Declaration of

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I. INTRODUCTION

1. My name is Alfred E. Kahn. My business address is 308 N. Cayuga Street, Ithaca, NY 14850. I am the Robert Julius Thorne Professor of Political Economy, Emeritus, Cornell University and Special Consultant with National Economic Research Associates, Inc. (NERA). I received my A.B. degree summa cum laude from New York University and my Ph.D. from Yale University, in 1942. I served as Associate Economist with the Antitrust Division of the U.S. Department of Justice in 1941-42; came to Cornell University as Assistant Professor in 1947 and have served successively as Chairman of the Department of Economics, Robert Julius Thorne Professor of Political Economy, member of the Cornell Board of Trustees and Dean of the College of Arts and Sciences. I have been Chairman of the New York State Public Service Commission and of the (U.S.) Civil Aeronautics Board; and in my capacity as Advisor to President Carter on Inflation, I participated actively in the successful efforts of his Administration to deregulate both the trucking industry and the railroads. I am the author of the two-volume *The Economics of Regulation*, reprinted in 1988 by MIT Press, *Letting Go: Deregulating the Process of Deregulation*, published in 1998 by Michigan State University Institute of Public Utilities, *Whom the Gods Would Destroy or How Not to Deregulate*, published this year by the AEI-Brookings Joint Center for Regulatory Studies, and have written and testified extensively in the area of direct economic regulation and particularly of the public utilities. Of especial relevance to my statement here, I am the co-author of *Fair Competition, The Law and Economics of Antitrust Policy*, was a member of the Attorney General's National Committee to Study the Antitrust Laws and the National Commission on Antitrust Laws and Procedures in the

Eisenhower and Carter Administrations, respectively; I have served as consultant with both the Antitrust Division of the Department of Justice and the Federal Trade Commission; I was recently a member of the National Research Council – Transportation Research Board committee charged with reporting to Congress on the state of competition in the airline industry; and I have published numerous articles, particularly in recent years, on the requisites of efficient competition in regulated and previously regulated industries. I attach a copy of my full resume as Attachment A.

2. My name is Timothy J. Tardiff. My business address is One Main Street, Cambridge, MA 02142. I am a Vice President at National Economic Research Associates, Inc. (NERA). I have specialized in telecommunications policy issues for about the last 20 years. My research has included studies of the demand for telephone services, such as local measured service and toll; analysis of the market potential for new telecommunications products and services; assessment of the growing competition for telecommunications services; and evaluation of regulatory frameworks consistent with the growing competitive trends. Most recently, I have participated in interconnection arbitrations, unbundled element proceedings, universal service investigations, and applications by incumbent local exchange carriers for authorization to provide interLATA long-distance pursuant to the Telecommunications Act of 1996, in over 20 states. I attach a copy of my full resume as Attachment B.

3. Advanced telecommunications services are being offered, and will increasingly be offered, by firms that formerly operated in distinct markets and industries (e.g., traditional telephone and cable television service) as well as new firms seeking to share in this apparently huge

potential market. These new offerings include broadband services—such as high-speed access to the Internet, currently provided mainly by cable modems and digital subscriber lines (DSL)—which have the potential to provide new ways for consumers to acquire information, audio and video entertainment and engage in business transactions. They also give businesses new ways of reducing their costs and of reaching consumers with products and services, new and old. These benefits to consumers and businesses are likely to be very large: some research suggests hundreds of billions of dollars annually.[1]

4. These broadband services are truly new, especially for residential and small business customers. By the end of 1998, the FCC counted fewer than 400,000 subscribers—a penetration rate of well under one percent—some 350,000 using cable modems and only 25,000 DSL.[2] Thereafter, in each of the next two years, residential and small business subscribership increased about four-fold, reaching a total of about 6 million by the end of 2000.[3] [4] Some analysts have projected subscribership of 30-40 million by 2005, with cable

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[1] See, for example, Robert E. Litan and Alice M. Rivlin, "Projecting the Economic Impact of the Internet," *American Economic Review*, Vol. 91, No.2, 2001, pp. 313-317 and Robert W. Crandall and Charles L. Jackson, "The $500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access," July 2001.

[2] Federal Communications Commission, *Deployment of Advanced Telecommunications Capability: Second Report*, CC Docket No. 98-146, August 2000.

[3] The respective shares of cable modems and DSL were 71 and 29 percent at the end of 1999 (Federal Communications Commission, Office of Plans and Policy, *Telecommunications @ the Millennium: The Telecom Act Turns Four*, February 8, 2000) and some two-thirds and one-third, respectively, at the end of 2000, with competitive local exchange carriers constituting some 20 percent of the latter group at the end of both 1999 and 2000. The Association of Local Telecommunications Services (ALTS), *The State of Competition in the U.S. Local Telecommunications Marketplace*, February 2000 and *The State of Local Competition 2001*, February 2001.

[4] Although both cable modems and DSL increased sharply during 2000, the former still enjoyed a 2:1 lead by the end of the year. Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, "High-Speed Access for Internet Access: Subscribership as of December 31, 2000," August 2001.

modems maintaining a narrowing lead *in market share*.[5] The FCC's second *Advanced Services* report also describes the inroads made by wireless and satellite services. The clear prospect is a competitive free-for-all among different suppliers and technologies, with the ultimately victorious ones far from clear and only consumers clear winners.

5. While broadband subscribership has continued to grow in 2001, the rate of that growth has declined markedly in not only percentage but also absolute terms. Moreover, the drop-off has been disproportionately large in the case of DSL as contrasted with cable modems.[6] While the total number of residential broadband subscribers added per quarter declined 20 percent—from 1.5 million in the fourth quarter of 2000 to 1.2 million for the first half of 2001—the decline in the new subscriptions to DSL was 35 percent (from 0.7 million to 0.45 million) and to cable modems only 7 percent (from 0.8 million to 0.75 million). The weakening of the U.S. economy doubtless explains part of the overall deceleration; the fact that growth rates for the more heavily regulated DSL services have experienced a much larger decline suggests, however, that current regulations may also be part of the explanation.

6. Whether the full potential of broadband services is realized depends on whether firms that must make huge investments to develop and upgrade the requisite networks have the opportunity to earn returns commensurate with the risks they will face. The amount and type of regulation will be an important determinant of those opportunities. As we explain in more detail below, any regulation of *new services* is problematic, because it increases the

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[5] Verizon, *Broadband Fact Report*, December 19, 2001.

[6] *Ibid.,* pp. 16-17.

cost and decreases the attractiveness of offering them. By the same token, relaxing regulation where it is no longer needed can unlock this potential. For example, as we describe in detail below, wireless was successful—providing benefits estimated at $25-$50 billion annually—even though it was regulated through the mid-1990s; since its deregulation at that time, subscribership has increased four-fold, with a commensurate increase in consumer benefits.

7. While both Congress and the FCC have generally recognized that the enormous potential will be much more rapidly and fully realized through competition in the market rather than a regulatory regime, there is a gaping exception to this recognition. While the FCC has generally taken a hands-off position with respect to both the Internet and most means of providing access to it, it has at the same time extended to the broadband services of incumbent local exchange carriers (ILECs) its regulations designed to promote competition for traditional local exchange services. The purpose is, of course, the same as the purpose of the Telecommunications Act in requiring ILECs to make unbundled network elements available, at favorable wholesale prices, in the belief that competitive local exchange carriers (CLECs) would be "impaired" in their ability to compete in downstream markets without such access.

8. Whatever merits regulations such as these have in facilitating efficient competition for traditional telephone services, they are both unnecessary and counterproductive when applied to broadband. As for the former, the essential premise underlying these requirements—namely, the necessity of CLECs having access to the facilities of the ILECs—is invalid in the broadband market. Not only are there alternative sources, as the

FCC has itself conceded; the ILECs are not the dominant suppliers—they have been and remain markedly behind cable modem services. And, on the other side, maintaining, extending, or even keeping open the option of applying regulation asymmetrically only to ILECs will not only dampen their incentives to roll out these services quickly and to introduce new methods of broadband access; it also risks artificially preserving the dominant position of the incumbent cable modem providers.

9. In particular, because it is very difficult, perhaps impossible, to forecast how competition for broadband services will evolve (what technologies will emerge, how successful each will be, what proportion of consumers will choose to subscribe, and how frequently and for what purposes they will use the services), basing regulatory policies on assessments of whether the present deployment is "fast enough," would be a fruitless exercise. No one can possibly know the ultimate size of the market and how it will be supplied. The task of policy is to remove all remedial hindrances to the competitive market's giving us the definitive answers.

II. ECONOMICS OF NEW SERVICES[7]

10. New services, particularly those requiring large investments and/or new technology, offer the prospects of large benefits, but at significant costs and with unusual degrees of risk. The benefits are large precisely because of their novelty. For example, Crandall and Jackson have estimated that wide scale penetration of broadband services (with broadband

[7] Parts of this section are adapted from Alfred E. Kahn, *Letting Go: Deregulating the Process of Deregulation*, Michigan State University, Institute of Public Utilities, 1998 and Alfred E. Kahn, Timothy J. Tardiff, and Dennis L. Weisman, "The Telecommunications Act at Three Years: an Economic Evaluation of its Implementation by the Federal Communications Commission," *Information Economics and Policy*, Vol. 11, 1999, pp. 319-365.

becoming almost as ubiquitous as ordinary phone service) would provide economic benefits of $400 billion annually in the form of new capabilities, such as shopping, commuter travel and home entertainment.[8]

11. Whether the widescale penetration that delivers such benefits will become a reality depends on potential suppliers—ILECs, cable operators, wireless broadband providers—making the requisite large investments, with no guarantee that their particular technology will prevail in competition with others or that consumers will sufficiently value the services it makes possible. These will include the large investments not only in the electronic equipment necessary to roll out more of their present DSL services over their existing copper loops but possibly the even larger ones in both electronics, fiber optic and wireless facilities capable of providing for greater capacity to carry information.

12. Were it not for the long legacy of telecommunications regulation—necessitated historically by the monopoly of the ILECs in traditional telephone service generally and local access in particular—the proper regulatory treatment of broadband services would be crystal clear: there would be none. The newness of the service, its reliance on risky technologies, the rapid expansion of the market and the leading position of unregulated suppliers all strongly suggest that the FCC's general disposition to keep its hands off the Internet has been fundamentally correct. The investments that the Telecommunications Act seek to encourage are not of a routine character such as may be required to provide plain old telephone service, but extremely costly and risky, both commercially and technologically. As for the former, it is useful to recall the exuberant expectations at AT&T about the

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[8] *Op. cit.*

potential of Picturephone some 35 years ago. While until recently analysts had expected broadband subscription to grow at rates resembling those of wireless a decade earlier, with comparable enormous benefits to the public,[9] the recent downturn in growth suggests that establishing the correct broadband policy may be a prerequisite for realizing its full potential. At the same time, there are very large risks about which technology will prevail: it is important to remind ourselves that those benefits are much clearer in hindsight than at the beginning of that decade, as is clearly suggested by the willingness of AT&T to surrender this particular business to the RBOCs at the time of divestiture, its more recent, hugely costly cable company acquisitions and its present attempts to sell them off. As for the technological uncertainty, how many times over the last several years has the consensus view changed about what method of transporting telecommunications signals will prove to be the successful one?

13. Under a proper conception of effective competition, the general rule is that neither new services nor the underlying facilities that produce them should be subject to regulation. The conception of monopoly in the offer of truly new services is a virtual oxymoron. New services offer customers additional alternatives not available to them previously. Their introduction is fundamentally a competitive rather than a monopolistic phenomenon, even though they may be distinctive and the innovator may be in a position to earn supernormal profits from them. To deny an innovator the rewards of being first would inhibit innovation, and it should not matter for these purposes whether the innovator is an incumbent telephone company, an incumbent cable television provider, or a new entrant. A

[9] Coincidentally, revenues for these two services per subscriber are roughly comparable, with wireless in the $55

half-century ago, Schumpeter[10] eloquently expounded—and generalized—the same underlying principle: the "perennial gale of creative destruction" that constitutes the most creative form of competition in a capitalist economy *consists,* at its essence, in the perpetual process of creation and erosion of monopoly positions achieved by innovation, with the prospect of the monopoly that rewards successful innovation providing the essential incentive for innovators and imitators alike. Transient market dominance and monopoly pricing are an essential part of the process:

> The introduction of new methods of production and new commodities is hardly conceivable with perfect—and perfectly prompt—competition from the start. And this means that the bulk of what we call economic progress is incompatible with it. As a matter of fact, perfect competition is and always has been temporarily suspended whenever anything new is being introduced —automatically or by measures devised for the purpose—even in otherwise perfectly competitive conditions (1950, p.105).

14. The more innovative the investments contemplated, the greater the uncertainties, both technological and commercial, the greater the risks, the more important is the prospect of the investor's exclusive enjoyment of the fruits of the ventures that turn out successfully. This proposition and the way in which the FCC's sharing rules conflict with it are most incisively spelled out by Justice Breyer, in his concurring opinion in the *Iowa Utilities Board* case:

> [A] sharing requirement may diminish the original owner's incentive to keep up or to improve the property by depriving the owner of the fruits of the value-creating investment, research, or labor….Nor can one guarantee that firms will undertake the investment necessary to produce complex technological innovations, knowing that any competitive advantage deriving from those innovations will be dissipated by the sharing

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to $95 dollar range from 1988 to 1994 and broadband at about $50 today.

[10] *Capitalism, Socialism and Democracy*, 3rd ed., New York: Harper & Row, 1976, Chapter VII.

> requirement…..Increased sharing by itself does not automatically mean increased competition. It is in the unshared, not in the shared, portions of the enterprise that meaningful competition would likely emerge. Rules that force firms to share every resource or element of a business would create, not competition, but pervasive regulation, for the regulators, not the marketplace, would set the relevant terms.[11]

15. As in the case of broadband, the major contribution of wireless has not been its reduction in the cost of existing ordinary telephone service,[12] but its offer of a new service that allows consumers to communicate in ways virtually unavailable previously—for which consumers were willing to pay high prices in the early years and in explosively growing numbers as prices declined but remained still at premium levels—every year since it was introduced.

16. Economists measure the benefits from a new product or services as the difference between what consumers pay and what they would be willing to pay at the point that they were indifferent between using the service and spending the money elsewhere. For example, the early adopters of cellular service paid several hundred dollars for the phone itself and prices considerably higher than today's for usage.[13] Now, these same subscribers can pay less for a service that is also probably of higher quality. Accordingly, the benefit from this phenomenon is at least as large as the difference between what they used to pay for the amount they used and what they pay today for that old amount, and of course it is enormously increased by the difference between the successively declining prices that successive increments of customers would have been willing to pay and the low prices that they more or less uniformly pay today.

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[11] *AT&T Corp. v. Iowa Utilities Board*, 119 S. Ct. 721, 752 (1999) (Breyer, J. concurring in relevant part).

[12] In fact, it has been only fairly recently that prices have declined to the point where wireless service has become a substantial substitute for ordinary service.

17. Jerry Hausman estimated the benefits of wireless services to consumers in 1994 at $25 to $50 billion annually,[14] or between 1.75 and 3.5 times the annual revenues of about $14 billion.[15] And both have exploded since then: subscribers have increased from about 25 million to over 100 million and revenues from $14 billion to over $50 billion annually.[16] This explosion coincided with two events that substantially relaxed regulatory burdens on wireless providers: (1) the Omnibus Budget Reconciliation Act of 1993, in which Congress deregulated the industry to a great extent, and (2) the increase in the number of providers that the availability of the new PCS spectrum permitted. Applying Hausman's calculations to current volume shows that the annual benefits have grown to a range of $85 billion to $170 billion.

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[13] The FCC reports that the average revenue-per-subscriber declined from about $97 in 1987 to about $45 in 2000.

[14] Jerry A. Hausman, "Valuing the Effect of Regulation on New Services in Telecommunications," Brookings, 1997. Similarly, Rohlfs, et al. estimated the social cost of the 10 to 15 year regulatory delay in licensing cellular systems at more than $86 billion–about 2 percent of GNP in 1983, when cellular service began. Jeffrey H. Rohlfs, Charles L. Jackson, and Tracey E. Kelley, "Estimate of the Loss to the United States Caused by the FCC's Delay in Licensing Cellular Telecommunications," National Economic Research Associates, November 4, 1991.

[15] The major determinant of the relation between revenue and benefit is the price elasticity, with the multiple decreasing as the elasticity increases. This is explained by the fact that when elasticity is high, consumers would be willing to pay little more than the current price.

[16] This expansion appears to be the result of both lower prices and competition shifting the demand curve outward by making services available to more consumers, improving the quality of services, and the like. In fact, the demand curve shift seems to be at least as powerful as the price reduction. For example, if we treat the 25 percent reduction in revenue per subscriber as a price decrease and use Hausman's elasticity of –0.5, then over 80 percent of the growth in volume after 1994 can be attributed to the demand curve shift and less than 20 percent to the price reduction. If instead we take as a measure of the decrease in prices the drop from $0.57 in 1994 to $0.21 in 2000 (Thomas J. Sugrue, "Sixth Annual CMRS Competition Report, Opening Remarks," June 20, 2001), the increase in demand and price reduction share equally in explaining the total expansion of sales. A major benefit of the increased competition since 1994, in addition to its having reduced prices to existing consumers, has been its expansion in the reach of these new services to a much larger customer base.

III. THE CURRENT ASYMMETRICAL REGULATION OF BROADBAND SERVICES INHIBITS INNOVATION AND HARMS CONSUMERS

18. The universal prescription of economists, we submit—other considerations aside[17]—would be that regulators not impose economic regulation on the provision of risky, innovative and/or new services such as broadband. In contrast, the present system has the anomalous characteristic that the leading suppliers, cable operators, are not regulated, while the competitors striving to catch up with them—in both cases endeavors that require very large and risky investments—are still regulated on the basis of what a regulatory agency says is "cost" plus a "reasonable" profit. In addition to the absurdity of shackling a competitor running in second place, the injuries to consumers from perpetuating such asymmetrical regulation are four-fold. *First*, by increasing the costs and risks of only one type of competitor—in effect imposing a tax on particular sources of supply—it makes it less likely that the services those competitors are uniquely qualified to offer will make it to the market, depriving consumers of the possibly enormous benefits of such offerings. *Second*, even if the broadband services offered by alternative providers prove to be close substitutes, handicapping one group could prevent the lower-cost supplier from taking over the share of the market that it would otherwise obtain. *Third*, the regulatory advantage enjoyed by the cable operators could give them an advantage in the provision of services other than broadband—such as video—thereby weakening and conceivably distorting the competition in the supply of such complementary services. *Fourth*, the discouraging effect of the

[17] We cannot of course ignore the fact that some economists are, nevertheless, opposing the deregulation of these services, particularly as it applies to the incumbent telephone companies, in the interest of preserving competitive opportunities for downstream rivals. We address ourselves specifically to that purpose of the Telecommunications Act in pars. 25-38, below.

Commission's regulation of the ILECs' broadband offerings is not confined to risk-taking innovations by them; it is equally destructive of the other part of the process of competitive innovations—the efforts of rivals of the successful innovator, by their own efforts, to invent around and surpass the originator.

19. The current broadband regulatory scheme as applied to ILECs appears to be designed not to provide incentives for them to compete against cable modems and other facilities-based providers but to provide CLECs an opportunity to get a piece of the action by free-riding on their facilities. The fact is, however, that the greater public benefits flow from facilities-based competition than from the efforts of competitors reselling the ILEC facilities, taking advantage of regulatorily-created opportunities; and it is precisely that facilities-based competition that the present rules both distort and discourage.

A. Cable Modems are Essentially Unregulated

20. In both its public pronouncements[18] and its specific rulings, the FCC has consistently maintained a hands-off-the-Internet position with regard to cable modem services,[19] a position it established early and articulated clearly in approving AT&T's acquisition of TCI, then the largest cable television company. The issues were poignantly posed by the plans of AT&T for a multi-billion dollar upgrading of the TCI cable in order to provide local, Internet and advanced video services; by the mounting pressures on the Commission

[18] See, for example, "'Open Access' Review Would be 'Premature,' Kennard Tells Dingell," *Telecommunications Reports*, January 3, 2000, pp. 5-6 and Federal Communications Commission, In the Matter of Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, Notice of Inquiry, GEN Docket No. 00-185, September 28, 2000, par. 4.

[19] The FCC has undertaken an ongoing investigation of this policy, apparently motivated at least in part by open access rulings by local governments and differing interpretations by federal courts. *Ibid.*, par. 14.

by competitors and public agencies to condition its approval of the merger on AT&T's giving competitors access to those facilities—presumably at FCC-determined rates; and by the equally costly and risky plans of the incumbent telephone companies to compete in these same markets by digitalizing their subscriber access lines. AT&T strenuously resisted the proposals to impose such a condition upon it.[20] As its experts argued, in our view correctly:

> It would be against the public interest to subject the parties' last mile broadband data transport facilities to any form of regulation at this time….There are many competitors, including the ILECs, that are actively developing broadband transport services…The xDSL services that are currently being deployed by the incumbent LECs alone constitute a significant and attractive commercial alternative to the internet cable services that TCI and others offer…The] demand to unbundle broadband transport will engender intrusive regulation of an emerging new service that requires massive entrepreneurial investments and whose marketplace success is far from assured…Forced unbundling with its attendant regulatory uncertainty would likely slow down the investment in the development of broadband last mile investment. Investing under the shadow of uncertain regulatory rules in an innovative service exacerbates the already substantial risks associated with that investment.[21]

The FCC concurred, presumably in the belief that imposition of such a sharing obligation would be incompatible with Congress's deregulation of the cable companies, with the need to encourage costly investment in upgrading their telecommunications capabilities and, therefore, with Schumpeterian competition. In its later approval of AT&T's acquisition of

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[20] *See* Bryan Gruley, *Must AT&T Give Internet Rivals Access To TCI's Network?* WALL ST. J., Jan. 15, 1999, at A1.

[21] Declaration of Professors Janusz A. Ordover and Robert W. Willig, attached to AT&T's and TCI's Joint Reply to Comments and Joint Opposition to petitions to Deny or to Impose Conditions, *In the Matter of Joint Application of AT&T Corp. and Tele-Communications, Inc. for Transfer of Control to AT&T of Licenses and Authorizations Held by TCI and its Affiliates or Subsidiaries*, CS Docket No. 98-178, November 13, 1998. Ordover and Willig make no effort to reconcile their compelling argument here that government restrictions can stifle innovation incentives with their previous advocacy of TELRIC pricing for access to ILEC networks.

MediaOne, the FCC once again rejected mandatory sharing, emphasizing the competition among both broadband access providers and Internet Service Providers (ISPs) as a major part of its rationale:

> [W]e find that there is significant actual and potential competition from both broadband service providers and from unaffiliated ISPs that may gain access to the merged firm's cable systems.[22]
>
> The evidence of growing competition from both alternative broadband providers and unaffiliated ISPs gaining access to cable and other broadband networks indicates that any action taken by the merged firm to disfavor unaffiliated broadband content and applications providers is likely to threaten the networks' ability to attract and retain customers.[23]

21. The FCC currently regulates the ILECs' broadband services in two ways: (1) it requires that the prices they charge their end-user customers and Internet Service Providers (ISPs)[24] be cost-based and (2) it requires them to make certain parts of their networks available to competitors at prescribed wholesale prices. Indeed, if anything, these unbundling requirements and concomitant pricing rules become even more onerous when the ILECs contemplate upgrades to their networks that would both extend broadband services to more customers and provide the capability for more services (e.g., video). The contrast with the explicit exemption of the dominant cable modem services could not be more glaring.

22. While the continued application of traditional regulatory pricing standards to ILECs' retail broadband prices (for services offered to end-users and ISPs)[25] prescribes the rate at which

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[22] Federal Communications Commission, In the Matter of Applications for Consent to the Transfer of Licenses and Section 214 Authorizations from MediaOne Group, Inc., Transferor to AT&T Corp., Transferee, Memorandum Opinion and Order, CC Docket No. 99-251, June 6, 2000, Par. 116.

[23] *Ibid.*, par. 123

[24] Indeed, while ILECs are required to provide services to ISPs at regulated prices, the FCC has not even required that cable television providers provide access to ISPs at *any* price.

[25] Federal Communications Commission, In the Matter of GTE Operating Companies GTOC Tariff No. 1, GTOC Transmittal No. 1148, Memorandum Opinion and Order, CC Docket No. 98-79, October 30, 1998, par. 32.

they are permitted to recover the large investments needed to provide these services, competitive providers are free to set prices as market conditions permit or dictate. And the ILEC must offer any services that it sells directly to end users also to competitors, at a prescribed resale discount.

23. To date, the FCC has considered the facilities used by ILECs to provide broadband services to be telecommunications services, and thus potentially subject to being offered on an unbundled basis to competitors. The requirement that the ILECs actually unbundle the facilities that provide broadband services and make them available to competitors is subject to the FCC's finding that particular elements satisfy the "necessary" and "impair" requirements of Section 251 of the Telecommunications Act. In that event, they become subject to the pricing standard specified in Section 252, which the FCC has interpreted to be its blank-slate total-service long-run incremental cost (TELRIC). To date, the Commission has made the following pertinent unbundling decisions:

- Because the electronics necessary to provide broadband capability over copper loops are widely available and easy for CLECs to deploy, it declined to order that packet switching and DSLAMs be unbundled, under at least some circumstances, when customers are served by copper loops.[26]

Federal Communications Commission, In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability, Second Report and Order, CC Docket No. 98-147, November 9, 1999, par. 21.

[26] Federal Communications Commission, In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Third Report and Order and Fourth Notice of Proposed Rulemaking, CC Docket No. 96-98, November 5, 1999, pars. 306-317. Even in this case, the Commission's action could be viewed as tentative in that it qualified its action with the phrase "at this time (par. 306)," strongly suggesting that it reserved the right to unbundle in the future.

- When, however, ILECs offer DSL services over loops that are part copper (distribution) and part fiber (feeder) and they are not able to offer collocation space in their remote terminals, they must unbundle their DSLAMs and packet switches.[27]
- Shortly after refraining from mandatory unbundling of the electronic equipment that provides DSL services, the FCC *did* require the ILECs to unbundle the high frequency part of a loop and offer it at low regulated prices to CLECs wishing to offer DSL—thereby sharing that line with the ILEC providing ordinary voice service.[28]

24. The situations in which these asymmetrical unbundling obligations impinge most heavily on the ILECs are precisely the ones in which those obligations dampen their incentives to upgrade their networks in order to extend broadband services to more customers and enhance the offerings to all of them—namely, the ones involving application of technologies other than existing copper loops. They do so: (1) by effectively allowing CLECs to share in the rewards from the new investments while paying only bare-bones TELRIC prices for that privilege, (2) imposing the costs of accommodating those CLECs—for example, the costs of increasingly sophisticated operations support systems—only on the ILECs and not on their other facilities-based competitors, and, (3), in particular, effectively perpetuating mandatory unbundling as new technologies move potential points of interconnection out of the central office (where space is more available than at other

[27] *Ibid.*, par. 313. At the time of the order, the most current ARMIS data (1998) showed that about 17 percent of the lines in Verizon's (pre-GTE merger) territory had fiber feeder. In the two years since then, such lines have accounted for 75 percent of the growth in the total.

[28] Federal Communications Commission, In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, December 9, 1999. In making that determination, the FCC employed an extremely narrow market definition—confining it to customers that want ordinary voice and DSL service over a single line (par. 39). And in determining what types of entrants would be "impaired" without line sharing, the FCC focused on special-purpose providers that choose to piggyback on ILEC voice customers. Ironically, in light of the fact that parties opposed to line sharing had argued that (1) a CLEC could choose to exploit the same economies of scope as an ILEC by buying a loop and offering both voice and DSL and (2) the DSL-only CLEC could cream-skim above cost voice services by transporting them over its packet switches, the FCC admitted

points) and farther into the network, where collocation arrangements are decreasingly available and/or more costly.[29]

B. The Impropriety and Harmful Effects of Extending Mandatory Sharing to ILEC Broadband Facilities

25. There is no disagreement with the proposition, embodied in the Act, that incumbent telephone companies should be required to make available to their competitors at a reasonable cost-based price preexisting facilities, inherited from their franchised monopolies, that are truly essential if the challengers are to compete with them. To the extent, however, that (1) it is economically feasible for competitors to obtain access to such facilities or practical substitutes from other sources or (2) the incumbents acquired or created them in competition with other providers, and, especially (3) if that acquisition has involved or continues to involve costly, risky innovation, enforcement of an obligation to share them or the advantages they confer with rivals can be anticompetitive.

26. In the case of broadband services, there is a strong case for the position that the obligation to share should be confined to essential facilities, strictly defined. The essence of competition is the attempt to develop and exploit the competitive advantages that successful innovation provides; to require their sharing in instances in which that quest has been successful, particularly where the quest involved big risks, would therefore discourage competition itself.

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that these DSL-only entrants would indeed be able to attain scope economies through the cream-skimming that the ILEC opponents had identified (par. 57)

[29] This is because under the FCC's rules the offer of collocation exempts an ILEC from obligations to unbundle their DSLAMs and packet switches; but these recent developments moving interconnection points further into the network make the collocation exemption decreasingly available to them.

27. Some have argued for a less strict standard in the context of the introduction of competition into public utility industries: that typically an incumbent company not only will control some facilities truly "essential" to its rivals but will also enjoy economies of scale or scope not because of superior enterprise on its part but merely because of its inherited franchised monopoly, and that requiring it to share the benefit of those facilities with rivals at a compensatory price would therefore not entail penalizing successful competitive efforts. By exactly the same logic, however, there is no basis for applying the sharing requirement to the subscriber access facilities of the local telephone companies and not to the access lines of their cable competitors, whose "monopoly" of which is similarly attributable to their historical status as franchised local monopolists.

28. Moreover, the somewhat more liberal sharing requirement of the telephone companies must not be permitted to obscure the fundamental propositions to which it provides the exception. First, it justifies mandatory sharing only of facilities or capabilities carried over from and attributable to the public utility past. Second, wherever mandatory sharing, for the sake of jump-starting the entry of competitors, would interfere with the more creative and dynamic investment henceforward in facilities-based competitive entry and innovation by incumbents and challengers alike, it is the latter that must take primacy. As Justice Breyer observed in concurring with the U.S. Supreme Court's decision overturning the FCC's 1996 Local Competition Order's requirement that the ILECs provide competitors with all network elements to which access is technically feasible, if rivals can share whatever ILEC facilities they ask for that can feasibly be provided, *at rock-bottom prices*—with their mere asking satisfying the conditions for mandatory sharing set forth in the Act—

it cannot but have a discouraging effect on their own initiative and innovation and, equally, on the willingness and ability of the ILECs themselves to undertake large risky investments in developing and incorporating new technology in their networks. In particular, much of the investment necessary for ILECs to extend broadband services to more customers and to provide broadband services with new capabilities entail not simple electronic upgrades to existing copper lines, but deployment of new ways to incorporate fiber optics and wireless technologies into their networks.

29. As the foregoing reference to "rock-bottom prices" suggests, the disincentive to innovation posed by the FCC's standards for identifying UNEs for mandatory sharing is grossly accentuated by the costing method it has prescribed for pricing them. This method, the estimated total-service long-run incremental cost (TELRIC) of a hypothetical most efficient new entrant, writing as it were on a blank slate, essentially ignores the actual incremental costs of the incumbent suppliers.[30]

30. The wide differences produced by the Commission's prescribed models, consistently lower than estimates by the incumbent companies of their actual incremental costs, cannot be attributed to the natural tendency of regulators to underestimate and regulatees to exaggerate the costs on the basis of which rates are to be set. The Commission has rationalized its endorsing of the models in part on the basis that it expected the incremental costs of the incumbent companies to reflect inefficiencies on their part. But that rationale, automatically assumed to explain the difference, is absurd. Not only is it irrational, in terms

[30] "Why should these firms invest in new, often risky technology for delivering advanced, high-speed services if they are to be required to offer any such new facilities to their rivals at cost"—moreover, "not the Company's

of the entire economic case for basing efficient prices on the actual marginal costs of incumbents; it also ignores the likelihood that an existing network, maximally efficient as of the time of its installation, will, because of the interdependencies between its various elements, contain some that could be replaced by more efficient elements with lower incremental costs only as part of a totally new system. The least-cost expansion path of an incumbent telephone company will necessarily be constrained by its inherited total complement of facilities, so that it could take advantage of the putatively lower incremental cost of an individual element only by taking on the additional cost of redesigning its entire network. That neither party believes that the blank slate estimates approximate either the ILECs' own incremental costs or those that would actually prevail under competition is demonstrated by the fact that neither of them actually follows the logical implications of its results, even though it would be the obligation of the former and in the clear interest of the latter to do so. If commissions that still regulate on a rate-base, rate of return basis believed those results, or that they reflected inefficiencies on the part of the incumbents, they would be derelict if they failed either to order the companies to scrap their existing facilities forthwith and take the lower incremental cost route dictated by those models or disallow a large portion of their rate base on grounds of imprudence. That they do not do either of these can only be if they fail to recognize this opportunity, or recognize that the difference between the estimated blank slate incremental costs of an individual element and those of the incumbent need not at all reflect inefficiency on the part of the latter; that adopting the hypothetical lowest cost expansion path for that element alone will be most unlikely to

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actual cost," but "at prices that reflect *most efficient* technology?" Robert W. Crandall, "The Telecom Act's Phone-y Deregulation," *Wall Street Journal*, January 27, 1999.

represent the lowest cost expansion path actually available to even the most efficient company. And if the companies—most of them subject to price cap regulation—believed them, they would be derelict in their obligations to stockholders if they did not likewise do so, abandoning all their present facilities and availing themselves of the assertedly lower present and future costs of the TELRIC blank slate path.

31. Further, as long as broadband services are subject to regulatory pricing and unbundling obligations, the possibility remains that an ILEC could upgrade and/or change its network at considerable risk and, on the ground that competitors would be impaired in their offer of services using these capabilities, be confronted with an obligation to unbundle those new capabilities and make them available to CLECs at bare-bones TELRIC prices.

32. This possibility is by no means merely hypothetical. After all, it is extremely unlikely that Congress had DSL services in mind when it developed the Section 251 requirements. Yet the FCC did not hesitate to apply those requirements—presumably developed with voice services in mind—to advanced broadband services when it ordered line-sharing. Further, as we described earlier, even when it refrained from unbundling packet switching where copper loops are available, the FCC qualified its action with the wording "at this time."[31]

33. In light of the lead that cable modem services enjoy and the FCC's decision to refrain from regulating them, competitive parity would call for a corresponding relaxation with respect to DSL services of the ILECs. The same consideration would argue for freeing them,

[31] One of the facts the FCC considered was that because ILECs did not have a large market share in broadband services, a CLEC would have the benefit of similar scale economies in providing packet switching (par. 308). This reasoning leaves open the possibility that if ILECs were "too successful" in competing for DSL, they could ultimately be deemed to have a scale economy advantage that could then possibly be used to justify mandatory unbundling.

specifically, from the obligation to share, especially at prices reflecting the FCC's hypothetical, ideally efficient firm standard.

34. Consider the anomaly of expecting the incumbent local telephone companies to incur these costs and handicaps in competition with giants such as AT&T—the largest provider of cable television and broadband services. If their new offerings lose out to that competition, they could recover none of the costs in the FCC-dictated charges for their network elements, because *an ideally-efficient firm never fails*! Should their new services instead prevail, they would be required to make those elements available to would-be entrants at wholesale prices based on the efficient-firm cost standard, with costs of capital typically set at traditional public utility levels. In its recent supplement on "Innovation in Industry," *The Economist* cites an American study which found, in nice contrast, "that the overall rate of return for some 17 successful innovations made in the 1970s averaged 56%."[32] What incumbent telephone company would undertake costly and risky innovations in the face of such a prospect of grossly asymmetrical treatment of successes and failures?[33]

35. It may appear anomalous, in view of the already manifest demand of subscribers for high-speed Internet access and new video services, among others, to point out that the losses consumers suffer from regulatory policies that have discouraged innovation are not directly

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[32] "Innovation in Industry," Supplement to *The Economist*, February 20, 1999.

[33] It is not only in their effect on the *incentives* of the ILECs to undertake costly and risky investment in modernizing their networks that the FCC's sharing and network element pricing are likely to prove so harmful. They could also severely impair the *ability* of the incumbents to finance such ventures, by sharply reducing their internal cash flow: retained earnings are frequently the preferred means of financing such risky large-scale investment projects. See K.A. Froot, D.S. Scharfstein and J.C. Stein, "A Framework for Risk Management," *Harvard Business Review*, November-December 1994. S. Fazzari, R.G. Hubbard, B. and Petersen, "Financing Constraints and Corporate Investment," *Brookings Papers on Economic Activity 1*, 1988, report that retained earnings constitute more than 70 percent of the source of funds for corporate investment (p.

observable. The essential evil of such policies is that they discourage or delay the introduction of services that cannot be predicted beforehand. The costs to consumers can be enormous.[34]

36. Moreover, competition alone can be relied upon to provide opportunities for CLECs requiring access to unbundled broadband facilities of the incumbents and to offer consumers choice among competing Internet service providers (ISPs), if their offerings can survive the competitive test. If transport facilities are most efficiently utilized through unbundling arrangements, providers competing with one another will not require regulatory compulsion to enter into them. Similarly, the competition that will emerge from relying primarily on markets rather than regulation will also provide customers with choice among ISPs, because it will be in the competitive interest of access suppliers to provide it. The more competitive the market is, the more sufficient are the incentives of facilities-based providers to negotiate such arrangements. In a competitive market, with multiple platforms available for providing service, if one provider withholds its cooperation from independent ISPs in the hope of vertically extending its control from transport to content, the ISPs can work with its rivals, who will thereby gain a competitive advantage. The critical point is that where, as here, a market is competitive, market forces are sufficient to encourage participants to reach arrangements that will maximize consumer welfare. It is strongly preferable that all such arrangements be negotiated on mutually beneficial terms rather than on terms set by regulators.

147, Table 1) and that on average firms reduce their capital expenditures by more than 36 cents for each $1 reduction in cash flow (p. 167, Table 4).

37. These considerations weigh strongly against any requirement that ILECs unbundle facilities such as access to fiber optics and electronics in remote terminals that require large new investments. In contrast, the logic of the FCC's requiring ILECs to make their existing copper loops available to competitors for access to the high-frequency portion of the spectrum may seem unexceptionable and not inconsistent with dynamic, innovative competition: the incumbents enjoy that opportunity merely because of their inherited, historic control of their copper-wired access networks and there is no immediately apparent reason to permit them to deny competitors access to those capabilities.

38. The Commission's ordering of mandatory provision of such access fails, however, to take into account three critical facts and counter-considerations:

- In the offer of broadband services, the ILECs are not only in intense competition with many other companies offering high-speed access, most importantly to the Internet, via cable, satellite and wireless transmission; they are markedly behind their main competitors, the cable companies.
- To compete in this market, the ILECs are indeed making very large risky investments—to the tune of billions of dollars a year—to incorporate DSL capabilities in their lines. The obligation to offer competitive access providers use of the high-frequency portion of those lines—thereby excluding their own use of the lines for that purpose—clearly biases the economics of that decision, because, unlike providers of cable modems, the ILECs would be forced to share potential DSL volumes with CLECs, who in turn would receive access to customers at very attractive prices (because of line sharing). It particularly skews the economics of their competition with the cable companies, which have likewise inherited from their previous monopolies the capability of using their coaxial cable for broadband access, without being subject to any such sharing obligation, and have a much larger portion of the market than the ILECs.
- The FCC's decision in effect assumes that the optimum telephone company network will remain as it is—predominantly copper subscriber loops; but in fact, to compete in this and other markets, the ILECs will have to upgrade their networks

[34] Hausman, *op. cit.*, estimated that the annual economic welfare losses associated with the delay of voice messaging were on the order of $1.3 billion.

substantially, particularly by installing a great deal of fiber optics and associated electronics.[35] To the extent they do that, it would disable the CLECs' DSL services now provided over copper loops; so continuation of a general line-sharing obligation in effect requires the incumbents to maintain two networks—or to unbundle the fiber as well—precisely the kind of extremely expensive risky new investment to which the logic of mandatory network element sharing is least applicable and most inhibiting of dynamic competition.

IV. CONCLUSION

39. Whatever the merits of the intention of the Telecommunications Act to open local telephone markets to competition, extending the unbundling and sharing obligations of the incumbent telephone companies to broadband transmission of data, including Internet access, is not conducive to efficient competition for broadband services.

40. Moreover, the underlying rationale that the incumbents enjoy monopolistic control over facilities necessary for the challengers to compete with them in this market is simply not correct.

41. On the contrary, extension of those requirements to the ILECs, particularly at the FCC's prescribed TELRIC prices, can only severely handicap them in competing with the incumbent cable companies, who are—properly—subject to no such obligations and now have a far greater share of that market.

42. The result can only be a severe impediment to the very large risky investments in exploiting the almost inconceivably large potential benefits of this new technology. Far from being a logical part of a program to encourage broadband competition—and competitive innovation in particular—it can only discourage that process.

[35] In fact, as we reported earlier, three-quarters of the recent growth in lines for Verizon is accounted for by lines with some fiber.