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]

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[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

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[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 sufficent 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.

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[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

Social Goal	Economic and Social Problems	Traditional Policies Under Franchise Monopoly
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 scholars[20] and government officials.[21] In her separate comments on the FCC's 1995 decision approving NYNEX's universal service plan for New York City

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[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.

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[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

Social Goal	New Regulatory Approach	Unilateral v. Bilateral Rule
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.

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[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.

Table 3
Unsustainability of Unilateral Rules and Proposed Remedies in a More Competitive Industry

Current Policy	Is Policy Sustainable?	Remedy if Needed
Asymmetric unilateral rules in general.	No.	Apply unilateral rules symmetrically.
Cross-subsidies as symmetric unilateral requirements.	No. Symmetry not enforceable.	Replace with bilateral agreement if sunk cost exposure not large. Replace with bilateral commitment otherwise.
Common carrier obligation as symmetric unilateral rule.	No. Symmetry not enforceable.	Replace with bilateral agreement if sunk cost exposure not large. Replace with bilateral commitment otherwise.
Lifeline, Linkup as symmetric unilateral rules.	No. Symmetry probably not enforceable.	Bilateral agreements should work.
Carrier of last resort obligations as symmetric unilateral rules.	No. Conditions for symmetric application not yet satisfied and enforceability doubtful.	Bilateral commitment until technology & competitive situation change.

C. Managing the Transition to a More Competitive Industry

Section III.B showed that, due to the nature of current technology and the uneven pace with which competitive alternatives are emerging for different geographic regions and customer classes, bilateral commitments are likely to be an important component of telecommunications regulation for some time to come. In other words, we are not yet to the point where we can completely dispense with the old regulatory contract and it is unclear when that day will come. Thus the credibility of the promises a regulatory agency may make as a party to a bilateral commitment with regulated firms will continue to be important to its ability to get needed compliance from service providers in the future. This means that for purely practical reasons, independent of moral obligations, regulators cannot casually disregard the financial implications of prior (often implicit) commitments to regulated

firms made under the old regulatory bargain. The terms of that bargain must be kept in mind even as it is being rewritten.

In the next section we argue that one way to manage a successful transition to competition is to move from reliance on entry barriers to a broader application of legal, constitutional principles which limit government action due to preexisting circumstances. Most notable of these principles is that of regulatory takings under the U.S. Constitution's Takings and Due Process Clauses, which provide for government compensation to private parties or invalidation of government rules for those government actions which constitute a confiscation of private property. An expeditious use of takings law may prove to be a better mechanism for providing regulated firms with the assurance required for them to undertake substantial sunk investments during periods when the prospect of rapid and unpredictable regulatory change dramatically increases their vulnerability and makes risks difficult to assess.[28] By reducing the risks associated with regulatory promises, applications of takings principles would reduce the costs of securing bilateral commitments from service providers in the future.

Economic analysis of takings law shows that an optimal takings rule balances the tradeoff between the benefits of encouraging the government to take private property (or infringe on other well-defined economic rights) and the need to give private citizens incentives to commit to activities that will be beneficial when there is no taking.[29] While the same kind of considerations arise in the transition from one regulatory regime to another governed by very different rules, the telecommunications literature provides little guidance as to how the general principles should be applied in any specific instance in which neither the regulator nor the regulated firms can clearly articulate the implicit understanding on guarantees of security for investments that governed their relationship before. Legal rules for handling similar problems under takings law have evolved through precedent over time. The next section reviews and builds on the logic underlying these rules, as well as other legal principles which limit government action due to its effects on preexisting circumstances of private parties, to develop a legal

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[28] This assumes, of course, that regulators prefer not to pay the risk premium that would be required to compensate service providers for a heightened risk that investments will be lost due to future changes in regulatory policy.

[29] Hermalin, "An Economic Analysis of Takings," 11 Journal of Law, Economics, & Organization 64-86 (1995).

framework for managing the transition to more competitive telecommunications markets.

IV. Constitutional Principles for Permissible Economic Regulation

The typology presented in Section II, based in large part on understanding the underlying concepts of compatibility and sustainability through economic analysis, is also supported by the legal history of economic regulation in the United States. This can be best seen by review of cases interpreting various clauses of the United States Constitution and similar clauses of various State Constitutions. This is because the federal and state constitutions set forth the parameters by which all the branches[30] of governments may operate, both enabling and prohibiting certain governmental actions. As a result, judicial interpretation of the U.S. and State Constitutions ultimately determine the scope of permissible government regulation.

As will be shown, judicial interpretation of various constitutional clauses reveals limitations on governments' use of unilateral and bilateral rules. These limitations are necessary to address various sustainability and equity problems arising in different contexts. Such contexts include the effect of action by a single unit of government, either prospectively or retroactively, and the combined effect of actions by more than one unit of government. These contexts also include whether the harmful effects of government action poses sustainability problems merely on a prospective basis or as the result of preexisting circumstances.

A. Takings and Due Process Clauses

1. General Application

One of the fundamental limits on actions by both federal and state governments is that government may not take private property for public use in the absence of just compensation. This prohibition applies to the federal government through the Takings Clause of the Fifth Amendment of the U.S.

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[30] The branches of government consist of the legislative, judicial and executive branches. It also includes the activities of administrative agencies which have been created and to which governmental authority has been delegated.

Constitution, which provides in relevant part: "nor shall private property be taken for public use, without just compensation." Although the Fifth Amendment does not directly apply to state governments, it has been held applicable to them by virtue of the Due Process Clause of the Fourteenth Amendment,[31] which provides that "no person shall be . . . deprived of life, liberty or property, without due process of law . . . . "

The U.S. Supreme Court has stated that the purpose of the Takings Clause is "to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole."[32] But principles to determine in a given situation whether a "taking" has occurred and what compensation, if any, is appropriate has proven to be elusive and the jurisprudence confusing.[33] However, recent cases have contributed to at least an improved understanding of the law in this area.[34] Although indication of all the nuances of takings jurisprudence is beyond the scope of this paper, the current interpretation of the Takings Clause can be summarized as follows.

The Takings Clause, as applied to the federal government and the states through the Due Process Clause of the Fourteenth Amendment, applies whether the government is utilizing its eminent domain or police powers.[35] When the police power is at issue, the question is whether or not a regulatory taking has occurred. As to the exercise of either powers, government action may either be invalidated or be permitted but with compensation paid to the owner of private property in question. Whether invalidation or compensation is required, in either case a violation of the Takings Clause has occurred.

There are several tests to implement in determining whether invalidation or compensation is required. First, invalidation of governmental action occurs if the exercise of power does not satisfy a rational relationship test, that is, only if the exercise of power does not bear any

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[31] See Missouri Pacific Ry. v. Nebraska, 164 U.S. 403, 417 (1896); Chicago, B. & Q. R.R. v. Chicago, 166 U.S. 226, 241 (1897).
[32] Armstrong v. United States, 364 U.S. 40, 49 (1960).
[33] See Lunney, "A Critical Reexamination of the Takings Jurisprudence," 90 Mich. L. Rev. 1892-1964 (1992).
[34] See Delaney, "What Does It Take to Make a Take? A Post-*Dolan* Look at the Evolution of Regulatory taking Jurisprudence in the Supreme Court," 27 The Urban Lawyer 56-69 (1995).
[35] See Fawcett, "Eminent Domain, the Police Power, and the Fifth Amendment: Defining the Domain of the Takings Analysis," 47 U. Pitts. L. Rev. 491-515 (1986).

reasonable relationship to one of government's implied or enumerated powers.[36] This test has been rarely construed so as to invalidate governmental action. Second, a taking, for which either invalidation or compensation is required, occurs if the government exercise of police power or eminent domain (1) does not substantially advance a legitimate state interest, or (2) denies the owner of economically viable use of the property. Separate tests are used to make determinations under either scenario.[37] In the former case, invalidation is the remedy. But, of particular interest here are the tests to be met for the latter case, where the owner is denied economically viable use of the property. In this regard, the "categorical rule" means that a physical invasion of private property or a regulation that denies all economically beneficial or productive use of land is *per se* a taking requiring compensation.[38] In all other cases, a "non-categorical rule" applies for which invalidation is required, where the following factors are considered: (1) the character of the government action; (2) the economic impact of the regulation upon the claimant; and (3) the extent to which the regulation has interfered with distinct investment-backed expectations.[39] A number of regulations have been held to be invalid under the equivalent of this non-categorical rule.[40] However, the vast majority of regulations have

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[36] See Hawaii Housing Authority v. Midkiff, 467 U.S. 229 (1984).

[37] See Delaney, *supra* note 34.

[38] The categorical rule is the basis under which the exercise of eminent domain requires compensation as well as those regulatory actions which approximate the use of eminent domain. See Fawcett, *supra* note 35.

[39] See Penn Central Transp. Co. v. New York City, 438 U.S. 104 (1978); Pennsylvania Coal Co. v. Mahon, 260 U.S. 393 (1922).

[40] See Dolan v. City of Tigard, 114 S. Ct. 2309 (1994) (invalidated city's requirements that landowner dedicate certain amount of land for pubic greenway and pedestrian/bicycle pathway in exchange for approval of application to expand her store); Ruckelshaus v Monsanto Co., 467 U.S. 986 (1984) (invalidated change in EPA rule as to disclosure of health, safety, and environmental data as to data submitted by claimant prior to such change in the rule); Armstrong v. United States, 364 U.S. 40 (1960) (invalidated state action that transferred title of vessels to government that had effect of vitiating liens held by suppliers for nonpayment of supplies); Pennsylvania Coal Co. v. Mahon, 260 U.S. 393 (1922) (invalidated state statute that forbade any mining of coal that caused subsidence of any house by a coal company which had reserved ability to mine coal in previously entered contracts as to sale of surface rights). *But cf.* Keystone Bituminous Coal Association v. DeBenedictis, 480 U.S. 470 (1987) (case distinguished from Pennsylvania Coal because the petitioners did not claim that the statute makes it commercially impracticable to continue their mining operations).

been upheld as not constituting "takings" under the Fifth or Fourteenth Amendments.[41]

As stated earlier, according to the U.S. Supreme Court, the purpose of the Takings Clause is to prevent private parties from bearing unjust and unfair public burdens which should be borne by the public as a whole. Economists, however, have also stressed that the Takings Clause plays an important economic role by encouraging efficient investment and ensuring a sustainable property rights system. Without a Takings Clause, government may ignore or externalize the costs of its regulations, uncompensated[42] takings will inefficiently discourage investments, and the uncertainty of government action will undermine property investments. Although commentators disagree as to the tests or tools that the courts should use in applying the Takings Clause in a particular case in order to best assure economic efficiency, they are in agreement as to the need for the existence of the Takings Clause to ensure efficient investments and a sustainable property rights system.[43]

Thus, the Takings Clause places a limit on unilateral action, or a unilateral rule, by either federal or state governments. When a taking is found, then the unilateral action of the government is either invalidated or converted to a bilateral action in which compensation is paid to the property owner.

2. Application to Public Utilities

"Constitutional review of utility ratemaking is considered a specialized subset of the broader field of judicial review of regulatory takings."[44] In

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[41] For general discussion, *see* Lunney, *supra* note 33; Fawcett, *supra* note 35. For specific cases, *see, e.g.*, Pennell v. City of San Jose, 485 U.S. 1 (1988) (rent control ordinance); Penn Central Transp Co. v. New York City, 438 U.S. 104 (1978) (landmark law restricting use of air rights); Nebbia v. New York, 291 U.S. 502 (1934) (price fixing of milk); Munn v. Illinois, 94 U.S. 113 (1876) (government regulation of prices).

[42] Compensation for a taking could consist of money, the opportunity to purchase insurance against takings, or the opportunity for property owners to purchase exemptions from takings from the government.

[43] See "Note, Taking Back Takings: A Coasean Approach to Regulation," 106 Harv. L. Rev. 914-931 (1993); "Note, Resurrecting Economic Rights: The Doctrine of Economic Due Process Reconsidered," 103 Harv. L. Rev. 1363-1383 (1990); Ackerman, "Against Ad Hocery: A Comment on Michelman." 88 Colum. L. Rev. 1697-1711 (1988); Blume & Rubinfeld, "Compensation for Takings: An Economic Analysis," 72 Calif. L. Rev. 569-623 (1984);

[44] Pierce, "Public Utility Regulatory Takings: Should the Judiciary Attempt to Police the Political Institutions?" 77 Geo. L. J. 2031, 2033 (1989).

Munn v Illinois,[45] the U.S. Supreme Court held that government regulation of prices was generally constitutional. However, subsequent cases have shown that a specific test for determining whether there has been a regulatory taking must be applied in the context of utility ratemaking.[46] "The guiding principle has been that the Constitution protects utilities from being limited to a charge for their property serving the public which is so 'unjust' as to be confiscatory."[47] Thus, the key concept is that ratemaking regulation which is confiscatory will be invalidated as a taking under the Fifth and Fourteenth Amendments.

Although there have been twists and turns by the Court in determining when regulation is confiscatory, the current law is governed by the holdings in FPC v. Hope Natural Gas Co.,[48] and Duquesne Light Co. v. Barasch.[49] The ratemaking process requires a balance between investor and consumer interests:

> "[T]he investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business . . . . [T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital."[50]

In determining whether rates are just and reasonable in light of investor interests, an "end result" test is applied, in which the overall impact of the rate order, not the particular methodology of setting rates, is evaluated.[51] Considerations in applying this test include what is a fair rate of return given the risks under a particular rate-setting system; the amount of

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[45] 94 U.S. 113 (1876).

[46] See Pierce, *supra* note 44; and Madden, "Takings Clause Analysis of Utility Ratemaking Decisions: Measuring Hope's Investor Interest Factor," 58 Fordham L. Rev. 427-446 (1989).

[47] Duquesne Light Co. v. Barasch, 488 U.S. 299, 307 (1989), *quoting*, Covington & Lexington Turnpike Road Co. v. Sandford, 164 U.S. 578, 597 (1896).

[48] 320 U.S. 591 (1944).

[49] 488 U.S. 299 (1989).

[50] FPC v. Hope, 320 U.S. at 603.

[51] 488 U.S. at 310; 320 U.S. at 602. However, the Court did not find the ratemaking actions to be confiscatory in either of these cases.

capital upon which investors are entitled to earn the return; and whether rates jeopardize the financial integrity of the company.

Thus, the application of regulatory taking analysis in the utility ratemaking context emphasizes the need to ensure that the overall effect of the ratemaking action does not threaten the financial viability of the regulated utility. Financial viability of the firm is consistent with a notion of sustainability that is concerned with the intracompany effects of regulation so that the regulated utility can remain viable and thus continue provision of the underlying activity (i.e. the provision of the utility service).

This particular view of sustainability, however, is different from that of the more general application of the Takings Clause discussed above in that the latter primarily addresses the viability of the underlying property system as opposed to the viability of a particular firm. This is because, as described earlier, the ratemaking function of the government has traditionally resided in the context of a bilateral rule, namely, a bilateral commitment, between the government and the utility. In essence, a regulatory taking in the public utility context means that the *quid pro quo* to the utility is severely inadequate.

B. Equal Protection Clause

1. General Application

A further fundamental limit placed on actions by state governments is found under the Equal Protection Clause of the Fourteenth Amendment of the U.S. Constitution, which provides that no State shall "deny to any person within its jurisdiction the equal protection of the laws." Violation of the Equal Protection Clause results in invalidation of the state action. Equal protection jurisprudence has a long, sometimes convoluted history, but to date equal protection analysis consists of three levels of scrutiny.[52] The level of scrutiny applied depends upon the type of classification created by the statute in question.

The lowest level of scrutiny, minimum rational scrutiny, applies to ordinary economic and social classifications and requires only that there be a rational relationship to a legitimate governmental purpose. Under this level

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[52] See "Note, Justice Stevens' Equal Protection Jurisprudence," 100 Harv. L. Rev. 1146-1165 (1987).

of scrutiny, great deference is given to state statutes and practically any conceivable basis for the classification has been upheld.[53]

The highest level of scrutiny, strict scrutiny, is applied when a classification is found to be "suspect". Suspect classifications are found: (1) if a fully suspect class exists; or (2) a classification infringes on the exercise of a "fundamental right". In practice, the U.S. Supreme Court has found fully suspect only those classifications based on race or ancestral group, and fundamental rights to include only the right to interstate travel, the right to equal voting participation in election, the right to access to courts in some circumstances, and the right to procreate. Under strict scrutiny, the classification is upheld if it is narrowly tailored to meet a compelling governmental interest. In practice, this strict scrutiny results in virtually automatic invalidation of the classification.[54]

The third level of scrutiny is an intermediate one between that of the prior two. Known as intermediate scrutiny. It applies when classifications are "semisuspect" or "quasi-suspect", usually those based on gender or illegitimacy. Under intermediate scrutiny, the classification is upheld if it is substantially related to an important governmental objective. This level of scrutiny was established after the prior two types, and was first used explicitly by the Court in Craig v. Boren.[55] As implied by its label, intermediate scrutiny results in fewer invalidations than under strict scrutiny but more than under minimum rational scrutiny.[56]

2. Application to Public Utilities

a. Unilateral rules. Application of equal protection analysis to public utilities is of particular interest here. Recently, in MCI Telecommunications Corp. v. Limbach,[57] the Ohio Supreme Court held that the tax commissioner violated the Equal Protection clauses under both the U.S. and Ohio Constitutions by overvaluing MCI's property vis-a-vis the property of telecommunications resellers under the state property law. The differences in valuation arose because the tax commissioner considered the property of MCI to be that of a public utility, to which a 100% valuation applied, but

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[53] For a general discussion of minimum rational scrutiny, *see* Note, *supra* note 52 at 1147-1148.
[54] For a general discussion of strict scrutiny, *see* Note, *supra* note 52 at 1147-1149.
[55] 429 U.S. 190 (1976).
[56] For a general discussion of intermediate scrutiny, *see* Note, *supra* note 52 at 1149-1150.
[57] 68 Ohio St. 3d 195 (1994).

considered the property of resellers to be that of a general business, to which a 31% valuation applied. The court found that since the Ohio Public Utilities Commission treated facilities-based carriers and resellers the same, then "two taxpayers within the same class owning or leasing the same type of equipment are treated differently, and this treatment denies MCI equal protection of the laws."[58]

The same result was reached earlier in a tax case in Wisconsin. In GTE Sprint Communications Corp. v Wisconsin Bell,[59] the Wisconsin Supreme Court held that a statute that imposed a retail sales tax on the sale of access telephone services to an interLATA carrier denied equal protection to that interLATA carrier because the tax was not imposed on furnishing the same services to resellers.

Both of these cases require equal treatment in taxation, a unilateral rule, between similarly situated competitors. Although not expressly stated, to permit asymmetric treatment would potentially have an adverse effect on the financial viability of the disadvantaged competitor.

The U.S. Supreme Court has also invalidated state or municipal fees imposed on utilities as a violation of equal protection or due process of the laws, but based on a different factual configuration. In Postal Telegraph-Cable Co. v. Borough of Taylor,[60] the Court held that an ordinance which imposed a fee on the poles and wires of interstate telegraph companies was invalid because there was no actual relationship between the fee and its stated purpose, to cover the costs of inspection, and the amount bore no reasonable relationship to costs associated with inspection. In essence, the fee was actually a revenue raising measure and therefore invalid. The Court noted that to uphold the fee:

> ". . . is to say that . . . the court must take it as such and hold it valid, although resulting in a rate of taxation which, if carried out throughout the country, would bankrupt the company were it added to the other taxes properly assessed for revenue and paid by the company."[61]

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[58] 68 Ohio St. 3d at 200.
[59] 155 Wis 2d 184 (1990).
[60] 192 U.S. 64 (1904).
[61] 192 U.S. at 72.

In this context, the Court is referring to the financial viability of the firm itself, not to viability of a firm vis-a-vis its competitors, with regard to taxation, which is a unilateral rule. Thus, state and municipal governments must not be permitted to assess revenue raising measures, in the guise of regulation and inspection fees, on public utilities, since the effect could be to bankrupt a firm due to the cumulative effect of other fees if other state and municipal governments were to do likewise.

Similarly, although upholding the state statute in question, in Great Northern Ry. Co. v. Washington[62] the Court stated that a regulatory and inspection fee assessed on public utilities could violate the Equal Protection and Due Process Clauses of the U.S. Constitution if the fee is not reasonably related to the costs of regulation and inspection. Thus, a unilateral rule may be invalid because there is no relationship between the financial burden of the rule and its stated purpose, without consideration of its potential cumulative effect if similar burdens were imposed by other governmental units.

b. Bilateral rules. The holdings in both Postal Telegraph-Cable Co. v. Borough of Taylor and Great Northern Ry. Co. v. Washington applied to unilateral rules, in that the governmental units were imposing a tax or fee on public utilities without any corresponding benefit conferred on the utilities. However, a similar holding was made by the Illinois Supreme Court in a case involving a bilateral arrangement, where the governmental unit sought compensation in exchange for granting access to public right of way to telephone companies. In AT&T v. The Village of Arlington Heights,[63] the court held that when a telephone company seeks a municipality's consent to construct facilities along or under municipal streets, the municipality may not unreasonably withhold consent. As compensation for a municipality's regulatory interest in the public streets, the payment to which a municipality is entitled "should only cover actual costs, including inspection, regulatory, administrative and repair costs associated with the tunneling under public streets."[64] To require payment of a toll, such as a fee based on a percentage of gross revenues of the telephone company, as a means of raising revenue is an improper reason for a municipality to withhold consent. Noting the

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[62] 300 U.S. 154 (1937).
[63] 620 N.E. 2d 1040 (Ill. Sup. Ct. 1993).
[64] 620 at 1046.

cumulative effect if tolls were permitted, the court stated that "[i]f each of these governmental units had the right to charge tolls for conduits going under and over their streets, the effect would amount to legalized extortion and a crippling of communication and commerce as we know it."[65] However, in contrast to the U. S. Supreme Court in Postal Telegraph-Cable Co. v. Borough of Taylor, the Illinois Supreme Court was referring to the cumulative effect on the communications industry, not just one firm within the industry.

The implication of AT&T v. The Village of Arlington Heights is also that asymmetry in the compensation required of utilities in the context of the bilateral arrangement is limited. Since the payments made by utilities for use of the public streets should only cover actual costs incurred by the municipality for such use, then utilities which are similarly situated as to such costs must end up paying similar amounts.

Thus, the application of equal protection analysis to public utilities means that the financial burden of a levy required to be paid by the utility to the government, whether under a unilateral or bilateral rule, must be symmetrically applied. Furthermore, the burden must bear a reasonable relationship to its stated purpose, not only for its application by one governmental unit on an individual firm, but for its application by many governmental units where the cumulative effect of similar financial burdens could threaten the viability of a firm or potentially cripple the industry subject to the burden.

C. Supremacy Clause

1. General Application

Another form of limitation on actions by state government is found under the Supremacy Clause of the U.S Constitution, which provides that "This Constitution, and the Laws of the United States which shall be made in Pursuance thereof . . . shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding."[66] The Supremacy Clause

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[65] 620 at 1044.

[66] U.S. Constitution, art. VI, cl. 2. The federal government also has supremacy over the States with regard to interstate commerce under the Commerce Clause, which provides that "The