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June 6, 1996

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Re: **Ex Parte Statement**
CC Docket 95-46

Dear Mr. Caton:

On June 6, 1996, the attached material was provided to Mr. David Krech of the Accounting and Audits Division. This material should be included in the record of the above referenced proceeding.

Sincerely,

Attachment
cc: D. Krech

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**A FRAMEWORK FOR MANAGING TELECOMMUNICATIONS DEREGULATION
WHILE MEETING UNIVERSAL SERVICE GOALS***

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I. INTRODUCTION

• The telecommunications industry is in a period of transition from regulated monopoly to competition. This process, which began with the Carterfone decision in 1966, has been accelerating since the divestiture of AT&T and its operating companies in 1984. The current flurry of deregulatory initiatives at both the federal and state levels is likely the prelude to even more rapid and far reaching deregulation in the next several years. Movement to a largely competitive industry does not imply a total absence of regulation, however. As in the past, society, as reflected in the decrees of regulators and lawmakers, still holds expectations for telecommunications that are not likely to be met by an industry totally unconstrained by regulatory and legal requirements. The various performance obligations, including ubiquity and continuity of service and socially defined reasonable prices, that are implicit in the policy goal of universal service are good examples.

To be effective, it is important that the ways in which policy mandates are implemented not be inconsistent with the underlying economic logic of the industry affected. As a result, it is likely that different approaches will be required to achieve telecommunications policy goals in the emerging competitive industry than those that worked under the passing regime of regulated monopoly. In recognition of this fact, legislative and regulatory bodies have been revising the rules governing telecommunications carriers. Unfortunately, this transition has been occurring through piecemeal changes of the regulatory apparatus, rather than as a result of a clearly articulated vision of how the various regulatory rules and requirements interrelate and how they might be coupled structurally to accomplish various objectives.

This paper develops a typology for mapping social goals concerning marketplace activities to the regulatory interventions, if any, necessary to accomplish those goals. As will be shown, some goals can be achieved without regulatory intervention, while others cannot. Furthermore, when intervention is necessary, the type of intervention must vary with the type of problem being addressed. A critical distinction is between goals that can be achieved through requirements unilaterally imposed on firms in an industry and goals that require the use of bilateral arrangements in which some form

of compensation or privilege is provided by government in exchange for the performance of otherwise unremunerative activities. Furthermore, bilateral arrangements themselves must differ depending on the degree of

- vulnerability to expropriation.

Deregulation of telecommunications to date has not been guided by a recognition of the importance of the distinction between unilateral and bilateral arrangements for regulatory design. This is not surprising given the historical context of franchise monopoly in which such a distinction has no meaning. However, as we come to rely increasingly on the performance of a competitive telecommunications industry to accomplish policy objectives, it becomes essential that regulatory rules compatible with competition be designed and, to the extent that the achievement of important policy goals requires restrictions on competitive processes, the need for these restrictions be anticipated in advance. The typology of regulatory rules developed below supports an analytical framework for assessing the merits of different types of regulations that might be employed in a more competitive telecommunications industry and determining the nature of restrictions on competitive processes required to achieve important policy goals. Application of the framework is illustrated with an analysis of the rules and regulations that have been developed in the United States to further policy goals associated with universal service.

II. A Framework for Ensuring Goal-Rule Compatibility in a More Competitive Telecommunications Industry

We begin with the simple observation that a wide variety of social goals are not achievable in an unregulated marketplace. This occurs for a variety of reasons. One is that society may not approve of the types of products supplied by markets, pornography being an obvious example. Another is that markets may suffer from various imperfections leading to inefficiency in the supply of goods and services society does want. Private markets also may not serve some individuals whom society would like to have served.

Policy responses to these problems take a variety of forms. Prohibitions of varying degrees are common responses to the provision of unwanted goods and services. On the other hand, the response to problems concerning

the provision of goods that themselves are inherently desirable is typically some type of governmental intervention in the economy to alter the manner in which these goods are produced and/or distributed. State provision, as with public schooling, is the most dramatic form of intervention. More typical, at least in market economies, are interventions that affect the provision of goods and services by privately owned firms. If we accept this as an inclusive definition of regulation, then it is clear that just about all economic activities are regulated to some degree. From this perspective, it is clear that what is commonly spoken of as a transition from regulation to competition in telecommunications would be better described as a movement to an industry in which regulation plays a less intrusive role in the functioning of the industry than it does now.

A. Compatibility Between Policy Goals and Regulatory Interventions

Any plan for a more competitive telecommunications industry must have both: (1) a long term vision that defines policy goals and appropriately matches them with regulatory instruments to achieve those goals, and (2) mechanisms for dealing with the transition from the current state of affairs to the one that is desired in the long term. This section explores issues, relating to both the role of regulation in a more competitive industry and steps that must be taken to facilitate the transition, in terms of goal-intervention compatibility--the extent to which the achievement of policy goals is actually facilitated by the regulatory interventions employed.

Two aspects of compatibility are important. One is whether a given social goal is in fact achievable through the selected form of regulatory intervention. If so, the goal and the regulatory intervention are compatible. Because we are typically trying to achieve multiple goals, it is also important to ask whether a particular combination of social goals is achievable given the interventions employed. If so, then that combination of goals and the associated set of interventions are compatible.

There may be many reasons why either form of compatibility is not realized. An individual goal-intervention combination may not be compatible because the intervention does not address critical problems associated with achieving the goal. For example, subsidized prices for local

rates will not increase telephone subscribership among households who refuse to take service due to high toll bills. Goals may also be inherently incompatible with each other, which precludes their joint realization. Fiber to the home and low cost local service are examples of goals that cannot be achieved simultaneously, at least not with current technology. The primary threat to compatibility addressed here is the possibility that the selected policy intervention will make the activities of the regulated agent financially unsustainable and, for this reason, unable to contribute to the attainment of policy goals.

B. Principles for Ensuring Compatibility of Regulatory Interventions with Policy Goals

1. Unilateral and Bilateral Rules

While regulation may take an almost infinite variety of forms, we are concerned with two broad categories of regulation, which we will call unilateral rules and bilateral rules. Excepting government as a direct supplier of a good or service as a form of regulation, all other forms of regulation are subsumed by these two categories.

Unilateral rules are performance requirements imposed by the government on firms as a condition for providing service without any assurance by the government that the affected firms will be able to generate revenues sufficient to cover the associated costs.¹ Minimum wage laws, Occupational Health and Safety requirements for workplace safety, product reliability standards, and nutritional labeling are among the many unilateral requirements that are commonly encountered.

Bilateral rules differ from unilateral rules in that affected firms receive some form of compensation or special consideration in exchange for meeting government-specified performance obligations. With a bilateral rule, the government and a regulated firm acknowledge mutual and specific obligations toward each other. Bilateral and unilateral rules also sometimes

¹ In some cases unilateral rules may also be viewed as granting some benefit or privilege, rather than imposition of a requirement, by government to private providers engaged in an activity. An example is a tax credit. However, a tax credit can also be viewed as just a change in a unilaterally imposed performance requirement. In any event, as to unilateral rules, this paper is concerned primarily with the imposition of performance requirements rather than the granting of a benefit.

differ in that obligations on private parties are imposed by unilateral rules but are usually accepted under bilateral rules.

Within the category of bilateral rules, we define two types of relationships. *Bilateral agreements* are performance requirements imposed by government on firms which are coupled with financial compensation to the affected firms to cover some of the costs associated with the requirements.² *Bilateral commitments* are performance requirements undertaken by firms in exchange for which the government accepts some degree of responsibility and provides some form of assurance for the financial health of the firms taking on the requirements, including the provision of safeguards against the threat of regulatory expropriation of the investments required to provide service.

U.S. federal and state government Lifeline and Linkup programs, which provide funding to local exchange companies for the provision of service to low income customers, are examples of bilateral agreements. In this situation, governments provide explicit funding to the local exchange companies but assume no responsibility for the companies' overall financial health. On the other hand, the regulatory contract, as described by Goldberg,³ Williamson,⁴ and Wiggins⁵ is a form of bilateral commitment. This is because the regulated firm agrees to provide service at a certain price in exchange for a promise of continuity of service that is feasible only because government gave an assurance, that is, a monopoly franchise, which gave the firm a reasonable expectation of providing service at compensatory rates for a sufficiently long period to realize a fair return on sunk investments.⁶ For bilateral commitments, some form of restriction on entry by competitors is

² As with unilateral rules, in some cases bilateral agreements involve the granting of some benefit or privilege by government to the private party. But, by contrast, the private party must provide some *quid pro quo* in exchange. In most instances, the bilateral agreements discussed in this paper concern a firm providing a requested service in exchange for compensation by the government.

³ Goldberg, "Relational Exchange," 23 American Behavioral Scientist 337-352 (1980);

Goldberg, "Regulation and Administered Contracts," 7 Bell J. of Economics 426-448 (1976).

⁴ Williamson, "Franchise Bidding for Natural Monopolies - in General and With Respect to CATV," 7 Bell J. of Economics 73-104 (1976).

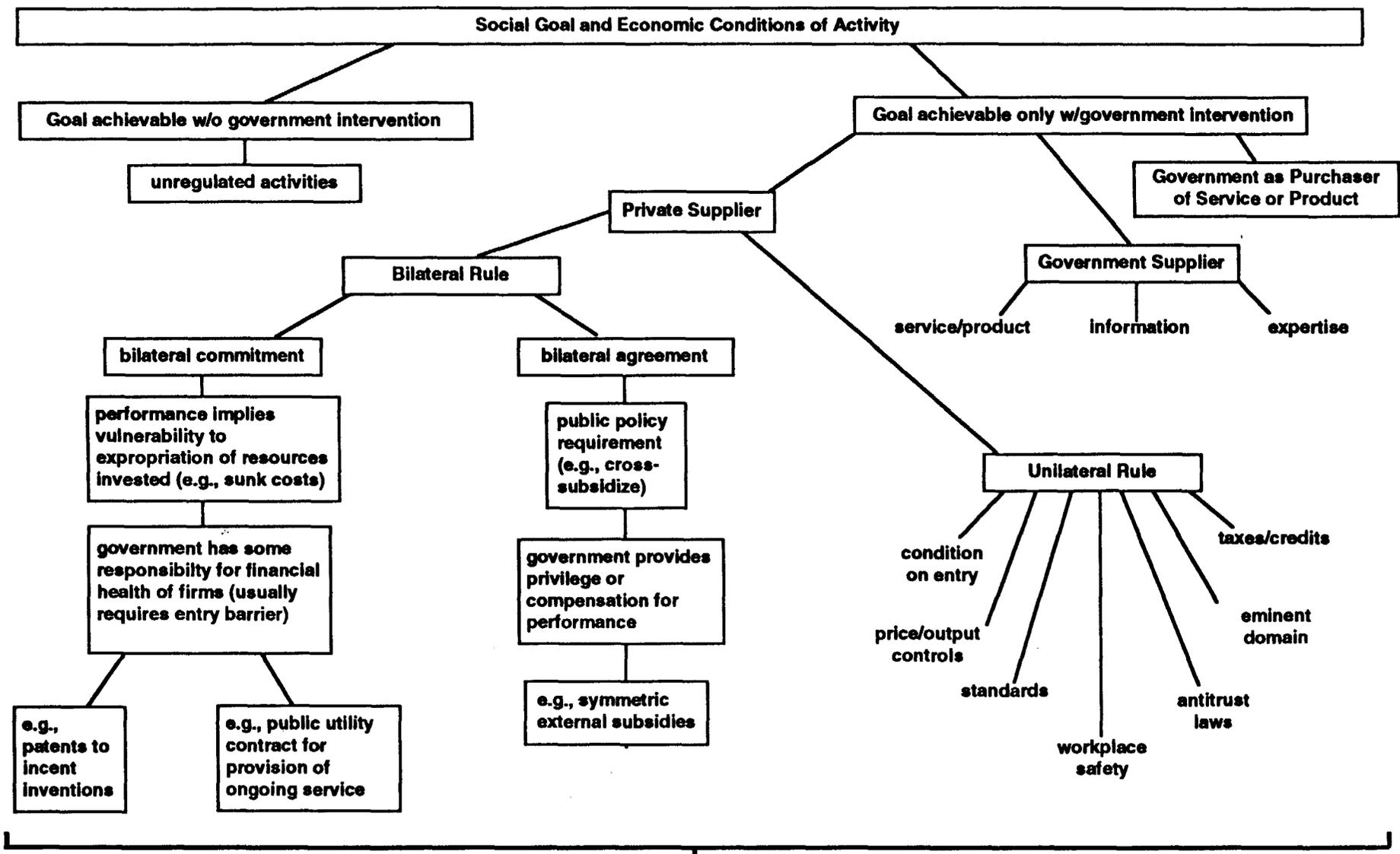
⁵ Wiggins, "The Economics of the Firm and Contracts: A Selective Survey," 147 Journal of Institutional and Theoretical Economics 603-661 (1991).

⁶ Patent laws are another example, where the prospect of earning a return on investments in innovations can be protected through grant of a patent, which provides for exclusive use of the innovation covered by the patent for a substantial period of time. Like an exclusive utility contract, this is an *ex post* barrier to entry.

usually a critical component of the governmentally provided assurance for the firm's financial viability.

There are limits, however, on the government's use of unilateral and bilateral rules. As the later discussion of the legal history makes clear, important restrictions are imposed by constitutional provisions of both the United States and State Constitutions. The typology of economic regulation just discussed is depicted in Flowchart 1.

Obviously, a bilateral rule, particularly a bilateral commitment, is a more intrusive form of government intervention in the marketplace than is a unilateral rule. For this reason, success in making a transition to competitive telecommunications markets will be determined by: (1) the extent to which regulatory policy goals that will not be met by market forces alone can be achieved through unilateral rules imposed on competitive firms, and (2) the extent to which natural market tendencies must be suppressed to implement those bilateral rules that might be required.



Subject to constitutional limitations on federal and state governmental powers

FLOWCHART 1

2. Competition and Choices Among Rules

There are three sets of conditions under which policy goals may not be achieved through unilateral rules imposed on competitive firms. (1) The cost of meeting the unilateral requirements may be so high that only one or a few firms can generate revenues sufficient to cover their costs. (2) The cost of a unilateral rule may not be shared equally by all firms in an industry. This could happen either because the requirement is asymmetrically imposed on an industry's firms (i.e. not symmetric on its face) or because firms differ in their ability to evade the requirement (i.e. not symmetric in effect). (3) The desired behavior may be financially feasible only if competition is suspended.

As to the first set of conditions, the potential for costly unilateral rules to harm competition is quite obvious. If unilateral rules add costs for which the affected firms cannot generate equivalent increases in revenue, then the number of firms in an industry must decline. If too many firms exit, the industry will no longer be competitive. (In the extreme, the costs of satisfying unilateral requirements may be so high that no firms will offer service.) Under some conditions, however, competition may be preserved, if a unilateral rule is converted to a bilateral agreement through the provision of some form of compensation. Food stamps are an example of such an approach.

The problems associated with asymmetry in regulatory burdens, the second set of conditions, is a bit more subtle, but still straightforward. Products are priced at cost in competitive markets, where cost includes the cost of meeting regulatory burdens. If the financial burden of a unilateral rule is greater for some firms than for others, unless those firms bearing the greatest burden start out with a cost advantage, they will be driven from the industry. While this is not a particular problem if the firms exiting are less efficient at complying with a unilateral rule, it is a problem if those for whom the burden is least are merely better able to avoid obeying the rule, or if, due to the way the rule is designed or enforced, their burden is less than for other firms in the same industry. In this case, otherwise efficient firms may be driven from the industry and competitive outcomes will be characterized by adverse selection favoring those firms that are best at either evading the unilateral rule or working the political process to guarantee themselves a less than proportionate share of its cost.

In many situations in which unilateral rules are not compatible with competition, whether due to the magnitude of the costs associated with compliance or cost asymmetry of incidence, it may be possible to preserve competition through payments to firms provided under a bilateral agreement. As mentioned above, use of food stamps is an example. If grocery stores were required to sell food at less than cost to low income consumers, competition would favor the stores most successful in discouraging their patronage. Using food stamps as a vehicle for providing grocery stores with reasonable compensation for sales to all certified low income consumers served solves this problem. Proposals for low income vouchers for telecommunications services rely on a similar logic, although it is not clear that the analogy is valid in all circumstances.⁷

Bilateral agreements are inadequate when a firm's vulnerability to expropriation of sunk investment requires assurance through some form of entry barrier.⁸ Then a bilateral commitment is required, as in the regulatory contract situation described above. As Goldberg pointed out, when the supply of a product or service is characterized by substantial sunk costs, the risk that customers may turn to an alternative supplier after sunk costs have been incurred increases the price at which a firm will be willing to offer service, and may actually preclude the provision of service entirely. In this case, a long term commitment that either precludes customer purchases from competing providers or specifies compensation to the original supplier in such an eventuality reduces supplier risks and the price at which service will be offered—a bargain buyers may be happy to make.⁹

⁷ For analyses of the logic and feasibility of telecommunications vouchers in urban and rural areas, respectively, see Panzar and Wildman, "Network Competition and the Provision of Universal Service," forthcoming in *Journal of Industrial and Corporate Change*; and Panzar and Wildman, "Competition in the Local Exchange: Appropriate Policies to Maintain Universal Service in Rural Areas." Working Paper, Northwestern University, Evanston, Illinois (September 1993).

⁸ Note that the barrier to entry is effective after the firm has accepted a request to provide services. There may still be vigorous competition *ex ante* among firms vying to be the service provider.

⁹ The fact that there is no continuous competition for buyer patronage under a long term regulatory contract does not mean, however, that firms don't compete for the contract. Although the contract is for a shorter duration, the provision of dual party relay service through competitive bidding is an example.

III. Applying the Framework to U.S. Universal Service Policy

A. Traditional Universal Service Policy Under Franchise Monopoly

The need for an integrated perspective on economic regulation is readily discerned from an analysis of the regulations addressing universal service goals in the United States. Although there may be disagreement as to the historical meaning of the term,¹⁰ there is general agreement that, at least as a minimum, in recent decades universal service has to come to mean access to basic analog voice grade service at generally affordable rates for all Americans. Such access has been provided by a local exchange line, and has generally included operator services, directory assistance, long distance, and, where applicable, 911 emergency service. The inclusion of yet other features, such as touch tone service, has varied by jurisdiction.¹¹

An important reason for making universal service a fundamental goal of telecommunications policy is a belief that the social value of a ubiquitous network will not be adequately reflected in consumers' decisions to subscribe. This is because the value of a network to each of its subscribers grows as their numbers increase. This positive externality will remain uninternalized if there is no mechanism by which existing subscribers can contribute to getting new subscribers on the network who would not otherwise subscribe.¹² Also underlying the fundamental concept of universal service is the notion that equity and fairness require affordable access to the telecommunications network for all individuals.

But universal service has also come to mean more than just affordability and ubiquity. It is also identified with a maze of regulatory mechanisms which have created a structure of service prices that would not have developed in a competitive markets for telecommunications services. The prices of various

¹⁰ Mueller, "Universal service in telephone history: a reconstruction," 17 Telecommunications Policy, 352- 369 (1993).

¹¹ See, e.g., comments of various parties - such as AT&T, MCI, USTA - in In the Matter of Amendment of Part 36 of The Commission's Rules and Establishment of Joint Board, CC Docket No. 80-286, Notice of Inquiry, FCC 94-199 (released August 30, 1994) ("FCC NOI").

¹² Given sufficient pricing flexibility (more than is currently allowed), this positive externality should be at least partially internalized by competitive telecommunications markets. See Panzar & Wildman, *op. cit.*

telecommunications services include rate elements designed to collect support for specific subclasses of customers,¹³ to help defray the costs of high cost local exchanges,¹⁴ and to collect contributions for local network common costs from toll customers.¹⁵ In addition, local exchange carriers are required to set geographically-averaged prices that effectively collect higher contributions to common costs from the customers groups that are least costly to serve, and many states use artificially inflated prices for business services to suppress the price of residential service.¹⁶ Under the passing regime of franchise monopoly, this price structure was maintained through regulatory fiat and ubiquitous availability of service was ensured through carrier of last resort and common carrier obligations imposed on regulated LECs.

A closer look at this regulatory structure reveals that universal service policies address a number of social policy goals, or universal service subgoals, each associated with a different social or economic problem. Table 1 lists important policy goals associated with universal service, the associated social and economic problems, and the policies traditionally employed in the service of these goals during the now waning franchise monopoly era of telecommunications regulation. With the exception of dual party relay services for the hearing impaired, which have been competitively bid under a separate bilateral commitment, all of these policies were administered as components of a bilateral commitment based on a franchise monopoly.

¹³ Examples are the Lifeline and Linkup Programs and dual party relay services.

¹⁴ The Universal Service Fund and the Long Term Support Fund are the most important sources of funding for high cost LECs supported in this way.

¹⁵ FCC-imposed levies on toll access services are the primary vehicle for effecting these transfers.

¹⁶ See, e.g., Weinhaus, C., Makeeff, S., Jamison, M., et al. , "Who pays whom? Cash flow for some support mechanisms and potential modeling of alternative telecommunications policies," Alternative Costing Methods Project, Program on Information Resources Policy, Harvard University, Cambridge, MA, Nov. 15, 1992; Weinhaus, C., Makeeff, S., Copeland, P., et al, "What is the price of universal service? Impact of deaveraging nationwide urban/rural rates," Telecommunications Industries Analysis Project, University of Southern California, Boston, MA, July 26, 1993.

TABLE 1
Universal Service Subgoals and Regulatory Responses Under Franchise Monopoly

<u>Social Goal</u>	<u>Economic and Social Problems</u>	<u>Traditional Policies Under Franchise Monopoly</u>
1. Telecommunications services should be provided at reasonable prices. ¹⁷	1. Market power results in high prices for an "essential" service. High prices may reduce network penetration to less than socially efficient levels.	1. (a) Common carrier obligations; (b) price regulation; (c) earnings regulation; (d) interservice and intraservice customer class support flows (e.g. rate averaging; toll & access rates subsidize local rates; business rates subsidize residential rates).
2. Provide economically disadvantaged individuals with access to certain basic telecommunications services and/or capabilities.	2. The existence of individuals who can not afford basic telecommunications services at cost-justified prices. Such individuals value service at less than the social value of having them on the public switched network.	2. Lifeline (subsidized monthly) rates; linkup programs to subsidize installation fees.
3. Provide individuals with disabilities with access to certain basic telecommunications services and/or capabilities.	3. The costs of special services needed by individuals with certain disabilities exceeds socially determined norms for fair prices and, if reflected in prices, may reduce penetration to less than socially efficient levels.	3. Dual party relay service is provided below cost to individuals with disabilities. Providers bid to provide service, government selects the provider and provides funding from the industry to the winning bidder.

¹⁷ This goal refers to the reasonableness of rates generally, as distinguished from social goal number 4 which refers to the level of rates which would need to be charged to recover costs in high cost areas. A totally separate social goal has been the provision of service without unreasonable price discrimination. However, since this goal is not essential to achieving universal service, it is not included in this table nor the following Table 2.

- | | | |
|--|--|--|
| 4. Provide individuals who are costly to serve with access to certain basic telecommunications services and/or capabilities. | 4. Locational factors raise the cost of providing service to some individuals above the socially determined norm for fair prices. In addition, high cost-based prices may reduce penetration to below socially efficient levels. | 4. (a) Carrier of last resort obligations; (b) interservice and intraservice customer class support flows (e.g. rural and urban customers charged the same rates; access rates subsidize local rates); (c) high cost assistance funding. |
| 5. Telecommunications services are to be provided at some minimum level of quality. | 5. Individual providers fail to fully internalize costs and benefits of service quality improvements. | 5. (a) Certification requirements on providers; (b) service quality regulations; and (c) interconnection related requirements. |

Substantial changes have occurred in U.S. telecommunications regulation in recent years as restrictions on entry have been relaxed and competition encouraged in a variety of services,¹⁸ and this appears to be only the beginning of a dramatic shift to reliance on competition to promote goals once addressed through direct and heavy handed regulatory interventions. With increasing entry into local markets, questions concerning the rules and responsibilities applied to new entrants have become a major source of contention. In most cases, new entrants do not bear the same regulatory obligations as incumbents,¹⁹ giving rise to asymmetric regulatory burdens.

Asymmetric regulatory burdens can not be sustained in a competitive equilibrium and the threat of the emerging combination of open entry and asymmetric regulation has been recognized as a threat to policies promoting universal service by both scholars²⁰ and government officials.²¹ In her separate comments on the FCC's 1995 decision approving NYNEX's universal service plan for New York City

¹⁸ As of early September, 1995, twenty-one states have an effective law or policy in place which permits local exchange competition. State Telephone Regulation Report, Vol. 13, No. 17, Sept. 7, 1995. Furthermore, the new Telecommunications Act of 1996 preempts state laws which bar local exchange entry.

¹⁹ Examples include carrier of last resort obligations, earnings and price cap restrictions, geographic rate averaging, and restrictions on differences in prices applied to different classes of customers.

²⁰ See, e.g., Schankerman, "Symmetric Regulation for a Competitive Era," paper prepared for the Twenty-Sixth Annual Conference Institute of Public Utilities in Williamsburg, Virginia (December 1994).

²¹ See, e.g., Haring, "Implications of Asymmetric Regulation for Competition Policy Analysis," FCC Office of Plans and Policy Working Paper No. 14 (December 1984), pp. 30-31.

"Commissioner Susan Ness stressed the need to pay attention to the relationship between competition and universal service. While competition results in lower prices and increased customer choice and helps in fulfilling universal service responsibilities, she said, it depends on subsidies that will not be sustainable in a changed environment

'We therefore need to reevaluate our universal service objectives and mechanisms in light of emerging competition....'"²²

Notwithstanding these sustainability problems, most analyses of local competition and asymmetric regulation have concentrated on their economic efficiency properties. For example, Weisman discusses technical efficiency losses, which arise because production will not occur at the lowest possible cost, and dynamic efficiency losses, resulting from a sub-optimal level of investment in innovation, as well as the breeding of inferior competitors which are adept at imitation rather than innovation.²³ Shankerman focuses on the need for regulatory instruments that minimize efficiency losses, such as inefficient entry and associated technical efficiency losses arising from asymmetric regulation.²⁴

A deeper understanding of the sustainability problems, however, is lacking. What are the sources or causes of unsustainability? To what extent are they technologically or regulatorily based? What is required to prevent them? Are changes needed as to the social goals or the regulatory mechanisms for achieving them? The typology presented here, based on both economic and legal analysis, provides a framework for answering these questions, not just in the context of universal service but for other objects of economic regulation. The next section employs the framework developed in Section II to examine the long term sustainability of recent policy innovations related to universal service and to make recommendations regarding directions policy should take in the future.

²² "FCC Grants Nynex Universal Service Plan for New York City," Washington Telecom Newswire (May 4, 1995).

²³ Weisman, "Asymmetrical Regulation: Principles for emerging competition in local service markets," 18 Telecommunications Policy 499-505 (1994).

²⁴ See note 20, *supra*.

B. Competition and Sustainable, Long Term Universal Service Policies

While the pace of deregulation has varied among the states, the general pattern has been to relax restraints on entry while reducing, but not eliminating, restraints on prices and earnings. Thus, critical constraints on the parties to the traditional regulatory contract in telecommunications have been greatly weakened. At the same time, regulators have attempted to retain many of the performance obligations subsumed under the previously all-encompassing bilateral commitment as unilateral requirements, typically with higher performance expectations for incumbent providers. Table 2 describes the way universal service goals are currently being addressed in those states that have move furthest in introducing competition to telecommunications. Almost all of the old bilateral arrangements have been converted to unilateral requirements.

Table 2
The Shift from Bilateral Commitment to Unilateral Requirements

<u>Social Goal</u>	<u>New Regulatory Approach</u>	<u>Unilateral v. Bilateral Rule</u>
1. Telecommunications services should be provided at reasonable prices.	1. (a) Common carrier obligations, (b) price regulation, (c) earnings regulation, and (d) interservice and intraservice customer class cross-subsidies are required of some, but not all providers.	1. (a) - (d) are asymmetrically imposed unilateral requirements that were obligations under the old bilateral commitment.
2. Provide economically disadvantaged individuals with access to certain basic telecommunications services and/or capabilities.	2. Lifeline and Linkup programs provided by traditional local exchange carriers.	2. A bilateral agreement using external support where fully compensatory government funding is provided; elsewhere an asymmetrically applied unilateral requirement that was previously an obligation under the old bilateral commitment.

3. Provide individuals with disabilities with access to certain basic telecommunications services and/or capabilities.	3. Dual party relay service bidding and funding programs (same as described in Table 1, column 3).	3. A bilateral commitment of fairly short duration funded through external support with open bidding to determine identity of the private provider and a barrier to entry until the service is rebid.
4. Provide individuals who are costly to serve with access to certain basic telecommunications services and/or capabilities.	4. (a) Carrier of last resort obligations imposed on some, but not all, providers; (b) interservice and intraservice customer class cross-subsidies imposed on some, but not all providers; and (c) high cost assistance funding.	4. (a) - (c) are asymmetrically imposed unilateral requirements in most situations; but may have characteristics of a bilateral agreement to the extent that the high cost funds, which are available only to carriers of last resort, are compensation for service provided to customers who do not cover their own costs.
5. Telecommunications services are to be provided at some minimum level of quality.	5. (a) Certification requirements on providers are reduced or eliminated; (b) minimum service quality standards imposed on some, but not all, providers; and (c) interconnection related requirements.	5. (a) - (c) are a mixture of symmetrically and asymmetrically imposed unilateral requirements.

1. Use of Unilateral Rules

For unilateral requirements to be features of a long-run competitive equilibrium, they must be applied symmetrically. If not, the asymmetrically advantaged firms will drive out the rest. This need for symmetry for sustainability purposes is also recognized under the Equal Protection Clause of the U.S. Constitution, which is discussed later. The feasibility of symmetric enforcement of the current set of unilateral rules is thus a critical question that must be addressed in developing a procompetitive regulatory policy for the long run.

Some of the current set of unilateral rules pose no problems in the long run because they will, of necessity, simply disappear. Price and earnings regulation, for example, have no role to play in a truly competitive market, since competition will force prices to accurately reflect underlying costs. However, to a large degree the various cross-subsidies embedded in current

prices reflect an unwillingness to accept the outcomes of cost-based pricing, either because the interests of certain classes of customers, such as residential users, have influenced regulated rates, or because rates reflecting the high costs of providing service in some geographic areas exceed generally accepted norms of fairness. It is hard to see how cross-subsidies can be maintained as unilateral rules in a competitive telecommunications industry because enforcement of symmetry would be extremely difficult and the incentive to avoid these obligations would be great. This applies both to interservice and intraservice cross-subsidies and to the cross-subsidies implicit in Lifeline and Linkup programs where government-provided funds do not fully cover costs.

Presumably the maintenance of cross-subsidies as unilateral rules would be accomplished by assigning each carrier responsibility for providing service to some well-specified portion of customers designated as support recipients. Symmetry of burden would require that each competing provider's share of support recipients be proportional to its share of the market, that the cost characteristics of the support recipients assigned to each carrier be similar, and that the pool of support recipients be reallocated as carriers' market shares changed or as new firms entered the industry. Enforcement of symmetry would be difficult for two reasons. First, more detailed information on service costs than is currently available would be required to ensure that some firms do not get disproportionate numbers of the highest cost customers to support. Second, to date competition has emerged through the entry of new providers targeting considerably narrower geographic areas and customer segments than those served by incumbent LECs. There is no reason to expect this pattern to change. Sharing of support obligations within common geographic areas would encourage entrants to concentrate on those areas in which the burden is least, leaving areas with more support recipients (or customers requiring more support) to be served by incumbents.²⁵ Differing customer mixes would create similar problems. How would one weigh business and residential customers, for example, in calculating the market shares used to allocate subsidized customers if the costs

²⁵ Another problem with geographically limited entry is that if prices to unsubsidized customers are allowed to adjust to reflect the support burdens that vary geographically, then the burden of support will also be asymmetrically distributed among customers, independent of its effect on the sustainability of competition. This situation is not likely to be politically sustainable if per customer differences in support contributions are large.

and margins on service differ among the two classes of customers -- especially if carriers have different relative costs for serving the two groups?

Under common carrier obligations, carriers must provide service to similarly situated customers on equivalent terms. Because common carrier obligations are applied on a per call basis, they at least nominally preclude discrimination among customers on the basis of calling characteristics, such as calling frequency, that are related to the extent to which the cost of providing service is recovered in subscriber phone bills. Thus, for example, incumbent LECs are typically required to offer high volume customers and low volume customers residing in the same local area equivalent rates for local service. While common carrier obligations may be relatively easy to enforce for franchised monopolists offering service to everyone, customers must be made aware of new entrants' service offerings and prices and it would be difficult, if not impossible, to police marketing plans to ensure that information about competitive offerings is not selectively targeted.

Carrier of last resort obligations require that once a carrier has committed to serving an area, it cannot refuse any reasonable request for service. Thus the carrier of last resort obligation implies an obligation to expand capacity in response to demonstrated need and constitutes a barrier to exit from areas already served. Since the very need to enforce carrier of last resort obligations implies that a reasonable request to be served must be at rates that are non-compensatory, carrier of last resort obligations also pose the threat of burdensome cross-subsidy. In fact, it is hard to imagine another reason why carrier of last resort obligations would be needed.

For this reason, if enacted as unilateral rules, enforcement of carrier of last resort obligations is likely to meet with all of the problems associated with the enforcement of cross-subsidies generally as unilateral rules. Through their locational choices entrants can assure themselves lower burdens than incumbents with plant ubiquitously deployed under the old regulatory bargain. Unless symmetry in geographic coverage is required, asymmetric incidence of carrier of last resort obligations is virtually assured. But capital costs of equal coverage requirements on a facilities-based basis would likely be a substantial barrier to new entry. Moreover, even if entrants were permitted to satisfy their carrier of last resort obligations on a resale basis, such entrants would still have an incentive to market their service only to more profitable customers. Furthermore, government regulation of prices would be

reintroduced due to the need to regulate resale prices and entrants would be able to arbitrage between the incumbent's resale rates to entrants and retail rates to customers.

2. Use of Bilateral Rules

The extent to which unilateral rules, for which symmetry likely cannot be enforced, can be converted into bilateral agreements depends in part on whether competition would naturally emerge in the absence of asymmetric obligations. For the most part, competitive entry by local service providers has occurred in the business districts and high income residential neighborhoods of densely populated urban areas. As Lifeline and Linkup customers are likely to account for a relatively small portion of traffic in these areas, the incremental costs of the facilities that would have to be added to preexisting networks to serve these customers is likely to be low and the perceived risk of a regulatory taking minimal. Therefore, Lifeline and Linkup services would seem to be attractive candidates for provision through bilateral agreements.

Customer class cross-subsidies might be dealt with in the same way if the group of subsidy recipients is not too large a fraction of all customers, especially if rapidly growing demand would create a need for similar facilities in the near future anyway. On the other hand, if the class of subsidy recipients constitutes a substantial portion of all customers, the sunk cost facilities investments at hazard to regulatory expropriation will also be large, and assurances of the type that can be provided only through a bilateral commitment are likely to be required. So policy decisions regarding the size of the class of subsidy recipients will have much to do with the extent to which open competition is actually achievable.

As stated above, common carrier obligations are intended to override a natural incentive to discriminate, either in price or in service quality, among customers with different demand characteristics. Compliance with common carrier obligations is certain to be difficult to monitor, especially for entrants who may not be known to many customers; but in an industry with common costs and economies of scope a differential ability to discriminate is not sustainable as part of a competitive equilibrium. Assuming the goals addressed through common carrier obligations are important ones -- an

assumption we think should be carefully reconsidered,²⁶ the magnitude of the problem is a function of the number of customers benefiting from the common carrier requirement. The larger the number of beneficiaries, the greater is the incentive to try to evade the obligation and the greater is the threat of an asymmetric incidence of this requirement to the maintenance of competitive telecommunications markets in the long run.

While it is clear that some form of bilateral rule is required to deal with common carrier obligations, whether this must be a bilateral commitment or a bilateral agreement will suffice is not as obvious. To the extent that incremental additions to sunk cost commitments are required to meet common carrier obligations, and such additional commitments are small, then bilateral agreements should be sufficient;²⁷ if they are large, bilateral commitments will be required. Resolution of this question is a matter for future research.

As discussed earlier, use of unilateral rules with regard to carrier of last resort obligations will be unsustainable with local competition due to enforcement asymmetries, uneconomic investment, or arbitrage between governmentally-regulated resale rates and retail rates. Therefore, so long as policymakers insist on the imposition of carrier of last resort obligations for universal service purposes, some form of bilateral rule is required.

Given the pace of entry to date and the generally narrow targeting of entrants' services to limited customer groups and geographic areas, the incumbent LECs are likely to be the sole facilities-based service providers for a substantial portion of telecommunications customers for some time to come. The question is whether such an asymmetric regulatory burden borne by the incumbent LEC's can be sustained under a bilateral agreement or requires a bilateral commitment. This answer to this question depends, in large part, on the available technology.

²⁶ It would seem that ensuring that similarly situated customers receive service at equal prices would be relatively unimportant compared to the overriding goal of ensuring that all customers receive service at a reasonable price. The problems associated with ensuring equivalent prices through common carrier obligations are likely to make the achievement of reasonable prices more difficult.

²⁷ The incentive to cheat on common carrier obligations through subtle forms of price discrimination would still be present under a bilateral agreement. One way to counter this tendency would be to impose a penalty on providers for noncompliance at a high enough rate so that the threat of losing the right to offer service if cheating is detected would be sufficient to deter cheating. Under a bilateral commitment, the fear of being denied a continued right to serve and the ability to recover substantial sunk costs could promote compliance.

Under present technology, large sunk investments are still required to provide local loops. This poses vulnerability to expropriation of investment for the incumbent LECs, or for any other sole provider of last resort such as one chosen by a bidding process, as well as vulnerability for those customers who are not attractive to other entrants. Given such vulnerabilities for both providers and their customers, it is doubtful that it will be possible to dispense with bilateral commitments for managing carrier of last resort obligations any time soon.

These same vulnerabilities appear even with multiple providers, where competitive bidding is used to select providers and to set the fees for the provision of services, so long as the risks of sunk cost investments remain large. The riskiness of maintaining sufficient capacity to handle the traffic of carriers that might exit a market means that such carriers of last resort are still likely to require and demand protections similar to those found in the traditional public utility contract.

In the future these vulnerability problems may be at least partially overcome if technology evolves in such a way, as is apparently the case with toll service today, that individual carriers find it prudent to build sufficient redundant capacity so that the carriers remaining in a local market would always have sufficient capacity to provide service to all customers should one of them exit the market. Continuous development of wireless technology may provide such an opportunity. However, the incentive to avoid the obligation to provide service at unremunerative rates would still remain.

The problems likely to arise if current universal service policies are continued as local telecommunications markets become more competitive, as well as proposed remedies for sustainable universal service policies, are summarized in Table 3.