

In other words, telecommunications has become an inherently risky business. Customers should not bear those risks. Under sharing plans they do; under price regulation, they do not.

Second, earnings sharing plans, by design, limit the incentives for efficiency, innovation and good performance. In competitive industries, firms that perform above industry averages earn profits above their cost of capital; firms that perform below average earn less than their cost of capital. Given the enormous changes and challenges in telecommunications, the report by Larry Darby demonstrates clearly that we need the undiluted incentives that price regulation offers to stimulate the best possible performance from managers and employees and to attract sufficient capital to modernize and further expand the telecommunications infrastructure.

Third, sharing plans are more costly and complex to administer, because they require both an apparatus for price indexing and the apparatus for regulating the rate base (i.e., depreciation) and rate of return. The quantity of reporting requirements, and, hence, compliance and monitoring costs, increases considerably when a price regulation plan is overlaid by rate of return regulation, as is required with a sharing plan. A sharing plan is, in this regard, the worst of both worlds.

The fourth and the fatal flaw of sharing plans is the death of the franchise "monopoly." The franchise is at the very heart of rate of return regulation, with or without sharing. Rate of return regulation constitutes a social contract between the regulator (acting as the agent of the people of its state) and the regulated firm. By that contract, the regulator grants a franchise to the firm, encouraging it to invest private capital by ensuring the recovery of, and return on, that capital over its useful life. In return, the regulated firm accepts "franchise obligations," to limit its rate of return to its cost of capital, to limit its prices to those approved by the regulator, and to have the capacity and actually provide service to all customers within its franchise territory on demand, whether or not it earns a profit on any given service, customer or class of customers. Under a sharing plan, the regulator is making essentially the same contract, with the modification that the firm will be allowed to earn a little more, or a little less, than its cost of capital. The fatal flaw is that the regulator is no longer in a position to honor its half of the contract. Given the rate at which competition is emerging and the extent to which competition will govern the market for local exchange services during the life of today's investments, no regulator can realistically commit itself to any given level of earnings over the life of capital investments made today.

There are five corresponding advantages of pure price regulation, as proposed by the USTA, over the current sharing plan:

First, whereas customers are at risk under sharing plans, a system of market pricing of competitive services and pure price caps eliminates ratepayer risk from unsuccessful investments and/or inefficient management. Price regulation imposes the risk of

unrecovered capital investment or unsuccessful product offerings on shareholders, which is where it should lie.

Second, whereas sharing limits the incentives for efficiency, innovation and good performance, price regulation does not. As in competitive industries, a price-regulated firm that performs above the norm can earn profits above its cost of capital; a firm that performs below average earns less than its cost of capital. While no one can guarantee that a firm will perform at its best, the incentive of above average returns and the threat of below average returns, is the most likely way to achieve it.

Third, under pure price regulation, there is no incentive to cross-subsidize competitive services, or to price those services below incremental costs, since the carrier would be "giving away" some of the profits of its shareholders. Note that this disincentive to cross-subsidize exists whether the firm is earning at, below or above its cost of capital.

Fourth, pure price regulation (especially if regulation is limited to those services and market areas in which competition has not yet fully developed) is much simpler and less expensive to administer, since much of the measurement, reporting and monitoring of rate of return regulation are no longer required. This reduces costs for the Commission, the company and its customers.

Fifth, and most critically, price regulation fundamentally changes the character of the contract between the regulator and the regulated. Under price regulation, the regulator no longer assures an opportunity for a return of investment; it demands only that prices not be raised above a certain rate, as determined by the price cap formula. In return, the regulated firm agrees to take the risk of making continued investments with no assurance that it will be able to earn its cost of capital on those investments.

The goal of regulation is to control prices for those services that are not competitive. Under rate of return regulation, controlling earnings was the indirect means of controlling prices. Controlling earnings was not, is not, and should not be an end in itself. Price regulation achieves the principal goal of regulation by limiting prices directly, through a price freeze or price index for basic services.

B. End Depreciation Prescription

The Commission should not continue to prescribe depreciation rates. The need to regulate depreciation is driven by sharing, as the argument goes: so long as the rate of return is regulated — which sharing requires — you should also regulate the rate base, i.e., prescribe depreciation rates. The USTA proposal does not require prescription of depreciation rates because it effectively shifts all of the investment risk onto LECs' shareholders, where it belongs. Given the rates of technological change, increasing competition and the potential for quantum shifts in competition (e.g., cable entry into telephony and/or rapid market penetration by Personal Communication Services), it is imperative that LECs assume their own investment risk.

but also be able to make their own business judgments about the rates at which to amortize their investments.

Depreciation rates on telecommunications investments have been too low for some time, because those rates fail to take account of the increasing rate of technological obsolescence and rising business risk. So long as the Commission prescribes depreciation rates, it is effectively regulating earnings; all one need do is keep depreciation rates low and the firm appears to be earning reasonable profits. Then, at some point the reality of business or technological obsolescence sets in and the same advocates of depreciation regulation argue that the firm's shareholders should incur the losses through a write-down of assets. The only way to get out of that trap is by allowing LECs to make their own business judgments about investments and their amortization, then live with the consequences. If they manage those risks well, their shareholders would be rewarded; if they do not, their shareholders should pay the price.

In many instances, regulators have attempted to minimize depreciation expense through the use of uneconomic depreciation rates, pushing cost recovery into the future, biasing against economic rates of plant replacement with new technologies. Whether biased or not, rate of return regulation must deal with the inherent difficulty of estimating the effects of technological change on economic depreciation rates. This causes future customers to bear the risk of under-depreciation of investments. If a new class of equipment is depreciated over ten years, but turns out to have an economically useful life of only seven or eight, then, under the rate of return regulatory contract, basic service customers in the seventh or eighth years out have to absorb the reserve deficiency, paying rates that reflect the cost of the new equipment and the remaining amortization of the replaced equipment.

By regulating depreciation rates now, the Commission is also effectively regulating them into the future. By preventing LECs from depreciating their investments at rates that anticipate more rapid technological change and potential loss of market share to competition, the Commission would be denying them an opportunity to earn a reasonable rate of return, because their regulated rate of return will overstate their actual economic rate of return. Hence, the Company could be in a "sharing" position even though it is earning, in economic terms, below its cost of capital. Moreover, if, at some point in the future (e.g., 2000) it becomes evident that prior depreciation rates (e.g., from 1993 to 2000) have been too low, it may be too late. By then, competition may have developed to the point where it can no longer recover its capital investments of today by raising its prices tomorrow. That being the case, the Commission should remove its oversight of depreciation rates and shift the risk and reward of investment decisions to shareholders of the company.

Among other changes, the FCC should recognize that the depreciation allowances embedded in the current earning sharing provision understate the true "economic" rate of depreciation. Moreover, the rate of return constraint embedded in earning-sharing provisions completely ignores the fundamental relationship between rate of return and risk. It is a commonly understood tenet of finance that riskier investments must earn higher expected returns. Investments in telecommunications in this day

and age are highly risky, as demand for telecommunication services is uncertain and competition increases in the provision of a variety of services. With considerable downside risk in making investments in new technologies (i.e., SONET, ISDN, and ATM switches) and new services, a ceiling on earnings has the effect of draining funds from telecommunications into other industries where comparably risky investments are allowed to potentially earn higher rates of return.

C. Rates and Regulations for New Services¹⁹

The regulatory process for the introduction of new services should be streamlined, since many new services typically will be launched in a competitive environment, or will, at minimum, extend the range of options from which customers can choose. Thus, new services should be subjected to price regulation only when there is a compelling public interest reason for doing so. Under normal circumstances, the Commission should give expedited regulatory treatment to new services. Consumers will pay the costs if those services are subject to unnecessary regulatory obstacles that slow down their introduction into the marketplace and place unnecessary constraints on their pricing. Such regulations thereby dull the incentives for investment in the provision of new services. Any attempts to limit the return derived from the provision of new services may prevent investors from reaping sufficient benefits to compensate for the substantial risk inherent in investments in those services. That risk stems from the considerable uncertainty concerning both the cost of and demand for new services.

The Commission can also promote innovation by enabling the rapid introduction of and by allowing greater pricing flexibility for new services. Under rate of return regulation, the regulated firm realizes little or no gain from innovation and bringing new services to market. Because a pure price regulation plan eliminates the floor and the ceiling on their earnings, LECs will have the same incentives as unregulated firms to develop, test, introduce and modify new services to meet customer needs and demands. If the new services succeed, the LEC increases its chance of higher earnings; if the new service fails, it makes economic losses more likely, while still protecting customers from those losses. There is a further incentive to market new services in that the price cap limits the prices of services, not the quantities of services, so LECs would have an additional incentive to develop, introduce and market successful new services that rapidly expand in the marketplace by meeting the needs of American consumers, businesses, public agencies and non-profit organizations.

There are two separate reasons why flexibility in offering and pricing new services is important in the telecommunications environment of the 1990's. First, the regulation of new services should be flexible because conditions in some market segments will differ from conditions in other segments. For example, an unregulated competitor may target a specific market segment by offering an especially attractive price or

¹⁹This sub-section addresses Baseline Issue #8.

new service to customers in that segment. Unless the regulated company can respond, it may lose substantial business, not because it is any less efficient or creative than the unregulated competitor, but because the regulation is inflexible, i.e., does not allow it to respond to the competition. Flexible regulation would, in contrast, enable the regulated firm to respond to such differences in competitive conditions by quickly introducing new services or offering contract prices to meet specific competition.

Second, greater flexibility in the pricing and terms of new service offerings is necessary because there is so much uncertainty and unpredictability about the demand for new services, price sensitivity of customers, response of competitors, rate of technological change and other market conditions. In the unregulated world, for example, not all of the new products brought to market fully succeed. For all of the predictive power of economics and consumer behavioral research, the fact is that companies seldom know whether or not a product will succeed until they try it in the market. For the same reasons, it is difficult to know what the right price for a service is, especially new services for which there is no existing equivalent. For these reasons, an alternative regulation plan should allow regulated companies considerable freedom in bringing new services to market and in pricing new and existing services. The best information about what customers want and what they are willing to pay for it comes from the market itself. By raising and lowering prices, by offering services in various configurations and packages, and by observing and measuring the results, the company can gain the valuable information it needs to serve its customers well and compete with unregulated firms who have almost complete flexibility in responding to different market conditions.

D. Revisions to Price Cap Baskets and Bands²⁰

USTA proposes to modify the composition of the LEC baskets by creating four baskets of functionally similar service elements: transport, switching, public policy and other (to include services and rate elements that do not fit in the other three baskets). Baskets should be established to protect customers of less competitive services but allow for pricing flexibility (i.e., by changing relative prices of services in a basket subject to the overall price cap).

The Commission is correct in its view that "current or revised price cap baskets and bands (sh)ould reflect expected levels of competition." Competition should include any alternative means of meeting customer needs (e.g., CPE v. CO services), and emphasize expected levels (i.e., be forward-looking). The measurement of competition should recognize suppliers that do not report traffic (e.g., private VSAT systems and self-supply by customers). Baskets and bands should also reflect the degree of discretion involved in customer purchasing decision: if highly discretionary, no need to tightly constrain pricing.

²⁰ This sub-section addresses Baseline Issue #2.

If the Commission fails to grant LECs pricing flexibility that is comparable to that of their competitors, the problem of disproportional loss of profitable traffic will be greatly exacerbated. When their competitors can target their entry, investment and marketing efforts at the highest density, lowest cost customers, and when these competitors can price their services accordingly, LECs will lose the very customers which lower their average costs. The very worst scenario is one in which the LEC is required to open and interconnect its local exchange network to competitors, but is denied the pricing flexibility needed to compete effectively with those less regulated or unregulated competitors. Under that scenario, LECs will incur very substantial losses of revenue on the most profitable traffic.

Under pure price regulation, there is no incentive to cross-subsidize competitive services, or to price those services below incremental costs, since the carrier would be "giving away" some of the profits of its shareholders. Note that this disincentive to cross-subsidize exists whether the firm is earning at, below or above its cost of capital.

E. Productivity Adjustment Factor²¹

A key factor in the price cap formula, the productivity offset, should be based on long-term historical experience, although the Commission should recognize that loss of traffic to competitors may well reduce LECs output growth, which has been a major source of productivity gains in the past. The price cap formula should not incorporate the additional efficiencies engendered by presence of incentive regulation, only normal expected productivity growth. To estimate the potential increased efficiencies from incentive regulation, then create an index incorporating that estimate, constitutes circular reasoning and a denial of the incentive benefits to the firm and its shareholders. There is no economic rationale for incorporating a "stretch" factor in the price cap mechanism: the price cap plan ensures that consumers continue to benefit from normal productivity gains (with shareholders receiving the benefits of above average performance). In competitive (unregulated) industries, firms do not share the benefits of above average performance with their customers.

It is important that the Commission recognize the explicit connection between the size of the adjustment factor and the incentive of LECs to invest in the telecommunications infrastructure. As a matter of economic logic, the higher the adjustment factor, the lower the expected rate of return on investments, hence the lower level of investment incentive. By providing LECs with a reasonable opportunity to earn a higher return commensurate with greater risk, the Commission would be providing an appropriate incentive to invest in the NII.

²¹This sub-section addresses Baseline Issue #3.

F. Exogenous Cost Changes²²

The ability to recover exogenous costs should be retained. In its efforts to "mirror" the workings of competitive markets, the Commission should recognize that exogenous cost changes are reflected in the prices charged by firms in competitive industries. An increase (decrease) in the costs incurred by firms in an industry effectively shifts the industry supply curve up (down), thereby increasing (decreasing) the market-clearing price. An increase in raw materials prices, for example, will quickly be passed through in higher output prices.

Moreover, it is important to recognize that changes in the accounting treatment of LECs may have real economic effects, given that current price cap rates were initially predicted on accounting costs. A change in separations that shifts costs from the intrastate to interstate jurisdiction, although instituted through an "accounting change," leaves LECs in an economically changed position, which should be reflected in the price caps. In addition, any regulated carrier should be able to request and receive rate recovery for the costly fulfillment of newly imposed regulatory obligations. To the extent that regulatory and legislative actions impose significant costs on LECs, the Commission has an obligation to provide some specific mechanism for recovery of these costs.

G. Service Quality, Monitoring and Reliability²³

Market forces, including competition and customers' demands, will drive improved service quality. It would be foolish for LECs to sacrifice one of their strongest sources of competitive advantage — their reputation for high quality, highly reliable service. Moreover, quality measures which do not serve customer needs raise costs unnecessarily and distract companies from meeting their customers' real needs. The Commission can use service quality reports to spur competition (compare to the reporting of airline on-time statistics), but then all competitors should be required to report so customers can compare the performance of LECs to other carriers.

H. Equalize Regulations of LECs, CAPs, IXC's and other Service Providers²⁴

FCC regulations should be modified to reduce the problems of "imbalanced competition" and "cream-skimming." "Imbalanced competition" refers to the situation in which one competitor is regulated by different standards than others; such regulations are asymmetric in that they treat competitors very differently. At the extreme, one carrier is heavily regulated, while its competitors are not. The unregulated (or less regulated) firms have far greater flexibility in pricing, new service

²²This sub-section addresses Baseline Issue #6.

²³This sub-section addresses Baseline Issue #7.

²⁴This sub-section addresses Baseline Issue #9.

offerings, investments, and otherwise meeting customers' demands. New entrants also do not share a proportionate share of the cost of meeting social policy objectives, such as the universal service obligation. Cream-skimming refers to the selective entry and targeted marketing efforts of competitors seeking to serve the high-yield customers and services, while relying on the LEC to provide the ubiquitous service needed to capture the positive externalities on an extensive public switched network.

Unless asymmetric regulatory policies and competitive handicapping of the local exchange carrier are modified, it is likely that LECs will suffer substantial harm to its competitive position, as competitors successfully target the most profitable access, exchange and interexchange business, leaving the LEC as the "carrier of last resort."²⁶ Imbalanced competition arises due to differences in how competitors are regulated. For that reason, good regulatory policies should be balanced across competitors. Unfortunately, there is a long tradition of continuing to heavily regulate incumbents while not regulating new entrants. Differential regulation should have nothing to do with how long a firm has been in the market; differences in regulatory policy can only be justified by specific needs over the duration of the regulations.

Unless accompanied by appropriate reform of price caps and access charges, the Commission's promotion of local exchange competition will increase the problems of imbalanced competition and targeted entry. Entrants into regulated industries have two strategic interests: minimizing their own regulations while continuing — or increasing — the regulatory requirements on the incumbent regulated firms. For a prospective competitor, these are the ideal conditions: the entrant is free to target whatever customers it sees as most profitable, while regulations inhibit the incumbent from competing on an equal footing. In a network industry with significant positive externalities,²⁶ this competitive imbalance is exacerbated because the entrant can take advantage of the ubiquitous connections of the incumbent, while not necessarily bearing a proportionate share of the costs of maintaining the ubiquitous network. To ameliorate this problem, it is imperative that the Commission reduce the regulatory asymmetries between LECs and other providers of access services.

In light of the rapid entry by cable companies into access services and the portent of their entry into local exchange services with networks that pass more than 90% of American homes, it is especially important that the Commission policies establish regulatory parity between cable companies and local exchange carriers. In its

²⁶Harris, Robert G. and Robert Meyer, "Suppliers of Last Resort: Economics of Self-Supply in Common Carrier Industries," *Quarterly Review of Economics and Business*, 19(4), Winter 1980.

²⁶"Positive externalities" refers to the fact that the value of being connected to a network increase with the number of users connected to that network; hence, when a CAP is interconnected to a LEC's network, the CAP's customers realize the economic value of being interconnected to the LEC's customers.

decision establishing cable rate regulation,²⁷ though, the Commission has proposed a productivity offset of 2%, partially on the grounds that cable companies have experienced lower productivity gains than telephone companies historically because digital switching has been an important source of productivity gains. The facts are correct; the reasoning is not. Precisely because telephone companies have nearly completed the deployment of digital switching, they have already realized those productivity gains. Because cable companies will be installing digital switches, they will be realizing those productivity gains in the future.

I. Universal Service²⁸

Though the Commission should deal with universal service funding issues in a separate proceeding, it should recognize the very substantial universal service benefits of price cap and access charge reforms. By promoting balanced competition and freeing LECs to meet competitors and serve customers needs, LECs will be better able to sustain their commitment to universal service.

V. Rationale for USTA's Price Cap Reform Proposals: Transitional Issues

A. Criteria for Reduced or Streamlined Regulation of Price Cap LECs²⁹

As discussed in Section II and shown in Appendix B, competition in access services is emerging at a phenomenal rate. CAPs are growing at rates that are a large multiple of the growth in total demand for access services, indicating substantial competitive inroads. In other words, we are now in the transition stage, with some market areas and services already highly competitive. Under those conditions, the Commission should not be looking at these transition issues as "futuristic," as issues that should be resolved at some point in the future. The Commission should adopt, in this proceeding, a long-term price cap plan that will naturally adapt to changing market conditions and thereby facilitate the continuing development of healthy, balanced competition in access services.

There are three essential ingredients for an effective transition to full competition in access services: the plan should (1) rely on economic incentives, rather than administrative controls; (2) incorporate maximum flexibility to meet competitors and customers' needs; and (3) rely upon and actively encourage the further development of competition in access services. As to economic incentives, the

²⁷Report and Order and Further Notice of Proposed Rulemaking, MM Docket No. 93-315, "Implementation of Sections of the Cable Television Consumer Protection and Competition Act of 1992: Rate Regulation." March 30, 1994.

²⁸This sub-section addresses Baseline Issue #1.

²⁹This sub-section addresses Transition Issue #1.

elimination of sharing and depreciation prescription, along with the opportunity for LECs to compete on a level playing field, are necessary conditions. As to regulatory flexibility, the plan should eliminate rigid structures such as Part 69 and provide maximum latitude in LEC pricing and service offerings, comparable to that enjoyed by LEC competitors. To encourage competition, the plan should regulate prices and services only when competition and customer choices are inadequate. Indeed, imposing restrictions on LEC pricing in the face of competition is actually anti-competitive, since it prevents customers from realizing the full benefits of unrestrained competitive efforts by all of the potential service providers. Furthermore, limiting LECs' downward pricing flexibility means that customers who decide to purchase some of their services from LECs will pay higher prices than if the market was allowed to determine LECs' prices.

B. Transition Stages³⁰

The key principle underlying transition stages, then, is that the degree of LEC regulation should be commensurate with the degree of competition for a given service or within a geographic market area. The USTA proposal provides for three designations, Initial, Transitional and Competitive Market Areas. While price changes in IMAs and TMAs would continue to be subject to price caps, services in CMAs would be removed from price caps (but would still be subject to tariff filings and the Commission's complaint process). A LEC would initiate a proposed CMA designation in a tariff filing, allowing the Commission to assess whether competitive conditions in the market area are sufficient for removing the price cap constraint. Under pure price caps, neither the liberalization of pricing in TMAs nor the removal of services in CMAs from price caps will give LECs an increased ability or incentive to cross-subsidize competitive services or other forms of anticompetitive pricing.

In creating transition stages, the Commission should avoid reliance on a narrow view of competition. It is well established in economics that, in addition to actual competition, potential competition is an important factor in market dynamics and competitive behavior — especially in controlling prices. Also, the Commission should recognize the inherent bias in the current regulatory reporting systems: the burden of demonstrating sufficient competition for liberalized regulatory treatment should not fall on LECs, since they do not have complete information about competitive alternatives (they may only observe losses of customers and traffic!). To successfully implement a transition plan, it is imperative that the Commission require, as USTA proposes, that all access providers report regularly on their facilities and access capabilities. Without that requirement, LEC competitors have a strategic interest in not disclosing or understating their capabilities to maintain regulatory restrictions on LEC for as long as possible.

In assessing the degree of competition in a market area, the Commission should not use market share as a measure of market power. Market share is based on historical

³⁰This sub-section addresses Transition Issue #2.

decisions; when change is occurring rapidly in markets, the use of historic measures biases the assessment against the incumbent. Market share also fails to account for the extremely high degree of traffic and revenue concentration; a LEC with large market share can lose a substantial share of its access revenues very quickly to an entrant covering a small portion of service territory. Finally, market share is an extremely misleading indicator when the LEC is subject to regulatory constraints that are not imposed on competitors. For example, when the LEC is required to provide services to many customers at prices below costs, those sales increase its market share but are certainly not an indicator of market power.

The "addressability" measure proposed by USTA is a much better indicator of the transition to competition. The question really is whether customers have choices of competing suppliers, in the forward-looking sense. To promote competition, the Commission should give LECs the freedom to respond to competition as it emerges, rather than restraining LECs until competitors have exploited the "price umbrella" created by regulatory barriers to pricing flexibility. Allowing the LECs to meet competition would ensure that customers receive the full benefits of competitive pricing and service offerings. Also, allowing LECs' downward pricing flexibility in the face of emerging competition, entry decisions would be based on realistic price signals, which would induce technical and allocative efficiencies in network utilization and customer choices.

C. Frequency of Review under Price Cap Regulation³¹

Given the degree of change since the Commission adopted the current LEC price cap plan and the inherent limitations of that plan, it is entirely appropriate for the Commission to be conducting a review of that plan at this time. The Commission should not revisit LEC price cap regulation every three or four years. The Commission has the opportunity, now, to develop and implement a price cap plan that will adapt to changes in industry conditions automatically. There are two major benefits in doing so: the adoption of a long-term plan for the transition to fully competition access markets will (1) maximize the incentive effects of price caps and (2) send a powerful signal to capital markets, LEC managers, competitors and customers that the Commission has irrevocably committed itself on the course to balanced competition and the economic incentives needed to induce private investment in the National Information Infrastructure.

The expected frequency of reviews and modifications to price cap is a major determinant of the incentive effects of price cap regulation. Indeed, if reviews are frequent enough, and become an exercise in "recontracting" to retract the additional efficiency gains realized during the prior period, the economic incentives of price caps are substantially diminished. Moreover, by incorporating adaptive mechanisms within the price cap plan — most importantly, the potential for designating market areas as transitional or competitive as competition develops —

³¹This sub-section addresses Transition Issue #5.

there is no need to revisit the price cap plan in the near future. Finally, frequent reviews increase regulatory risk, which in turn compounds the increasing market risk facing LECs and their competitors. The Commission could, by committing itself to a long-term plan, reduce, rather than exacerbate, the risks facing managers and investors.

VI. Conclusion

Dramatic, accelerating changes in telecommunications technologies, market demand and competition require corresponding changes in the price cap regulation of interstate access services. This proposition is based on the principle of "environmental fit," namely that successful public policies must be responsive to current and expected industry conditions and be capable of adapting to and with further developments in the industry. The current regulatory regime for interstate access is becoming an obstacle to balanced competition, market-response pricing and new service offerings. In contrast, the powerful economic incentives and competitive safeguards in USTA's proposed price cap plan can promote the development of healthy competition and expedite the deployment and adoption of new telecommunications technologies and services.

Because telecommunications has become so vitally important to economic development in the information age, regulatory policies must place greater weight on economic efficiency, innovation and investment incentives. The price regulation plan proposed by USTA represents a significant improvement over the Commission's current LEC price cap plan. Adoption of the USTA plan will generate substantial benefits to telecommunications customers and to the US economy. At the same time, failure to act progressively now will surely delay the tremendous potential benefits of the National Information Infrastructure. Unless freed to compete by pricing flexibly and offering new services expeditiously, and given appropriate economic incentives, capital market discipline will reduce LEC investments in the public telecommunications network. Such regulation-imposed delay in making the transition to full competition would cause a permanent loss of economic benefits.

As it addresses the need for access reforms, the Commission should consider three major factors. First, the Commission should also realize that, in constructing a good price cap plan, parsimony and simplicity should be very high priorities. Adding terms and conditions, contingencies and exigencies, unduly complicates the understanding and administration of a plan. Each element of price cap plan should pass a test of essentially: is it really necessary or can we get along without it? Each element should also pass a stiff cost-benefit test: will the benefits of including the provision clearly exceed the costs of administering it, including the costs it imposes by dampening incentives for efficiency and innovation?

Second, the Commission should be wary of arguments that emphasize the risks of change and, therefore, the need to continue elements of rate of return regulation in a rapidly changing environment. Such arguments are not surprising since they reflect the power of the emotional and institutional status quo. Whatever the risks of

change in regulatory policy may now be, however, the risks of not making a substantial change are far greater. If we cling too long to the past, we harm our own future. The status quo offers some comfort, because we know it so well – or at least think we do. What we actually know is how the current policy has worked in the past. We do not know at all how it will work in the future. Yet the comfort and familiarity of the status quo too often prevent institutions from changing their policies and practices in response to, much less in anticipation of, changes in their environments. The Commission should continue its leadership in telecommunications by taking the next logical step by adopting a simplified, pro-competitive, pure price cap plan in this proceeding.

Third, the Commission should not underestimate the market signaling effects of its decision in this proceeding. The mass media and business press are full of reports of the Administration's pronounced commitment to the "Information superhighway." Actions, though, speak ever so much louder than words. Few actions, by any government agency, will have a greater effect on perceptions of investors, competitors and telecommunications customers, or will speak more to the point, than the Commission's decision in this proceeding. Capital markets are, by their very nature, forward-looking; hence investors and investment managers are looking forward to this decision as an indicator of the extent to which the Commission will actually adopt the principles enunciated as crucial to the National Information Infrastructure.

ECONOMIC BENEFITS OF LEC PRICE CAP REFORMS

Appendix A

Telecommunications and the Information Economy

by

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in support of the
United States Telephone Association

May 9, 1994

Federal Communications Commission

Notice of Proposed Rulemaking

In the Matter of
Price Cap Performance Review
for Local Exchange Carriers
CC Docket No. 94-1

1. Telecommunications Plays an Important Role in the U.S. Economy

In the past decade or so, the United States and other highly developed economies have entered the "post-industrial" era. In the industrial age, the extraction of natural resources for energy and raw materials and manufacturing of goods were the chief drivers of economic growth. While manufacturing continues to be important, employment in services continues to grow, due mainly to the tremendous advances in computers and communications. In the past century, agricultural employment declined from 45% to less than 5%; employment in manufacturing has returned to its 1890 level of 20% after peaking at 30% in 1960; while employment in services has exploded from 30% to over 77% (and 75% of the Gross National Product). Even in manufacturing industries, knowledge-based service activities (e.g., information processing, communications, research and development) constitute 65 to 75 percent of manufacturing costs and an even higher percentage of the "value-added" in the manufacturing sector.¹

What railways, waterways and highways were and are to the goods economy, telecommunications networks are to the service economy, since a very large share of value-creation in the services sector involves the generation, manipulation, storage, retrieval and other use of information. Today, information-based enhancements have become the main avenue to revitalize mature businesses and transform them into new ones. The basis of this transformation is microelectronics technologies and their application to computers, communications, manufacturing equipment, consumer products such as autos and household appliances and virtually all services industries. This transformation is confirmed by a 1989 article by G. Gilder.² Because information has become the core technology of modern economies, the current era is referred to as the "information age:"

"Today, information-based enhancements have become the main avenue to revitalize mature businesses and transform them into new ones. In every economy, the core technology becomes the basis for revitalization and growth. Information technologies are the core for today's economy, and to survive all businesses must informationalize."³

Not surprisingly, one direct implication of the information age is that telecommunications equipment and services constitute a substantial and increasing share of national economic output:

¹ Quinn, James Bryan. Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industry. New York: The Free Press., 1992, pages 3-30.

² Gilder, George, 1989. Microcosm: The Quantum Revolution in Economics and Technology. New York: Touchstone/Simon & Schuster, pages 317-383.

³ Davis, Stan and Bill Davidson, 1991. 2020 Vision. New York: Simon & Schuster, page 17.

"Economic growth in the telecommunications industry over the past decade has contributed significantly to improving consumer welfare in this country and has played an increasingly larger role in the overall domestic economy. In 1982, the telecommunications equipment and services sector generated approximately \$94.6 billion (\$143 billion in 1993 dollars). By 1993, that figure had grown to \$171.9 billion."⁴

Because it is so capital and labor intensive, growing revenues in telecommunications services requires enormous expenditures in equipment purchases and payrolls:

"Communications Industry spending is expected to grow 7.6 percent on a compound annual basis over the next five years, reaching \$461 billion by 1994 and becoming the sixth largest industry as measured by final dollar sales in the U.S., moving up from seventh largest in 1989. . . . Communications Industry spending in 1989 totaled \$320 billion, 6.1 percent of GNP, compared with 5.5 percent of GNP in 1984."⁵

Measured more broadly, to include telecommunications, computers, computer software, publishing, entertainment, broadcasting, cable TV and information services, the combined output of the "information industries" comprised 16% of Gross National Product in 1992, and is forecast to grow to 20% of GNP in the year 2000.⁶

Perhaps even more important than its direct contribution to economic input, telecommunications has made enormous contributions to the performance of user industries. Because telecommunications services can greatly improve the productivity and performance of business enterprises, and because the real prices of telecommunications services have been falling, American businesses have been substituting telecommunications for other goods and services.

Over the ten years from 1983 through 1993, purchases of telecommunications services grew, as a percentage of total output in the U.S. economy, by nearly 3% per year. As of 1987, "the top eight telecommunications-intensive sectors produced 44.1% of total US output. This is significant as an indicator of the relative degree to which the national economy, in general depends on telecommunications as an

⁴ Statement of Reed Hundt, Chairman, Federal Communications Commission before the House Subcommittee on Telecommunications and Finance, Committee on Energy and Commerce, January 27, 1994.

⁵ See The Veronis, Suhler & Associates, Communications Industry Forecast, July 1990. Note that the definition of industry spending in this context is the value of goods and services sold by the industry (i.e., the amount spend on the communications industry).

⁶ "Strategic Uses of Regulation: The Case of Line-of-Business Restrictions in Communications," Research in Corporate Social Performance and Policy, edited by James E. Post, JAI Press, 1992 (with Robert A. Blau).

input.⁷ Table A-1 shows for selected industries the growth in telecommunications purchases.

Industry	1983	1993	Share Growth
Air Transportation	1.84	2.05	1.10
Business Services	1.60	2.17	3.07
Communications Equipment	1.06	1.11	0.45
Complete Aircraft	0.54	0.69	2.50
Drugs, Soaps and Toiletries	0.42	0.63	4.09
Electrical Industrial Apparatus	2.94	3.55	1.92
Electrical Trans. and Distr. Equip.	0.79	0.90	1.36
Electronic Components	1.10	1.14	0.39
Finance, Insurance, Real Estate	0.87	1.28	4.04
General Industrial Machinery	0.71	0.85	1.78
Health Services	0.81	1.34	5.10
Local/Other Transp. Services	1.88	2.75	3.85
Measuring/Controlling Devices	1.03	1.23	1.82
Medical Instruments and Supplies	0.67	0.83	2.24
Motor Freight and Warehousing	1.48	1.74	1.64
Newspapers, Periodicals and Books	1.84	2.80	4.31
Other Publishing and Printing	0.43	0.56	2.69
Other Services	0.87	1.27	3.90
Public Administration	0.69	0.97	3.42
Radio/Television Broadcasting	0.81	1.08	2.93
Search and Navigation Equipment	0.99	1.18	1.79
Wholesale and Retail Trade	1.63	1.88	1.44
All Industries	0.81	1.06	2.73

Source: Analysis by The WEFA Group.

As business enterprises increase their usage of telecommunications products and services, they improve their productivity accordingly. A recent study of these effects found that telecommunications productivity and consumption efficiencies were

⁷ Francis J. Cronin, Elisabeth K. Colleran, Paul L. Herbert, and Steven Lewitsky: "Telecommunications and growth: the contribution of telecommunications infrastructure to aggregate and sectoral productivity," *Telecommunications Policy*, December 1993, p. 677-690.

responsible for 25% of aggregate productivity growth from 1975 through 1991.⁸ Table A-2 shows contributions of telecommunications to productivity growth for selected industries from 1963-1991. Finance, transportation, trade, real estate and primary metals are found to be among the individual sectors where telecommunications has most significantly contributed to productivity growth.⁹

Table A-2 Changes in Productivity due to Telecommunications 1963-1991	
Industry	% of Total Efficiency Gain due to Telecommunications
Wholesale and retail trade	87.4%
Primary metals	59.8%
Entertainment	57.0%
Real estate	25.3%
Transportation and warehousing	11.4%
Mining	10.9%
Stone, clay and glass	10.7%
Printing and publishing	9.5%
Business services	8.8%
Fabricated metals	6.5%
Other transportation equipment	6.0%
Leather	5.9%
Motor vehicles and equipment	5.4%
Economy-wide total	21.5%

⁸ Over this 17-year time frame the percentage of total economy-wide productivity gains attributable to advances in telecommunications ranged from 18% to 37%, averaging 25%. As shown in Table A-2, when analyzed over a longer period from 1963-1991, telecommunications still contribute over 20% to productivity growth. The somewhat lower number associated with telecommunications from 1963-1991 versus 1975 to 1991 indicates that telecommunications contributions to productivity gains have increased in recent years. Francis J. Cronin, Elisabeth K. Collieran, Paul L. Herbert, and Steven Lewitsky: "Telecommunications and growth: the contribution of telecommunications infrastructure to aggregate and sectoral productivity," *Telecommunications Policy*, December 1993, p. 677-690.

⁹ Finance is not included in Table A-2 because overall productivity growth in finance and insurance was negative from 1963-1991. However, but for gains in productivity due to telecommunications, the productivity loss would have been substantially greater.

There is a growing awareness among American business leaders of the importance and potential of telecommunications in the national economy:

"...the impact of investments (the Baby Bells and other telecom companies) will have a powerful multiplier effect on the economy in coming years. Here's how: Higher investment rates boost productivity. Faster productivity growth raise real incomes. Consumers spend more, companies start hiring, and the economic tempo picks up. Much of the gain from telecommunications investment will stay in the domestic economy too, because US producers account for a major chunk of the world telecom industry."¹⁰

In its recent "Survey on the National Information Infrastructure," the American Electronic Association found that:

"Eight of ten industry executives surveyed believe that increased business efficiency is a top reason for constructing an information superhighway. More than half of the executives indicated that their business would become more responsive to customer needs, and derive strategic applications from the information superhighway's construction. Two-thirds of responding executives cited databases and electronic mail as useful capabilities of their organizations following the information superhighway's construction. Almost half of the executives sampled said that their organization's ability to telecommute would be enhanced by the information superhighway."¹¹

The AEA survey also found that electronics industry executives believe that, in order for the NII to be built sooner rather than later, the government should remove legal and regulatory obstacles which inhibit new services and disincant innovation and investment.

2. Importance of LECs to U.S. Telecommunications Investment

As shown in Table A-3, LECs account for large share of telecommmunications investment. The mandatory price cap LECs account for 76% of capital expenditures by telecommunications carriers.

¹⁰ Christopher Farrell and Michael J. Mandel, "What's arriving on the information highway? Growth," Business Week, November 29, 1993, p. 40.

¹¹ The AEA Survey on the National Information Infrastructure: Background and Executive Summary, March 1, 1994.

Table A-3				
1992 Capital Expenditures and Total Assets for Major US Telecommunications Carriers				
Company	Capital Expenditures (\$ millions)	Share of Total	Total Assets (\$ billions)	Share of Total
Mandatory Price Cap LECs				
Ameritech	2,267	8%	22.8	7%
Bell Atlantic	2,244	8%	28.1	9%
BellSouth	3,266	12%	31.5	10%
GTE	3,909	12%	42.1	14%
NYNEX	2,450	9%	27.7	9%
Pacific Telesis	2,381	8%	22.5	7%
Southwestern Bell	2,182	8%	23.8	8%
US West	2,598	9%	28.0	9%
LEC Total	21,297	76%	226.5	74%
Grand Total	28,067		307.0	

In addition to the critical role LECs play in providing local exchange services to 100 million customers, LECs also provide interconnectivity among competing networks. The LECs have played, and will continue to play, a vital role in facilitating competition by other providers. Just as IXC competition was facilitated by the conversion of local central office switches to "equal access," and the deployment of Signaling System 7 made possible "800 number portability," the interconnectivity and interoperability achieved through the PTN will stimulate competition in newly emerging communications and information services.

That is not to say that investment by local exchange carriers is all that matters. In fact, InterExchange Carriers, Competitive Access Providers, Enhanced Services Providers, cable systems operators, cellular carriers, Personal Communication Service systems developers, and other telecommunications suppliers and users have made and/or will make substantial investments in the telecommunications infrastructure. Even so, it is imperative that Local Exchange Companies (LECs) continue to modernize, upgrade and expand their networks for two crucial reasons. First, the LECs play a critical role in the "network of networks", at least in the near term, by providing the interconnectivity and interoperability across all these other operators, systems, suppliers and users. Second, many of the competing networks focus primarily on large users, or users in high density urban areas. Investment in the local exchange networks can ensure that the benefits of the information age are available in a timely manner to small users, small towns and rural areas as well.

Without question, private networks also have a vital role to play in telecommunications, but only if the public network provides interconnectivity and

interoperability across networks will these systems perform at their full potential. Moreover, while private networks are important to very large customers, it is the public network which provides the ubiquity and ease of access needed to serve small businesses and residential customers, ensuring that they, too, can enjoy the fruits of the information age.

3. Linkages between Telecommunications and Economic Development

There is growing evidence of the linkage between telecommunications and economic development. Investment in telecommunications improves the quality of service, expands the availability of services, increases the number of services and reduces the costs of those services. Thus, telecommunications investment generates substantial benefits to the users of telecommunications services. In the past decade or so, telecommunications services have literally revolutionized many industries; in virtually all industries and sectors, telecommunications services have generated or have the potential to generate major productivity gains. Six recent studies of economic development also support the conclusion that telecommunications services are playing an increasingly important role, especially in the high-technology, knowledge-intensive industries that generate skilled jobs and a high degree of learning on the job.

First, a study by the Organization for Economic Cooperation and Development¹² found extraordinarily rapid growth in the importance of telecommunications services to business users in all member nations, with crucial effects on international competition in telecommunications-intensive industries, especially financial services (banking, insurance and securities, commodities and foreign exchange trading), publishing and information services, wholesaling and retailing.

Second, in a study of the impact of information technologies on service industries (financial services, health care, insurance and publishing), James Bryan Quinn found:¹³

- substantial forward (i.e., downstream) linkage economies and externalities, including realization of economies of scale and economies of scope (the capacity to provide entirely new service products through the same service network);
- a substantial increase in "output complexity" (the quantity and quality of services available to customers);

¹² Organization for Economic Cooperation and Development. The Telecommunications Industry: The Challenges of Structural Change. Paris: OECD Series in Information, Computer and Communications Policy (No.14), 1988.

¹³ Quinn, James, "The Impacts of Technology in the Services Sector." In Technology and Global Industry: Companies and Nations in the World Economy, edited by Bruce R. Guile and Harvey Brooks. Washington, D.C.: National Academy Press, 1987.

- a blurring of industry boundaries through functional cross-competition; and
- improved international competitiveness, through the locational decisions of manufacturers who use these services.

One of the most valuable "downstream" benefits of telecommunications services Quinn found is the increased geographic extensiveness of user industries. In urban areas, this extension improves accessibility and enhances competition among goods and service providers (e.g., Automated Teller Machines competing with branch banks; telemarketers competing with local retailers). In rural areas, the geographic extension of services through telecommunications often means a substantial improvement in the quality of service available, or even the difference between having service or not (e.g., remote health care services).

In a recent extension of that work, Quinn found that telecommunications can make significant contributions to increased productivity and improved competitiveness in manufacturing as well. In the *Intelligent Enterprise*, Quinn explores the revolutionary changes in organizational and industry structure that are being driven by the application of knowledge and information, noting that:

"Discussions concerning America's manufacturing competitiveness have consistently overlooked an area that offers major productivity leveraging possibilities: the manufacturing-services interface. On the one hand, service companies have become some of the most important customers, suppliers, and coalition partners for many manufacturing concerns. U.S. service enterprises are both near at hand and are among the world's most efficient performers-surpassing the services productivity of virtually all other advanced industrial economies, especially Japan. Major opportunities exist for manufacturers to exploit U.S. service companies as major customers, as lead companies or co-developers for new products, as potential suppliers, as value-adding advisers or market intermediaries, and as sources of valuable information and distribution clout in their markets."¹⁴

In order to realize this potential, Quinn urges increased investment in communications infrastructures and regulations that are "goal-oriented rather than means-specifying."¹⁵

Third, in a study commissioned by the State of New York, Coopers and Lybrand found that purchases of telecommunications services by businesses in the United States were growing at the rate of 11.8% per year, compared with GNP growth rates

¹⁴ Quinn, James Bryan. *Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industry*. New York: The Free Press, 1992, p. 208.

¹⁵ *ibid.*, pp. 432-33.

averaging 2.5%.¹⁶ Employment is growing fastest in "telecom-intensive" industries. Even though the real prices of telecommunications services have been declining, purchases of telecommunications services are a growing share of business costs. Telecommunications can also geographically extend the workplace; by so doing, telecommuting can enhance the quality of workers' and families' lives, bring economic opportunities to rural areas, and aid in reducing congestion and air pollution in urban areas.

Fourth, in a study commissioned by the New Jersey Board of Public Utilities, Deloitte and Touche found that:

"As New Jersey continues to move toward an information services-based economy, today's local exchange carrier network will increasingly constrain users' (especially residential and small business users) ability to fully participate in the Information Age;"

"A significant opportunity exists to advance the public agenda for excellence in education through improvements to the telecommunications infrastructure;"

"Strong motivation, especially in the improved quality of care and cost reduction, exists for increasing the use of telecommunications and information technologies in the health care industry in New Jersey;" and

"Public policies that encourage deployment of an advanced telecommunications infrastructure are essential for New Jersey to achieve the level of employment and job creation expected in the state."¹⁷

Fifth, the Illinois Task Force on Advanced Telecommunications and Networking concluded, on the basis of an extensive survey and focus group interviews of small businesses, that:

"all enterprises are becoming more information intensive and...(the) Illinois communications and computing infrastructure will define state economic development capabilities in the future;" and

"a robust telecommunications infrastructure is vital to meet the requirements of education and training, libraries, health services,

¹⁶Coopers and Lybrand, 1987. State Policy & Telecommunications Economy in New York: Final Report. Albany: New York State Office of Economic Development.

¹⁷Deloitte and Touche (1991). New Jersey Telecommunications Infrastructure Study. Trenton: Report to New Jersey Board of Public Utilities, p. 1-3

safety, and other social components which collectively create the quality of life."¹⁸

Sixth, recent statistical analyses found strong evidence of a feedback process in which telecommunications investment enhances economic activity and growth, while economic activity and growth stimulate demands for telecommunications infrastructure investment. This relationship was found to hold at the national, state and sub-state level of analysis and for definitions of telecommunications infrastructure investment including total investment, cable and wire, and central office equipment.¹⁹

"Our findings at both the state and county level support the conclusion that telecommunications investment affects economic activity and that economic activity can affect telecommunications investment. These findings are consistent with national-level results. The county level findings are particularly significant because they indicate that even relatively small geographic areas can be affected by investment in telecommunications infrastructure."²⁰

Each of these studies — and numerous others — have confirmed that the direct user benefits, and direct and indirect economic development benefits of telecommunications are, if anything, growing over time. For an increasing number of industries, access to advanced telecommunications services will be essential to competitive advantage — possibly even competitive survival — in global markets. In short, what the U.S. economy and the nation's workers and consumers need to survive and thrive in the information age is "advanced universal access" to voice, data and image telecommunications services, in which residences, businesses, government agencies, health care facilities, colleges and non-profit organizations all have access to the wide range of communications and information services.

¹⁸ Report of The Illinois Task Force on Advanced Telecommunications and Networking. Springfield: Report to Jim Edgar, Governor of Illinois, April 1992, p. 9.

¹⁹ Francis J. Cronin, Edwin B. Parker, Elisabeth K. Collieran and Mark A. Gold, "Telecommunications infrastructure and economic growth: an analysis of causality," Telecommunications Policy, December 1991, pp. 529-535; and Francis J. Cronin, Elisabeth K. Collieran, Paul L. Herbert, and Steven Lewitsky: "Telecommunications and growth: the contribution of telecommunications infrastructure to aggregate and sectoral productivity," Telecommunications Policy, December 1993, p. 677-690. See also, Andrew Hardy, "The role of the telephone in economic development", Telecommunications Policy, December 1980, pp. 278-286; Hardy looked at 45 countries and found a significant two way relationship between economic growth and telecommunications infrastructure development.

²⁰ Francis J. Cronin, Edwin P. Parker, Elisabeth K. Collieran and Mark A. Gold, "Telecommunications infrastructure investment and economic development", Telecommunications Policy, August 1993, pp. 415-428.

4. Implications of Telecommunications for International Competitiveness

Historically, there was little or no thought given to the implications of United States telecommunications policy for international competition, perhaps because the United States was a hegemonic economic power in the world. That extremely parochial view of the world is increasingly out of touch with current economic and technological reality, however, especially considering what has happened and is happening elsewhere.

Simply put, by the late 1980s the United States no longer had a telecommunications sector far superior to that of other nations, in the quality or extent of the network, in the range of communications or information services available through the network, or even in underlying technological prowess. A recent study of international trends in telecommunications technology, using an index of five year accumulations of patents, found that in 1979 the United States was the world leader in technological capacity. By 1986, however, Japan had taken the lead in telecommunications development activities and accumulated the largest stock of proprietary technology, as measured by the issuance of significant international patents to companies of Japanese origin.²¹

This growing awareness of the global implications of domestic telecommunications policy has shifted the terms of the public policy debate, as well it should. The change in orientation is due largely to two factors, one general to the United States economy, one specific to telecommunications. At the general level, there is substantial evidence that the performance of the United States' economy has lagged behind some of its major competitors and trading partners. Although there is much dispute over the causes of this relative decline in productivity and economic growth rates, "competitiveness" has become a central concern of policy makers in Washington and state capitals. This concern has in turn generated a recognition that, in a global economy, it is relative performance that counts. Both the reality of the United States' economic welfare and people's perceptions of their economic well-being increasingly depend on how well the United States is doing compared to other nations.

At the specific level of telecommunications policy, it has been readily apparent that the leading nations of Europe and the Pacific Rim have targeted telecommunications, or, more broadly, information technologies, as a central element in their national economic strategies.²² In the Pacific region, Japan, Korea,

²¹ The comparison is based on an analysis of international patents, using an index of five year accumulations of patents, excluding those of "minor" significance. Schnoring, Thomas. "Research and Development in Telecommunications - An International Comparison." Unpublished paper presented for the Telecommunications Policy Research Conference, Airlie House, October 1989, p. 16-17.

²² Rothwell, Roy. "Technological Change and Reindustrialization: In Search of a Policy Framework," in Competitiveness through Technology, edited by Jerry Demer, Lexington: Lexington Books, 1986, p. 102.