Third Report and Order (Access Charge Order)*, 93 FCC 2d 241 (1982); *Final Rule (Reconsideration Order)*, 48 Fed. Reg. 42984 (September 21, 1983); *Memorandum Opinion and Order (Second Reconsideration Order)*, 49 Fed. Reg. 7810 (March 2, 1984); and *Final Rule (Third Reconsideration Order)*, 50 Fed. Reg. 18249 (April 30, 1985).

⁴⁵ *Interconnection Proceeding*.

⁴⁶ FCC, *In the Matter of Regulatory and Policy Problems Presented by the Interdependence of Computer and Communications Services (Computer Inquiry I)*, FCC Docket No. 16979, *Notice of Inquiry*, 7 FCC 2d 11 (1966).

FCC, *In the Matter of Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry)*, FCC Docket No. 20828, *Notice of Inquiry and Proposed Rulemaking*, 61 FCC 2d 103 (1976).

FCC, *In the Matters of: Amendment of Sections 64.702 of the Commission's Rules and Regulations (Third Computer Inquiry); and Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Thereof; Communications Protocols Under Section 64.702 of the Commission's Rules and Regulations*, CC Docket No. 85-229, *Notice of Proposed Rulemaking*, 50 Fed. Reg. 33581 (August 20, 1985).

FCC, *Computer Inquiry Implementation Proceeding*, CC Docket No. 81-893, *Notice of Inquiry*, 89 FCC 2d 694 (1982).

⁴⁷ *Regulated/Nonregulated Proceedings*.

⁴⁸ The FCC's *OVS Proceeding* includes the debate over whether the allocation of common costs is necessary to prevent subsidies. In brief, the debate centers over what type of costs is used as the basis: incremental costs v. stand-alone costs.

⁴⁹ *Behind the Telephone Debates*, pages 63 through 66.

⁵⁰ It was up to regulators within each state to determine whether the revenues from interstate long distance customers were used to prevent price increases in local services or in some other state service. For example, a predominantly rural state with small local populations might choose to use interstate revenues to keep short-haul state toll rates low.

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- ⁵¹ Between 1947 and 1982, the battles over federal and state regulatory jurisdiction “boiled down to a pattern. On one side, the FCC wanted a reduction of the interstate (federal interexchange) rates. On the other side, the state regulators wanted low basic exchange rates. In addition, the companies wanted to increase rates to cover their increased local costs.” The 19-year war over state toll settlements was resolved with the adoption of a new mechanism for cost allocations and revenue recovery, called the Ozark Plan. *Behind the Telephone Debates*, page 77.
- ⁵² The percentage of interstate cost allocations was frozen in 1982 and a transition was made to a single nationwide interstate allocator. *Behind the Telephone Debates*, page 54. The same year, the FCC proposed access charges in its *MTS and WATS Market Structure Inquiry; Phase I: Third Report and Order*; 93 FCC 2d 241 (1982).
- ⁵³ “The characteristic of a pooling mechanism is that some companies in the pool will benefit at the expense of others.” *Behind the Telephone Debates*, page 86. In addition, the solution increased the percentage of state costs recovered from interstate customers. It also made the mechanisms for cost allocations and cost recovery match one another; both now have usage-sensitive and distance-sensitive measures. *Ibid.*, pages 86 and 88.
- ⁵⁴ *Ibid.*, page 90.