52. What safeguards should be adopted to ensure adequate quality of service under a system of competitive bidding?

Under the principle of reasonably comparable service, the performance standards applied in urban areas should be applied in high-cost areas subject to competitive bidding. These standards should be explicit stated in the technical requirement when the service is put up for bids. A penalty system for failure to meet the standards should be included in the bid contract. A performance bond should be required.

53. How is collusion avoided when using a competitive bid?

Collusion violates criminal statutes and should result in prosecution and full federal and state penalties for companies and executives found to have broken the law.

54. Should the structure of the auction differ if there are few bidders? If so, how?

No response.

55. How should the Commission determine the size of the areas within which eligible carriers bid for universal service support? What is the optimal basis for determining the size of those areas, in order to avoid unfair advantage for either the incumbent local exchange carriers or competitive carriers?

Bid areas should be realistic market areas. Identifying extremely small areas creates unrealistic market definitions. It increases the role of joint and common costs in the network, which places greater emphasis of regulatory oversight of incumbent costs.

If small product and geographic markets are defined for purposes of bidding, then Commissions would have to expose all joint and common costs to a competitive bidding process as well. That is, if a small census block group is put up for bid, transport and switching would be excluded from that bid. All network functionalities necessary to provide telecommunications services for that census block group should also be put up for bid -- e.g. transport and switching. Winning bidders for each network functionality must be required to serve the winning bidder of every other network functionality. The resulting bidding process would be quite complex.

It would be more reasonable to identify a market that competitors are likely to serve at the level of an exchange and require bids for that entire market. It should include all services sold in the market.

56. How do the book costs of incumbent local exchange carriers compare with the calculated proxy costs of the benchmark cost model (BCM) for the same areas?

The book costs of incumbents are roughly twice the benchmark costs because the book costs include excess profits, inefficiencies, strategic investments, and misallocated costs.

57. Should the BCM be modified to include non-wireline services? If wireless technology proves less costly than wireline facilities, should projected costs be capped that the level predicted for use of wireless technology?

Yes, the proxy cost model must be a least cost, forward looking model.

58. What are the advantages and disadvantages of using a wire center instead of a census block groups as the appropriate geographic area in projecting costs?

We believe wire centers are closer to the relevant geographic markets for purposes of entry. The fact that costs may differ slightly between census blocks within a wire center is not a major problem, since such cost differences are observed in competitive markets.

59. The Maine PUC and several other state commissions proposed inclusion in the BCM of the costs of connecting exchanges to the public switched network through the use of microwave, trunk, or satellite technologies. Those commenters also proposed the use of an additional extra-high-cost variable for remote areas not accessible by road. What is the feasibility and the advisability of incorporating these changes in the BCM?

All reasonable changes which improve the model's ability to estimate costs should be considered.

60. The National Cable Television Association proposed a number of modifications to the BCM related to switching costs, fill factors, digital loop carrier subscriber equipment, penetration assumptions, deployment of fiber versus copper technology assumptions, and service area interface costs. Which if any of these changes would be feasible and advisable to incorporate into the BCM?

No response.

61. Should the support calculated using the benchmark cost model also reflect subscriber into levels, as suggested by the Puerto Rico Telephone Company in its Comments?

No. A cost model should measure only the cost of service. Income levels come into consideration when the reference price is set.

62. The BCM appears to compare unseparated costs, calculated using a proxy methodology, with a nationwide local benchmark rate. Does use of the BCM suggest that the costs calculated by the model would be recovered only through services included in the benchmark rate? Does the BCM require changes to existing separation and access charge rules. Is the model designed to change as the rules are changed? Does the comparison of model costs with a local rate affordability benchmark create an opportunity for over-recovery from universal service mechanisms?

The assumption of the BCM, for purposes of estimating a national total high-cost fund, is that only basic service rates are taken into account in calculating the fund. We have stressed that this is inappropriate. To the extent that other services utilize the same facilities (i.e. share joint and common facilities), costs must be allocated to those services or revenues from those services must be taken into account.

The over-recovery potential arises because of the failure of the BCM to recognize joint and common costs between basic and non-basic services. Therefore, as stated in our Comments, the high-cost support should be based on a reasonable projection of all revenues within an exchange.

63. Is it feasible and/or advisable to integrate the grid cell structure in the cost proxy model (CPM) proposed by Pacific Telesis into the BCM for identifying terrain and population areas where density is low?

No response.

64- 68. Cost proxy model proposed by Pacific Telesis

No response.

69. If a portion of the CCL charge represents a subsidy to support universal service, what is

the total amount of the subsidy? Please provide supporting evidence to substantiate such estimates. Supporting evidence should indicate the cost methodology used to estimate the magnitude of the subsidy (e.g. long-run incremental, short-run incremental, fully distributed).

We believe that the CCL is a charge for use of joint and common facilities. It may embody some excess profits and inefficiencies at present.

70. If a portion of the CCL charge represents a contribution to the recovery of loop costs, please identify and discuss alternatives to the CCL charge for recovery of those costs from all interstate telecommunications service providers (e.g. bulk billing, flat rate/per line charge)?

A flat rate, channel charge would be appropriate as a mechanism for the recovery of loop costs.

71. Should the new universal service fund provide support for the lifeline and linkup programs, in order to make those subsidies technologically and competitively neutral? If so, should the amount of the lifeline subsidy be tied, as it is now, to the amount of the subscriber line charge?

The lifeline and link-up programs should be supported from the new universal service fund. The amount should be adequate to ensure progress toward the goal of universal service.

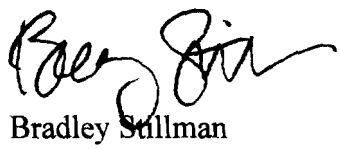
72. Section 254 (d) of the 1996 Act provides that the Commission may exempt carriers for contributing to the support of universal service if their contribution would be "de minimis." The conference report indicate that "the conferees intend that this authority would be used only in cases where the administrative cost of collecting contributions from a carrier or carriers would exceed the contribution that carrier would otherwise have to make under the formula for contributions selected by the commission." What level of administrative cost should be expected per carrier under the various methods that have been proposed for funding (e.g. gross revenues, revenues net of payments to other carriers, retail revenues, etc.)?

With electronic reporting, we believe that these costs are quite small.

CONCLUSION

CFA urges the Joint Board to adopt policies consistent with the proposals outlined above to maximize the social investment designed to bring advanced services to important institutional users of telecommunications services.

Respectfully submitted,



Bradley Stillman
Telecommunications Policy Director

Dr. Mark N. Cooper
Research Director

Consumer Federation of America
1424 16th Street, NW, Suite 604
Washington, DC 20036

August 2, 1996

Universal Service:

An Historical Perspective

and Policies for the 21st Century

Prerelease draft

Benton Foundation

Consumer Federation of America

The Consumer Federation of America

The Consumer Federation of America is a nonprofit association of some 240 pro-consumer groups, with a combined membership of 50 million, that was founded in 1968 to advance the consumer interest through advocacy and education.

The Benton Foundation

The Benton Foundation believes that communications in the public interest, including the effort to connect all Americans to basic communications systems, is essential to a strong democracy. Benton's mission is to realize the social benefits made possible by the public interest use of communications. Benton bridges the worlds of philanthropy, community practice, and public policy. It develops and provides effective information and communication tools and strategies to equip and engage individuals and organizations in the emerging digital communications environment.

The Benton Foundation's Communications Policy Project is a nonpartisan initiative to strengthen public interest efforts in shaping the emerging National Information Infrastructure (NII). It is Benton's conviction that the vigorous participation of the nonprofit sector in policy debates, regulatory processes, and demonstration projects will help realize the public interest potential of the NII. Current emphases of Benton's research include extending universal service in the digital age; the future of public service in the new media environment; the implications of new networking tools for civic participation and public dialogue; the roles of states as laboratories for policy development; and the ways in which noncommercial applications and services are being developed through new telecommunications and information tools.

Universal Service

An Historical Perspective

and Policies for the 21st Century

A joint publication of the Benton Foundation and the Consumer Federation of America

By Mark Cooper

This is a preliminary draft prepared for delivery at the meeting of the National Association of Regulatory Utility Commissioners (NARUC) in Los Angeles, California. It is intended to begin a dialogue between state regulatory commissions and public interest advocates as they work together to define what "affordable" rates are for telecommunications services. The paper looks back at the course of the evolution of universal service policy and also offers recommendations for the evolving policy outlined in the Telecommunications Act of 1996. The final version of this paper will be available through the Benton Foundation later this summer.

I.
Universal Service—A century of commitment

A. The fundamental goal

Soon after the start of the twentieth century, Theodore Vail, president of AT&T, articulated his vision of the future of the nascent telephone industry:

> The Bell system was founded on broad lines of "One System," "One Policy," "Universal Service" on the idea that no aggregation of isolated independent systems not under common control, however well built or equipped, could give the country the service. One system with a common policy, common purpose, and common action; comprehensive, universal, interdependent, intercommunicating like the highway system of the country, extending from every door to every other door, affording electrical communication of every kind from every one and every place to every one at every other place.[1]

Vail's vision may have been intended as much to further the corporate strategy of the powerful Bell company as to promote a social policy, but the concept of universal service—connecting each to all—has been at the center of telecommunications policy ever since.[2] Vail's vision was certainly futuristic at the time, since only about 10 percent of the households in the country had telephone service.[3] But this goal was effective, and produced a rapid extension of service and concentration in the industry.[4] A quarter of a century later, when Congress passed its first piece of comprehensive legislation dealing with the telecommunications industry (the Communications Act of 1934), the penetration of telephone service had risen to almost 40 percent. And AT&T's market share had risen from about 50 percent to over 80 percent.[5]

In the Communications Act of 1934 Congress established a national policy of universal service that went beyond merely laying the wires and infrastructure to connect each to all. It included a commitment to making service economically accessible to all Americans. To continue the highway analogy introduced by Vail, it was not enough that the roads be in place, public policy declared that the pricing of usage be such that all Americans could avail themselves of telephone service. The Federal Communications Commission (FCC) was created at this time,

> [f]or the purpose of regulating interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible to all the people of the United States, a rapid, efficient, Nation-wide, and world-wide wire and radio communications service with adequate facilities at reasonable charges.[6]

Today, as the twentieth century draws to a close, Congress has not only reaffirmed the central importance of universal service in telecommunications, but it has vastly expanded the scope and specificity of the concept.

Section 254 of The Telecommunications Act of 1996 vastly expands the concept of universal service[7] (see Table I-1):

> 1)The FCC is charged with assuring that all rates for universal service are just, reasonable, and affordable, not just the rates for interstate services.
>
> 2) The word "affordable" had not been used before this legislation, but the 1996 Act introduces the concept of affordability directly and explicitly into national policy.

TABLE I-1. The universal service goals of the Telecommunications Act of 1996

254(b) *Universal service principles*—The Joint Board and the Commission shall base policies for the preservation and advancement of universal service on the following principles:

(1) *Quality and rates*—Quality services should be available at just, reasonable, and affordable rates.

(2) *Access toadvanced services*—Access to advanced telecommunications and information services should be provided in all regions of the country.

(3) *Access in rural and high-cost areas*—Consumers in all regions of the nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas at rates that are reasonably comparable to rates charged for similar services in urban areas.

(4) *Equitable and nondiscriminatory contributions*—All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service.

(5) *Specific and predicable support mechanisms*—There should be specific, predictable, and sufficient federal and state mechanisms to preserve and advance universal service.

(6) *Access to advanced telecommunications services for schools, health care, and libraries*—Elementary and secondary schools and classrooms, health care providers, and libraries should have access to advanced telecommunications services as described in subsection (h).

(7) *Additional principles*—Such other principles as the Joint Board and the Commission determine are necessary and appropriate for the protection of the public interest, convenience, and necessity and are consistent with this Act.

Section 255. *Access by persons with disabilities*

(b) *Manufacturing*—A manufacturer of telecommunications equipment or customer premise equipment shall ensure that the equipment is designed, developed, and fabricated to be accessible to and usable by individuals with disabilities, if readily achievable.

(c) *Telecommunications services*—A provider of telecommunications services shall ensure that the service is accessible to and usable by individuals with disabilities, if readily achievable.

(d) *Compatibility*—Whenever the requirements of subsections (b) and (c) are not readily achievable, such a manufacturer or provider shall ensure that the equipment or service is compatible with existing peripheral devices or specialized customer premise equipment commonly used by individuals with disabilities to achieve access, if readily achievable.

3) The 1996 Act expands the services to which the universal service concept applies and institutes a formal process for expanding the definition of universal service over time.

4) Although access to the network for high-cost areas and low-income consumers has been supported for years, the 1996 Act explicitly requires this policy and requires that it be implemented with specific and predictable mechanisms, in the form of contributions from all providers of telecommunications services, to support universal service.

5) A whole new range of institutions has been identified as having a role in universal service policy.

6) Section 255 also adds a commitment to consumers with disabilities.

B. Changing industry structure

Although telephone service is much more widespread today, being subscribed to by about 94 percent of all U.S. households,[8] the new commitments made in the 1996 Act may constitute no less of a forward-looking goal than earlier statements of universal service policy. Not only does the 1996 Act expand the concept of universal service in several areas, but it also charges the Commission with accomplishing expanded universal service access at the same time that the form of industrial organization in telecommunications undergoes a change. The Act requires states to allow competition in local telephone service by removing the legal and regulatory barriers the local exchange companies have operated under since before the passage of the Communications Act in 1934. The Conference Report states the overall purpose of the law is

> to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition.[9]

The task facing regulators is to implement a significantly more inclusive and aggressive concept of universal service in harmony with the pro-competitive and deregulatory goals of the 1996 Act.

C. Purpose and outline of the paper

Although the outline for universal service and competition policy for the twenty-first century has been laid down by Congress, the content of those policies remains an open issue. Over the next year or so the FCC[10] will issue rules and guidelines to fill in the details. The states—simultaneously in some instances, subsequently in others—will put their own stamp on universal service by adopting state-specific policies to meet their individual needs while they continue to exercise full authority over the setting of retail rates.[11]

Thus, in a flurry of proceedings over the next year or two, 50 regulatory bodies will write the road map for the information superhighway, determining who has access to what services at what prices. And if the Internet and other advanced telecommunications services prove to be anywhere as powerful a social force in the twenty-first century as plain old telephone service proved to be in the twentieth, a great deal is at stake for consumers.[12]

This paper is intended to encourage public interest groups to become actively involved in the process of defining the information age by illuminating the fundamental questions they will face in the debate over universal service. It attempts to demystify the regulatory issues that citizen intervenors will face in the policymaking process at regulatory commissions, first by presenting a forward-looking, consumer-friendly position on policy issues, and then describing rebuttals to the arguments they are likely to encounter from governmental and industry representatives.[13]

Industry representatives frequently suggest that technology will dictate the shape of the telecommunications future and that economic policy analysis is beyond the ken of citizen intervenors. But the initial reaction to the FCC's first Notice of Proposed Rulemaking under the new law, implementing the universal service section of the 1996 Act, makes it clear that policy decisions can dramatically influence where and how the information superhighway is built, who gets to use it, and how costs are allocated.[14] Over 200 comments were filed at the FCC, many by public interest groups, all providing the Commission an enormous amount of information on what services should be universal. Because the federal proceeding on universal service will greatly influence the overall outcome and has elicited much comment, the issues and positions taken in that proceeding will be used as primary material in this paper, although the more highly developed universal service policies in some states will also be reviewed.[15]

We begin with the broad commitment to universal service. Chapter II deals with the issue of ensuring just, reasonable, and affordable rates for the general body of ratepayers. The cornerstone of universal service policy has always been a commitment to ensuring access to service for average citizens. Chapter III reviews the definition of affordability, a concept which has been introduced explicitly into the law. Chapter IV discusses which services have been proposed for inclusion in the definition of "basic service." Chapter V addresses the issue of people who need more than the simple policy of ensuring just, reasonable, and affordable rates for all in order to obtain universal service access. It describes eligibility for groups of individuals, as well as special arrangements necessary to support institutions—both companies and public institutions.

II.
Universal, affordable service

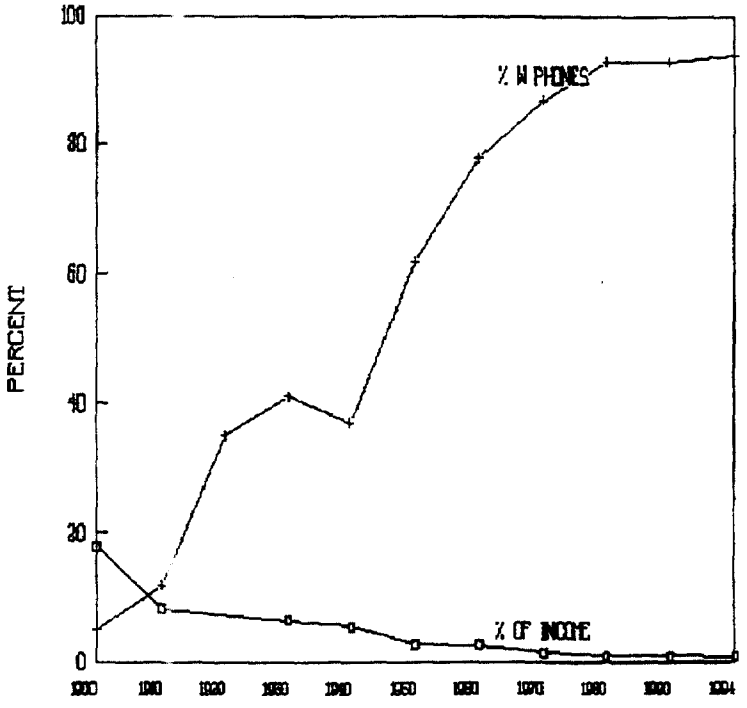
A. Progress toward the goal of universal service

Figure II-1 presents data from the beginning of the twentieth century to the present on the percentage of households with telephone service, and the cost of service relative to the national average per capita income. While the cost of service, expressed as a percentage of income, is only one factor affecting the decision to take telephone service, it is certainly the most important factor because it incorporates the two most important economic factors affecting the demand for any commodity—the income elasticity of demand and the price elasticity of demand.[16]

At the turn of the century telephone service had been adopted by a small part of the population, something on the order of 5 percent.[17] The monthly cost of service was quite high relative to income, around 18 percent. Over the first three decades of the century, the relative cost of the service declined dramatically, to around 6.3 percent of income. The penetration rate increased sharply, to just over 40 percent.

Telephone penetration rates stagnated throughout the depression, and then skyrocketed in the post-war years. From 37 percent in 1940, penetration jumped to 93 percent in 1980. This rapid spread of tele-

Figure II-1. Percent of households with telephones and cost of service as a percentage of per capita income



Sources:

U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United states: Colonial Times to 1970* (Washington, D.C., 1975), Tables F17–30, R1–12.

John Robert Meyer, *The Economics of Competition in the Telephone Industry* (Oelgeschlager, Gunn & Hain, Cambridge, Mass, 1980).

McMaster, Susan E. and James Lande, *Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service* (Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, November 1995), Table 2.

Federal State Staff, Federal State Joint Board, *Monitoring Report*, CC Docket No. 87-339, May 1995, Table 1.1.

Council of Economic Advisors, *Economic Report of the President*, February 1996, Table B-27.

phone service coincided with a dramatic decline in the cost of service relative to income. By 1980 the monthly cost of service had fallen to less than 1 percent of income.

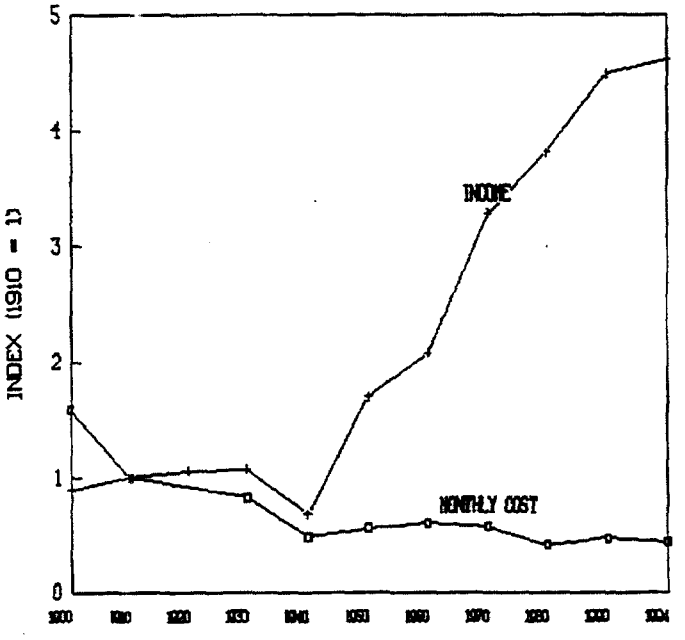
Figure II-2 shows that the dramatic decline in the cost of telephone service relative to income in the early years was predominantly the result of falling real prices.[18] Between 1900 and 1930, the real cost of service fell by about 50 percent. Income grew by 20 percent. After World War II, the declining relative cost of service was predominantly a result of rising income levels.[19] Real income grew by over 300 percent between 1940 and 1980, while the real cost of service again fell by about 25 percent.

B. Universal affordable rates for all[20]

For the six decades between the passage of the Communications Act of 1934 and the Telecommunications Act of 1996, universal service was implemented by a general approach to setting rates for basic service, applying principles of cost allocation and cost recovery to try and keep the cost of basic service low and affordable. The cornerstone of this process had been laid down in two fundamental principles of ratemaking, established in case law around the time of the passage of the 1934 Act.[21]

First, in a series of cases starting in the 1920s, the concept of rate of return regulation came to rest on the principle of just and reasonable rates, defined by the courts to require that regulators grant companies only the opportunity to earn a return commensurate with the risks that they faced.[22] This kept the total revenue requirement to be collected from ratepayers under control.

Figure II-2. Indices of per capita income and telephone costs
(Real dollars, 1910=1)



Sources:

U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United states: Colonial Times to 1970* (Washington, D.C., 1975), Tables F17–30, R1–12.

John Robert Meyer, *The Economics of Competition in the Telephone Industry* (Oelgeschlager, Gunn & Hain, Cambridge, Mass, 1980), Tables 2-2, 2-3, Figures 2-2, 2-3.

McMaster, Susan E. and James Lande, *Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service* (Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, November 1995), Table 2.

Federal State Staff, Federal State Joint Board, *Monitoring Report*, CC Docket No. 87-339, May 1995, Table 1.1.

Council of Economic Advisors, *Economic Report of the President*, February 1996, Table B-27.

Second, the courts upheld the principle that the costs for the shared facilities in the telecommunications network—facilities used for more than one service—should be shared among the full range of services and customer classes that used the network.[23] In particular, long distance services were required to cover a part of the cost of the loop facilities that were used in the completion of long distance calls. This kept the share of the revenue requirement to be collected from basic service to residential ratepayers under control.

Flowing from this legal foundation, many regulators kept the share of these costs placed on basic service low (the mark-up of basic service prices above direct costs was small), but not below cost.[24] Consequently, the share of these costs recovered from non-basic services—long distance usage, enhanced services like call forwarding—has been high. Overlaid on this cost allocation approach were substantial economic efficiency gains in the industry—fueled by economies of scale which lowered costs as more and more users joined the network—that enabled prices to fall across the board.[25] Economies of scale, which flow from more users sharing facilities, were particularly suited to allocation approaches that kept basic service low.

For as long as regulators have engaged in the practice of keeping basic service rates low by allocating joint and common costs to other services, various industry, academic, and consumer groups have argued about whether keeping rates low involves a subsidy and which way the subsidy flows—to the company or to the consumer.[26] Those who use non-basic services intensively (generally business customers) would like to see a larger share of joint and common costs allocated to basic service. This would result in lower rates for the services they rely on more heavily.[27] Telephone companies have also argued that a larger share of network costs should be recovered from residential ratepayers, who rely more on basic services than other services. If the recovery of these costs were shifted onto basic service, they would have a more secure revenue stream.[28]

Those who rely predominantly on basic service have argued that their needs do not cause the high costs imposed on the network by the more demanding services and they do not benefit from the higher levels of functionality that have been built into the network.[29] They argue that in the 1920s and 1930s these costs were driven by the need for higher quality—a need created by long distance service. From this point of view, the needs of high speed data transmission have been driving costs in the 1980s; in the years ahead broadband applications will drive costs.[30] Those who do not use these services do not feel they should pay for them.

The debate is not likely to be ended by the 1996 Act. Not only does the Act reiterate the belief that universal service depends on a fundamental commitment to affordable pricing based on just and reasonable rates for all households, but Section 254(k) of the 1996 Act reaffirms the principle of protecting universal service when allocating joint and common costs. Section 254(k) states:

> *Subsidy of competitive services prohibited*—A telecommunications carrier may not use services that are not competitive to subsidize services that are subject to competition. The Commission, with respect to interstate services, and the states, with respect to intrastate services, shall establish any necessary cost allocation rules, accounting safeguards, and guidelines to ensure that services included in the definition of universal service bear no more than a reasonable share of the joint and common costs of facilities used to provide those services.

The Conference Report makes a point of stating that in adopting Section 254(k) the House is receding to the Senate.[31] The Senate report made it clear that a reasonable share of joint and common costs was the maximum that should be included in the rates for universal service, but that less could be allocated to these services.

> The Commission and the states are required to establish any necessary cost allocation rules, accounting safeguards, and other guidelines to ensure that universal service bears no more than a reasonable share (and may bear less than a reasonable share) of the joint and common costs of facilities used to provide both competitive and noncompetitive services.[32]

Above all, consumer advocates view the loop (the wires that connect the end-user to the network and are used to complete all telephone calls—local, intralata long distance calls,[33] and interlata long distance—and to provide enhanced services) as a shared facility. If the loop were not provided by the existing local exchange companies, telecommunications service providers would have to build their own loops, or rent the use of some other loop in order to sell their services to the public. Because the loop is a joint and common cost shared by competitive and non-competitive services, it is subject to Section 254(k), meaning that universal service services should not bear more than a reasonable share of the loop's joint and common costs.

It is not only consumer advocates who take this view of the loop,[34] but even some local companies point out charges for the use of the loop represent the recovery of joint and common costs.[35] State regulators also take this view.[36]

Consumer advocates see the sharing of joint and common costs as the linchpin of the legislation.[37] Affordability can only be assured where there is a direct link between the growth of information, data, and video services and declining costs for basic access. As the network is filled up with enhanced and discretionary services, the cost of network access and plain old telephone service will decline for all people, if the link between use of the network and basic service rates is well-crafted. In a sense, economies of scope—the sharing of facilities between different services—can play the role that economies of scale played in the early days of the industry.[38]

III.
Affordability: explicit statements of complex goals

A. Definition

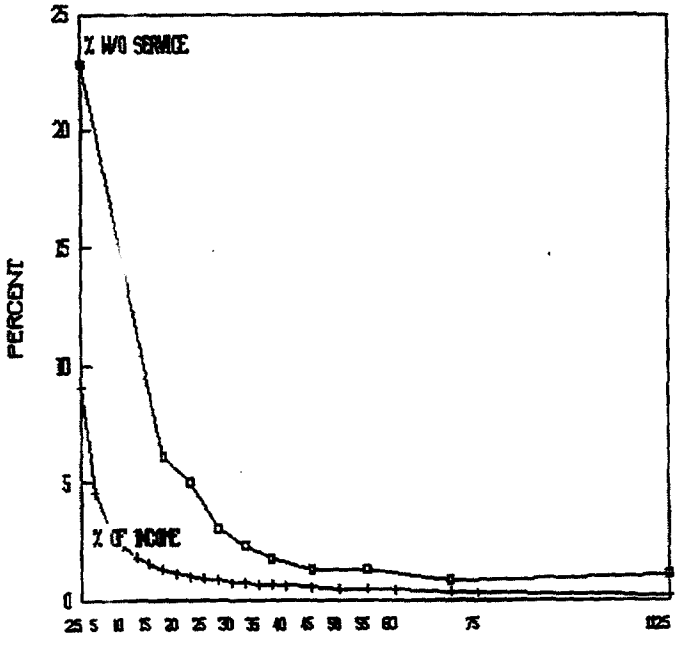
The explicit Congressional charge to ensure affordability is a new obligation.[39] The FCC's initial discussion of the definition of affordability, in the Notice of Proposed Rulemaking on universal service, highlights the inherent difficulty of this concept. The FCC begins by citing a definition of "affordable" that invokes both an absolute and a relative concept of affordability—

> Webster's New World Dictionary defines the term "afford" as follows: "to have enough or the means for; bear the cost of without serious inconvenience.[40]

The first definition ("have enough or the means for") is an absolute concept in the sense that there is no qualifier. No matter how much it hurts, if a subscriber continues to pay for telecommunications service, telephone service is deemed by implication to be affordable. The second definition ("bear the cost of without serious inconvenience") is relative in the sense that the burden imposed is qualified by the term "serious inconvenience." If it hurts a lot to pay for telephone service, telephone service is not deemed to be affordable, even though the subscriber continues to pay for it.

Although the dictionary definition clearly has two aspects, the example the FCC's initial notice gives refers only to the absolute connotation of affordability: "For example, one such measure might be the

Figure III-1. Percent of households without service and percent of income devoted to basic service at various income levels



Sources:

McMaster, Susan E. and James Lande, *Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service* (Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, November 1995), Table 2.

Council of Economic Advisors, *Economic Report of the President*, February 1996, Table B-27.

U.S. Bureau of the Census, *Current Population Survey*, November 1994.

TABLE III-1. Income and telephone rates as a percent of income

Income category	Percent of all households	Percent of all households without service	Estimate		Cost		Affordable rate at .7 percent of income
			Point	Inc.	$ per month	Percent of income	
LT 5000	5.98	22.8	midpoint	2,500.00	18.89	9.07	1.46
			endpoint	5,000.00	18.89	4.54	2.92
5 TO 7,499	5.71	16.5	midpoint	6,300.00	18.89	3.60	3.68
			endpoint	7,500.00	18.89	3.02	4.38
7,500 to 9,999	5.00	12.5	midpoint	8,750.00	18.89	2.59	5.10
			endpoint	10,000.00	18.89	2.27	5.83
10,000 to 12,499	6.14	9.3	midpoint	11,250.00	18.89	2.02	6.56
			endpoint	12,500.00	18.89	1.81	7.29
12,500 to 14,999	5.32	7.7	midpoint	13,750.00	18.89	1.65	8.02
			endpoint	15,000.00	18.89	1.51	8.75
15,000 to 19,999	7.80	6.1	midpoint	17,500.00	18.89	1.30	10.21
			endpoint	20,000.00	18.89	1.13	11.67
20,000 to 24,999	9.14	5.0	midpoint	22,500.00	18.89	1.01	13.13
			endpoint	25,000.00	18.89	.91	14.58
25,000 to 29,999	8.13	3.1	midpoint	27,500.00	18.89	.82	16.04
			endpoint	30,000.00	18.89	.76	17.50
30,000 to 34,999	7.43	2.3	midpoint	32,500.00	18.89	.70	18.96
			endpoint	35,000.00	18.89	.65	20.42
35,000 to 39,999	6.64	1.8	midpoint	37,500.00	18.89	.60	21.88
			endpoint	40,000.00	18.89	.57	23.33
40,000 to 49,999	9.45	1.3	midpoint	45,000.00	18.89	.50	26.25
			endpoint	50,000.00	18.89	.45	29.17
50,000 to 59,999	7.59	1.3	midpoint	55,000.00	18.89	.41	32.08
			endpoint	60,000.00	18.89	.38	35.00
60,000 to 74,999	6.08	.8	midpoint	67,500.00	18.89	.34	39.38
			endpoint	75,000.00	18.89	.30	43.75
75,000 or more	9.58	1.1	midpoint	113,000.00	18.89	.20	65.92

Source: U.S. Bureau of the Census, *Current Population Survey*, November 1994.

level of telecommunications service subscribership among targeted populations."[41] In fact, the notice repeatedly refers to the penetration rate as the measure of affordability.[42]

More recent editions of the Webster's Dictionary cite the relative concept as the primary definition of affordable—

> (1) (a) To manage to bear without serious detriment; (b) To manage to pay for or incur the cost of.[43]

> (1) (a) To manage to bear without serious detriment; (b) To be able to bear the cost of.[44]

Random House provides a similar definition.

> (1) To be able to undergo, manage, or the like without serious consequence; (2) to be able to meet the expense of or spare the price of.[45]

Thus, the relative concept of affordability seems to be the primary connotation. The standard should be not whether one can pay the price, but whether that price causes serious detriment, consequence, or inconvenience.

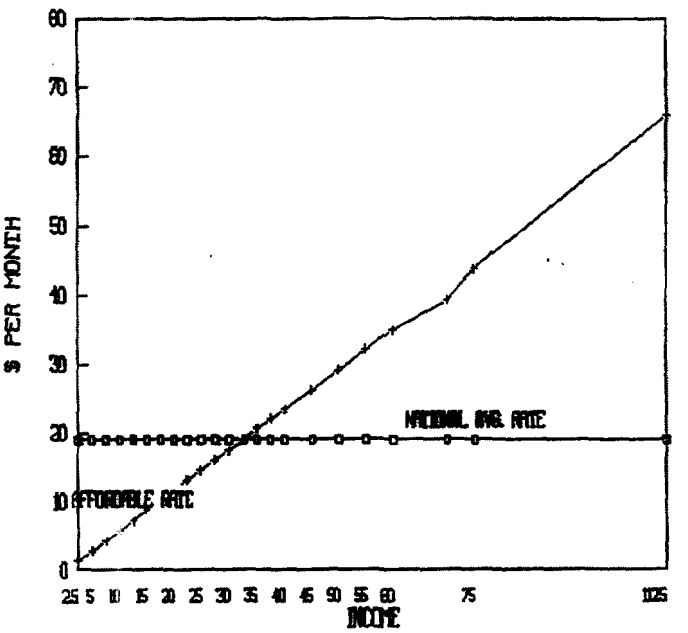
Consumer advocates reject a narrow definition of universal service as simple access to the phone because the telephone is a necessity and people will cling to it.[46] Even if households do not drop off the network, we must still ask—at the end of the twentieth century—whether they are able to use the phone as the basic means of communication. For the past half century we have woven the phone into the fabric of daily life. We have let decisions about where to live, where to locate services, how to acquire information, and how to allocate our time be fundamentally influenced by the degree of access to unlimited local calls. The telephone is the mainstay of daily communications, a foundation of economic,[47] social,[48] and political life.[49]

Given the tremendous importance of the telephone, it does not suffice to say that if a household has a phone it must be affordable, regardless of how much of a burden it places on the household budget.[50] Affordability is more complex than that. In this context the test of affordability is not simply whether or not people keep the phone, or whether or not they use it, but how much of a burden a reasonable level of consumption of this vital necessity places on the household budget.

B. Measurement

Quantitative measures of the relative concept of affordability involve estimating the percentage of income that households might be forced to spend for service at various income levels and rate levels (see the Consumer Expenditure Survey compiled by the Bureau of Labor Statistics).[51] Qualitative measures include what people consider "too expensive" or "too much" to pay for telephone service. Examples of this measurement are levels of satisfaction and dissatisfaction with rates expressed in response to questions asked in opinion polls.[52]

Figure III-2. Affordable rates at .7 percent of income



Sources:

McMaster, Susan E. and James Lande, *Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service* (Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, November 1995), Table 2.

Council of Economic Advisors, *Economic Report of the President*, February 1996, Table B-27.

U.S. Bureau of the Census, *Current Population Survey*, November 1994.

Quantitative measures of the absolute concept of affordability include penetration rates, as compiled by the Current Population Survey conducted by the Census Bureau. We can also find qualitative measures, where people are asked why they do not have, or have given up, telephone service. Examples of this measurement include the national study conducted by the American Association of Retired Persons and the Consumer Federation of America.[53]

Table III-1 and Figure III-2 present quantitative data from late 1994 to demonstrate the two aspects of affordability. They show the percentage of households at various income levels that do not subscribe to telephone service and the percentage of income that basic service charges represents for households with telephone service.

Among households with income below $5,000 we observe that almost 23 percent do not have telephone service. On a national average basis, a household with an income of $2,500 would be forced to pay 10.1 percent of that income to obtain service. The percentage of households without telephone service declines steadily as income rises, as does the percentage of income required to pay for service. For those with incomes between $10,000 and $12,500, about 9.3 percent of households do not have telephone service ($12,500 being approximately the upper limit of poverty-level income for multi-person households). The percentage of households without telephone service drops rapidly as income rises above this level. By $25,000 the percentage of households with telephones exceeds 90 percent. Penetration rates stabilize at about 99 percent when income reaches $35,000. At this level, basic monthly service costs consume about .7 percent of income.

Based upon this data, we can suggest a rule of thumb for affordability measured as penetration and burden. First, since we observe that at high levels of income approximately 99 percent of all households have telephone service, it is reasonable to assume that if the cost of service were not a burden, 99 percent of all households would have service. ("High" levels of income in this case starts at $35,000—very firmly in the middle class.)

We can flip this observation around to note that the overwhelming majority of households without telephone service are low-income households. For example, although 23 percent of households have income below $12,500, we find that 61 percent of all those without telephone service are in this group. If a household has an income below $12,500 it is 10 times more likely to have no telephone service than a household with an income above $35,000.

Second, we have observed across time that only when the cost of service drops below 1 percent of income in the aggregate does the telephone penetration rate begin to exceed 90 percent. We now observe in a more disaggregated approach that penetration rates of 99 percent are consistently achieved only where the cost falls below 1 percent of income—to about .7 percent. Thus, .7 percent of income would seem to be a target level for cost, if universal service is to be achieved. Figure III-2 shows that this is a demanding goal. For lower income groups, .7 percent of income is a relatively small figure, compared to current national average rates. For the lowest income category, .7 percent of income is only $1 to $3 per month. Even at the limit of poverty level income ($12,500), .7 percent of income is just over $7 per month, less than half of the national average rate for local telephone service.

It is clear that for households at the lower end of the income distribution, telephone service is simply not affordable by both measures of affordability—the percentage of households without telephone service and the burden that having telephone service places on household budgets. Large percentages of households at this income level do not subscribe to service and those that do are forced to devote a disproportionately large share of their income to pay for basic service.

It is also clear that the fundamental commitment to just and reasonable rates has driven the overall affordability of telephone service. In the historical development of telephone subscribership and in the new law, just and reasonable rates underlie affordability for the vast majority of consumers. With this in mind, it does not seem overly-optimistic to look at the expanded provisions for universal service in the 1996 Act as a means for just and reasonable rates by available to all.

IV.
Basic Service

A. The evolving concept of basic service

Basic service has always been the target of universal service policy, but the meaning of that term has never been specifically defined. The 1996 Act and actions by state regulators and legislators now seek to define basic service more precisely. At the federal and state levels public policymakers are now in the process of deciding which package of services (core services) should be included in the definition of basic service. The potential definition of basic service has become quite rich and complex.

The key observation that underlies this process from the public interest point of view is that it is perfectly reasonable, even necessary, for basic service to be defined differently at different points in time and for different groups. The purpose of ensuring basic service is to provide citizens with effective access to the telecommunications network and it is only natural that basic service would change as society changes or be somewhat different to meet the needs of individuals or institutions in very different circumstances.[54]

Some services that may be luxuries at one point in time become necessary for effective participation in society as these services become more deeply embedded in the network and relied upon for daily social activities, such as touchtone telephone service. As technological progress takes place, old ways of doing things fall by the wayside. Because they take too long or cost too much, they are deemed inadequate, even though a decade before they may have been the norm or even leading edge. As technology progresses, individuals require higher levels of functionality to survive economically.[55] From this point of view, "necessary" is not defined by the simple technological possibility of providing service, but by the economic requirement to provide adequate and efficient service for the public convenience. Ironically, the more vigorous economic progress is, the more rapidly this evolution takes place.

Similarly, some population groups may not be able to gain access and use of the telecommunications network if they are not provided with specific additional services that may not be required by other segments of the population. Here too, there is a growing list of services that can help to ensure access for these targeted groups.

B. Candidates for immediate inclusion in basic service

The 1996 Act does not restrict the definition of service to "telephone exchange service." Rather, the Act uses the broader concept of "telecommunications services."[56] In recognition of this broader concept, the FCC proposed the following set of services be included in the universal service definition—voice grade access to the public switched network, touchtone, single party lines, access to emergency services, access to operator services, and relay services (required elsewhere in the law).[57]

At the state level the list of potential services for inclusion under the umbrella of basic service has become quite long[58] (see Table IV-1). Each of the services on the list has been included in the definition of basic service by one or more states and has received at least some support in the federal proceeding.

The FCC neglected to include a number of other services that are presently embodied in telecommunications services purchased by a majority of subscribers and considered to be a public necessity. Among the most important are the following.

Use/Flat Rate Service: Because the telephone has become the mainstay of daily communications under a flat rate approach to service, usage must be included in the definition of basic service. Flat rate