

DISMANTLING DIGITAL DEREGULATION: TOWARD A NATIONAL BROADBAND STRATEGY

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TABLE OF CONTENTS

THE REVOLUTION WILL NOT BE STREAMED 5

Abandoning the Commitment to Competition	7
The FCC's Premature Deregulation	9
Making Up for Lost Time: A National Broadband Plan	10

DEFINING AMERICA'S BROADBAND PROBLEM 14

The American Decline	15
The U.S. Duopoly Fails to Deliver	19
The Digital Divide Persists as Broadband Becomes an Essential Service	23
Why Some States Are Falling Behind in Broadband Adoption	25
America's Broadband Failures Are the Result of Policy Failures	27

AMERICA'S BROADBAND PROBLEM: COMPETITION 28

The Computer Inquiries and Competition Policy	30
From Computer II to the 1996 Telecom Act	32
Implementing and Undermining the 1996 Telecom Act	33
The Rest of the World Takes a Different Path	37
Cable TV and the Beginning of the End of Broadband Competition	39
The FCC Kills the Commitment to Competition	42
Platform Competition: Always Right Around the Corner	47
The FCC's Blindness to Abuses of Market Power	52
FCC Endorses Monopoly Power in the Middle-Mile and Special Access Markets	55
The FCC's Premature Deregulation of the High-Capacity Broadband Market	59

AMERICA'S BROADBAND PROBLEM: OPENNESS 62

Nondiscrimination and Content Control	63
The FCC Abandons Openness	65
The Early Network Neutrality Debate	68
The Evolution of the Network Neutrality Debate	71
The Case Against Comcast	73
Net Neutrality and the Need for a Fifth Principle	75
Dealing with Managed Services	77
Getting Back to Basics: Preserving the Open Internet Should Be a Top Priority	79

AMERICA'S BROADBAND PROBLEM: ACCESS 81

Universal Service Policy at a Crossroads	83
Defining Universal Service: History and Rationale	84
1934 to 1996: Monopolies and Cross-Subsidies	84
Universal Service and the Telecommunications Act of 1996	86
Competition and Universal Service: Congress Moves to Explicit Subsidies	87
Implementing the 1996 Act	88
Current Status of Universal Service and Impetus for Reform	90
Universal Service and Broadband	91
Leaping Forward: A New Approach to Universal Service	92
The High Cost Fund	93
The Current Distribution of High Cost Funds	95
Modernizing the High Cost Fund for Broadband	101
Distributing the Broadband Deployment High Cost Fund	103
The Role of Mobile Wireless Telephony	105
The FCC Must Not Place USF Contribution Burdens on Residential Broadband Connections	106
Lifeline/Link Up for Broadband: What Is the Likely Impact?	106
Ending the Stalemate at the Commission	109

TOWARD A NATIONAL BROADBAND POLICY: 111

SOLVING AMERICA'S BROADBAND PROBLEM 111

Policies For Success: Developing a National Broadband Plan 113

Getting the Act Back on Track: Protecting the Internet as an Open Platform for Innovation	114
Getting the Act Back on Track: Achieving Universal Service	116
Getting the Act Back on Track: Developing a Meaningful Competition Standard	117
Getting the Act Back on Track: Properly Classifying Broadband	118
Getting the Act Back on Track: Using Section 706 to Promote Competition	119
Getting the Act Back on Track: Promoting Platform Competition	120

Conclusion 122

FIGURES

Figure 1: The Decline in U.S. Broadband Penetration	16
Figure 2: Leaders in Absolute Growth in Broadband Penetration	17
Figure 3: Price, Speed and Value of Broadband Connections	18
Figure 4: Broadband Penetration vs. Price	19
Figure 5: Top U.S. Broadband Providers	20
Figure 6: U.S. Broadband Market Duopoly	21
Figure 7: U.S. Broadband Speeds	22
Figure 8: U.S. Residential Broadband Speeds	23
Figure 9: Economic Digital Divide	24
Figure 10: Racial/Ethnic Digital Divide	24
Figure 11: Geographic Digital Divide	25
Figure 12: Household Broadband Adoption vs. Median Income	25
Figure 13: Household Broadband Adoption vs. Poverty	26
Figure 14: Household Broadband Adoption vs. Percent of Rural Population	26
Figure 15: The Best and Worst U.S. States in Broadband Adoption	27
Figure 16: Broadband Penetration and Open Access Policy	38
Figure 17: Broadband Price and Open Access Policy	38
Figure 18: Broadband Value and Open Access Policy	39
Figure 19: Earthlink on Time Warner Cable	45
Figure 20: The Decline of Earthlink and Covad	46
Figure 21: The Duopoly U.S. Broadband Market	48
Figure 22: No Indication of Mobile Broadband Supplanting Fixed Broadband	49
Figure 23: The Slow Performance of 3G Mobile Broadband	49
Figure 24: Percent of End-User Premises Without Broadband Deployment	49
Figure 25: Current Top U.S. States without Broadband Deployment	50
Figure 26: Top U.S. States without DSL Deployment in June 2005	50
Figure 27: DSL Adoption and Wholesale Access Policy	51
Figure 28: The Slow Death of CLECs	52
Figure 29: Special Access Runaway Rate of Returns	57
Figure 30: Top 10 Study Areas with Highest Special Access Rate of Returns	58
Figure 31: A Broken Regulatory System: Runaway Rate of Returns	58
Figure 32: Recoverable Interstate Investment and Returns	59
Figure 33: The Current USF Support Model	89
Figure 34: USF Disbursements by Program	90
Figure 35: Percentage of USF by Program	90
Figure 36: USF Contribution Base vs. Contribution Factor	91
Figure 37: High Cost Fund Disbursements	94
Figure 38: High-Cost Support: ILECs vs. CLECs	95
Figure 39: High Cost Fund Support by Program and Study Area Type	96
Figure 40: Per Line Monthly High Cost Fund Support by Program	97
Figure 41: Per Line Monthly High Cost Fund Support By Program and Study Area Type	97
Figure 42: Per Line Monthly High Cost Fund Support by Cost - All Carriers	99
Figure 43: Per Line Monthly High Cost Fund Support By Cost and Study Area Type	100
Figure 44: Current Participation in the Lifeline Program	107
Figure 45: Adoption of Internet by Low-Income Households	107
Figure 46: Potential Cost and Impact of a Broadband Lifeline Program	109

CHAPTER 1

**THE REVOLUTION
WILL NOT BE STREAMED**

INTRODUCTION: THE PROMISE OF THE INTERNET

On a cold February morning 13 years ago, President Bill Clinton made history by signing the Telecommunications Act of 1996 into law. It was the first signing at the Library of Congress and the first to be streamed live over the Internet.¹ This symbolism was intended to capture the legislation's promise of bringing the information revolution to the doorstep of every American. As President Clinton signed a bill he described as "truly revolutionary" and that would "protect consumers against monopolies," he spoke of the future the law would bring. "Soon, working parents will be able to check up on their children in class via computer," he said. "On a rainy Saturday night, you'll be able to order up every movie ever produced or every symphony ever created in a minute's time."²

Americans are still waiting on the promise of this digital revolution.

The story of how this digital promise was broken is a tale of typical Washington politics. Before the ink was even dry on the 1996 Act, the powerful media and telecommunications giants and their army of overpaid lobbyists went straight to work obstructing and undermining the competition the new law was intended to create. By the dawn of the 21st century, what they could not get overturned in the courts was gladly undone by a new FCC staffed and led by the same lobbyists.

Instead of "protection against monopolies," consumers have been left with high prices, few choices and a duopoly of cable and phone companies. Instead of "every American child" being connected, today we have more than 20 million school-age kids without home Internet connections. And instead of every American being able to order up a movie in "a minute's time," today less than 5 percent of Americans have a home Internet connection capable of downloading a movie in less than 30 minutes.³ Worst of all, the promise of the Internet as a democracy-enhancing, free-flowing communications conduit is now in serious jeopardy.⁴

But this story actually begins long before the 1996 Act came into being. It begins nearly half a century ago, during a time when the network computing industry was in its infancy and the nation's communications market was still a government-sanctioned monopoly. In the 1960s, the Federal Communications Commission began to craft a regulatory structure that would allow the Internet to grow and thrive as an open and competitive communications platform. The FCC established a bold series of safeguards through the so-called *Computer Inquiries* that would protect competition on the Internet from the monopoly whims of the phone companies that owned and controlled the Internet's infrastructure. This regulatory structure was remarkably

¹ See Mike Mills, "Ushering in a New Age in Communications; Clinton Signs 'Revolutionary' Bill into Law at a Ceremony Packed with Symbolism," *Washington Post*, Feb. 9, 1996.

² See "Remarks by the President in Signing Ceremony for the Telecommunications Act Conference Report," The White House Office of the Press Secretary, Feb. 8, 1996.

³ See *infra* Figure 8, explaining that only 4 percent of U.S. households subscribe to broadband connections with advertised speeds above 10 megabits per second.

⁴ At the 1996 Act's signing ceremony, President Clinton said: "It is fitting that we mark this moment here in the Library of Congress. It is Thomas Jefferson's building. ... He understood that democracy depends upon the free flow of information. ... Today, the information revolution is spreading light, the light Jefferson spoke about, all across our land and all across the world. It will allow every American child to bring the ideas stored in this reading room into his or her own living room or school room."

successful and became the foundation of the 1996 Act's pro-competition legal framework.⁵ Not only was this structure successful, it had broad bipartisan support. From the 1960s through 1996, Democratic and Republican administrations alike replaced policies of regulated monopoly with policies of competition in market after market. The Reagan administration, with a Democratic Congress, broke up AT&T to increase competition in long-distance, device and computer markets. The Clinton administration worked with a Republican Congress to increase competition in local networks. Both parties shared the principle that meaningful competition — not regulated monopolies or unregulated market concentration — best serves innovation and consumer freedom. In 2001, however, without congressional approval, President George W. Bush's administration unilaterally reversed course and abandoned this core bipartisan principle.

For a brief period in the late 1990s, following the first efforts to implement the 1996 Act, the law appeared to be working. Local and long-distance competition increased and monthly charges began to fall. Dial-up Internet went from a novelty to being available to almost every American household. Even those in remote rural areas had access to multiple, highly competitive Internet Service Providers (ISPs) by the end of the decade.⁶ The number of ISPs more than doubled in the few short years after the Act became law.⁷ And the United States was an early global leader in broadband deployment, with new startup companies like Earthlink, @Home Network and Covad bringing broadband into the living rooms of ordinary Americans.

Abandoning the Commitment to Competition

But just as the Internet was becoming an essential technology for the average American, the FCC and the courts began to tear down the 1996 Act's basic competitive framework. In just a few short years, nearly all of the important safeguards established by Congress and by the FCC were removed. However, as America blindly followed this path of "deregulation," our foreign counterparts maintained their commitment to the very pro-competitive policies pioneered in the 1996 Act. And they saw their broadband Internet markets blossom, while ours withered.

At the turn of the century, the United States was ranked fifth among the world's nations in broadband penetration. But just a few short years later, we had dropped precipitously to 22nd place. Consumers in countries that maintained the commitment to competition, such as South Korea and Japan, are today able to access broadband with symmetrical speeds reaching 1 Gigabit per second (Gbps) for less than the monthly price a U.S. consumer would pay for service that's 100 times slower.⁸ The commitment to competition in countries like England has led to the development of robust and fiercely competitive marketplaces.⁹

By turning its back on the 1996 Act, the FCC ordered up a future of digital mediocrity and stuck American consumers with the bill. Americans pay more per month for broadband than consumers in all but seven of the 30 nations in the Organization for Economic Co-operation and Development (OECD). The speeds of the connections offered to U.S. consumers are quite slow compared to the connections offered to consumers in other countries like Japan and France. Overall, America ranks 14th in average advertised download speed, at just under 9 Mbps, some 10 times slower than the international leader Japan. When price and speed are considered together as a measure of value, we see that Americans pay more per megabit per second (Mbps) than consumers in many other countries. The value of U.S. connections is some four times less than that of

⁵ It is important to note here that we're referring to the "pro-competitive" framework of the 1996 Act, as it applies to Internet and telecommunications policy. The 1996 Act has often been rightly criticized for opening the door to massive consolidation of traditional media, especially in the broadcast radio and television markets.

⁶ See Shane M. Greenstein, "The Economic Geography of Internet Infrastructure in the United States," in the *Handbook of Telecommunications Economics Volume 2*, ed. S. Majumdar et al., North-Holland (2005), p. 310, discussing how 92 percent of the U.S. population could reach *seven or more* dial-up ISPs via a local call in 1998.

⁷ *Ibid.* at p. 310, stating that according to *Boardwatch Magazine*, there were 3,000 ISPs in the fall of 1996; that number had increased to 4,200 by January 1998. By 2000, the number had increased to 6,000. See "Broadband Internet Access: Background and Issues," *Congressional Research Service*, Resources, Science, and Industry Division, IB10045, Jan. 10, 2001.

⁸ See *infra* note 30.

⁹ See *infra* note 31.

countries like France, and is only slightly better than the value of connections in Hungary, a country with a per capita GDP nearly two-and-a-half times lower than the United States.¹⁰

Nowhere is this digital mediocrity more evident than in the state of competition in our broadband markets. In the aftermath of the 1996 Act, the average American consumer had access to more than a dozen ISPs; today, our broadband market is a stagnant duopoly. Nationwide, incumbent phone and cable companies control 97 percent of the fixed-line residential broadband market. When complementary (and slow and expensive) mobile data connections are factored in, the incumbent phone and cable companies' nationwide market share stands at 95 percent. This situation is essentially unchanged since 2005, when the FCC took its final step to destroy the last vestige of the 1996 Act's competitive framework.¹¹

As expected, this uncompetitive market has slowed innovation and advancement. Only 4 percent of U.S. homes have broadband connections with advertised download speeds in excess of 10 Mbps, and many of these are cable modem lines that may rarely reach these speeds due to the shared and over-subscribed nature of cable infrastructure.¹² Prices have slowly and steadily increased, the precise outcome expected when competition is nowhere to be found. In 2003, the average monthly price for a broadband connection in the United States was \$42.15. This climbed to \$44.09 four years later, during a period when incumbents were given substantial "regulatory relief" that was supposed to lead to lower prices.¹³

The abandonment of the 1996 Act's commitment to competition and universal service also left tens of millions of Americans stranded on the wrong side of the digital divide, a situation that has not improved with advances in technology. As broadband replaced dial-up as the only truly viable conduit for connecting to the Internet, the digital divide remained largely unchanged, or in some cases, actually got worse. In 2001, only 28 percent of homes with annual household incomes below \$35,000 were connected to the Internet. By the end of 2007, just 29 percent of homes with annual household incomes below \$35,000 were connected to the Internet via broadband.¹⁴

Similarly, in 2001, just 37 percent of racial and ethnic minorities were connected to the Internet, compared to 55 percent of non-Hispanic white Americans. By 2007, only 40 percent of minority homes were connected to broadband versus 55 percent of whites.¹⁵ And while there was no real geographic digital divide to speak of at the turn of the century — with 51 percent of urban homes connected to the Internet versus 48 percent of rural homes — rural America was left behind as technology progressed. By 2007, 54 percent of urban homes had broadband, compared to 39 percent of rural homes.¹⁶ These trends combine to hit hardest those living in the poorer and more rural states. While two-thirds of the population in states like New Hampshire and Massachusetts has broadband at home, only one-third of the population in states like Mississippi and West Virginia is connected.

To bring broadband adoption in states like Mississippi and West Virginia more in line with the levels seen in northeastern states, we need policies that encourage more rural broadband deployment and lower monthly costs. To bring all Americans the low-priced, fast connections widely available in other countries, we need real competition, not the phony choices offered by the phone and cable duopoly. And to ensure our economic future is driven by American ingenuity and innovation, we need to maintain our historical commitment to protecting the open Internet.

¹⁰ See *infra* Figure 2.

¹¹ See *infra* Figure 21.

¹² See *infra* Figure 8 and discussion on page 72.

¹³ See *infra* note 162.

¹⁴ See *infra* Figure 9.

¹⁵ See *infra* Figure 10.

¹⁶ See *infra* Figure 11.

The FCC's Premature Deregulation

It's clear that absent government intervention, the invisible hand of the marketplace won't solve these problems. The 1996 Act was supposed to be that intervention. Congress intended for the FCC to faithfully implement the Act and to prevent all the inequity and technological stagnation discussed above. At the heart of the 1996 Act is a progressive, pro-competition regulatory structure — one that was intended to break open the bottlenecks in local communications networks. The FCC was supposed to use this new structure to create within the communications industry the level of competition seen in the computer industry — and with it, bring consumers the benefits of lower prices, better services and unfettered innovation.

But it didn't.

Instead, beginning in 2001, the FCC set out on a destructive path of premature deregulation, seeing competition where it did not exist and ignoring abuses of market power at every turn. Aided by compliant courts and an uninterested Congress, the FCC undid most of the 1996 Act's competitive structure, producing a policy failure that is directly responsible for all of America's broadband problems.

Almost right out of the gate, the Bush administration's FCC declared war on competitive ISPs. It quickly decided that even though the cable platform had transformed into a two-way communications medium, cable companies didn't need to abide by any of the pro-competitive requirements of the 1996 Act.¹⁷ The FCC also decided that incumbent monopoly phone companies would no longer be required to provide competitive broadband ISPs wholesale access at reasonable rates and conditions. This abandonment of "open access" policy flew in the face of congressional intent and doomed the competitive ISPs to irrelevancy and bankruptcy.

Meanwhile, overseas, other countries maintained this commitment to competition and reaped the benefits. The OECD countries with open access policies have broadband penetration levels nearly twice that of countries without these policies.¹⁸ Citizens in the countries with open access policies also get more broadband bang for their buck. For example, consumers in countries with "line sharing" open access policies pay about \$14 per Mbps; consumers in countries without these policies pay more than double this amount.¹⁹

The FCC, in its blind pursuit of deregulation, abandoned line sharing and other open access policies in the hopes that this "regulatory relief" would inspire incumbents to make massive investments in broadband infrastructure. But this hope, based in part on the promises made by the incumbents to get favorable FCC treatment, turned out to be completely false. An examination of the data reveals that the pace of broadband deployment was no different in the years before major FCC broadband deregulation than it was in the years after.²⁰ States like Virginia and Maine saw no improvement in deployment, while in some states like Nebraska, things actually got worse.²¹

The FCC also justified its abandonment of competition policy by arguing that the incumbent phone and cable companies would offer third-party ISPs wholesale access on favorable terms, even though they weren't obligated to do so. In retrospect, letting the fox guard the henhouse was a colossal mistake. An examination of the offerings of the few remaining third-party broadband ISPs illustrates the obvious: that incumbents have absolutely no reason to offer their competitors favorable wholesale rates. For example, Earthlink still resells Time Warner Cable broadband service, but the monthly rate is so high that no consumer in his or her right mind would pay it. Earthlink's 7 Mbps tier costs consumers nearly \$30 more than if they bought it from Time Warner Cable directly, while the lowest-price tier is nearly 20 percent cheaper if purchased from Time Warner Cable.²²

In many cases, once they were granted relief from providing reasonable wholesale access, incumbents refused to offer wholesale altogether or jacked up the rates so high that third-party ISPs would lose money. The

¹⁷ See discussion beginning *infra* page 39.

¹⁸ See *infra* Figure 16.

¹⁹ See *infra* Figure 18.

²⁰ See *infra* Figure 24.

²¹ See *infra* Figures 25-26.

²² See *infra* Figure 19.

complete and utter implosion of the wholesale DSL business in the aftermath of the FCC's deregulatory orders is proof positive that the Commission's claims about competition were flawed and that the promises made by the incumbents were hollow. Again, consider Earthlink, the nation's largest wholesale ISP. From 2001 to 2006, they saw a steady, cumulative 260 percent increase in the number of retail broadband customers. But in the year following the implementation of the FCC's last deregulatory order, they lost nearly half their broadband customers.²³

A review of the history makes it clear that the FCC's heart was never really in promoting this type of "intra-modal" competition. All along, the Commission predicted a future of "inter-modal" competition, or competition between broadband providers using different technologies. Though this was only half of the approach Congress directed the Commission to pursue in the 1996 Act, the FCC couldn't even get this part right. The FCC basically pinned the hopes for America's broadband future on a form of competition that it took no steps to help develop. In fact, the FCC made a series of decisions that completely undermined the ability of providers of new broadband technologies to enter the market and effectively compete against the phone and cable duopoly.

For "third-platform" competition to become reality, new ISPs need reasonable access to "middle-mile" or "special access" high-capacity telecommunications lines that transport data back and forth from the Internet backbone to local facilities. In most areas of the country, these high-capacity lines are only available from legacy monopoly phone companies like AT&T, Verizon or Qwest. To compete, any new providers need the FCC to ensure that the monopoly phone companies don't charge unfair rates. But instead of protecting competition, in many cases, the FCC let the monopoly phone companies charge whatever they wanted. In some areas, the special access rates of return are now at such a high level that even the most stalwart monopolist would blush. In one California study area, Verizon earned a 700 percent rate of return in 2007 from its special access lines.²⁴

The bottom line: Every move the FCC made to supposedly constrain phone and cable companies from exploiting their market power backfired. Almost without exception, every claim made by the agency about what would lower prices or increase competition turned out to be completely, utterly wrong.

Making Up for Lost Time: A National Broadband Plan

We need a new direction. Each month that policymakers let pass without addressing our broadband problems is another month that millions of low-income children fall further behind in acquiring the technology skills that they will need to compete in the 21st-century global economy. Each month of FCC inaction is another month that millions of Americans will pay billions more than they should for Internet connections that are too slow to even deserve to be called "broadband." And each month of neglect is another month that the phone and cable companies can use their duopoly profits to implement secretive network management schemes that violate consumer privacy, undermine competition, and threaten the future of the Internet as an open platform for innovation.

The policy failures of the past decade discussed on the pages that follow have left America in such a deep hole that it may not be possible to completely dig ourselves out of it. But we must try. The new FCC, as instructed by Congress, must formulate a bold and transformative national broadband plan that will once again put America back on top. The path that the Commission needs to follow will be politically perilous. But the time for acquiescence to the revolving-door telecom lobby is long gone. The Commission's policy decisions should be based on empirical data and a firmly grounded understanding of the market. It may indeed be the case that some of the tools from the 1996 Act won't work now that the duopolists have been allowed to run amok for the past decade. However, if we have any hope to get back on track, the agency's decisions must be based on facts and on its overarching duty to promote the public interest above private gains.

After a lengthy examination and analysis of the policy missteps underlying America's broadband problems, we propose a path forward — a path that begins in earnest with the national broadband plan. The FCC

²³ See *infra* Figure 20.

²⁴ See *infra* Figure 30.

first needs to re-examine all of its deregulatory actions and the associated predictions made since 1996 and honestly assess where things went wrong. This process will enable the Commission to formulate a meaningful standard for assessing market power and will greatly improve its ability to make meaningful predictions about competitive market development. This, in turn, will lead the FCC toward the policies that will be most effective at addressing our broadband problems.

The FCC overreached by completely deregulating the high-capacity enterprise broadband market, and it wrongly predicted the development of meaningful competition in the special access market. The negative impacts of these decisions have only been compounded by the near-total reconstitution of the old Ma Bell monopoly through the Commission's approval of the mergers between SBC and AT&T and Verizon with MCI. This string of decisions has completely undermined the ability of any viable third-platform broadband competitor to emerge to effectively challenge the phone and cable duopoly. The FCC must reverse course here and apply a more meaningful approach to regulating the enterprise, special access and middle-mile transport markets. With new pricing discipline, last-mile fixed wireless providers would finally have a chance to compete on a more level playing field.

The FCC also blatantly flaunted the will of Congress by declaring that all broadband access services were "information services" beyond the reach of the 1996 Act's policy framework. The new Commission should immediately reverse these improper classifications. Doing so will enable the Commission to determine — on a case-by-case, market-by-market basis — what, if any, Title II provisions of the Act should apply. In most markets, the only appropriate regulatory treatment may be a simple obligation for broadband providers to offer reasonable and nondiscriminatory pricing and access, while some less-competitive markets may require more aggressive access requirements.

The FCC has other powerful tools at its disposal. Below, we present irrefutable evidence that the so-called Section 706 test is not being met. This section of the 1996 Act requires the FCC to take immediate action to promote competition if it determines that advanced broadband is not being deployed to all Americans in a reasonable and timely fashion. Given that a majority of the current FCC has dissented in previous Section 706 orders, reversing course here should not be a point of controversy. With this declaration that Congress' standard under Section 706 is not being met, the FCC will have wide latitude to promote competition in the duopoly broadband market.

Whatever course of action the FCC ultimately takes to promote competition, it must first send a strong signal that it intends to protect the open Internet. By adopting firm, clear and specific Network Neutrality rules, the Commission can bring certainty to the market and end this debate that has dragged on for far too long. FCC inaction on this central issue will only serve to embolden incumbent efforts to seize control of the content and applications markets, potentially destroying the one sector of our economy that holds the most promise for our economic future.

We examine how nondiscrimination — the principle at the core of Network Neutrality — has been an integral part of the FCC's policymaking from the Internet's infancy. We also describe how the application of this principle directly led to the development of the Internet as a primary driver for American economic growth and social change. We illustrate how the regulatory framework developed by the FCC to protect the competitive applications and content market from the anti-competitive telecommunications market was incorporated into the 1996 Act, only to be recklessly abandoned later during the Bush era. We explore the underlying economic incentives motivating network operators to discriminate and control the content carried on their networks, and we discuss what implications this behavior will have if the FCC fails to step in and once again restore rules protecting consumers.

The national broadband plan will also need to continue the work begun by the American Recovery and Reinvestment Act to close the digital divide and finally deliver on the 1996 Act's promise of universal, affordable advanced communications services.²⁵ The FCC's work here must move beyond the stale, self-interested debate that has characterized this issue in recent years. Though there is wide agreement that the

²⁵ American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009).

Universal Service Fund is broken, inefficient, and must be fixed — that’s where the agreement ends. While there are no shortage of complaints about the USF, there is a dearth of good non-self-interested ideas on how to fix it. We propose a bold and transformative shift in USF policy. Done properly, we believe the FCC can ensure universal access to affordable broadband while also substantially reducing the size of the fund over the long term.

This path to reform begins with an understanding of how technology has fundamentally changed the communications marketplace, and how this change has transformed the old paradigms about universal service policy. When the current universal service regime was created in 1996, the Internet was an application that rode on top of the telephone infrastructure. Today, it’s the opposite. Telephony is just one of many applications that broadband offers. But our universal service policy has not kept pace with advances in technology. Today, the FCC throws almost \$5 billion per year down the drain by inefficiently supporting legacy telephone technologies while, 20 million rural Americans live in areas unserved by any broadband provider.²⁶ This is especially wasteful given the fact that in the 1996 Act, Congress directed the FCC to treat universal service as “evolving” and to modernize the support system to account for advances in technology.²⁷

The national broadband plan must account for how convergence has changed the business of telecommunications. Before broadband, carriers were only able to earn perhaps \$20 per customer each month selling phone service. In today’s converged world, a carrier can earn well over \$100 on that same line by offering phone, TV and Internet services. Unfortunately, our current regulatory structure does not account for this potential — ignoring that with this additional revenue, many carriers can operate profitably without ongoing subsidies. In fact, the need for the majority of current USF subsidies is questionable.

Below, we propose an alternative to this broken process. We suggest that the FCC implement a 10-year transition as part of the national broadband plan, whereby a new support model that accounts for “triple-play” revenue is phased in, and the resulting cost-savings are used to fund the buildout of broadband infrastructure in unserved areas. We estimate that after this transition, every rural home will have access to broadband, and spending on subsidies to high-cost areas could be reduced by billions a year.

The national broadband plan must also address the most difficult issue plaguing our country’s broadband markets — the fact that 50 million low-income Americans still lack access to this essential technology. FCC policy can play a role in bridging this divide, for example, by extending the Lifeline/Linkup low-income program to broadband and by expanding the “e-rate” program to ensure American students receive the benefits of broadband both in school and at home.

FCC action to create more meaningful marketplace competition will also lead to lower prices and help increase broadband adoption rates in low-income communities. However, many of the programs that will provide the most impact on the digital divide lie outside of the Commission’s jurisdiction. Therefore, Congress needs to explore a wide mix of policies aimed at solving this problem, including programs that provide practical technology training, enhance digital literacy, and develop community-based content and applications.

Finally, the FCC must use the national broadband plan to establish the agency as the pre-eminent authority and resource for all broadband market data. States all over the country have undertaken efforts to map out broadband deployment and adoption, often at great and unnecessary expense. In many cases, these public-private efforts are conducted in a manner that places more focus on private, rather than public, concerns. The data generated from these efforts is often nontransparent and nonverifiable. The FCC should conclude efforts begun in 2008 to reform its own data gathering practices, so it has the information needed to make the right policy decisions. But just as good data enables the FCC to make informed decisions, so too can it empower consumers to make smart decisions. Thus the FCC should make as much of its broadband data publicly accessible as possible.

President Obama promised to bring change to Washington, and it appears that is already happening. The very fact that the FCC is preparing a national broadband plan is in and of itself a huge step forward. However, this

²⁶ See *infra* notes 286-289.

²⁷ See *infra* page 92.

plan cannot be a long list of platitudes and bromides. It cannot simply state goals that we all agree are noble; it must contain policies that are bold and transformative — policies that atone for the FCC's past record of neglect and finally deliver on those promises made by our leaders so long ago.

CHAPTER 2

**DEFINING AMERICA'S
BROADBAND PROBLEM**

U.S. BROADBAND: SLOW, EXPENSIVE AND STAGNANT

Innovation is America's greatest economic asset. American innovation created the Internet and most of the content and applications that continue to drive its exponential worldwide growth. But the early success of the Internet in America is characterized by a stark contrast: The thriving, competitive Internet market was built on top of a private communications infrastructure operated by a monopolist — Ma Bell — with every incentive to crush innovation.

The reason innovation wasn't crushed is because this communications revolution was nurtured and protected by a vigilant regulator. The Federal Communications Commission recognized the potential of the Internet in its infancy, and the agency acted to protect it with regulatory safeguards that ensured that the Internet would thrive as an open platform. These safeguards are directly responsible for creating the communications-driven economic expansion that pushed the American economy forward over the past quarter-century. These safeguards also fostered a new era of people-powered democratic participation that has transformed the American political landscape.

But the very characteristic that defines the Internet — its almost unlimited potential as a platform for economic activity — is the thing that makes it so vulnerable to domination by the few communications giants that control its underlying infrastructure. Just as the Internet was becoming an essential technology for the average American, the vigilant regulator that had once protected it from the communications giants was captured by those same giants. In just a few short years, nearly all of the important safeguards established by Congress and by the FCC were removed. And the results were as predictable as they were disappointing.

The American Decline

America was an early international leader in information and communications technology precisely because of the basic competitive framework established in U.S. communications law during the last quarter of the 20th century. The undoing of this framework is why America has fallen further and further behind the rest of the world in every index of information and communications technology. And it's why we're poised to permanently lose our position as the global leader in economic growth and technological innovation.

The American decline is the opposite of the outcome predicted by those who pushed to abolish the pro-competitive framework. In fact, the large incumbent phone and cable companies predicted that jettisoning these regulatory safeguards would "free" American companies from the same "burdens" that saddle our overseas competitors, leading to a period of unprecedented investment and growth. But as we went down the path of "deregulation," our foreign counterparts maintained their commitment to the very pro-competitive policies pioneered in America. And they saw their broadband Internet markets blossom while ours withered.

The most obvious example of this decline is seen in the measurement of broadband penetration, or the number of per capita broadband connections. At the turn of the century, the United States was ranked fifth among the world's nations in broadband penetration, according to data from the International Telecommunications Union (ITU). By 2007, we had dropped precipitously to 22nd place, just barely ahead of isolated island nations such as Barbados and the Faroe Islands (see Figure 1).²⁸

²⁸ It is important to note that there are two major international indices for comparing broadband penetration. The one most often quoted is the semi-annual figure reported by the Organization for Economic Cooperation and Development (OECD). For example,

Figure 1: The Decline in U.S. Broadband Penetration(Broadband Lines per 100 inhabitants, ITU, 2000 and 2007)²⁹

Country	Broadband Penetration (ITU, 2000)	Broadband Penetration Ranking (ITU, 2000)	Country	Broadband Penetration (ITU, 2007)	Broadband Penetration Ranking (ITU, 2007)
South Korea	8.42	1	Bermuda	36.71	1
Hong Kong, China	6.67	2	Denmark	36.33	2
Canada	4.58	3	Iceland	34.76	3
Sweden	2.8	4	Netherlands	33.54	4
United States	2.51	5	Finland	33.33	5
Austria	2.38	6	Switzerland	32.07	6
Singapore	1.89	7	South Korea	30.62	7
Netherlands	1.63	8	Norway	30.57	8
Belgium	1.4	9	Hong Kong, China	26.09	9
Denmark	1.26	10	Belgium	25.97	10
Taiwan, China	1.03	11	Sweden	25.87	11
Macao, China	0.86	12	United Kingdom	25.55	12
Iceland	0.84	13	France	25.22	13
Switzerland	0.78	14	Luxembourg	24.16	14
Finland	0.68	15	Germany	23.97	15
Japan	0.67	16	Australia	23.28	16
Norway	0.52	17	Macao, China	22.97	17
Malta	0.42	18	Canada	22.91	18
France	0.33	19	New Zealand	22.50	19
Germany	0.32	20	Japan	22.47	20
Portugal	0.25	21	Israel	22.06	21
Italy	0.2	22	United States	21.46	22
Spain	0.19	23	Faroe Islands	21.35	23
New Zealand	0.12	24	Taiwan, China	20.93	24
Dominica	0.11	25	Estonia	20.80	25

Source: International Telecommunications Union

The U.S. descent is a remarkable story. But perhaps even more remarkable is the rapid expansion and innovation occurring in the broadband markets of the countries moving ahead of us on the list. Countries like South Korea and Japan have achieved substantial deployment and uptake of fiber-optic-to-the-premise (fttp) services, in some instances offering residential users symmetrical speeds reaching 1 Gigabit per second (Gbps) for the less than the monthly price a U.S. consumer would pay for a service 100 times slower.³⁰ Countries like England that had virtually no broadband deployment at the turn of the century now have robust and fiercely competitive marketplaces offering DSL broadband services with speeds 10 times faster than the average U.S.

In his December 6, 2008, address to the nation, President-Elect Obama stated, "It is unacceptable that the United States ranks 15th in the world in broadband adoption." The figure he was citing was from the OECD's June 2008 data. However, the OECD is a 30-nation member body, and thus it is technically incorrect to say that the United States is ranked "15th in the world" — we're 15th in the OECD. The broadband penetration data cited above and in Figure 1 is from the International Telecommunications Union (ITU), which does actually include every country in the world. Thus, in this index, the United States is ranked 22nd, because we are behind the following non-OECD nations: Bermuda, Hong Kong, Macao and Israel. Also, the ITU data has Australia, New Zealand and Japan slightly ahead of the United States, while these three countries are slightly behind the United States in the OECD ranking. Adding to the confusion, in a March 10, 2009, speech, Acting FCC Chairman Michael Copps stated, "Just last week, we got another of those many reports telling us how far the United States has fallen in the ranking of nations when it comes to broadband — this one from the International Telecommunications Union concluding that your country and mine has now slipped to a dismal 17th." However, Chairman Copps seemed to be referring to an ITU study commissioned by the United Nations, titled *Measuring the Information Society — the ICT Development Index*, released on March 2, 2009. This index, however, is a composite measurement based on many more factors other than just broadband penetration. Such factors include literacy and education levels, computer ownership and mobile phone ownership. In this index, the United States did fall from 11th place in the world in 2002 to 17th place in 2007.

²⁹ This data was extracted from an ITU database available at <http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx>. Some other broadband penetration index summary charts available from ITU show the United States with a slightly lower ranking of 24th (see, for example, http://www.itu.int/ITU-D/ict/statistics/at_glance/top20_broad_2007.html). However, these rankings appear to have been created from incomplete and only partially current data sets, and thus do not reflect the best available data. The data in figure 1 above closely tracks that collected by the Organization for Economic Cooperation and Development in 2007. Among the 30 OECD countries, the United States ranked third in broadband penetration in 2000 but had fallen to 15th by June 2008.

³⁰ By mid-2007, the South Korean Information Ministry estimated that nationwide adoption of broadband had exceeded 90 percent of households, with some areas attaining 100 percent adoption. See "90 percent of Koreans Hooked to Broadband," *The Korea Herald*, July 9, 2007. Japanese ISP KDDI began offering the "Hikari One Home Gigabit service" in 2008, which provides subscribers with symmetrical 1Gbps fiber optic service for about \$51 U.S. per month. See "Japan's KDDI to Offer 1 Gbps Internet Connections to Homes," Martyn Williams, *PC World*, Sept. 25, 2008. According to the OECD, by June 2008, 45 percent of Japanese and 39 percent of South Korean broadband connections were fiber-to-the-premise, compared to less than 3 percent of U.S. fixed connections. See OECD Broadband Data to June 2008, table 1, available at <http://www.oecd.org/sti/ict/broadband> (*June 2008 OECD Data*).

DSL connection.³¹ And countries like Denmark, Iceland, Finland and The Netherlands saw their broadband markets achieve twice the levels of absolute growth compared to the United States. (see Figure 2).

Figure 2: Leaders in Absolute Growth in Broadband Penetration
(Net Change in Broadband Lines per 100 Inhabitants, ITU, between 2000 and 2007)³²

Country	BROADBAND PENETRATION		Absolute Change	Ranked Above U.S. in 2000?	Ranked Above U.S. in 2007?
	2000	2007			
Denmark	1.26	36.33	35.07	No	Yes
Iceland	0.84	34.76	33.92	No	Yes
Finland	0.68	33.33	32.65	No	Yes
Netherlands	1.63	33.54	31.91	No	Yes
Switzerland	0.78	32.07	31.29	No	Yes
Norway	0.52	30.57	30.05	No	Yes
United Kingdom	0.09	25.55	25.46	No	Yes
France	0.33	25.22	24.89	No	Yes
Belgium	1.4	25.97	24.57	No	Yes
Germany	0.32	23.97	23.65	No	Yes
Sweden	2.8	25.87	23.07	Yes	Yes
New Zealand	0.12	22.5	22.38	No	Yes
South Korea	8.42	30.62	22.2	Yes	Yes
Macao, China	0.86	22.97	22.11	No	Yes
Japan	0.67	22.47	21.8	No	Yes
Taiwan, China	1.03	20.93	19.9	No	No
Hong Kong, China	6.67	26.09	19.42	Yes	Yes
United States	2.51	21.46	18.95		
Canada	4.58	22.91	18.33	Yes	Yes
Italy	0.2	18.45	18.25	No	No

Source: International Telecommunications Union

Critics are quick to point out that broadband penetration can be a misleading metric. These apologists for the U.S. decline contend that the ITU and OECD penetration indexes unfairly present the United States in a bad light, due to differences in household size,³³ how business lines are counted,³⁴ or the fact that the United States has a lower population density than countries like South Korea.³⁵ Most of these excuses are mere diversions,

³¹ Unlike the United States, the incumbent cable and telephone companies in the United Kingdom have only a 50 percent share of the broadband market. Competitive carriers that resell, wholesale and unbundle network elements from BT (the U.K. incumbent telecom carrier) control half the U.K. market. This arrangement has led to early and accelerated deployment of advanced VDSL technologies by these competitive carriers, offering users speeds in excess of 24 Mbps. In turn, this competitive deployment appears to have encouraged BT to finally offer its own VDSL2+ services. See *June 2008 OECD Data* (showing 24 Mbps DSL services, but only 8Mbps DSL services available from BT); See also "BT Rolls Out Faster Broadband," *BBC News*, April 30, 2008, available at <http://news.bbc.co.uk/2/hi/technology/7376173.stm>. According to the latest FCC data, nearly two-thirds of all residential and business DSL lines in the United States had downstream speeds of less than 2.5 Mbps. See "High-Speed Services for Internet Access as of December 31, 2007," Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, Table 5 (*December 2007 FCC Form 477 Data*).

³² This figure illustrates the changes in these broadband markets in terms of absolute, or net, growth in broadband penetration between 2000 and 2007. This metric is preferable to presenting the change in terms of *percent* growth, as countries that had very low broadband penetration in 2000 would exhibit higher percent growth rates than those countries that had appreciable levels of broadband penetration in 2000. For example, Denmark, which ranked highest in net growth over this period, had a 2,800 percent increase in broadband penetration. Contrast that with Nicaragua (not shown), which had a 3,300 percent growth rate in broadband penetration but only improved from 0.01 lines per capita in 2000 to 0.34 lines per capita in 2007.

³³ For example, in a 2007 speech, FCC Commissioner Robert McDowell stated: "Countries are punished or rewarded by the OECD analysis based on the number of persons living in a household or the number of people working in a business." While differences in average household size can affect the total broadband penetration ranking, and the level of actual household penetration is more informative, the United States is lagging in this metric, too. According to the U.K. research firm Point-Topic, in 2007, the United States ranked 15th in household broadband penetration in the OECD and 24th in household penetration worldwide. See "Shooting the Messenger: Myth vs. Reality: U.S. Broadband Policy and International Broadband Rankings," S. Derek Turner, Free Press, July 2007 (*Shooting the Messenger*).

³⁴ Some critics have argued that the OECD's methodology does not account for special access lines (a type of broadband data platform typically used by large business customers) and therefore understates the true level of U.S. broadband penetration. But this is a misleading critique. The OECD does not count such leased access lines that do not have Internet connectivity, but it does account for those that do. For example, if a rural cell phone company purchases a T-1 dedicated line to connect a cellular tower with a central office facility for the purpose of transporting voice calls, the OECD does not count this line. However, if a small business purchases a T-1 to run a Web server, the line is counted.

³⁵ The population density excuse is perhaps the one most consistently trotted out to explain away the U.S. decline, and it is also the most incorrect. Among the OECD nations, there is no correlation between population density and broadband penetration ($R^2 = 0.05$, $p = 0.25$). For example, Iceland has one of the lowest population densities in the world, but it has the fifth-highest broadband penetration in the OECD. Furthermore, four of the 14 countries ahead of the United States in the OECD broadband rankings have

and they don't really address the basic fact that both residential and business adoption of broadband in America are well below what they should be for a country with our level of income and technological readiness.³⁶

But even if we accept these weak critiques at face value and agree to ignore the international broadband penetration rankings, there are still many important metrics where U.S. broadband is lagging. The monthly cost of broadband in America is higher than all but seven of the 30 OECD nations, only slightly less expensive than the offerings in countries like Hungary and Poland (see Figure 3). The speeds of the connections offered to U.S. consumers are quite slow compared to other countries like Japan and France. Overall, the United States ranks 14th in average advertised download speed, at just under 9Mbps, some 10 times slower than Japan, the international leader (see Figure 3). When price and speed are considered together (i.e., a measure of "value," or price per megabit per second) the United States fares slightly better, coming in at 12th place (see Figure 3). But at \$12.60 per Mbps, the value of U.S. connections is some four-times less than that of countries like France, and is only slightly better than the value of connections in Hungary, a country whose per capita GDP is nearly two-and-a-half times lower than the United States.³⁷

Figure 3: Price, Speed and Value of Broadband Connections
(OECD, October 2007)

PRICE (OECD 2007)			SPEED (OECD 2007)			VALUE (OECD 2007)		
Country	Average Advertised Monthly Price (US\$/mo.)	Advertised \$/Mbps Ranking	Country	Average Advertised Download Speed (Mbps)	Advertised Speed Ranking	Country	Average Advertised Price Per Mbps (US\$/mo./Mbps)	Advertised \$/Mbps Ranking
Finland	\$31.18	1	Japan	93.7	1	Japan	\$3.09	1
Germany	\$32.22	2	France	44.2	2	France	\$3.70	2
Switzerland	\$32.69	3	South Korea	43.3	3	Italy	\$4.61	3
United Kingdom	\$33.34	4	Sweden	21.4	4	United Kingdom	\$5.29	4
Sweden	\$34.00	5	New Zealand	13.6	5	South Korea	\$5.96	5
Japan	\$34.21	6	Italy	13.1	6	Luxembourg	\$7.31	6
Denmark	\$34.34	7	Finland	13.0	7	Switzerland	\$8.17	7
France	\$36.70	8	Portugal	13.0	8	Germany	\$8.44	8
Netherlands	\$39.06	9	Australia	12.1	9	Norway	\$9.81	9
Ireland	\$40.41	10	Norway	11.8	10	Portugal	\$11.52	10
South Korea	\$40.65	11	Luxembourg	10.7	11	United States	\$12.60	11
Italy	\$41.09	12	United Kingdom	10.6	12	Finland	\$13.45	12
Greece	\$41.77	13	Germany	9.2	13	Hungary	\$14.31	13
Belgium	\$46.08	14	United States	8.9	14	Ireland	\$14.92	14
New Zealand	\$48.66	15	Canada	7.8	15	Netherlands	\$15.26	15
Turkey	\$50.04	16	Spain	6.9	16	New Zealand	\$16.75	16
Austria	\$50.08	17	Greece	6.6	17	Czech Republic	\$17.54	17
Luxembourg	\$50.84	18	Hungary	6.4	18	Austria	\$17.66	18
Canada	\$51.07	19	Belgium	6.3	19	Denmark	\$17.70	19
Australia	\$52.26	20	Czech Republic	6.0	20	Sweden	\$18.40	20
Portugal	\$52.61	21	Denmark	6.0	21	Belgium	\$18.55	21
United States	\$53.06	22	Switzerland	5.5	22	Slovak Republic	\$19.59	22
Norway	\$55.74	23	Netherlands	5.3	23	Australia	\$21.34	23
Poland	\$56.57	24	Slovak Republic	5.2	24	Iceland	\$22.22	24
Hungary	\$57.22	25	Austria	4.9	25	Spain	\$22.85	25
Iceland	\$57.92	26	Iceland	4.9	26	Poland	\$25.03	26
Mexico	\$72.20	27	Poland	4.2	27	Canada	\$28.14	27
Slovak Republic	\$79.61	28	Ireland	3.0	28	Greece	\$29.13	28
Czech Republic	\$88.91	29	Mexico	1.7	29	Mexico	\$63.89	29
Spain	n/a	n/a	Turkey	1.4	30	Turkey	\$97.43	30

Source: OECD

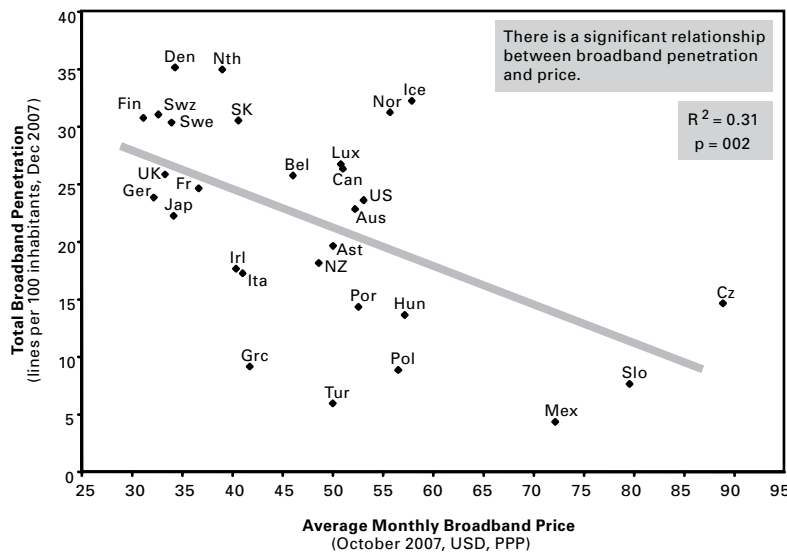
lower population densities than the United States, and 13 of the 15 countries with lower broadband penetration than the United States have higher population densities. Geography does play a small role in broadband diffusion, but it is the proportion of the rural population ($R^2 = 0.15$, $p = 0.03$), not the density of the population, that matters.

³⁶ A 2007 report by the industry-funded Phoenix Center attempted to downplay the OECD rankings by constructing a "Broadband Performance Index," which accounts for intervening factors such as population density, GDP per capita, income inequality, household and business size, service price, and the use of conventional telephony. But even when accounting for these factors, this index still showed the United States ranking 14th among the 30 OECD nations. Thus, it is likely that the most obvious factors not controlled for in this ranking — market competition and government broadband policy, two things other countries have that the United States lacks — account for the low U.S. ranking.

³⁷ In 2008, the per capita GDP in Hungary was \$19,800, while it was \$47,000 in the United States (in U.S. purchasing power parity dollars). See CIA World Factbook 2008.

The impact that price has on adoption in the broadband market cannot be understated. Unlike in mature communications markets such as telephony, consumers are much more sensitive to price changes in a developing market like broadband access. Consumers who have yet to try the service are much less willing to pay for it at higher prices, and those who are “marginal” adopters that don’t place a very high value on the service are much more likely to cancel it if prices increase, even modestly. Thus, it is no surprise to learn that monthly broadband price alone explains a substantial portion of the differences in broadband penetration between OECD nations (see Figure 4).

Figure 4: Broadband Penetration vs. Price
(OECD, 2007)



Source: OECD; Free Press analysis of OECD data

The U.S. Duopoly Fails to Deliver

A central premise in competition analysis is summed up by the quip “four is few, six is many.” In other words, when a market has fewer than the equivalent of six equal-sized competitors, the market just doesn’t function properly. Prices are well above cost-plus-reasonable profit; investment is withheld until absolutely needed; innovation is actively discouraged; and consumer welfare suffers.³⁸ This is especially true in the case of communications services, where entry barriers are high, reducing the threat of increased competition, and where the vertically integrated phone and cable companies go to great lengths to avoid head-to-head competition on broadband access.

But for the past decade, federal regulators have not seemed very concerned with the state of competition in the U.S. broadband market. They seem content to pretend that our market is not a duopoly, and that competitive third, fourth and fifth broadband platform alternatives such as 3G wireless, satellite and broadband over powerline (BPL) are either already here or just around the corner. The FCC even claims there are actually six or more broadband providers available in two-thirds of this nation’s ZIP Codes, though in reality most consumers are hard-pressed to find two reasonably affordable options for broadband service. And even as the FCC approves merger after merger, we’re told not to worry about one company having too much market power (see Figure 5).

³⁸ See testimony of Mark Cooper, Consumer Federation of America, before the U.S. Senate Committee on Commerce, Science and Transportation, Regarding Competition and Convergence, March 30, 2006.

Figure 5: Top U.S. Broadband Providers
(Leichtman Research Group, 4Q 2008)

Rank	Company	Subscribers at End of 2008	Percent of All U.S. Broadband
1	AT&T	15,077,000	20.9%
2	Comcast	14,929,000	20.7%
3	Time Warner	8,727,000	12.1%
4	Verizon	8,673,000	12.0%
5	Cox	4,000,000	5.6%
6	Charter	2,881,100	4.0%
7	Qwest	2,847,000	4.0%
8	Cablevision	2,455,000	3.4%
9	BHN, Suddenlink	2,075,000	2.9%
10	Embarq	1,412,000	2.0%
11	Windstream	978,800	1.4%
12	Mediacom	737,000	1.0%
13	CenturyTel	641,000	0.9%
14	Frontier	579,943	0.8%
15	Insight	458,500	0.6%
16	Cable ONE	372,887	0.5%
17	RCN	302,000	0.4%
18	FairPoint	295,360	0.4%
19	Cincinnati Bell	233,200	0.3%
Total (Top 19 Companies)		67,674,790	94.0%
Total (All U.S. Broadband)		71,994,457	100.0%

Source: Leichtman Research Group; top 19 companies account for approximately 94% of the total U.S. market

As we see from Figure 5, no single broadband provider controls more than one-fifth of the entire U.S. broadband market, and the top cable and top phone company together only control about 42 percent of the market. But the broadband Internet access market is not really a national market: It's fundamentally a local market. It makes no difference to a consumer in Montana if Verizon is expanding its fiber optic broadband services, as that customer is a thousand miles away from Verizon's service territory. In fact, none of the nine telephone companies listed above compete against one another in the fixed broadband market. And only one of the cable companies shown above — RCN — is an "overbuilder" in direct competition with other cable companies.³⁹

As most Americans are well aware, their only options for home broadband service are the local cable or local phone company (and millions of rural Americans don't even have those options). While cellular companies have widely deployed 3G-level "high-speed" Internet services, this technology has not yet shown to be a viable substitute for a dedicated fixed home broadband line (what's more, the same incumbent telephone companies control more than 80 percent of the mobile high-speed Internet market, and these services are far slower and far more expensive than a typical DSL or cable modem line).⁴⁰

The simple fact is that our broadband market is a duopoly. Nationwide, incumbent phone and cable companies control 97 percent of the fixed-line residential broadband market. When the mobile data market is included, the incumbent phone and cable companies' nationwide market share only declines to 95 percent (see Figure 6).

³⁹ RCN's overbuilding is limited to just small portions of four states and Washington, D.C., and it only accounts for less than 0.5 percent of the entire broadband market. Verizon has overbuilt its FiOS service in a few areas around Dallas-Ft. Worth, Texas. This practice is not something analysts think will become a widespread industry trend. See "Verizon to Challenge AT&T with Internet, TV in Texas," Crayton Harrison, *Bloomberg.com*, June 16, 2008.

⁴⁰ See *December 2007 FCC Form 477 Data*, Table 6, showing the ILEC share of the mobile wireless high-speed Internet market to be 81.5 percent. The mobile wireless high-speed Internet market, however, consists mostly of business lines, with only 9 million of the 51 million reported lines being counted by the FCC as residential.

Figure 6: U.S. Broadband Market Duopoly⁴¹
(2008 Marketshare Estimates)

Provider Type	Marketshare of Fixed Residential Broadband Market (2008)	Marketshare of Fixed AND Mobile Residential Broadband Market (2008)
Incumbent Phone Companies	39%	45%
Incumbent Cable Companies	57%	50%
Cable Overbuilders	1%	1%
CLECs	1%	1%
Others (satellite, wireless, powerline)	1%	3%
Marketshare of Incumbent Cable and Phone Companies	97%	95%

Source: Free Press estimates based on FCC and provider data

As high as these incumbent marketshares are, they still *overstate* the true level of local competition. First, in the case of the entire high-speed access market (fixed plus mobile lines), there is no evidence to suggest that any significant portion of mobile data customers are using these services as their *sole or primary* residential broadband connection. Mobile data is a complementary service and will likely remain so for quite some time.⁴² Second, the other competitors accounted for in the above figure have very limited geographic deployment and customer bases. Given its high price, slow speeds and slow response times (or “high latencies”), satellite is only a sensible high-speed Internet option for customers living in areas where there is no other provider available. Fixed wireless deployment is also targeted toward rural areas with limited cable and DSL deployment. Traditional competitive local exchange carriers (CLECs) targeting residential populations and cable overbuilders have a limited presence in just a few large metropolitan areas. And broadband over powerline (BPL) is a sparsely deployed and declining technology.⁴³

The cable-phone duopoly is failing to deliver the quality of broadband connections needed for American innovation to thrive. While much emphasis is placed on the slow download speeds of U.S. broadband connections, the upload speeds of our connections are also abysmal. This is an often overlooked but important issue. The promise of the Internet to effect social and economic change is based upon its fundamental nature as a *two-way* communications medium. In the 1996 Telecommunications Act, Congress clearly articulated its intent to foster universal deployment and adoption of a two-way communications technology, and not another one-way, one-to-many broadcast medium. But a glance at the offerings of most U.S. providers indicates an ever-increasing asymmetry, running counter to Congress’ stated intent.

According to the FCC, a full third of the high-speed connections in the United States have upload speeds no faster than dial-up service (see Figure 7). This figure reflects the generally poor quality of mobile data connections. When mobile lines are excluded, the percent of all U.S. connections with upload speeds below 200 kbps drops to just under 8 percent. We also see from this data that a full 62 percent of DSL connections have failed to break the 2.5 Mbps barrier or have upload speeds below 200 kbps. And the limitations of satellite connections are quite apparent, with less than 10 percent of these lines breaking the 200 kbps upload barrier.

⁴¹ For this table, “incumbent phone companies” include facilities-based incumbent Local Exchange companies such as the RBOCs (AT&T, Qwest, Verizon); mid-size price-cap incumbents such as Windstream, CenturyTel, Frontier, Embarq; and smaller local exchange carriers, such as the members of WTA, OPASTCO and NTCA. “Incumbent cable companies” includes the larger national cable operators such as Comcast, Time Warner Cable, Cox, Bright House, Charter, Cablevision, CableOne, etc. “Cable overbuilders” includes companies such as RCN. “CLECs” include competitive local exchange carriers such as Covad Communications and XO Communications. “Others” includes satellite companies like WildBlue and Hughes Networks; Powerline providers include local municipalities and fixed wireless carriers such as Lariet.net.

⁴² Even among mobile telephone customers, the substitution of mobile lines for fixed wired telephone lines is still relatively limited (17.5 percent of households in 2008), and much of this substitution is occurring in low-income homes. See “Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January-June 2008,” Stephen J. Blumberg, Ph.D. and Julian V. Luke, Division of Health Interview Statistics, National Center for Health Statistics, rel. December 17, 2008. See also “Wireless Substitution: State-level Estimates From the National Health Interview Survey, January–December 2007,” Blumberg et. al., rel. March 11, 2009.

⁴³ Broadband over powerline peaked in June 2007 with an unremarkable 5,347 residential lines. It has since declined to 5,159 lines as of the end of 2007, accounting for just 0.007 percent of all residential U.S. high-speed lines.

Figure 7: U.S. Broadband Speeds
(High-Speed Lines by Technology, December 2007)⁴⁴

Technology	Percent of lines exceeding 200 kbps in only one direction	PERCENT OF LINES EXCEEDING 200 KBPS IN BOTH DIRECTIONS, AND THE SPEED IN THE FASTER DIRECTION IS:				
		Between 200 kbps and 2.5 Mbps	Between 2.5 Mbps and 10 Mbps	Between 10 Mbps and 25 Mbps	Between 25 Mbps and 100 Mbps	Greater than 100 Mbps
ADSL	14.3%	47.6%	38.0%	0.1%	0%	
SDSL	0%	99.5%	0.4%	0.1%		0%
Traditional Wireline	0%	90.6%	5.4%	1.3%	1.4%	1.3%
Cable Modem	0.9%	10.6%	77.6%	10.9%		0%
Fiber	0.2%	7.5%	43.9%	46.8%	0.8%	0.7%
Satellite	90.7%	9.3%		0%	0%	0%
Fixed Wireless	4.4%	90.3%	5.2%	0.1%	0%	
Mobile Wireless	69.9%	30.1%	0%	0%	0%	0%
Power Line and Other	0%	100%		0%	0%	0%
All Technologies	33.8%	28.8%	33.3%	3.9%	0.1%	0%
All, excluding mobile wireless	7.6%	27.9%	57.6%	6.8%	0.2%	0.0%

Source: December 2007 FCC Form 477 Data.

The data in Figure 7 accounts for all U.S. connections, both residential and business. Using this and other data, we estimate that a full third of residential broadband connections have maximum download speeds that are less than 2.5 Mbps or have upload speeds that do not exceed 200 kbps. Only 7 percent of residential U.S. broadband connections — reaching just 4 percent of the country's households — have download speeds in excess of 10 Mbps, and many of these are cable modem connections that may rarely reach advertised speeds due to the shared and over-subscribed nature of cable infrastructure (see Figure 8).

It is important to note that despite this data, the FCC continues to conclude in reports to Congress that broadband is being deployed to all Americans “in a reasonable and timely fashion.”⁴⁵ But Section 706 of the Telecommunications Act of 1996 directs the FCC to “determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion,”⁴⁶ and defines “advanced telecommunications capability” as “high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video” (emphasis added).⁴⁷ Such a standard requires at a minimum constant upload speeds on the order of at least 4 Mbps.⁴⁸ Just a few companies in a few limited geographic areas are deploying connections with this level of upstream capability.⁴⁹ Despite the rosy annual summaries from the FCC, the U.S. broadband market is failing to meet the standards set by Congress.

⁴⁴ Some of the speed bins in this table have been lumped together, due to the fact that the FCC has redacted the figures for the purposes of “protecting” sensitive business information. Though given that these data would not be reported publicly in a manner associated with any particular provider, it is perplexing as to how such disclosure could cause any competitive harm.

⁴⁵ See “Availability of Advanced Telecommunications Capability in the United States,” GN Docket No. 07-45, Fifth Report to Congress, 23 FCC Rcd 9615 (2008).

⁴⁶ See § 706(b) of the Telecommunications Act of 1996, Pub. L. 104-104, 110 Stat. 56 (1996), (1996 Act), reproduced in the notes under 47 U.S.C. § 157.

⁴⁷ See § 706(c) of the 1996 Act.

⁴⁸ Using the MPEG-2 video compression standard (that used by cable TV providers), a user would need approximately 2 to 4 Mbps of upload speed to originate a standard-definition quality television video signal, and 30-40 Mbps of upload speed to originate a professional high-definition quality television video signal. The MPEG-4 codec, version h.264 (used notably by IP video service provider Apple) transmits HD video with an approximate average bit rate of 4.5 Mbps. The term “high-quality” is inherently subjective, but pegging the Section 706 standard to that used by commercial providers to originate high-definition video is consistent with the objectives of the 1996 Act. Slingbox, a company that manufactures a consumer device that can be used to redirect a customer's home HD television signal over the Internet, recommends that users have “sustained upload speeds” of at least 2 Mbps “for a good streaming experience” (emphasis added; note the use of the word “good” and not “high-quality” or “excellent”). See <http://support.slingmedia.com/get/KB-005850.html>.

⁴⁹ None of the major U.S. DSL providers offer upload speeds exceeding even 1 Mbps. Most cable offerings top out at a shared 2 Mbps upstream speed, though limited DOCSIS 3.0 deployments are offering 10 Mbps advertised upstream speeds for well over \$100 per month. Verizon's FiOS fiber to the home service does offer upstream speeds that meet the definition of advanced services, with packages starting out at 5 Mbps and going up to 20 Mbps upstream. However, Verizon has only deployed FiOS to a limited part of its service territory (it is available to approximately 8 percent of all U.S. households, based on the number reported in the company's YE2008 10-K SEC filing).

Figure 8: U.S. Residential Broadband Speeds

(Estimates for December 2007)

Connection Speed	Number of Primary U.S. Residential Broadband Connections	Percent of Primary U.S. Residential Broadband Connections	Percent of All U.S. Households
Less than 2.5Mbps Downstream and/or Less than 200kbps upstream	22,001,844	34%	19%
Greater than 2.5Mbps Downstream and greater than 200kbps upstream	42,866,780	66%	36%
Total	64,868,624	100%	55%
Less than 10 Mbps Downstream and/or Less than 200kbps upstream	60,207,143	93%	51%
Greater than 10Mbps Downstream and greater than 200kbps upstream	4,661,481	7%	4%
Total	64,868,624	100%	55%

Source: Free Press analysis of December 2007 FCC Form 477 data; excludes mobile wireless connections

The Digital Divide Persists as Broadband Becomes an Essential Service

As he took the helm at the FCC in 2001, Chairman Michael Powell, in so many words, called the majority of Americans without access to the Internet a bunch of whiners. At his first press conference, when asked by a reporter if he believed there was a “digital divide” in America, Powell replied: “I think there is a Mercedes divide. I would like to have one, but I can’t afford one.”⁵⁰

Powell’s quote signaled the radical pro-business, anti-consumer regulatory path that would define the Commission’s work over the following eight years. But to give Powell the benefit of the doubt, his statement was likely intended to portray the digital divide as something that would disappear in a few short years — with the natural progression of technology deployment. Powell apparently believed that though the Internet at the time was largely unavailable in the homes of minority, rural and low-income Americans, this was simply because the Internet had yet to become a mainstream technology.

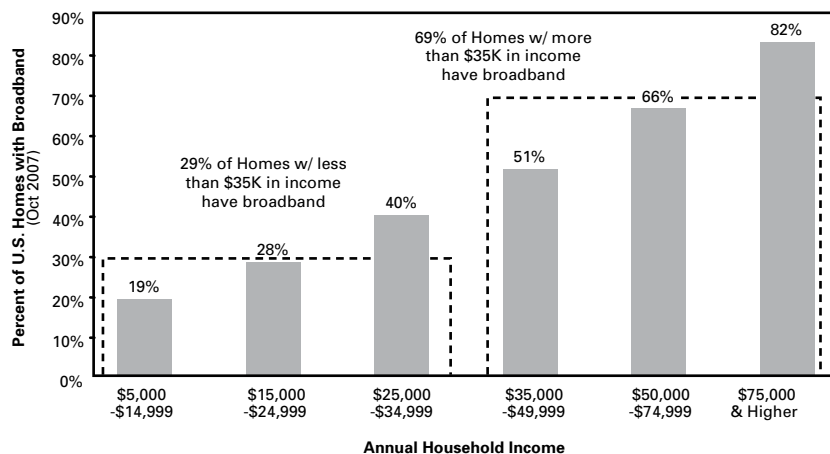
But as technology continued to advance, the digital divide remained largely unchanged. In 2001, when Powell made his “Mercedes divide” quip, 50 percent of all U.S. homes were connected to the Internet, most via “dial-up” technology. But as Americans became familiar with the Internet’s capabilities, demand grew rapidly for a technology that could do more. By 2007, high-speed Internet access had replaced basic Internet access as the “essential” communications technology, with 51 percent of homes connected to broadband.

But this technological progress has not supplanted the digital divide; it has merely transformed it into a more challenging problem. In 2001, only 28 percent of homes with annual household incomes below \$35,000 (an amount approximately twice as high as the federal poverty line) were connected to the Internet. By the end of 2007, just 29 percent of homes with annual household incomes below \$35,000 were connected to the Internet via broadband (see Figure 9). The more things changed, the more they stayed the same.

⁵⁰ The video archive for this press conference on the FCC Web site no longer works. However, according to one 2001 article, the full quote is: “I think the term sometimes is dangerous in the sense that it suggests that the minute a new and innovative technology is introduced in the market, there is a divide unless it is equitably distributed among every part of the society, and that is just an unreal understanding of an American capitalistic system. I think there is a Mercedes divide. I would like to have one, but I can’t afford one. I’m not meaning to be completely flip about this. I think it’s an important social issue, but it shouldn’t be used to justify the notion of, essentially, the socialization of deployment of the infrastructure.” See “Closing the Gap: Smart Taxation Could Be Key in Solving the Problem of the Digital Divide,” Alan Pearce, *America’s Network*, Sept. 1, 2001, available at http://findarticles.com/p/articles/mi_m0DUJ/is_13_105/ai_n27570760/.

Figure 9: Economic Digital Divide

(October 2007)



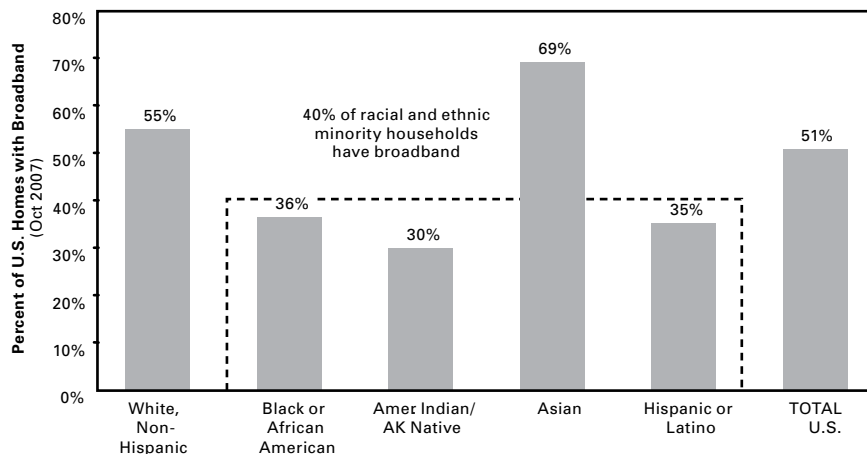
Source: U.S. Census Bureau 2007 Current Population Survey

And this trend persists in all elements of the digital divide. In 2001, just 37 percent of racial and ethnic minorities were connected to the Internet, compared to 55 percent of non-Hispanic white Americans. By 2007, only 40 percent of minority homes were connected to broadband versus 55 percent of whites (see Figure 10).

In 2001, there was no real geographic digital divide to speak of, with 51 percent of urban homes connected to the Internet versus 48 percent of rural homes. But by 2007, 54 percent of urban homes had broadband, compared to 39 percent of rural homes (see Figure 11).

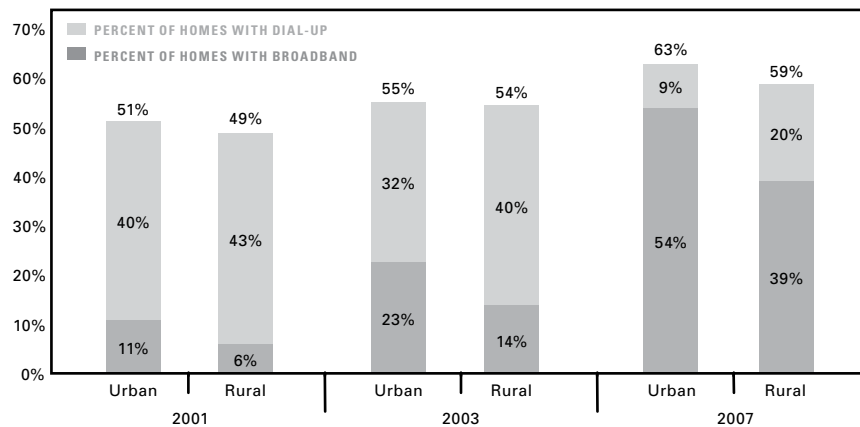
Figure 10: Racial/Ethnic Digital Divide

(October 2007)



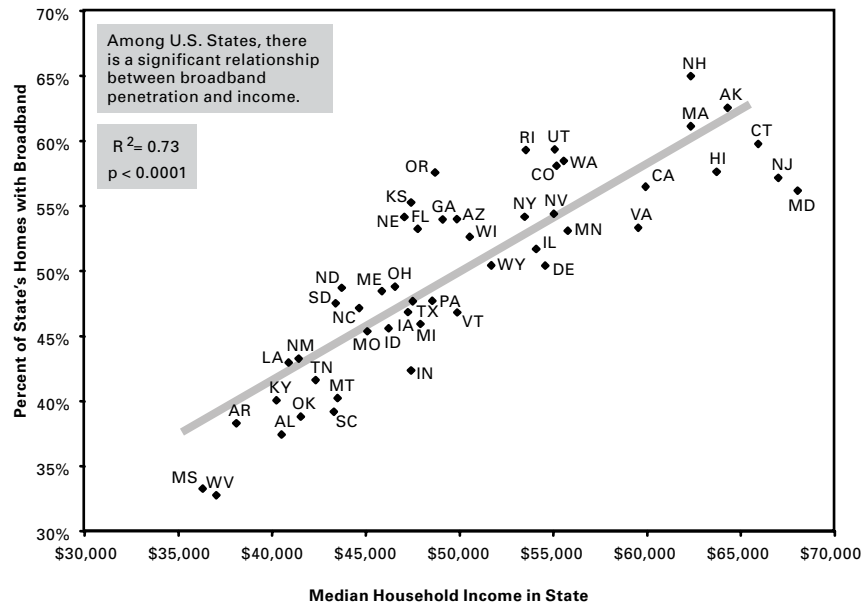
Source: U.S. Census Bureau, 2007 Current Population Survey

Figure 11: Geographic Digital Divide
(2001, 2003 & 2007)



Source: U.S. Census Bureau, Current Population Surveys, 2001, 2003, 2007

Figure 12: Household Broadband Adoption vs. Median Income
(U.S. States, October 2007)



Source: 2007 Current Population Survey

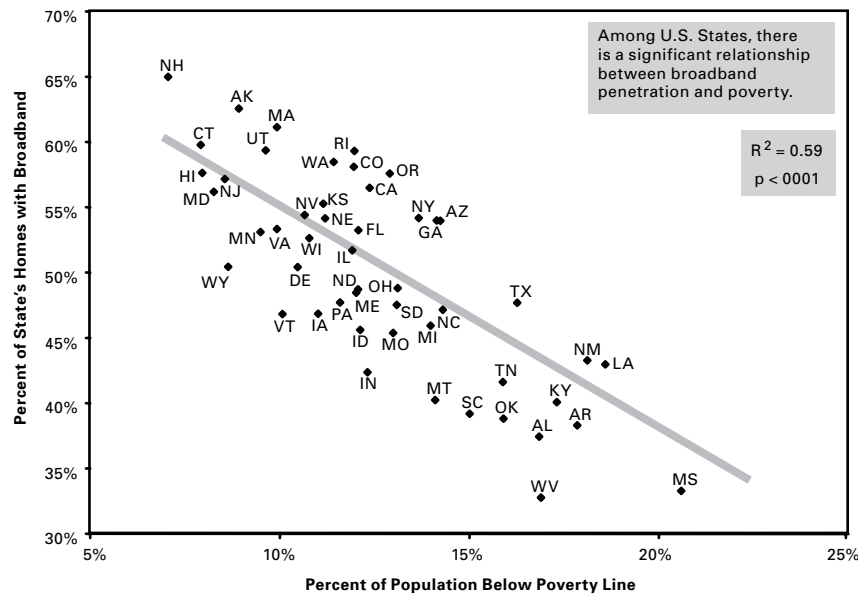
Why Some States Are Falling Behind in Broadband Adoption

Income, poverty and geography all influence which U.S. states excel and which lag behind in broadband adoption. Median household income alone can explain nearly three-fourths of the differences in household broadband adoption between U.S. states (see Figure 12). Affluent northeastern states like New Hampshire, Massachusetts and Connecticut all have household broadband adoption levels at or above 60 percent, almost twice the level seen in poorer states like Mississippi and West Virginia.

A similar relationship is seen between state-level household broadband adoption and poverty. The percentage of a state's population living below the poverty line can explain nearly 60 percent of the observed differences in broadband penetration between states (see Figure 13). Again, states with a high proportion of poor citizens like Alabama and Arkansas have broadband adoption levels far lower than wealthier states such as Utah and Alaska.

Figure 13: Household Broadband Adoption vs. Poverty

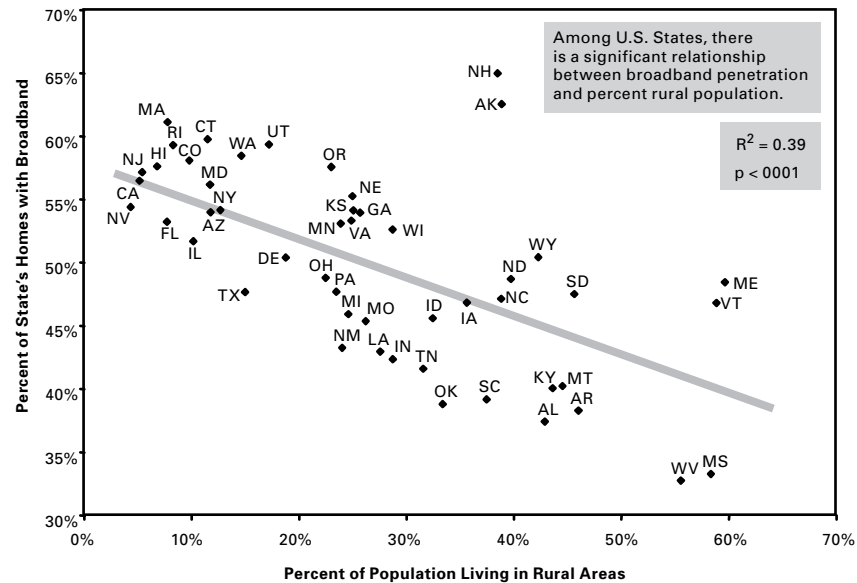
(U.S. States, October 2007)



Source: 2007 Current Population Survey; 2007 American Community Survey

Figure 14: Household Broadband Adoption vs. Percent of Rural Population

(U.S. States, October 2007)



Source: 2007 Current Population Survey

Not surprisingly, the percentage of inhabitants who live in rural areas determines the differences in broadband adoption between states, but is not nearly as strong a factor as income or poverty (see Figure 14). So while rural and relatively poor states like Mississippi and West Virginia have low broadband penetration, equally rural but much wealthier states like Vermont and Maine have considerably higher levels of household broadband adoption.

To bring broadband adoption in states like Mississippi and West Virginia more in line with the levels seen in northeastern states (see Figure 15), we need policies that encourage more rural broadband deployment, lower the monthly cost of broadband, increase the value and perceived utility of broadband, and help the less

affluent get and stay connected. It's clear that the invisible hand of the marketplace won't solve these problems absent government intervention.

Figure 15: The Best and Worst U.S. States in Broadband Adoption
(October 2007)

TOP FIVE BROADBAND STATES		BOTTOM FIVE BROADBAND STATES	
State	Percent of Homes with Broadband	State	Percent of Homes with Broadband
New Hampshire	64.9%	West Virginia	32.7%
Alaska	62.5%	Mississippi	33.2%
Massachusetts	61.1%	Alabama	37.4%
Connecticut	59.7%	Arkansas	38.2%
Utah	59.3%	Oklahoma	38.8%
TOP FIVE RURAL BROADBAND STATES		BOTTOM FIVE RURAL BROADBAND STATES	
State	Percent of Rural Homes with Broadband	State	Percent of Rural Homes with Broadband
Rhode Island	70.6%	Mississippi	25.1%
Massachusetts	69.7%	West Virginia	26.4%
Connecticut	62.9%	Oklahoma	26.6%
Colorado	60.4%	Tennessee	26.8%
New Jersey	59.8%	Alabama	27.9%
TOP FIVE URBAN BROADBAND STATES		BOTTOM FIVE URBAN BROADBAND STATES	
State	Percent of Urban Homes with Broadband	State	Percent of Urban Homes with Broadband
New Hampshire	68.2%	West Virginia	40.6%
Alaska	66.0%	South Carolina	43.0%
Virginia	61.2%	Arkansas	43.5%
Oregon	61.0%	Alabama	44.6%
Kansas	60.8%	Mississippi	44.6%

Source: 2007 Current Population Survey

America's Broadband Failures Are the Result of Policy Failures

Fortunately, America already has a vibrant policy framework and guiding document that aims to encourage universal deployment and adoption of affordable next-generation telecommunications and information services. That document — the Communications Act — is supposed to prevent the inequity and technological stagnation discussed above. The Communications Act was last revised in 1996, and in quite an important way. Though generally characterized as “deregulatory” because of its loosening of traditional media ownership limits, the sections of the 1996 Act governing the telecommunications market were anything but. In the 1996 Act, Congress implemented a progressive, pro-competition regulatory structure — one that was intended to break open the bottlenecks in local communications networks. The new structure was supposed to use regulation to introduce the level of competition seen in the computer industry into the communications industry, and with it bring consumers the benefits of lower prices, better services and unfettered innovation.

Or that was the way it was supposed to work. But just as the new competition policy was being implemented by the FCC in the late 1990s, big industry players began to cripple it with endless lawsuits. What couldn't be killed in court was easily undone by the FCC under the Bush administration. America's broadband problems are not natural. They are the result of massive policy failures.

CHAPTER 3

**AMERICA'S BROADBAND
PROBLEM: COMPETITION**

COMPETITION: THE FCC'S MISSED OPPORTUNITY

Successful communications policy needs to be adaptable. Regulators must not be overprotective of a particular industry or technology, and they should be willing to let an entire private industry die if it means promoting the general public interest. (No one is shedding a tear at the demise of the telegraph industry.) But the laws underlying the regulatory structure needn't be as flexible. In fact, the values at the foundation of U.S. communications law — competition, universal access and openness — are timeless principles that protect the public interest no matter how communications technology changes.

The principles of universal access and openness (or “nondiscrimination”) are as old as the Communications Act itself.⁵¹ The central organizing purpose of the Communications Act as written in 1934 was to establish the FCC “to make available, so far as possible, to all the people of the United States, a rapid, efficient, nationwide, and world-wide wire and radio communication service with adequate facilities at reasonable charges.”⁵² Sections 201 and 202⁵³ are built around the principle of nondiscrimination and are intended to protect the public interest regardless of technology or the level of market competition.⁵⁴

The principle of competition is somewhat newer to the field of communications law. For much of the 20th century, Congress and the Commission treated the telecommunications market as a natural monopoly. This somewhat narrow and misguided belief enabled AT&T's 70-year monopoly reign.⁵⁵ But by the last quarter of

⁵¹ The term “Communications Act” refers to the 1934 Communications Act, as amended (substantially so by the 1996 Telecommunications Act).

⁵² 47 U.S.C. §151. This is how it appeared in the original 1934 Act. In 1996, the following clause was inserted after “United States”: “without discrimination on the basis of race, color, religion, national origin, or sex.”

⁵³ 47 U.S.C. 201, 202. These are the first two sections of Title II of the Act, which governs common carriers (or more specifically, telecommunications providers). Title I deals with general provisions (and grants the FCC wide authority in regulating anything that is ancillary to its duties under the other titles). Title III deals with wireless communications of all forms (broadcasting, satellite, cellular, etc.). Title IV deals with administrative matters. Title V deals with penal and forfeiture provisions. Title VI deals with cable communications. And Title VII deals with miscellaneous provisions such as wartime powers of the president.

⁵⁴ In a 1998 denial of a forbearance petition, the Commission stated, “Assuming all relevant product and geographic markets become substantially competitive, moreover, carriers may still be able to treat some customers in an unjust, unreasonable, or discriminatory manner. Competitive markets increase the number of service options available to consumers, but they do not necessarily protect all consumers from all unfair practices. The market may fail to deter providers from unreasonably denying service to, or discriminating against, customers whom they may view as less desirable. ... providers may, in the absence of sections 201 and 202, have the opportunity and incentive to treat some of their existing customers in an unjust, unreasonable, and discriminatory manner, as compared with similarly situated potential new customers.” See *Personal Communications Industry Association's Broadband Personal Communications Services Alliance's Petition for Forbearance for Broadband Personal Communications Services*, WT Docket No. 98-100, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 13 FCC Rcd 16857 (1998) at 16868-69, para. 23. This view of the central importance of Sections 201 and 202 was affirmed by the Commission in 2005. See *Petition of SBC Communications Inc. for Forbearance from the Application of Title II Common Carrier Regulation to IP Platform Services*, WC Docket No. 04-29, Memorandum Opinion and Order, 20 FCC Rcd 9361 (2005) at 9368, para. 17.

⁵⁵ Natural monopoly is an economic concept that refers to the case where there are economies of scale in social costs — that is, a single firm can produce the desired output at a lower private and external cost than multiple firms. There is certainly a reason to conceptualize the telecommunications industry as a natural monopoly, but this conceptualization is apt only if technology is viewed in a very narrow and static manner. For example, the regulatory and economic view of the telephone industry as a natural monopoly was so ingrained that it took many years for MCI (a company that was able to utilize microwave radio waves to facilitate long-distance communications) to get the FCC to rethink this paradigm and allow limited long-distance competition (something that wasn't fully realized until the court-ordered breakup of the Bell system in 1982). The fact that the natural monopoly framework became so central to the FCC's early thinking about telecommunications markets is somewhat surprising, given the fact that the local telephone market exhibited appreciable levels of competition in the years following the expiration of the first Bell patents. Recent economic theory has raised substantial questions about the assumptions concerning scale and scope economies that underlie the view of the telecommunications market as a natural monopoly. See Fontenay et. al., “A New View of Scale and Scope in the Telecommunications Industry; Implications for Competition and Innovation,” *Communications & Strategies*, No. 60, 4th Quarter 2005, p. 85.

the 20th century, the view that AT&T's monopoly was "natural" gave way to the understanding that the industry could actually benefit from greater competition. This shift was embodied in the 1996 Telecommunications Act, which empowered the FCC to impose extensive regulations on the legacy local incumbents — regulations designed to force the "Baby Bells" to open up their networks for use by their competitors.

It's clear from the plain language of the 1996 Act that Congress intended for this regulatory structure to facilitate competition in the emerging Internet market as well as the traditional local telephone market. The architects of the law understood very well that the future viability of the then-emerging computer-driven communications market was wholly dependent upon an open communications platform — one where all third parties have fair, reasonable and nondiscriminatory access to local telephone facilities (which, because there is only one "wire" running into any given home, makes these facilities so-called "bottleneck" facilities).

Indeed, Congress took its cue in 1996 from a series of rulings by the Commission beginning in the 1970s — known collectively as the *Computer Inquiries* — which helped foster the creation of the Internet and led to the information technology revolution. Unfortunately, this regulatory structure was later completely dismantled at the turn of the century by an FCC bent on "promoting" competition by undermining it at every turn. In a painful irony for America, the regulatory structure we pioneered but abandoned was adopted and implemented successfully by many of the countries that are leapfrogging past us in technology adoption and innovation.

The Computer Inquiries and Competition Policy

There is a widely held belief, particularly among D.C. policymakers and corporate lobbyists, that the Internet "has never been regulated."⁵⁶ In reality, the FCC has imposed substantial regulations on part of the Internet⁵⁷ since its infancy to ensure that it would be able to grow and flourish into a competitive marketplace.⁵⁸

In the mid-1960s, computers began to "talk" to one another. These computer-to-computer "conversations" took place over the same infrastructure used to make telephone calls. The FCC became concerned that AT&T might use its monopoly position to unfairly control the emerging computing market. This concern was not without merit, as AT&T controlled the communications infrastructure that computing companies needed to offer their services. The Commission worried that AT&T could decide to enter the computer networking business and offer services that would compete with those offered by unregulated entities such as data processing companies or computer equipment manufacturers, making AT&T both a supplier of and a competitor to the emerging communications companies.

So in 1966, the FCC sought comment on the question of whether computer information and other data processing services should be subjected to FCC authority under the provisions of the Communications Act.⁵⁹ From this inquiry, the Commission concluded that the data-processing industry was competitive, had low barriers to entry, and should not be regulated.⁶⁰ But the Commission also found that the emerging data

⁵⁶ Opponents of Network Neutrality heavily pushed this notion during the debates surrounding major telecom legislation in Congress during 2006. Some industry claims were particularly galling. For example, a wildly dishonest advertisement from the industry front group "Hands Off The Internet" stated that nondiscrimination protections on the Internet would be "the first major government regulation of the Internet, and will change how the Internet works."

⁵⁷ The Internet is, in its most simple abstraction, a global system of interconnected computers — a system with two basic parts, separable by two broadly distinct markets: the computer market and the market for the communications infrastructure that connects the computers.

⁵⁸ The first two nodes of what would become ARPANET — the predecessor of today's Internet — were connected in October 1969. The Commission began the first "Computer Inquiry" in 1966 and issued a tentative decision in 1970. *Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities*, Docket No. 16979, Notice of Inquiry, 7 FCC 2d 11 (1966) (*Computer I NOI*). See also *Regulatory and Policy Problems Presented by the Interdependence of Computer and Communications Services*, Tentative Decision by the Commission, 28 FCC2d 291, (1970) (*Computer I Tentative Decision*).

⁵⁹ *Computer I NOI*, para. 15-18.

⁶⁰ *Ibid*, paragraphs 19-23, which state in part, "There is ample evidence that data processing services of all kinds are becoming available in larger volume and that there are no natural or economic barriers to free entry into the market for these services."

processing market was wholly dependent on access to AT&T's infrastructure,⁶¹ and that the phone company had substantial incentive to act in an anti-competitive manner.⁶² So the FCC separated the competitive market from the uncompetitive market by imposing a set of highly regulatory safeguards known as "Maximum Separation."⁶³

Under this structural separation, the phone company was only allowed to enter the data processing market if it established a completely separate corporate entity with separate facilities, equipment and personnel (including corporate officers). And the separate computing affiliate was not allowed to own its own communications transmission infrastructure; it had to purchase it from the parent company on the same publicly published terms and conditions available to all other data processing companies.⁶⁴

The *Computer I* decision separated pure data processing services from pure communications transmission services. But there were some functions that did not fit so neatly into these separate bins, and the Commission ruled that it would deal with the regulatory status of these "hybrid services" on a case-by-case basis.⁶⁵ But this ad-hoc approach to decisions about hybrid services introduced too much uncertainty into the market, and the Commission quickly realized that it needed a better approach. So in 1976, it began its second *Computer Inquiry*.⁶⁶

To resolve the problems of uncertainty inherent to the "pure communications," "pure data processing" and "hybrid service" classification system, the Commission opted for a binary approach. Services were now considered either "basic" or "enhanced." This was a much more elegant and workable solution, as it established a clear dividing line between "common carrier transmission services from those computer services which depend on common carrier services in the transmission of information."⁶⁷

Basically, this meant that the Commission would consider any service offered over the network that was more than a basic transmission service to be an enhanced service. So dial-up Internet access service would be an enhanced service, but the "Plain Old Telephone Service," or POTS, that provided dial-up's transmission path was a basic service.

In the *Computer II Decision* of 1980, the FCC maintained the "Maximum Separation" requirements from the first inquiry, but only on AT&T.⁶⁸ The FCC also continued to require the phone companies to provide the basic

⁶¹ In discussing this history, we will often refer to the monopoly phone "company" in the singular. This is a simplification. AT&T was by far the dominant local and long-distance phone company in the United States prior to its court-ordered breakup, but there were other local monopoly carriers in certain areas (the largest being GTE, which was eventually acquired by Verizon), including many small local telephone cooperatives, some of which continue to operate today.

⁶² *Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities*, Docket No. 16979, Final Decision and Order, 28 FCC 2d 267 (1971) (*Computer I Final Decision*) at para. 7, which stated, in part, "There is a close and intimate relationship between data processing and communications services and that this interdependence will continue to increase. In fact, it is clear that data processing cannot survive, much less develop further, except through reliance upon and use of communication facilities and services."

⁶³ *Computer I Final Decision* at para. 10.

⁶⁴ *Computer I Final Decision*, para. 229. Maximum separation was only applied to carriers with annual operating revenues exceeding \$1 million, so many of the smallest rural independent companies were not subject to these conditions. However, all common carriers under Title II of the Act were required to offer their services on a reasonable and nondiscriminatory basis.

⁶⁵ At the time, the Commission defined hybrid services as "an offering of service which combines remote access data processing and message-switching to form a single integrated service." Pure data processing was considered to occur at the edges of the network, defined by the Commission as the "use of a computer for the processing of information as distinguished from circuit or message-switching. 'Processing' involves the use of the computer for operations which include, inter alia, the functions of storing, retrieving, sorting, merging and calculating data, according to programmed instructions." In contrast, pure communications was a transmission service where the content of the message is transmitted over the network without a change in content or form of the message. See *Computer I Tentative Decision*, para. 15.

⁶⁶ *Amendment of Section 64.702 of the Commission's Rules and Regulations*, Notice of Inquiry and Proposed Rulemaking, 61 FCC 2d 103 (1976) (*Computer II Notice of Inquiry*).

⁶⁷ Basic services were defined as those offering "a pure transmission capability over a communications path that is virtually transparent in terms of its interaction with customer-supplied information." The Commission considered enhanced services to be those that combine "basic service with computer processing applications that act on the format, content, code, protocol or similar aspects of the subscriber's transmitted information, or provide the subscriber additional, different, or restructured information, or involve subscriber interaction with stored information." See *Amendment of Section 64.702 of the Commission's Rules and Regulations (Computer II)*, 77 FCC 2d 384 (1980) (*Computer II Final Decision*), para. 86.

⁶⁸ *Ibid.*, para. 216. The Commission also ruled that this separation was necessary to protect the public from "monopoly telephone companies exercising significant market power on a broad geographic basis." *Ibid.*, para. 261.

transmission services underlying their own enhanced services on a nondiscriminatory basis. Thus all enhanced service providers were able to purchase the basic transmission services at the same prices, terms and conditions that the phone company charged its own subsidiaries.

The impact of these proceedings cannot be understated. They created an open communications platform that served as the basis for much of the economic and social growth seen in America during the past two decades.⁶⁹

From Computer II to the 1996 Telecom Act

The years following the *Computer II* decision were marked by substantial shifts in the telecommunications market. Some of these shifts were caused by technology, others were the result of government action. But these two factors were always closely intertwined.

By far the biggest change of the decade was the breakup of the monopoly Bell system. Two years after the 1980 *Computer II* decision, AT&T entered into a consent agreement that divided the company into 22 regional local phone companies (the Regional Bell Operating Companies, or RBOCs), a long-distance company (AT&T), and a computer services subsidiary (AT&T Information Systems).⁷⁰

With the breakup of Ma Bell came a whole new regulatory system for preventing the new local telephone monopolies from charging interconnecting long-distance companies (interexchange carriers, or "IXCs") and other companies uncompetitive fees for accessing their networks.⁷¹ Under this system, the access charges were determined based on a carrier's investment costs, plus an authorized "rate of return." But by 1990, it became apparent that such an approach encouraged waste and inefficiency. Why would a company keep costs down or become more efficient if that would lower the amount of revenue they were legally entitled to earn?

In 1991, the FCC attempted to replace this inefficient regulatory structure with a new incentive-based structure known as price-cap regulation. While rate-of-return regulation is designed to protect consumers by limiting profits to a reasonable level, price-cap regulation is designed to curb monopoly harms by limiting the prices an incumbent can charge and the revenues it can earn. Prices were periodically adjusted to account for increases in efficiency and inflation.⁷² The FCC initially required all Bell companies and GTE to enter into price-cap regulation, and permitted smaller Incumbent Local Exchange Carriers (ILECs) to voluntarily transition to this new system.⁷³

⁶⁹ For the definitive history on the *Computer Inquiries*, See Robert Cannon, "The Legacy of the Federal Communications Commission's Computer Inquiries," *Federal Communications Law Journal*, 55, 167 (2003).

⁷⁰ See *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983). Though the *Computer I* Maximum Separation rules permitted common carriers to enter the data processing business under a separate subsidiary, AT&T was already held to the terms of a separate consent agreement that precluded the company from engaging in any unregulated activity. Thus in *Computer I*, the FCC concluded that AT&T could not offer data processing services. With the declaration in *Computer II* that enhanced services were subject to Title I ancillary jurisdiction, it became less clear what the 1956 settlement meant for AT&T's entry into the information business. AT&T formed the subsidiary American Bell in 1983, which became AT&T Information Systems (ATTIS) in 1984 as part of the breakup. ATTIS became AT&T's structurally separate enhanced services entity operating under the *Computer II* rules.

⁷¹ When MCI emerged as a long-distance competitor in the early 1970s, there were constant battles over what fees AT&T could charge MCI for access to its network. In 1978, MCI and AT&T entered into an agreement governing what fees AT&T could charge MCI for originating and terminating calls on AT&T's network (the "Exchange Network Facilities for Interstate Access" agreement). The FCC, following the breakup of Ma Bell, supplanted this agreement with formal access charge rules. See *Investigation of Access and Divestiture-Related Tariffs*, CC Docket No. 83-1145, Phase I and Phase II, Part 1, FCC 85-100, 57 Rad.Reg.2d 1229, 1241 (rel. March 8, 1985). See also *MTS and WATS Market Structure*, CC Docket No. 78-72, Third Report and Order, Phase 1, 93 FCC 2d 241, *recon.*, 97 FCC 2d 682 (1983), *second recon.*, 97 FCC 2d 834 (1984).

⁷² Price-cap regulation is a form of "incentive regulation" because, in theory, carriers that operate at maximum efficiency can earn short-term returns far higher than what would be allowed under rate-of-return regulation. When the regulator reviews the price caps, these increased efficiencies are supposed to be accounted for and the prices adjusted downward. Thus, this regulatory structure is supposed to mimic behavior that would be expected in a competitive market, and can act as a transitional regime until actual market competition forms. However, the system also has risks for the carrier. Since there is no guaranteed rate of return, it is possible that external factors such as competition could act to keep returns below what the carrier would have earned under the old system. A price-cap carrier may petition the FCC to raise the caps if they can demonstrate that the authorized price would produce earnings that are so low as to be confiscatory. Price-cap carriers used to be required to return to their customers earnings above specified levels, but the FCC eliminated this requirement in 1997. See *Price Cap Performance Review for Local Exchange Carriers*, Fourth Report and Order in CC Docket No. 94-1 and Second Report and Order in CC Docket No. 96-262, 12 FCC Rcd 16642 (1997).

⁷³ See *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786, (1990) (*LEC Price Cap Order*).

Efficiency was also at the forefront when the Commission revisited the *Computer Inquiry* rules in 1985.⁷⁴ By this time, the political zeitgeist had turned sour on supposedly heavy-handed regulations such as structural separation. The FCC became convinced that the efficiency costs of structural separation outweighed its benefits and that the agency could better protect the computing industry from anti-competitive discrimination through the use of nonstructural safeguards. The FCC let the local monopoly carriers get into the enhanced service business without a separate subsidiary, but only if they followed a strict set of rules.⁷⁵

These nonstructural safeguards were the Comparatively Efficient Interconnection (CEI) plans and the Open Network Architecture (ONA) rules. CEI plans were intended to be a temporary regime while companies made the transition to the more rigorous ONA rules. Under CEI, RBOCs were required to file plans that detailed what services the company was provisioning to its own enhanced service affiliates, and make those same services available to other providers under the same terms and conditions.⁷⁶

The ONA rules were much more comprehensive than the CEI plans, and set the stage for what would become the centerpiece of competition policy in the 1996 Telecom Act. Under ONA, RBOCs had to break their networks into individual building blocks, and then offer those separate network elements to unaffiliated Enhanced Service Providers (ESPs) on a nondiscriminatory basis. But in a progressive move, the FCC required the Bell companies to break all of their networks into elements and make those available, whether or not a particular element was used by the Bells to offer enhanced services.⁷⁷ The Commission felt “such unbundling ensures that competitors of the carrier’s information services operations can develop information services that utilize the carrier’s network on an economical and efficient basis.”⁷⁸

This marked a leap forward in Commission policy. Whereas under the structural separation regime the FCC was primarily concerned with incumbents favoring their own enhanced services through discriminatory practices, here we see the Commission recognizing the potential for innovation that would come if the monopoly bottleneck was broken wide open.⁷⁹

Implementing and Undermining the 1996 Telecom Act

In enacting the 1996 Telecom Act, a piece of legislation that started to take shape in the early 1990s, Congress intended for the FCC to implement a regulatory structure that would usher in a new era of competition and innovation in the local telephone, long-distance and Internet access markets. The basic conceptual framework of the *Computer Inquiries* became the starting point for Congress’ efforts to legislate competition into the

⁷⁴ *Amendment of Section 64.702 of the Commission’s Rules and Regulations (Third Computer Inquiry)*, Notice of Proposed Rulemaking, CC Docket No. 85- 229, 50 Fed. Reg. 33581 (1985).

⁷⁵ See *Bell Operating Company Safeguards and Tier 1 Local Exchange Company Safeguards*, CC Docket No. 90-623, 6 FCC Rcd 7571 (1991) (*BOC Safeguards Order*). In this order, the Commission determined that the RBOCs’ ONA plans as filed would act as an appropriate safeguard against discrimination, enough to eliminate the *Computer II* structural separations.

⁷⁶ Under CEI, RBOCs were required to file reports demonstrating how they were providing equal access to competitors according to nine specific criteria. These nine CEI parameters were: interface functionality (standardized hardware); basic service unbundling (the underlying basic transmission service that must be offered under tariff to unaffiliated providers); resale (the RBOC must itself purchase the unbundled basic service at the tariff rate); technical characteristics (the RBOC must provide basic services with technical characteristics that are equal to those used by the RBOC in its enhanced service offering); installation, maintenance and repair (these functions must occur at the same intervals for facilities used by the unaffiliated provider as they occur for the incumbents own enhanced services); end-user access (whatever method the RBOC uses to enable its customers to access the enhanced service must be provided to the unaffiliated provider); CEI availability (the incumbent has to make CEI facilities available for testing by the unaffiliated provider); transport costs minimization (the incumbent must interconnect with the unaffiliated providers in a manner that reduces transport costs); recipients of CEI (the incumbent cannot restrict the availability of a CEI offering to any particular class competitors). See *Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services*, CC Docket No. 95-20, Report and Order, 14 FCC Rcd 4289 (1999) (*Computer III Further Remand Order*), at para. 13.

⁷⁷ Indeed, RBOCs were required to file ONA plans even if they did not themselves offer any enhanced services.

⁷⁸ *Ibid.* at para. 8 n.17.

⁷⁹ As it refined the ONA rules, the FCC categorized four “basic service elements” that should comprise a RBOC’s basic services. These are: 1) Basic Serving Arrangements, which are switching and transport services (such as line-side and trunk-side circuit-switched service and line-side and trunk-side packet-switched service), offered pursuant to tariff; 2) Basic Service Elements, which are optional unbundled features, such as caller ID; 3) Complementary Network Services, which are optional unbundled basic service features such as stutter dial tone that an *end user* may need to receive an enhanced service; and 4) Ancillary Network Services, which consist of non-common-carrier services like billing or protocol conversion. See *Filing and Review of Open Network Architecture Plans*, 4 FCC Rcd 1, 36, para. 56 (1988) (*RBOC ONA Order*).

broadband communications marketplace. Congress took the unbundling concept from *Computer III* and expanded it to the entire local communications infrastructure.

Section 251 of the 1996 Act imposes on each incumbent local exchange carrier “the duty to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory.”⁸⁰ In determining what network elements were to be made individually available for wholesale (or “unbundled”) access, the FCC was to consider whether “the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.”⁸¹ These unbundled network elements, or UNEs, must be priced at cost-based rates (i.e., roughly equivalent to the current actual cost of building that element), a task left to the states.⁸² In addition, the Act also allowed competitive providers to resell an incumbent’s retail service, priced at wholesale rates.⁸³

The Commission’s attempt to implement Congress’ vision turned into a drawn-out series of orders, court cases, reconsiderations and remands.⁸⁴ The disputes surrounding the unbundling and wholesale provisions dealing with broadband Internet services were among the most contentious.⁸⁵

In the 1996 Act, Congress largely codified the basic concepts of “enhanced” versus “basic” services present in the *Computer II* rules. But they didn’t *exactly* codify them, and this has been the source of much debate over the past dozen years.

The 1996 Act describes four types of services that are of importance to the regulatory debate over broadband:

- First, “information service” is defined as “the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service.”⁸⁶
- Second, “telecommunications service” is defined as “the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used.”⁸⁷

⁸⁰ 47 U.S.C. 251(c)(3).

⁸¹ 47 U.S.C. 251(d)(2)(B). The ambiguities of the word “impair” in that sentence would be the subject of much debate and litigation in the years following the passage of the 1996 Act and would ultimately lead to the nearly complete undermining of the competition structure of the law.

⁸² 47 U.S.C. 252(d)(1). The FCC created a forward-looking, long-run, incremental cost methodology known as TELRIC (Total Element Long Run Incremental Cost) for the states to use in setting rates. See *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket Nos. 96-98, 95-185, First Report and Order, 11 FCC Rcd 15499, (1996) (*Local Competition Order*), at paras. 618-740.

⁸³ 47 U.S.C. 251(c)(4).

⁸⁴ According to the D.C. Circuit Court of Appeals, the FCC’s fourth attempt at implementing these provisions of the Act was “the charm.” *COVAD Communications Co. vs. FCC* 450 F.3d 528 (D.C. Cir. 2006).

⁸⁵ And the issue was made even more complex by the ongoing legal battles surrounding the *Computer III* rules. See e.g., *Bell Operating Company Safeguards and Tier 1 Local Exchange Company Safeguards*, CC Docket No. 90-623, 6 FCC Rcd 7571 (1991) (*BOC Safeguards Order*), *BOC Safeguards Order vacated in part and remanded sub nom. California v. FCC*, 39 F.3d 919 (9th Cir. 1994) (*California III*), cert. denied, 514 U.S. 1050 (1995); *Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services*, CC Docket No. 95-20, Notice of Proposed Rulemaking, 10 FCC Rcd 8360 (1995) (*Computer III Further Remand Notice*), *Further Notice of Proposed Rulemaking*, 13 FCC Rcd 6040 (1998) (*Computer III Further Remand Further Notice*); Report and Order, 14 FCC Rcd 4289 (1999) (*Computer III Further Remand Order*), recon., 14 FCC Rcd 21628 (1999) (*Computer III Further Remand Reconsideration Order*); see also *Further Comment Requested to Update and Refresh Record on Computer III Requirements*, CC Dockets Nos. 95-20 & 98-10, Public Notice, 16 FCC Rcd 5363 (2001). The collective *Computer III* proceeding was subsumed by the *Wireline Broadband* proceeding. See *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Notice of Proposed Rulemaking, 17 F.C.C.R. 3019 (2002) (*Wireline Broadband NPRM*).

⁸⁶ 47 U.S.C. 153 (20).

⁸⁷ 47 U.S.C. 153 (46).

- Third is “telecommunications,” which Congress defined as “the transmission, between or among points specified by the user, of information of the user’s choosing, without change in the form or content of the information as sent and received.”⁸⁸
- And finally, the Act defines “cable service” to be “the one-way transmission to subscribers of video programming, or other programming service; and subscriber interaction, if any, which is required for the selection or use of such video programming or other programming service.”⁸⁹

In defining these terms, Congress built upon the language of the court ruling that broke up Ma Bell and the Commission’s work in the *Computer II* proceeding. The Commission later clarified that “information services” and “telecommunications services” were mutually exclusive, mirroring the *Computer II* “enhanced” versus “basic” services dichotomy.⁹⁰

In its 1998 *Advanced Services Order*, the FCC ruled that the “pro-competitive provisions of the 1996 Act apply equally to advanced services and to circuit-switched voice services.”⁹¹ In doing so, the Commission also concluded that advanced services such as broadband are “telecommunications services” as defined under the Act. This ruling meant that all the interconnection and unbundling provisions of the Act applied to the Bells’ broadband services.⁹² This classification of incumbent wireline broadband services as “telecommunications services” was the first in a series of FCC rulings on this issue — an issue of semantics that would have far-reaching consequences both for broadband competition and for larger issues such as consumer rights and Network Neutrality.

This semantic issue is important, because if ISP services are considered to be “information services” with a “telecommunications service” component, then the underlying transmission component is subject to Title II and *Computer Inquiry* regulatory treatment. So, for example, if the old Southwestern Bell wanted to sell dial-up Internet access service, the service was considered to be an information service with a telecommunications service component, and thus Southwestern Bell had to comply with *Computer II* and *III* unbundling requirements. Dial-up services were never a point of controversy, since the underlying transmission facility was basic circuit-switched telephony. But it becomes less straightforward when considering broadband services. In the case of DSL broadband, the underlying transmission facility is still the same old telephone company copper wiring, but the service is now packet-switched instead of circuit-switched. Does this difference allow the incumbent phone company to be free of any Title II or *Computer Inquiry* obligations? If we are following the Commission’s basic logic in regulating the networking industry since the 1970s, the obvious answer is “no.” The underlying facility is still an essential, critical bottleneck facility controlled by the telephone monopoly, which has every incentive to use its ownership of this crucial facility to reduce competition in the broadband ISP market.

Thus, consistent with the approach of the *Computer Inquiries*, in its 1998 *Advanced Services Order*, the Commission ruled that the broadband *transmission path* was a “basic” service coupled with an “enhanced” Internet access service. Just because an incumbent’s DSL offering was transmitted via packet-switching did not matter, and just because the transmission was coupled with an information service (Internet access) did not matter. This opinion was in keeping with Commission

⁸⁸ 47 U.S.C. 153 (43).

⁸⁹ 47 U.S.C. 522 (6).

⁹⁰ See *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report to Congress, 13 FCC Rcd 11501, 11516-17, 11520, 11524, paras. 33, 39, 45-46 (1998).

⁹¹ The term “advanced services” in this context means (per the Commission) “wireline broadband telecommunications services.” See *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket Nos. 98-147, 98-11, 98-26, 98-32, 98-15, 98-78, 98-91, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 13 FCC Rcd 24012 (1998) (*Advanced Services Order*), paras 3, 11.

⁹² *Ibid.* para. 32, “Pursuant to the Act and our implementing orders, incumbent LECs are required to (1) provide interconnection for advanced services; and (2) provide access to unbundled network elements, including conditioned loops capable of transmitting high-speed digital signals, used by the incumbent LEC to provide advanced services. We also note that under the plain terms of the Act, incumbent LECs have an obligation to offer for resale, pursuant to section 251(c)(4), all advanced services that they generally provide to subscribers who are not telecommunications carriers. Finally, for the reasons discussed below, we conclude that incumbent LECs have an obligation under the statute and our implementing rules to offer collocation arrangements that reduce unnecessary costs and delays for competitors and that optimize the amount of space available for collocation.”

precedent set before the 1996 Act. In 1995, the FCC ruled that AT&T's enhanced frame relay⁹³ service was a combination of packet-switched transmission and an enhanced service, and the underlying transmission was subject to *Computer Inquiry* unbundling.⁹⁴

Before we go any further into the semantic wilderness, it is important to take stock of the clear and consistent path that began with the Commission's first treatment of this issue in 1970 and runs clear through Congress' creation of the Act: If you are a facilities-based provider⁹⁵ offering an information service (or "enhanced service" or "advanced service" or simply "broadband Internet access") you are *always* offering a basic service plus an enhanced service. As the Commission stated in the 1998 ruling, "An end-user may utilize a telecommunications service together with an information service, as in the case of Internet access. In such a case, however, we treat the two services separately: the first service is a telecommunications service (e.g., the DSL-enabled transmission path), and the second service is an information service, in this case Internet access."⁹⁶ This is critically important, because it demonstrates the Commission's main motivation — to promote competition in the ISP, content and applications markets by restraining the market power of the companies that own the critical underlying transmission infrastructure.

This definitional issue was not at the center of the first major legal challenge to the Commission's implementation of the Section 251 framework, but in its response to the subsequent remand,⁹⁷ the FCC once again stated that elements such as high-capacity loops (including DSL and dark fiber) and packet-switching were subject to unbundling and resale.⁹⁸ The Commission then released a subsequent order ruling that incumbents were obligated to unbundle and wholesale the high-frequency portion of the local loop, or the "portion" of the copper wiring that carried data, and not voice transmissions.⁹⁹ This is known as "line sharing," and is a form of what is commonly referred to as "open access" policy. In a line-sharing arrangement, the competitive company provides DSL service and the incumbent provides voice service over the same local

⁹³ Frame relay is a packet-switched technology that provides a high-speed always-on connection, but is a less expensive alternative than a dedicated line like a T-1 for enterprise customers.

⁹⁴ In the *Frame Relay Order*, the Commission rejected AT&T's argument that since the frame relay service itself was sold to customers only as an enhanced service, that the service was one singular enhanced service. The Commission also rejected AT&T's interpretation that the "contamination theory" applied to its frame relay service. The contamination theory holds that if an enhanced service provider sells a service that is a combination of computing and basic transmission, that the entire service is considered enhanced, and the provider is not obligated to abide by Title II regulations. But as the Commission made clear in the *Frame Relay Order*, the contamination theory is not meant to apply to facilities-based providers: "Application of the contamination theory to a facilities-based carrier such as AT&T would allow circumvention of the Computer II and Computer III basic-enhanced framework. AT&T would be able to avoid Computer II and Computer III unbundling and tariffing requirements for any basic service that it could combine with an enhanced service. This is obviously an undesirable and unintended result." See *Independent Data Communications Manufacturers Association Inc. Petition for Declaratory Ruling that AT&T's InterSpan Frame Relay Service Is a Basic Service, American Telephone and Telegraph Company Petition for Declaratory Ruling that all Interexchange Carriers be Subject to the Commission's Decision in the ID-CMA Petition*, Memorandum Opinion and Order, 10 FCC Rcd 13717 (1995) (*Frame Relay Order*), at paras. 41-44, stating, "The assertion by AT&T and other commenters that the enhanced protocol conversion capabilities associated with AT&T's InterSpan service bring it within the definition of an enhanced service is beside the point. Under the Commission's *Computer II* and *Computer III* decisions, AT&T must unbundle the basic frame relay service, regardless of whether the [service] offering also provides a combined, enhanced protocol conversion and transport service for those customers who require it."

⁹⁵ "Facilities-based" providers offer services to residents and businesses using their own infrastructure. "Non-facilities-based" providers lease facilities from the local incumbent at wholesale rates, and in turn, offer a service that competes with the incumbent's service.

⁹⁶ *Advanced Services Order*, para. 36.

⁹⁷ *Local Competition First Report and Order*, aff'd in part and vacated in part sub nom., *Competitive Telecommunications Ass'n v. FCC*, 117 F.3d 1068 (8th Cir. 1997) (*CompTel v. FCC*) and *Iowa Utils. Bd. v. FCC*, 120 F.3d 753 (8th Cir. 1997) (*Iowa Utils. Bd. v. FCC*), aff'd in part and remanded, *AT&T v. Iowa Utils. Bd.*, 119 S. Ct. 721 (1999).

⁹⁸ Though "only in limited circumstances in which the incumbent has placed digital loop carrier systems in the feeder section of the loop or has its Digital Subscriber Line Access Multiplexer (DSLAM) in a remote terminal." *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 FCC Rcd 3696, (1999) (*UNE Remand Order*), at para. 15.

⁹⁹ The "local loop" is the portion of the public switched telephone network (PSTN) that runs from the central switching office to the customer's premises. This portion of the network is generally regarded as the "bottleneck" of the system, due to its natural monopoly features. The local loop is sometimes referred to as the "last mile." The copper wiring of the local loop is capable of carrying information transmitted at various "frequencies" (think stations on the radio dial). Voice transmissions are carried on the low frequencies, while data is transmitted on the high frequencies. See *Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket Nos. 98-147, 96-98, Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, 14 FCC Rcd 20912 (1999) (*Line Sharing Order*).

loop. The Commission believed that line-sharing arrangements would “enable advanced services providers to develop and deploy more rapidly new technologies and innovative services, benefiting consumers through lower prices and increased product choice.”¹⁰⁰

For a brief time, line sharing was a remarkably successful policy in the United States. It helped accelerate deployment and uptake of broadband services. It did so by providing more competition to the dominant cable companies and applying competitive pressure to phone companies that were dragging in deploying their own DSL services (out of concerns for cannibalizing their second-line dial-up access market). It lowered barriers to entry for competitive DSL providers (which did not want to focus energy and resources on both the residential phone and data businesses). And it encouraged adoption by consumers (who may have been reluctant to try phone service from an unknown provider but were willing to try their DSL services).

However, as was the case with much of the FCC’s implementation of Section 251, line sharing was soon struck down by the D.C. Circuit Court of Appeals.¹⁰¹ In 2003, when the Commission (now under new leadership) took up this issue on remand, it declined to reimpose line sharing.¹⁰² This was just the first step in dismantling Congress’ vision of a competitive marketplace.

The Rest of the World Takes a Different Path

While U.S. regulators were slowly undermining competition in the telecommunications market, regulators and markets overseas were embracing pro-competition policy. Unlike in the United States, when foreign governments imposed unbundling requirements, the incumbents weren’t able to litigate their way out of these obligations. The overseas incumbents for the most part simply accepted the new paradigm, and went on about the business of competing.

The results speak for themselves. OECD countries with line-sharing policies have DSL penetration levels nearly twice those of countries that do not require line sharing (see Figure 16). We see a similar result for the “bitstream access” policy (a policy that is essentially wholesale/resale like that required under Section 251(c) (4) of the Act).¹⁰³ In other words, bitstream access is a policy that enables a competitive ISP to be a reseller of an incumbent’s DSL service, while line sharing requires the competitive ISP to actually install some of its own equipment in the incumbent’s local central office facility. Unlike its treatment of line sharing, the FCC wouldn’t completely foreclose wholesale DSL access until 2005 (see the discussion of 2005 *Wireline Broadband Order* below).

¹⁰⁰ *Ibid.* para. 10. Also para. 25, where the Commission concluded that “lack of access to the high frequency portion of the local loop would materially raise competitive LECs’ cost of providing xDSL-based service to residential and small business users, delaying broad facilities-based market entry, and materially limiting the scope and quality of competitors’ service offerings. Moreover, access to the high frequency portion of the loop encourages the deployment of advanced telecommunications capability to all Americans as mandated by section 706 of the 1996 Act. Because some residential and small business markets may lack the economic characteristics that would support competitive entry in the absence of access to the high frequency spectrum of a local loop, it is clear that spectrum unbundling is crucial for the deployment of broadband services to the mass consumer market” (emphasis added). This is a critical point. The Commission rejected the typical incumbent argument that such access would discourage investment in next-generation facilities and would thus delay deployment. Instead, the Commission recognized that facilitating competitive access would help these companies build their businesses and would create marketplace competition, which in turn would lead to accelerated deployment of advanced services. This basic thought process is the heart of the 1996 Act’s competition framework. It would be completely turned on its head within a couple of years of this order.

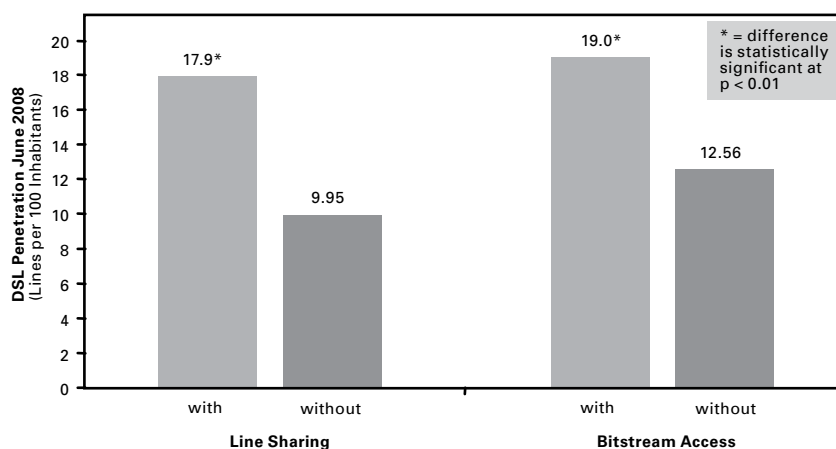
¹⁰¹ *UNE Remand Order, reversed and remanded in part sub. nom. United States Telecom Ass’n v. FCC*, 290 F.3d 415 (D.C. Cir. 2002) (USTA).

¹⁰² As a practical matter, this decision meant that competitive DSL providers no longer could obtain access to the high-frequency portion of the local loop (“HFPL”), and consequently, their current customers were placed in substantial jeopardy. Since the cost of either wholesale DSL or a fully unbundled loop would be far higher than the cost of a UNE HFPL, this meant many customers’ monthly bills would likely rise substantially; or worse, that large numbers of areas would become “unserved” as the ILEC itself offered no DSL services. Thus, the Commission in the *Triennial Review Order* that was released in August 2003 (not the version voted on in February of that year) created a grandfathering of existing line-sharing arrangements for a few months until the 2004 biennial review began. See *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996; Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket Nos. 01-338, 96-98, 98-147, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, 18 FCC Rcd 16978 (2003) (*Triennial Review Order*).

¹⁰³ Bitstream access can include wholesale DSL services that hand off the traffic to the CLEC at the central office or the nearest local Internet Point of Presence (POP), or that can be a full-resale service where the incumbent also provides backhaul transport. This is in contrast to line-sharing, where the CLEC would receive the traffic directly from their own DSLAM or line splitter collocated in the incumbents’ CO, and provide their own transport from that point.

Figure 16: Broadband Penetration and Open Access Policy

Average DSL Penetration of Countries by Regulation Type, June 2008

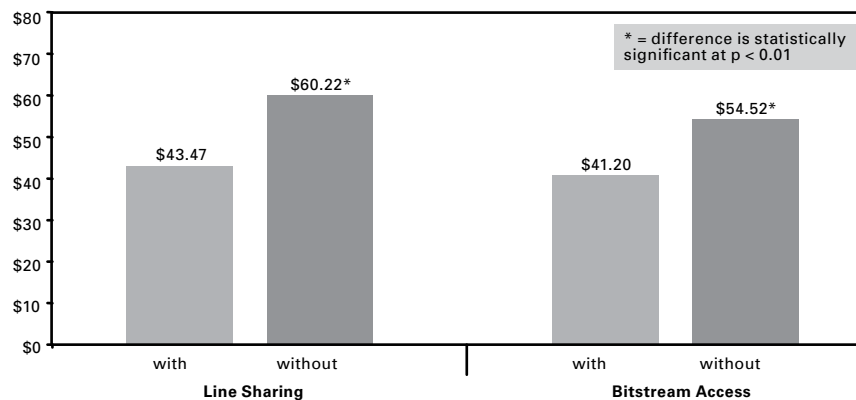


Source: OECD, Free Press analysis of OECD data

As explained above, there's a strong link between broadband penetration and price, so it is not surprising to learn that countries with line sharing and wholesale access policies also have significantly lower monthly prices for DSL service. The monthly cost of DSL service is nearly 40 percent higher in OECD countries without this policy (see Figure 17).

Figure 17: Broadband Price and Open Access Policy

Average Monthly Price of Broadband in Countries by Regulation Type, June 2008

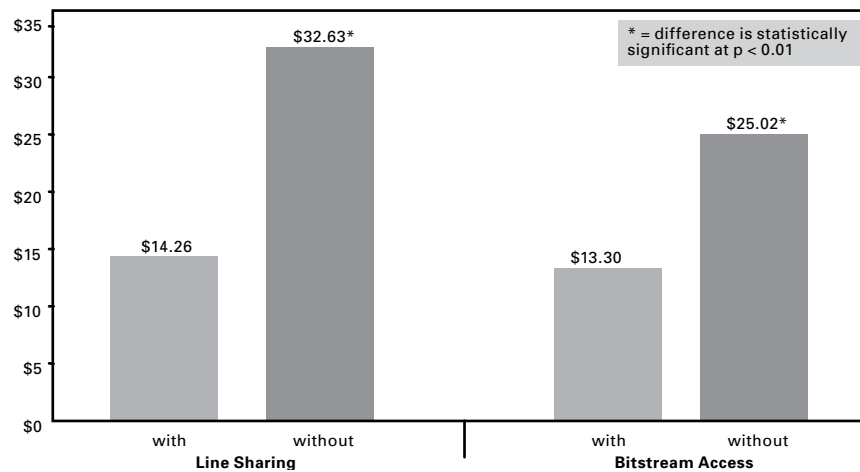


Source: OECD, Free Press analysis of OECD data

And this trend further applies when the value of broadband is measured. Citizens in countries with line sharing and wholesale access get more broadband bang for their buck. Consumers in countries with line-sharing pay about \$14 per Mbps, while consumers in countries without line sharing pay more than double that amount (see Figure 18).

Figure 18: Broadband Value and Open Access Policy

Average Monthly Price per Mbps of Broadband in Countries by Regulation Type, June 2008



Source: OECD, Free Press analysis of OECD data

Cable TV and the Beginning of the End of Broadband Competition

In the Bush administration, the new FCC signaled early on — through a series of notices and rulings — that it intended to turn Congress' competitive regulatory framework on its head. For Congress, competition had meant opening up bottleneck infrastructures to multiple providers, which would nurture this nascent industry and eventually lead to more facilities investment.¹⁰⁴ But for the new FCC, competition meant protecting incumbents from access obligations under the misguided belief that this would somehow spur the foreclosed competitors to make massive new investments in their own facilities.¹⁰⁵

The new FCC felt that relieving the incumbents of unbundling obligations would lead them to investments that they would not have made if they had to share their infrastructure. The fact that this would likely destroy the competitive carriers did not matter, in the logic of the FCC majority, because the mere existence of a *single* market competitor — local monopoly cable companies — was proof that robust facilities-based *intermodal* competition¹⁰⁶ would emerge.

¹⁰⁴ In its 2003 *Triennial Review Order*, the FCC went far beyond eliminating line sharing. This proceeding was essentially the new FCC's chance to re-engineer the previous Commission's entire competition policy framework. The emerging competitive telecom carriers were already weakened from years of litigation and the bursting of the tech stock bubble. The *Triennial Review* pushed them closer to their grave. In the order, the majority also ruled that incumbents were not required to offer fiber-to-the-home or hybrid fiber-copper loops as UNEs, nor were they required to unbundle OCn-level fiber loops. And the order also eliminated the unbundling of packet-switching elements, including routers and Digital Subscriber Line Access Multiplexers (DSLAMs).

¹⁰⁵ The history here is complex. The early Bush-era FCC majority was united in its belief that relief from unbundling regulations would spur investment and competition, but not relief from *all* unbundling regulations. Chairman Powell said that line sharing was an important instrument for seeding future facilities-based competition. In the *Triennial Review Order* of 2003, Powell was joined by Republican Commissioner Kathleen Q. Abernathy in dissenting from the decision to eliminate line sharing, while Democratic Commissioners Jonathan Adelstein and Michael Copps both (reluctantly) concurred with Republican Commissioner Kevin Martin's vote to not reimpose this UNE. In testimony delivered to Congress just days after the *Triennial Review* vote, Powell stated, "I fear that the majority's elimination of the line sharing UNE ... flies in the face of the explicit Congressional goals of bringing the American public new infrastructure investment and innovation and meaningful competition. ... Line sharing has given birth to facilities-based competitive broadband telecommunications carriers and has provided a valuable source of inputs for broadband ISPs. The result has been lower prices for broadband users and, as a result, increased demand. I fear that the majority's elimination of line sharing strikes a blow to facilities-based competition. In addition, I fear that a result of this action will cause higher prices for broadband Internet access subscribers. Furthermore, I do not accept the argument that the elimination of line sharing provides an affirmative incentive for ILEC deployment of new broadband infrastructure. Line sharing rides on the old copper infrastructure, not the new fiber facilities that we seek to advance to deployment. For these reasons, I could not accept the majority's decision to eliminate line sharing." See "Oral Statement of FCC Chairman Michael K. Powell, Before the Subcommittee on Telecommunications and the Internet, Committee on Energy and Commerce, U.S. House of Representatives," Feb. 26, 2003 (*Powell 2003 House Testimony*).

¹⁰⁶ "Inter-modal" competition, or "platform competition" refers to competition between providers of a particular service, using different "platforms" or technologies. For example, cable modem is an intramodal competitor to DSL service. "Inter-modal" competition refers to competition between providers using the same platform or technology. An example of intramodal competition is a company like Earthlink, which obtains wholesale access to an incumbent's infrastructure and competes with that incumbent using the same technology. Intra-modal competition can also be "facilities-based." For example, a company like RCN, which is a cable "overbuilder," deploys its own cable facilities and competes intramodally with the incumbent cable operator.

Where there is clearly a single market provider, regulators are compelled to intervene to prevent monopoly harms and anticompetitive conduct. But when there are two providers, the calculus is more complex, and politics plays a greater role. In a monopoly market, there are dozens of potential competitors each making the obvious case of lack of competition, and the potential benefits competition brings. But in a duopoly market, the two dominant players are quick to decry the certain harms that regulations encouraging further competition would bring. This is precisely the logic that led to the complete unraveling not only of Congress' 1996 vision, but of the FCC's own wildly successful 30-plus year *Computer Inquiry* regulatory regime.

Cable system deployment in America, and its near-universal availability, makes this country somewhat unique among our international economic counterparts. The "historical accident" of cable has also created a barrier to implementing a robustly competitive communications marketplace. For most of its history, the cable industry has received vastly different regulatory treatment than the wireline telecommunications industry. From cable's birth, Congress and the FCC rejected the idea that cable systems should be treated as "common carriers."¹⁰⁷ This view was based on the premise that unlike the telephone, cable was a one-way communications technology like over-the-air broadcasting.

But the advent of the cable modem changed the fundamental nature of the cable system. It became a two-way system that could enable the types of communications innovations that were taking place on telephone infrastructure and in the cellular spectrum. It is not clear how this development was factored into Congress' drafting of the 1996 Act, as the technology was still in its infancy at the time.¹⁰⁸ But whether Congress fully envisioned the marketplace developing as it did isn't important, as the Act was written in a manner that provides clear guidelines about what a competitive regulatory structure should look like.

The FCC first dealt with the issue of two-way cable modem communications in its consideration of the merger between AT&T and TCI cable. In that proceeding, many parties petitioned the Commission to require that independent ISPs be granted access to the cable system as a condition of the merger. The Commission in its 1999 ruling declined to mandate such open access on the grounds that the merging parties agreed to allow their customers unfettered open access to the Internet. A year later, in another cable merger proceeding, the FCC once again decided against imposing open access conditions on AT&T Cable because the company made promises that it would negotiate independent access contracts with unaffiliated ISPs.¹⁰⁹ This is a typical pattern in broadband matters at the FCC: Give companies whatever anti-competitive "relief" they are seeking in exchange for unenforceable promises to allow third-party access at some future point. A quick glance at today's ISP marketplace makes it quite clear that these promises were largely empty.

In 2000, the Commission made an under-the-radar decision that in retrospect would have profound consequences for broadband competition. This decision came about in response to a petition by a small company called Internet Ventures, which wanted the FCC to declare that ISPs are entitled to commercial leased access on cable systems under Section 612 of the Communications Act (such a declaration would effectively force cable companies to provide "channels" to third-party ISPs that could be used to offer cable modem services, and not just for traditional video programming). Section 612 (which originated in the 1984 Cable Act)¹¹⁰ created a federal regime of channel leasing "to promote competition in the delivery of diverse sources

¹⁰⁷ The Act defines "common carrier" as "any person engaged as a common carrier for hire, in interstate or foreign communication by wire or radio or in interstate or foreign radio transmission of energy, except where reference is made to common carriers not subject to this Act; but a person engaged in radio broadcasting shall not, insofar as such person is so engaged, be deemed a common carrier." See 47 U.S.C. § 153(10). In other words, common carriers "hold themselves out" to offer their services to the general public without discrimination. Broadcasters and cable systems sell advertising, but this is not enough alone to classify them as common carriers. In fact, the Act precludes cable systems from being treated as common carriers: "Any cable system shall not be subject to regulation as a common carrier or utility by reason of providing any cable service." See 47 U.S.C. 541(c).

¹⁰⁸ The first cable modem system wasn't developed until 1990, and the DOCSIS 1.0 standard was not ratified by ITU-T until 1998. Most cable systems did not begin deploying cable Internet access services until after the 1996 Act was passed. According to the first FCC Form 477 data collected at the end of 1999, there were only 1.4 million cable modem lines in service at that time.

¹⁰⁹ See *Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from MediaOne Group, Inc., Transferor, to AT&T Corp., Transferee*, CS Docket No. 99-251, Memorandum Opinion and Order, FCC 00-202, at ¶ 121 (rel. June 6, 2000) (*AT&T/MediaOne Order*).

¹¹⁰ Cable Communications Policy Act of 1984, Pub. L. No. 98-549, 98 Stat. 2779 (1984), 47 U.S.C. § 521 *et seq.* The leased access provisions are codified at Communications Act § 612, 47 U.S.C. § 532.

of video programming and to assure that the widest possible diversity of *information sources* are made available to the public from cable systems” (emphasis added).¹¹¹ Internet Ventures had requested leased access on a Washington State cable system owned by TCI, but was denied.¹¹² Given Congress’ original concerns when crafting this section of the law, and given the more recent rise in broadband Internet video services that are increasingly a viable substitute for traditional cable video programming, it is now clear the 2000 decision was short-sighted. The typical U.S. cable system provides 750 MHz of capacity and uses about 12 MHz of that capacity for broadband service. If the FCC had decided this case in a different way, we might today live in a world where many cable customers could potentially choose between more than a dozen different cable modem ISPs.¹¹³

In the Internet Ventures decision, the Commission declined to weigh in on the broader issue of the regulatory classification of Internet services provided over cable systems. This was a crucial issue that the FCC had continued to sidestep. But outside events finally forced the Commission to act. In the space of a few short months, three different federal courts issued three different conclusions on the appropriate regulatory status of cable modem Internet service.¹¹⁴

When the FCC finally made its decision on the matter in 2002, it ruled that “cable modem service as currently provided is an interstate information service, not a cable service,” and that there is “no separate telecommunications service offering to subscribers or ISPs.”¹¹⁵ The Commission stated that cable modem service provides functionalities like Web surfing and e-mail “via telecommunications,” but that the “telecommunications component is not, however, separable from the data processing capabilities of the service.”¹¹⁶

This logic of redefining Internet service delivered by cable as an “information service” upended the entire approach of the *Computer Inquiry* proceedings and all the subsequent broadband rulings. The entire purpose of the regulatory approach before this point was that the “telecommunications component” underlying Internet access services *absolutely* was separable from the data processing capabilities of the service. It did not matter that the transmission medium was “packet switched,”¹¹⁷ or if traditional cable facilities were used. In fact, the 1996 Act defines telecommunications service as “the offering of telecommunications ... *regardless of the facilities used*” (emphasis added).¹¹⁸

¹¹¹ 47 U.S.C. 532(a).

¹¹² The Commission rejected the petition on the grounds that Section 612 applied in a very narrow fashion to video programmers, and that Congress did not intend to facilitate leased access by ISPs. But the Commission applied a reading of the statute that was too narrow. The legislative history of Section 612 demonstrates the main purpose of leased access was to curb anti-competitive behavior on the part of cable companies. When it created the leased access regime, Congress observed that “cable operators do not necessarily have the incentive to provide a diversity of programming sources, especially when ... the offering competes with a program service already being provided by that cable system.” In 1992, Congress strengthened and expanded the language of Section 612, in part because of concern that vertically integrated cable companies might be protecting their own programming businesses by establishing discriminatory leased access practices. See H.R. Rep. No. 934 at 48, 98th Cong., 2d Sess. (1984); and House Committee on Energy and Commerce, H.R. Rep. No. 628 at 39, 102d Cong., 2d Sess.

¹¹³ Section 612 requires the largest cable systems to set aside 15 percent of their channel capacity for leased access. See 47 U.S.C. 532(b)(1)(C).

¹¹⁴ One decision held that cable modem service comprises both a “telecommunications service” and an “information service.” See *AT&T Corp. v. City of Portland*, 216 F.3d 871, 877 (9th Cir. 2000) (*City of Portland*). Another held that Internet service is neither a cable service nor a telecommunications service. See *Gulf Power Co. v. FCC*, 208 F.3d 1263, 1275-78 (11th Cir. 2000). And a third decided that cable modem service is a “cable service.” See *MediaOne Group, Inc. v. County of Henrico*, 97 F.Supp.2d 712, 714 (E.D. Va. 2000), 4th Cir. No. 00-1680.

¹¹⁵ *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, Internet Over Cable Declaratory Ruling, Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, GN Docket No. 00-185 & CS Docket No. 02-52, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd 4798 (2002) (*Cable Modem Declaratory Ruling and NPRM*) at para. 33.

¹¹⁶ *Ibid.* para. 39.

¹¹⁷ *Supra* note 96. With its *Cable Modem Declaratory Ruling*, the Commission essentially applied the contamination theory for the first time to a facilities-based provider.

¹¹⁸ 47 U.S.C. 153 (43).

The fact that cable operators provide telephone services¹¹⁹ clearly demonstrates that the underlying transmission facility is “separable.” It also suggests that because cable companies are offering telephone services on an indiscriminate basis to the public, they are essentially using their facilities as common carriers,¹²⁰ and that they therefore are subject to the resale provisions under Section 251(b)(1) of the Act.¹²¹

The FCC Kills the Commitment to Competition

The cable modem ruling was appealed, and affirmed by the Supreme Court in its 2005 ruling in the *Brand X* case.¹²² The *Brand X* ruling gave the FCC, now led by Chairman Kevin J. Martin, the impetus it needed to remove the common carrier requirements on broadband services delivered by the phone companies,¹²³ ending the last vestiges of competition policies governing the Internet.¹²⁴

The impetus behind Martin’s desire to treat all broadband services the same was the perceived inefficiencies and market perversions stemming from “asymmetric regulation.” The thinking was that since cable modem services were not subject to Title II or *Computer Inquiry* regulations, then neither should any other Internet access services, because to do so would create market inefficiencies. Never mind the fact that it was the FCC itself that created this problem in the first place via its decisions regarding cable modem service.

Congress was clearly aware of the phenomenon of convergence when it crafted the 1996 Act, which is why much of the language of the Act is concerned not with specific technologies, but with their *functions*. Thus, we see terms like “telecommunications services,” “information services” and “cable services.” Each has a different function, and each is given different regulatory status and treatment. Information services are kept largely unregulated, and information service providers are granted rights to access telecommunications facilities. Cable services are one-way providers of video programming. And telecommunications services offer an end-to-end transmission path for users to communicate, be it via a telephone call, fax or e-mail.

¹¹⁹ 47 U.S.C. 153(47) defines “telephone exchange service” in part as a “service provided through a system of switches, transmission equipment, or other facilities (or combination thereof) by which a subscriber can originate and terminate a telecommunications service.” This definition on its face appears to encompass cable Voice Over Internet Protocol services (as well as any IP end-to-end communications). However, the FCC has yet to make a ruling as to whether such services are telecommunications services or information services. It has required these service abide by a number of Title II regulations. It has also ruled that pure IP-to-IP computer voice applications (like Pulver’s FWD) are information services. And it ruled that phone-to-phone-with-IP-in-the-middle calls are telecommunications services. The closest the Commission has come to a definitive opinion on the matter came in a 1998 report to Congress, which seems to indicate that cable VoIP would be considered to be telecommunications: Such service would “bear the characteristics of telecommunications services,” so long as the particular service met four criteria: “(1) it holds itself out as providing voice telephony or facsimile transmission service; (2) it does not require the customer to use CPE different from that CPE necessary to place an ordinary touch-tone call (or facsimile transmission) over the public switched telephone network; (3) it allows the customer to call telephone numbers assigned in accordance with the North American Numbering Plan, and associated international agreements; and (4) it transmits customer information without net change in form or content.” See *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report to Congress, 13 FCC Rcd 11501 (1998) (*Stevens Report*) para. 88.

¹²⁰ And therefore *Computer II* and *Computer III* unbundling rules should apply. However, in the *Declaratory Ruling*, the Commission sidestepped and dismissed this specific argument by stating that “even if Computer II were to apply, however, we waive on our own motion the requirements of Computer II in situations where the cable operator additionally offers local exchange service.” See *Cable Modem Declaratory Ruling*, para. 45.

¹²¹ The unbundling, interconnection and resale requirements of Section 251(c) only apply to *incumbent* local exchange carriers, as defined in Section 251(h), which does not seem to include cable providers (absent an affirmative Commission declaration). However, 251(b) applies to all “local exchange carriers,” which the Act defines as “any person that is engaged in the provision of telephone exchange service or exchange access.” As discussed above (*supra* note 121) cable telephone providers appear to meet the definition of a local exchange carrier, and thus have “the duty not to prohibit, and not to impose unreasonable or discriminatory conditions or limitations on, the resale of its telecommunications services,” among other obligations. This is not a settled issue. See *IP-Enabled Services*, WC Docket No. 04-36, Notice of Proposed Rulemaking, 19 FCC Rcd 4863 (2004) (*IP-Enabled Services NPRM*).

¹²² *National Cable & Telecommunications Ass’n v. Brand X Internet Services*, 125 S. Ct. 2688 (2005) (*NCTA v. Brand X*).

¹²³ *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Universal Service Obligations of Broadband Providers*, CC Docket No. 02-33, Notice of Proposed Rulemaking, 17 FCC Rcd 3019 (2002) (*Wireline Broadband NPRM*).

¹²⁴ *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review — Review of Computer III and ONA Safeguards and Requirements; Conditional Petition of the Verizon Telephone Companies for Forbearance Under 47 U.S.C. §160(c) with Regard to Broadband Services Provided via Fiber to the Premises; Petition of the Verizon Telephone Companies for Declaratory Ruling or, Alternatively, for Interim Waiver with Regard to Broadband Services Provided via Fiber to the Premises; Consumer Protection in the Broadband Era*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853 (2005) (*Wireline Broadband Order*).

Through this definitional structure, Congress seemed to embrace the notion that “like services should be treated alike.” But what the Commission did was to make a deeply flawed decision in the cable modem case, and then use the resulting “unlike” treatment to justify the paramount need to make even more flawed decisions. Because it had declared cable modem service to be an information service inseparable from the underlying telecommunications, the Commission felt the only proper thing to do at that point was to reverse 30 years of regulatory and legal precedent by declaring that all broadband services were Title I information services.

The Commission in part justified its sweeping change to broadband policy based on the directives of Section 706 of the 1996 Act. This portion of the law directs the Commission to “encourage the deployment on a reasonable and timely basis of advanced *telecommunications* capability to all Americans” (emphasis added).¹²⁵ This illustrates the truly ridiculous nature of the debate surrounding the regulatory classification of Internet access.¹²⁶

In Section 706, Congress clearly stated, “advanced telecommunications capability is defined without regard to any *transmission media* or technology, as high-speed, switched, *broadband* telecommunications capability that enables *users* to originate and receive high-quality voice, *data*, graphics, and video telecommunications using any technology”¹²⁷ (emphasis added). There is no mystery as to congressional intent of how the FCC should treat broadband: as *telecommunications* capability regardless of transmission media, which allows end users to transmit *data*, and which may or may not also involve an information service.¹²⁸

By declaring that all wireline broadband Internet access services¹²⁹ were information services, the FCC completely removed incumbents’ obligations to provide wholesale DSL to competitors under Section 251(c)(4).¹³⁰ This technically flawed, semantically driven decision¹³¹ also completely destroyed the *Computer Inquiry*

¹²⁵ See § 706(a) of the Telecommunications Act of 1996, Pub. L. 104-104, 110 Stat. 56 (1996), (1996 Act), reproduced in the notes under 47 U.S.C. § 157.

¹²⁶ To illustrate how ridiculous this debate was, one only need look at how some industry representatives would change their own thinking on the matter when it best suited them. In their 2001 *Reply Comments* in the *Cable Modem* proceeding, Verizon wrote, “Cable operators are presently offering residential customers a telecommunications service and an information service bundled together.” Less than a year later, the company (indeed, the same two lead attorneys) would tell the Commission in their *Wireline Broadband NPRM Comments* that “bundled broadband Internet access is unquestionably a Title I information service,” and “a particular service cannot be both an information service and a telecommunications service at once: by adding an information component to a telecommunications service, the entire service becomes an information service.”

¹²⁷ *Ibid.*, §706(c)(1).

¹²⁸ In his enlightened and often amusing dissent in the *Brand X* case, Justice Antonin Scalia summed up the semantic debate perfectly: “After all is said and done, after all the regulatory cant has been translated, and the smoke of agency expertise blows away, it remains perfectly clear that someone who sells cable-modem service is ‘offering’ telecommunications.”

¹²⁹ “Wireline broadband” in the context of this order encompassed Internet *access services* (and their underlying transmission components) provided over existing or future telephone company network facilities. It did not matter whether the underlying component was provided over copper loops, hybrid copper-fiber loops, fiber-to-the-curb (fttc) or fiber-to-the-premises (fttp) loops. However, in the *Triennial Review Order* and *Orders on Remand*, fttp, fttc and hybrid loops were already relieved of Section 251(c)(3) unbundling obligations.

¹³⁰ The Commission in the 1998 *Advanced Services Order* ruled that “under the plain terms of the Act, incumbent LECs have an obligation to offer for resale, pursuant to section 251(c)(4), all advanced services that they generally provide to subscribers who are not telecommunications carriers.” (*supra* note 93). However, prior to the 2005 *Wireline Broadband Order* or the 2002 NPRM, the Commission appeared to be stepping back from this view. In a 2001 SBC transfer application, the company argued it did not separately offer the telecommunications component underlying its DSL offerings at retail, and thus was not bound by 251(c)(4) wholesale obligations — i.e., they were making the same “one service” style argument the Commission had rejected in the *Frame Relay Order*. The Commission declined to weigh in on SBC’s assertion, leaving it to the *Wireline Broadband NPRM*. See *Joint Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Arkansas and Missouri*, CC Docket No. 01-194, Memorandum Opinion and Order, 16 FCC Rcd 20719 (2001) (*SBC MO/AR 271 Order*), paras. 81-82.

¹³¹ Among the litany of reasons that the classification was technically flawed is the Commission’s reliance on carrier-provisioned DNS services as evidence of the offering of more than transparent transmission services. The Commission said that an end-user’s inability to reach Web sites without using the ISP’s DNS servers “proved” that wireline broadband is an information service inseparable from the underlying telecommunications. But the Commission seems to be unaware of the fact that end users are not in any way required to use the ISP’s DNS servers, and that there are a number of third-party DNS providers offering DNS service that is arguably superior to those offered by the ISPs (e.g., OpenDNS). Indeed, a third party could even be another ILEC, as an end-user of Verizon could easily decide to use Qwest’s DNS servers. This point is, however, completely irrelevant, as DNS services are essentially routing services that are expressly excluded from the Act’s definition of information service. See *Wireline Broadband Order*, *supra* note 124, para. 15: “Because wireline broadband Internet access service inextricably combines the offering of powerful computer capabilities with telecommunications, we conclude that it falls within the class of services identified in the Act

regulatory framework. It freed all wireline broadband Internet access service providers from the *Computer II* requirement to separate out the underlying transmission from their broadband access services and offer it on a common carrier basis.¹³² And it left consumers without any of the nondiscrimination protections and their associated outcomes, such as Network Neutrality, that are the cornerstones of Title II. We have a situation where an incumbent-friendly Commission was unable to change the law, so it simply moved the goalposts by removing the service in question from under the laws that were written to govern it.

Redefining broadband as an “information service” completely destroyed Congress’ vision of a competitive marketplace. It was an immediate blow to third-party ISPs like Earthlink that relied on reasonable wholesale rates to provide competitive and attractively priced DSL services to millions of customers. The decision ensured that U.S. consumers would be at the mercy of a duopoly marketplace.

The Commission dismissed the notion that eliminating *Computer Inquiry* unbundling would have a negative impact on the third-party ISP market, or on third-platform competition. Just as it had done when it eliminated line sharing in 2003, the Commission was certain that the competitive marketplace would thrive absent regulatory intervention. In particular, the Commission assumed that even without regulation, substantial incentives existed for incumbents to offer competitive ISPs wholesale access on reasonable terms. In the *Wireline Broadband Order* that lifted the obligation to wholesale, the Commission stated their belief that “carriers have a business interest in maximizing the traffic on their networks, as this enables them to spread fixed costs over a greater number of revenue-generating customers.”¹³³

But the belief that carriers would on their own provide reasonable access to independent ISPs is flawed at its core, as it ignores the realities of the market. In a truly competitive market, the carriers would be best served by expanding output via wholesaling, as this would allow them to earn revenues from lines that might otherwise go unused. However, in an uncompetitive duopoly market, providers have strong incentives to avoid wholesaling, even if it means having a substantial number of their lines going unused. This is because in a competitive marketplace, competition creates a downward pressure on prices. By wholesaling, the duopolist risks earning lower total revenues because the competition might force it to lower the prices it charges its own retail customers. This is the hallmark economic characteristic of monopoly or oligopoly markets: Producers reduce output in order to charge prices that far exceed the competitive level.

The FCC should have been aware of this basic economic reality. All it had to do was to look at the cable modem marketplace to see that facilities-based carriers will not provide reasonable wholesale access unless they are required to do so. Yet in its 2005 ruling, the Commission claimed “cable operators, which have never been required to make Internet access transmission available to third parties on a wholesale basis, have business incentives similar to those of incumbent LECs to make such transmission available to ISPs, and are continuing to do so pursuant to private carriage arrangements.”¹³⁴ And to prove this point, the Commission cited the existence of independent ISPs operating under wholesale arrangements with AOL-Time Warner Cable.¹³⁵ But these cable wholesale arrangements were the sole result of another regulator, the Federal Trade Commission, *mandating* that Time Warner Cable provide wholesale access to certain third parties.¹³⁶

And even with these obligations, the terms of these wholesale arrangements were still unreasonable. Earthlink reported that even under the FTC “memorandum of understanding” that Time Warner was offering wholesale terms that made it “difficult, if not impossible” for competing ISPs to offer services over Time Warner’s

as ‘information services.’ The information service classification applies regardless of whether subscribers use all of the functions and capabilities provided as part of the service (e.g., e-mail or web-hosting) ... an end user of wireline broadband Internet access service cannot reach a third party’s web site without access to the [provider’s] Domain Naming Service (DNS) capability. ... The end user therefore receives more than transparent transmission whenever he or she accesses the Internet.”

¹³² This was subject to a one-year transition scheme. But all RBOCs were granted immediate relief from the separate subsidiary, CEI and ONA obligations under *Computer II* and *Computer III*.

¹³³ See *Wireline Broadband Order*, *supra* note 124, at para. 64.

¹³⁴ *Ibid.* para. 64.

¹³⁵ *Ibid.* para. 64, note 186.

¹³⁶ *America Online Inc. and Time Warner Inc.*, Federal Trade Commission, Docket No. C-3989, File No. 001 0105, Decision and Order (Dec. 14, 2000) (“*FTC AOL Time Warner Merger Order*”).

system.¹³⁷ Indeed, the last vestige of this merger obligation appears to be Earthlink's limited wholesale agreement with Time Warner Cable — all of the other third-party ISPs mentioned in the FTC's December 2001 approval are either out of business or no longer offer any retail broadband services.¹³⁸ And a comparison between Earthlink's resold Time Warner services, and the offerings of Time Warner itself reveals the flaw in the FCC's thinking that these wholesale agreements would be on reasonable terms or promote competition. As Figure 19 shows, Earthlink's offerings are in no way competitive with Time Warner's. Earthlink does not offer the highest speed tier (15 Mbps), and their highest tier costs consumers nearly \$30 more than if they bought it directly from Time Warner Cable. And casual Internet users shopping for a bargain have no reason to choose Earthlink, as the lowest-price tier is nearly 20 percent cheaper if purchased directly from Time Warner.

Figure 19: Earthlink on Time Warner Cable

Service Package	Earthlink on TWC (standard monthly price)	TWC (standard monthly price)
768kbps Standalone	\$29.95	\$24.95
3Mbps Standalone	Not Offered	\$29.95
7Mbps Standalone	\$41.95	Not Offered
Earthlink Branded Standalone 7Mbps sold on TWC Website	N/A	\$46.95
10Mbps Standalone	\$72.95	\$46.95
10Mbps Bundled with Digital Cable	Not Offered	\$39.95
15Mbps Standalone	Not Offered	\$49.90

Source: Time Warner Cable published offerings for North Carolina, accessed from timewarnercable.com, April 2009.

The thinking behind the FCC's *Wireline Broadband, Triennial Review* and *Cable Modem* orders was that incumbents, on their own, would create efficient market competition. The Commission justified this belief based mainly on the fact that incumbent phone and cable companies *promised* they would continue to offer reasonable wholesale access.¹³⁹ For example, Verizon made numerous promises that it would offer wholesale access to its FiOS service.¹⁴⁰ Though it currently has extensive other wholesale offerings listed on its Web site, retail fiber optics is not among them.¹⁴¹

The RBOCs all continue to offer some wholesale residential-targeted DSL services. But that's not the issue. The issue is whether these offerings are made in a manner that facilitates residential market competition. The answer, of course, is no. Contrary to the FCC's claims, incumbents simply have no incentive to provide reasonable wholesale access. This is the basic economic reality that underlies the entire *raison d'être* of the

¹³⁷ See *Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner Inc. and America Online, Inc., Transferors, to AOL Time Warner Inc., Transferee*, CS Docket No. 00-30, Memorandum Opinion and Order, 16 FCC Rcd 6547 (2001) (*FCC AOL Time Warner Merger Order*), para. 126, note 357.

¹³⁸ See *Cable Modem Declaratory Ruling*, *supra* note 115, at para. 26, note 117.

¹³⁹ See e.g., *Wireline Broadband Order*, *supra* note 124, at para. 74, "Incumbent LECs have represented that they not only intend to make broadband Internet access transmission offerings available to unaffiliated ISPs in a manner that meets ISPs' needs, but that they have business incentives to do so. ... Qwest has stated it will continue to make available a DSL offering that will enable consumers to reach unaffiliated ISPs because consumers demand the choice, and meeting that demand makes its product more attractive. ... Verizon has similarly indicated its intent to enter into commercially reasonable contracts with unaffiliated ISPs for broadband transmission services because it is in its best interest to do so. Finally, BellSouth has also evidenced a willingness, desire, and incentive to deal with unaffiliated ISPs absent a Commission requirement that compels them to do so" (*internal footnotes omitted*). All of the RBOCs continue to offer some wholesale DSL products, but the terms are nowhere near as favorable as they were under the tariffed regime, and prices are not set according to costs. The margins that resellers are able to earn are so low that residential resale is rare. Instead, the CLEC industry has largely shifted its focus to full loop unbundling targeted at business customers, where the QoS offerings enable them to charge substantially higher prices.

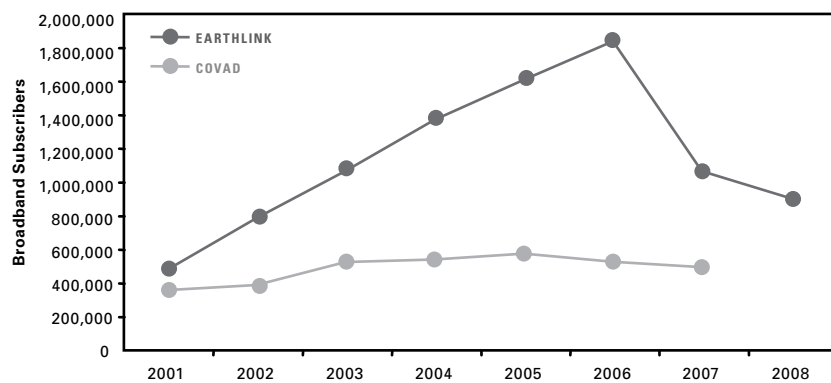
¹⁴⁰ See e.g., "Verizon Takes FiOS Wholesale," Carol Wilson, *Telephony Online*, May 30, 2005.

¹⁴¹ See <http://www22.verizon.com/wholesale/solutionsbridge/solutionsbridge.html>. Verizon did make a wholesale retail fiber solution called FBAS available during the first phases of FiOS rollouts. That was replaced with a resale-only product known as FTAS. But this product is no longer listed on Verizon's wholesale portal. We were able to find one company (LA Bridge Internet Services) that still appears to sell the service in Southern California. However, their pricing does not seem very competitive. For example, their reselling of the standalone 20 Mbps symmetrical package costs customers \$100 per month on a month-to-month contract. Verizon offers the same service directly for \$77.99 per month on a month-to-month basis.

Section 251 unbundling provisions of the 1996 Act, and the primary motivation behind the *Computer Inquiries*. Congress dictated that competitors should have access to unbundled network elements at *cost-based* rates because incumbents would have no other reason to offer advantageous access to these bottleneck facilities.

The complete and utter implosion of the wholesale DSL business in the aftermath of the *Triennial Review* and *Wireline Broadband* orders is proof positive that the FCC's beliefs were flawed and that the promises made by the incumbents were empty. Consider Earthlink, the largest wholesale ISP. From 2001 to 2006, it saw a steady, cumulative 260 percent increase in the number of retail broadband customers (served on lines obtained at wholesale). But between 2006 and 2007 (when the *Wireline Broadband Order* transition period was complete), the company lost nearly half of its broadband customers. For Covad, a CLEC, the impact was less severe, as their business is mainly focused on UNE-loops serving business customers. But even here, we see that Covad's business never recovered after 2005 (see Figure 20). Earthlink and Covad are, however, standout exceptions — many ISP CLECs simply went out of business after the 2003-2005 orders.

Figure 20: The Decline of Earthlink and Covad



Source: Company Annual SEC 10-K filings; Covad was taken private after 2007

In the *Wireline Broadband Order*, the FCC hedged its bets. It claimed wholesale competition would thrive absent regulations, and it promised consumers would have access to multiple intra-modal broadband ISPs. But even if that didn't pan out, then "third-platform" inter-modal competition was sure to be the savior. The FCC uncritically accepted the stale argument that deregulation would unleash a wave of incumbent investment *and* investment by competitive providers, which having been foreclosed from wholesale access, would have no choice but to build their own facilities. In essence, the Commission declared that platform competition would develop because it was eliminating the regulatory structure that Congress created to develop platform competition.

The Commission appeared defensive in the Order, knowing its decision to replace a competitive structure that was working with nothing more than empty promises of future deployment would be criticized. The ruling noted the decision to end wholesale access "does not mean that we sacrifice competitive ISP choice for greater deployment of broadband facilities."¹⁴²

But the Commission *did* sacrifice competitive ISP choice for the promise of greater deployment — a promise that went unfulfilled. Simply put, there is no evidence that the very limited deployment that has occurred since 2006 would not have occurred otherwise. In fact, it is quite possible that greater ISP access and choice would have led to *more* deployment. Indeed, this is the exact purpose of Section 251 of the 1996 Act — to use unbundling to give new competitors a path that begins with establishing a business and customer base and ends with robust facilities deployment.

What the evangelists for platform competition fail to grasp is that the simple desire for platform competition does not erase the substantial fixed and sunk costs of building a network. New entrants may be able to justify

¹⁴² See *Wireline Broadband Order*, *supra* note 124, at para. 79.

those costs in some limited instances, but only once they've built the foundations of a successful business. And even then, the barriers to widespread platform competition are still immense, and we should not expect all areas to see multiple facilities-based providers. Where alternative platforms do arise, there is still a substantial need for Title II regulatory protections such as reasonable and nondiscriminatory interconnection.

The barriers to entry in the facilities-based data market are immense. Thus, if entry is going to occur, it will first occur in the market segments where the average revenues per user (ARPU) are very high. This means new entrants will target large business ("enterprise") customers. And this is largely where competitive deployments have occurred, albeit in a very limited fashion.¹⁴³ There have been essentially no non-incumbent deployments of next-generation services to residential areas.

This lack of competitive market-wide fiber deployment should come as no surprise, not only given the economic barriers, but also the practical constraints such as getting a local government to agree to let the streets be torn up to bury new cables. The latter is something even the FCC recognized when it issued an order foreclosing competitive access to fiber optic lines.¹⁴⁴

If we suspend disbelief and accept the Commission's logic that dismantling existing regulations would create greater incentives for competitors to deploy their own facilities, then the only two companies that might have had a plausible chance to make this happen were MCI and the old AT&T. But just three months after dealing a major blow to competition in the *Wireline Broadband Order* – and on the same day, no less — the Commission allowed SBC to merge with AT&T and approved Verizon's acquisition of MCI.¹⁴⁵ Thus the two largest Baby Bells acquired the two largest CLECs, smothering any real possibility of facilities-based competition.

Platform Competition: Always Right Around the Corner

But the FCC didn't stop there. In order after order that further entrenched the duopoly marketplace, the Bush-era Commission continued to insist that alternative platform competition was just around the corner. The Commission pointed to the existence of platforms that might have a cumulative total of less than 1 percent of the national broadband market as proof that the duopoly would be short-lived. In the 2005 *Wireline Broadband Order*, the Commission stated, "Cable modem and DSL providers are currently the market leaders for broadband Internet access service. ... There are, however, other existing and developing platforms, such as satellite and wireless, and even broadband over power line in certain locations, indicating that broadband Internet access services in the future will not be limited to cable modem and DSL service."

No one can accuse the FCC of being pessimistic about the future. But were they right? Have platforms such as satellite, wireless and broadband over powerline (BPL) emerged as legitimate competitive platforms to the cable-telco duopoly? In 2005, when the Commission made this statement, the combined fixed-residential broadband marketshare of phone and cable incumbents was 97 percent. *Today, that number stands unchanged* (see Figure 21).

¹⁴³ In a 2006 study, the GAO found competitive DS3-level and above deployment in 15 to 25 percent of the business locations it examined in 16 major Metropolitan Statistical Areas. Specifically, "For the subset of buildings identified as likely having companies with a DS-3 level of demand, competitors have a fiber-based presence in about 15 percent of buildings on average. For buildings identified in our model with 2 DS-3s of demand, competitors have a fiber-based presence in 24 percent of buildings on average." However, these 16 MSA's examined were all granted some level of FCC Special Access pricing flexibility, meaning they are expected to be the most competitive areas in the country. And still we see in some MSAs like Phoenix or Detroit the buildings that housed companies that would have a demand for the fastest fiber optics possible, still only see single-digit levels of competitive deployment. (Note: A DS-3 is a dedicated circuit with 45 Mbps symmetrical bandwidth. DS-3s usually only exist within buildings, because these circuits can usually only span 600 feet without repeating; thus usually outside the building, the circuit is muxed onto a SONET circuit). See *infra* note 170.

¹⁴⁴ In 2004, the Commission wrote, "The barriers to entry impeding competitive deployment of loops are substantial: The costs of the loops themselves, as well as costs associated with accessing right-of-ways and obtaining building access do not generally vary with demand. As we found in the Triennial Review Order, the costs of loop deployment vary due to factors such as regional differences in costs of construction; the length of the fiber lateral that competitor must construct from the splice point on the relevant ring to the customer location; and the availability of reasonable access to rights-of-way." See *Unbundled Access to Network Elements and Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, WC Docket No. 04-313, CC Docket No. 01-338, Order on Remand, 20 FCC Rcd 2533 (2003) (*Triennial Review Order on Remand*) at para. 152.

¹⁴⁵ See *SBC Communications, Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, WC Docket No. 05-65, Memorandum Opinion and Order, 20 FCC Rcd 18290 (2005) (*SBC/AT&T Order*); *Verizon Communications, Inc. and MCI, Inc. Applications for Approval of Transfer of Control*, WC Docket Memorandum Opinion and Order, 20 FCC Rcd 18433 (2005) (*Verizon/MCI Order*).

Figure 21: The Duopoly U.S. Broadband Market
(2005 & 2008 Marketshare Estimates)

Provider Type	Marketshare of Fixed Residential Broadband Market (2005)	Marketshare of Fixed AND Mobile Residential Broadband Market (2005)	Marketshare of Fixed Residential Broadband Market (2008)	Marketshare of Fixed AND Mobile Residential Broadband Market (2008)
Incumbent Phone Companies	33%	33%	39%	45%
Incumbent Cable Companies	64%	64%	57%	50%
Cable Overbuilders	1%	1%	1%	1%
CLECs	2%	2%	1%	1%
Others (satellite, wireless, powerline)	0.4%	0.4%	1%	3%
Marketshare of Incumbent Cable and Phone Companies	97%	97%	97%	95%

Source: Free Press estimates based on FCC and provider data

Considering mobile wireless connections as well as fixed connections, the incumbents' share of the residential market stands today at 95 percent, versus 97 percent in 2005. But these numbers actually overstate the level of competition available to the typical U.S. consumer.

First, cable overbuilders may account for 1 percent of the total U.S. market, but these services are only available in a few select areas. The same is true for services offered over platforms like fixed wireless, non-incumbent fiber, CLEC-DSL, or the perennial dud that is broadband over powerline. Satellite services are technically available to any house that has a clear view of the southern sky, but these services are extremely slow, very expensive, plagued with technical issues, and saddled with restrictive download caps. Consequently, satellite is really only sold and marketed as a solution in areas where absolutely no other options are available.

And though 3G mobile wireless deployments are quickly reaching most major populated areas, there is absolutely no evidence to suggest that these services are being used as the primary or sole residential broadband connections for subscribers. So while non-incumbent mobile wireless may make up more than 2 percent of all residential high-speed lines in the United States, they are not being bought to replace an incumbent broadband line.

Comparing FCC data with other estimates of household-level broadband adoption illustrates this point. In October 2007, the Census Bureau estimated that 51 percent of U.S. homes were connected to broadband. But the FCC's December 2007 data indicates that there were 64 residential broadband lines per 100 U.S. households. In other words, if each residential connection reported by the FCC were the *sole* home connection, then this data would indicate that 64 percent of U.S. homes were connected to broadband. When we remove mobile wireless from this count, the FCC data indicates 56 fixed broadband lines per 100 U.S. households. This number is much closer to the 51 percent figure from the Census Bureau, and also closer to an estimated figure of 53 percent based on time-series extrapolation of Pew data (see Figure 22).¹⁴⁶

Not only are mobile data services not a substitute for fixed broadband, but these 3G devices are so slow they don't deserve to be classified as "broadband." Real-world speed tests of devices that are supposed to be able to deliver more than 3 Mbps in downstream speeds reveals that these devices can only deliver about a third of that when used in a fixed setting. When used in a mobile setting, the downstream speeds drop well below 1 Mbps (see Figure 23).

¹⁴⁶ Given that the figure obtained by dividing the FCC count of fixed residential broadband lines by the number of U.S. households consistently exceeds the estimate based on Pew's data (of the percent of adults reporting broadband at home), it is possible that the FCC's residential count is capturing some small-business lines.

Figure 22: No Indication of Mobile Broadband Supplanting Fixed Broadband
(2005 - 2007 Marketshare Estimates)

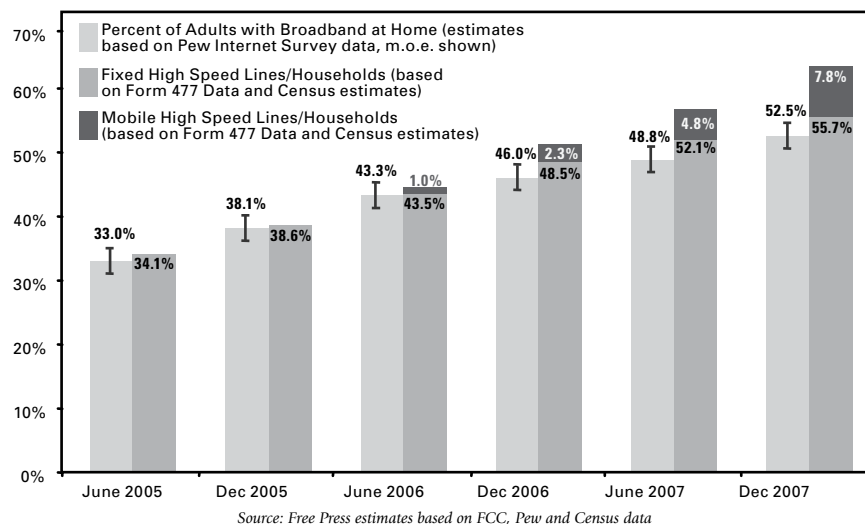


Figure 23: The Slow Performance of 3G Mobile Broadband

3G Carrier (Technology)	Rated Downstream Speed	Rated Upstream Speed	Computerworld Test (N=500, NYC metro area, mobile and fixed tests)		Gizmodo Test (N=200, 8 metro areas, fixed only tests)	
			Actual Downstream Speed	Actual Upstream Speed	Actual Downstream Speed	Actual Upstream Speed
AT&T (HSPA)	3.6Mbps	1.4Mbps	775kbps	484kbps	1.23Mbps	640kbps
Sprint (EVDO Rev-A)	3.1Mbps	1.8Mbps	494kbps	294kbps	1.42Mbps	400kbps
Verizon (EVDO Rev-A)	3.1Mbps	1.8Mbps	592kbps	292kbps	1.17Mbps	400kbps

Source: Computerworld, Gizmodo

If ending line sharing and wholesale access was supposed to accelerate deployment of DSL, it's not happening. On Form 477, the FCC requires that incumbent LECs and cable companies report the percentage of their end-user lines that are DSL or cable modem-capable. This data indicates that removing DSL from wholesale regulations had no impact on rural broadband deployment. In fact, there was likely more vigorous deployment of DSL into unserved areas in the period before the *Wireline Broadband Order* took effect than there was in the time following (see Figure 24).

Figure 24: Percent of End-User Premises Without Broadband Deployment
(2005-2007)

Carrier Type	Technology	PERCENT OF LINES THAT ARE NOT HIGH-SPEED INTERNET CAPABLE					
		June 2005	Dec 2005	June 2006	Dec 2006	June 2007	Dec 2007
Wireline Telephone	DSL	24%	22%	21%	21%	18%	18%
Cable Television	Cable Modem	9%	7%	7%	4%	4%	4%

Source: Free Press analysis of FCC Form 477 data (note: data not collected by FCC before June 2005)

The data in Figure 24 is at the national level, but the pattern is seen at the state level as well. Figure 25 lists the top five states without DSL deployment (and the top five without cable modem deployment) as of the end of

2007. Here we see DSL availability in states like New Hampshire and Virginia is actually lower today than it was prior to the FCC's 2005 deregulation (see Figure 25).

Figure 25: Current Top U.S. States without Broadband Deployment
(2005-2007)

Top Five States Without DSL Deployment (as of 12/07)	PERCENT OF TELEPHONE LINES THAT ARE NOT DSL CAPABLE					
	June 2005	Dec 2005	June 2006	Dec 2006	June 2007	Dec 2007
New Hampshire	35.0%	37.4%	40.6%	38.9%	38.8%	37.9%
Virginia	34.0%	33.1%	34.4%	34.2%	34.3%	34.6%
Maine	30.1%	32.8%	33.0%	32.5%	31.8%	31.0%
Vermont	35.6%	38.7%	40.1%	35.7%	34.0%	30.9%
Michigan	35.2%	34.9%	33.6%	36.0%	27.9%	29.2%
Top Five States Without Cable Modem Deployment (as of 12/07)	PERCENT OF CABLE LINES THAT ARE NOT MODEM CAPABLE					
	June 2005	Dec 2005	June 2006	Dec 2006	June 2007	Dec 2007
Arkansas	35.4%	32.9%	22.7%	27.6%	26.9%	26.6%
New Mexico	28.4%	25.2%	20.5%	21.9%	22.7%	22.8%
South Dakota	37.9%	n/a	41.5%	26.7%	27.1%	19.7%
North Dakota	20.8%	10.9%	20.6%	17.3%	17.5%	17.5%
West Virginia	17.8%	17.6%	11.8%	12.5%	15.3%	16.3%

Source: Free Press analysis of FCC Form 477 data

If we instead look at the five worst DSL states as of June 2005, a strong pattern emerges: The states with limited DSL availability saw much greater levels of deployment during the period prior to the deregulation taking effect than they did afterward (see Figure 26). In short, DSL deployment was already robust prior to deregulation, and only slowed down after the competitive pressures of wholesale access were eliminated.

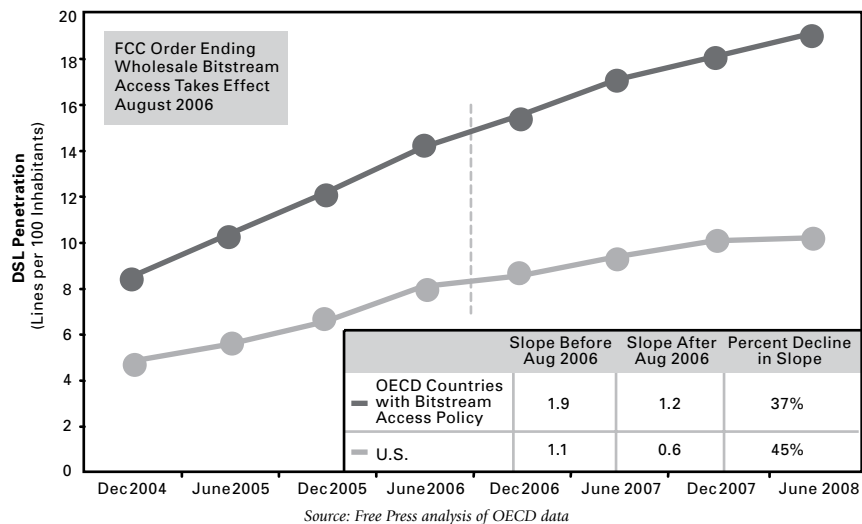
Figure 26: Top U.S. States without DSL Deployment in June 2005
(2005-2007)

Top Five States Without DSL Deployment (as of 6/05)	PERCENT OF TELEPHONE LINES THAT ARE NOT DSL CAPABLE						June '05 to June '06 Change	Dec '06 to Dec '07 Change
	June 2005	Dec 2005	June 2006	Dec 2006	June 2007	Dec 2007		
Nebraska	48.0%	29.3%	13.9%	11.4%	11.8%	13.6%	34.1%	-2.2%
West Virginia	43.1%	38.8%	31.7%	28.3%	27.5%	25.9%	11.4%	2.4%
Arkansas	42.8%	37.1%	34.4%	33.7%	25.1%	25.2%	8.3%	8.5%
Kentucky	40.2%	25.7%	15.5%	15.3%	13.4%	14.4%	24.7%	0.9%
Arizona	38.8%	35.5%	33.1%	20.8%	18.1%	16.9%	5.8%	3.9%

Source: Free Press analysis of FCC Form 477 data

There is one further comparative example that indicates the fallacy in the Commission's thinking that its deregulation would spur accelerated broadband deployment or adoption. If we compare DSL penetration in the United States to DSL penetration in countries that have the type of wholesale access policies the FCC eliminated, we see that post-2006, the United States saw a relative decline in raw DSL penetration growth compared to these other countries (see Figure 27). While both groups saw a slowing down in DSL adoption during the 18-month period following December 2006 (indicating maturing markets), the decline is *much* more pronounced in the United States than in those countries that retained wholesale access regulations.

Figure 27: DSL Adoption and Wholesale Access Policy
(OECD, 2004-2008)



Defenders of the FCC's destructive deregulatory path might be quick to assert that the real point was to encourage incumbents to deploy next-generation fiber-optic technologies by freeing them of "outdated" regulatory burdens. Even if we accept the underlying premise that regulation deters investment (which the Commission certainly did when it removed fiber-to-the-curb and fiber-to-the-home from the list of unbundled elements in 2003),¹⁴⁷ it makes little sense to apply this approach to the legacy copper telephone network or to new fiber network elements.

The sunk costs of the legacy copper network were long ago recovered, and any investment in preparing the copper infrastructure for DSL deployment will be relatively small compared to that required to deploy fiber-optics. Further, the costs of this small investment are born by the CLEC, not by the incumbent. The DSL offered by the CLEC would create a competitive market impact that would encourage the incumbent — freed from unbundling obligations on its future fiber network — to make even larger investments in next-generation technology deployment.

This was actually the view of FCC Chairman Michael Powell, who voted against eliminating line sharing in 2003, even as he voted to free fiber infrastructure from Section 251 unbundling obligations. Powell stated: "I do not accept the argument that the elimination of line sharing provides an affirmative incentive for ILEC deployment of new broadband infrastructure. Line sharing rides on the old copper infrastructure, not the new fiber facilities that we seek to advance to deployment."¹⁴⁸

The Commission was nearly united in its belief that removing unbundling requirements from next-generation fiber-optic networks would create a "race to build next-generation networks."¹⁴⁹ The Commission said that in a deregulatory climate, incumbent phone and cable companies would be better able "to develop and deploy

¹⁴⁷ See *Triennial Review Order*, *supra* note 102, at paras. 272-297.

¹⁴⁸ See *Powell 2003 House Testimony*, *supra* note 105.

¹⁴⁹ See *Triennial Review Order*, *supra* note 102, at para. 272: "We expect that this decision to refrain from unbundling incumbent LEC next-generation networks ... will stimulate facilities-based deployment in two ways. First, with the certainty that their fiber optic and packet-based networks will remain free of unbundling requirements, incumbent LECs will have the opportunity to expand their deployment of these networks, enter new lines of business, and reap the rewards of delivering broadband services to the mass market. Thus, we conclude that relieving incumbent LECs from unbundling requirements for these networks will promote investment in, and deployment of, next-generation networks. Second, with the knowledge that incumbent LEC next-generation networks will not be available on an unbundled basis, *competitive LECs will need to continue to seek innovative network access options* to serve end users and to fully compete against incumbent LECs in the mass market. The end result is that consumers will benefit from this race to build next generation networks and the increased competition in the delivery of broadband services" (*emphasis added*). We're not sure what the Commission meant by the highlighted passage and the phrase "innovative network access options."

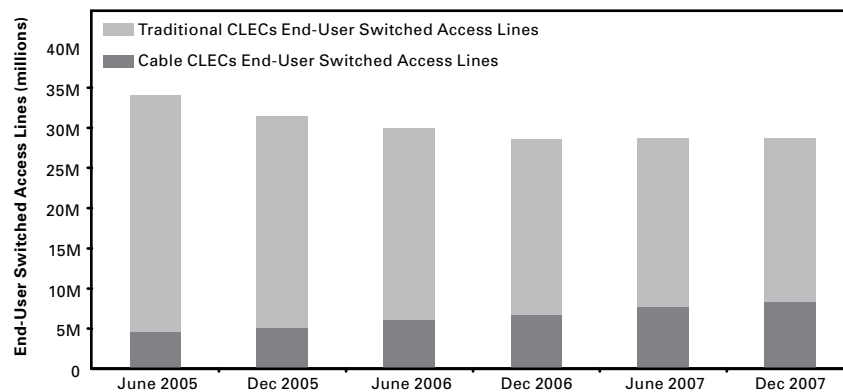
innovative broadband capabilities that respond to market demands.”¹⁵⁰ But there is little evidence that this belief had any merit.

Yes, Verizon undertook a large-scale fiber-to-the-home deployment effort. Yet this effort is unique among the other incumbents, and only extends to a fraction of Verizon’s service territory; FiOS is available in less than 10 percent of U.S. homes. Companies like AT&T and Qwest have affirmatively decided against fiber-to-the-home deployments, instead choosing to milk the legacy copper network for years to come. AT&T, and, to a much lesser extent, Qwest, have finally recently deployed some limited “VDSL” upgrades. But overseas telcos implemented similar “innovated broadband capability” upgrades years ago and are already deploying even faster VDSL2+ pair-bonded technology.¹⁵¹

In closing the book on the 1996 Act’s competitive regulatory framework, the FCC was content to deliver to consumers a vertically integrated duopoly in place of Congress’ intended goal of a robust, truly competitive communications market. This is true not only for the broadband market, but also for the voice market, where some residual unbundling regulations remain intact after the decade-long legal assault.

The CLEC industry Congress envisioned is almost dead, left to serve a small slice of the business market in large cities. Of the 94 million residential end-user switched access lines, a full 86 percent are provided by incumbent LECs. But when cable VoIP lines are excluded, we see that traditional CLECs account for less than 5 percent of residential voice lines (see Figure 28). Thus the FCC’s destructive deregulatory reign not only stifled broadband competition, it also denied consumers competition in basic local voice services.

Figure 28: The Slow Death of CLECs
(Cable vs. Traditional CLEC Access Lines, 2005-2007)



Source: Free Press analysis of FCC Form 477 data.

¹⁵⁰ See *Wireline Broadband Order*, *supra* note 124, at para. 44.

¹⁵¹ And contrary to the core belief contained in the Triennial Review and subsequent orders, the deployment and adoption of business fiber lines have not increased at all since the Commission began dismantling the 1996 Act. This is the exact opposite of the outcome that was predicted by the FCC in 2003, which felt that its fiber-deregulation would have the greatest impact in the business market. In fact, since the 2006-2007 enterprise broadband forbearance orders (that deregulated all high-capacity dedicated broadband services, such as metro Ethernet, OCn, ATM, Frame Relay, etc.) we’ve actually seen a decline in the number of business fiber lines. This suggests that the predictable higher prices that forbearance brought led some companies to downgrade their service. See “Verizon Telephone Companies’ Petition for Forbearance from Title II and Computer Inquiry Rules with Respect to their Broadband Services Is Granted by Operation of Law,” WC Docket No. 04-440, News Release (rel. March 20, 2006). See also *Petition of the Verizon Telephone Companies For Forbearance*, WC Docket No. 04- 440 (filed Dec. 20, 2004) (*Verizon Enterprise Forbearance Petition*). See also *Petition of AT&T Inc. for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Its Broadband Services*, *Petition of BellSouth Corporation for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Its Broadband Services*, WC Docket No. 06-125, Memorandum Opinion and Order, 22 FCC Rcd 18705 (2007) (*AT&T Enterprise Forbearance Order*); See also *Qwest Petition for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Broadband Services*, WC Docket No. 06-125, Memorandum Opinion and Order, 23 FCC Rcd 12260 (2008) (*Qwest Enterprise Forbearance Order*).

The FCC's Blindness to Abuses of Market Power

One of the central purposes of any regulatory agency is to protect consumers from abuses of market power. Most of the FCC's telecommunications regulatory structure dictated by Title II of the Communications Act is designed to protect consumers and competitors from the natural anticompetitive tendencies of the incumbent phone companies. The same is true of Title VI and its treatment of cable companies.

Congress and the FCC are concerned with market power because companies with it have strong incentives to discriminate against competitors and engage in otherwise anti-competitive conduct. Outside of forbearance proceedings, the Commission is not required by statute to conduct market power analysis when contemplating major regulatory or deregulatory actions. However, in many cases, the FCC does rely on this type of analysis as a guiding factor in determining if regulations are in the public interest.

In telecommunications markets, the FCC generally considers two broad types of market power: classic and exclusionary. Classic market power exists when a company can profitably raise and sustain its price above the competitive level by restricting its own output. Exclusionary market power exists when a company can profitably raise and sustain its price above the competitive level by raising its rivals' costs and thereby causing the rivals to restrain their output.¹⁵²

Concern about exclusionary market power is particularly relevant in the context of unbundling. Such concerns spawned the original *Computer Inquiry* and motivated Congress to create the pro-competitive structure of Section 251 in the 1996 Act. These concerns are rooted in the fact that incumbents in markets with extremely high fixed and sunk costs will control so-called bottleneck facilities. Such bottlenecks exist when a firm has such substantial control over a facility or essential commodity in a particular industry that the firm is able to exclude or impede new competitors from entering the market.¹⁵³ In the telecom and Internet markets, the "last-mile" facilities are considered bottlenecks, because in most cases it is uneconomical for new entrants to duplicate (or "overbuild") these facilities. Thus competition depends on these new entrants having reasonable and nondiscriminatory access to these bottlenecks. In many cases, "middle-mile" and "special access" facilities are also considered to be bottlenecks.¹⁵⁴

Firms that control bottlenecks can impede and stifle market entry by "price squeezing" their competitors. In the context of telecom, this means an incumbent will set its wholesale prices at a point that is so close to the retail market price that competitors are unable to resell it and still earn a profit.¹⁵⁵ Having no other alternative to bypass the bottleneck facility, the new entrant exits the market, and consumers suffer as a result.

It is important to note that exclusionary market power can exist even if a firm lacks classic market power. For example, the FCC has allowed the RBOCs to more fully enter into the long-distance market, finding they lacked individual market power.¹⁵⁶ But these companies were still found to possess exclusionary power and thus are required to adhere to various equal access and unbundling regulations.¹⁵⁷

Though the FCC rarely undertakes a formal market power analysis (often lacking the data to do so), in evaluating regulatory action, it does often consider the impact on price of factors such as marketshare, trends in marketshare, elasticities of supply and demand (i.e., how sensitive to changes in price consumers and suppliers are), cross-price elasticities (i.e., what substitutable products are available, and how are consumers likely to shift between products), and market cost-structure (i.e., barriers to entry).

¹⁵² These two concepts are known, respectively, as "Stiglerian" and "Bainian" market power.

¹⁵³ See *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities*, CC Docket No. 79-252, First Report and Order, 85 FCC 2d 1 (1980) (*Competitive Carrier First Report and Order*).

¹⁵⁴ See below for a full discussion of this issue. In general, middle-mile facilities are those high-capacity dedicated transport lines that carry data between a local Internet point of presence (POP) facility and larger traffic aggregation facilities at or connecting with the Internet backbone. Special access facilities are in general those dedicated circuits that connect an end user facility to another facility or POP, avoiding a local exchange switch.

¹⁵⁵ See *Triennial Review Order on Remand*, *supra* note 144, at para. 59 n.159.

¹⁵⁶ See *Section 272(f) Sunset of the BOC Separate Affiliate and Related Requirements*, WC Docket No. 02-112, Report and Order, 22 FCC Rcd 16440 (2007) (*2007 Section 272 Sunset Order*), at para 66.

¹⁵⁷ *Ibid.* paras. 64, 69, 90.

The hallmark of a market lacking effective competition is the presence of a firm that is able to substantially raise the price of its goods and sustain that price increase over time. This is because in a competitive market, such supra-competitive profits would encourage other firms to enter the market with a lower-priced offering. However, the lack of the ability to raise prices alone does not mean a market is competitive. If demand for a good is relatively elastic (i.e., consumers are very sensitive to price increases), then a firm even with substantial market power is constrained from raising prices. This is because the total revenues lost from customers exiting the market will be more than the additional per-customer revenues generated by the price increase.

Consumers are more sensitive to price increases in markets that are not fully mature, such as the residential broadband market. Thus, analyzing how monthly broadband subscription prices have changed over time is not a good way to measure competition or market power. In emerging markets, regulators are forced to rely on other predictive tools for assessing market power, such as the historical relationship between marketshare and market power (measured by the Herfindahl-Hirschman Index, or HHI),¹⁵⁸ and other factors such as barriers to entry.

But in its 2005 *Wireline Broadband Order*, when the FCC sentenced American broadband consumers to a lifetime in a duopoly market, the agency didn't consider any of the above economic factors. They didn't conduct any rigorous or even semi-rigorous market analysis. The Commission stated flat out that it considered undertaking a market dominance analysis to be unnecessary and inappropriate.¹⁵⁹ They were arrogant enough to acknowledge the existence of a duopoly, but then dismiss that duopoly as a temporary aberration.¹⁶⁰ In essence, the FCC ruled that it was in the "public interest" for the duopoly broadband providers to be set completely free to abuse their bottleneck-controlling market power in a market where competitive entry is all but impossible.¹⁶¹

At the core of the Commission's recent regulatory actions is the belief that the mere *presence* of more than one provider is proof alone that the market is, or *might in the future* become, competitive. The FCC finds a duopoly in the emerging broadband market acceptable, because the limited competition in combination with consumer price sensitivity *might* be enough to restrain the "substantial and sustained" price increases that are the main symptom of market power abuse.

But this narrow view ignores other basic anti-competitive realities about oligopolistic marketplaces. In these highly concentrated markets, incumbents artificially restrain investment and discourage innovation. Incumbents in a duopoly simply will not invest in new technologies until the costs of the old investments

¹⁵⁸ The Herfindahl-Hirschman Index (HHI) is calculated as:

$$H = \sum_{i=1}^n S_i^2 \times 10,000,$$

where n = the number of firms; S_i = the share of the i th firm. The HHI is calculated based on ratios rather than percentages and the decimals are cleared by multiplying by 10,000. The Department of Justice considers a market with fewer than ten equal-sized firms to be concentrated (i.e., $HHI=1,000$). It considers a market with fewer than the equivalent of approximately 5.5-equal sized firms ($HHI = 1800$) to be "highly concentrated." Markets with an HHI between 1000 and 1800 are considered "moderately concentrated." These thresholds have been chosen based on theory, empirical evidence and experience with the exercise of market power.

¹⁵⁹ "Nor do we think it necessary or appropriate to make findings about dominance or non-dominance with respect to the retail market for broadband Internet access." See *Wireline Broadband Order*, *supra* note 124, at para. 84.

¹⁶⁰ "The current market leaders, cable operators and wireline carriers, face competition not only from each other but also from other emerging broadband Internet access service providers. This rapidly changing market does not lend itself to the conclusions about market dominance the Commission typically makes to determine the degree of regulation to be applied to well-established, relatively stable telecommunications service markets. On the contrary, any finding about dominance or non-dominance in this emerging broadband Internet access service market would be premature." *Ibid*, at para. 84. It should be noted that in the *Triennial Review Order*, when the Commission decided to remove fiber-to-the-home from the list of Section 251 unbundled network elements, it did conduct a market analysis of this "emerging" broadband market, and concluded that CLECs were not impaired without access to these facilities. At the time, there was almost no residential fiber deployment, and municipalities and CLECs were largely the providers of what few facilities existed. Thus the Bells had no market dominance, a fact the Commission was more than happy to point out. But when a broadband market analysis will illustrate incumbent dominance, the Commission all of a sudden finds such an examination to be "premature."

¹⁶¹ Quite flipantly, the Commission stated: "We find that the public interest is best served if we permit competitive marketplace conditions to guide the evolution of broadband Internet access service." *Ibid*, at para. 85. But all evidence before the Commission suggested that the marketplace was already a duopoly, and that the very regulations that it was about to remove would likely make that situation permanent. The "competitive marketplace conditions" the FCC referred to were nowhere to be found. And the conditions that did exist at the time — a vertically integrated duopoly in which producers avoided direct competition on broadband, instead focusing on product differentiation through bundles — would surely "guide the evolution" of this market to the place it is today.

are fully recovered. This is nowhere more apparent than the unwillingness of cable companies to deploy the relatively inexpensive DOCSIS 3.0 upgrades, or in the unwillingness of most ILECs to deploy fiber-to-the-home or VDSL2+ technologies. Duopolies do more than just keep prices high; they rob consumers of new products and better services. One only need compare European and East Asian broadband markets to those in the United States to get a full sense of this basic reality.

In 2005, the HHI of the local broadband marketplace was near 5,000 — a stratospheric level of market concentration that remains unchanged today (this level of HHI is nearly three times the HHI that the Department of Justice considers to be a “highly concentrated” market). The market power possessed by the phone and cable companies is immense, and exists in both the classic and exclusionary sense. The fact that prices have either held constant or increased over the years¹⁶² despite declining costs and a growing market is evidence of classic market power. The fact that the third-party wholesale ISP market died shortly after the 2005 *Wireline Broadband Order* is strong evidence of exclusionary last-mile market power.

The FCC defended its 2005 dismantling of 30 years of successful competition policy by stating that the broadband market was already characterized by multiple “vigorously competing” platforms,¹⁶³ and that consumers in the future would “not be limited to cable modem and DSL service.”¹⁶⁴ Looking back, it is hard to fathom how the Commission could have been so blind to reality and so indifferent to the plight of consumers.

Predicting a future of competition and then regulating like it’s already in place is not good public policy. If the Commission was going to knowingly kill off the wholesale ISP market, and hope that emerging inter-modal platform competition would offset this, then it should have done something to turn that hope into reality. Optimism alone is not going to protect consumers and promote innovation.

FCC Endorses Monopoly Power in the Middle-Mile and Special Access Markets

Perhaps the strongest evidence of incumbents abusing their exclusionary market power is the lack of a viable “third-pipe” broadband competitor. Fixed wireless services in most cases have much lower “last-mile” deployment costs than wired services and can, in theory (and given adequate transport capacity to carry traffic back and forth to the Internet backbone), provide residential broadband services that are as fast as those offered by DSL and cable modem. So why haven’t we seen robust fixed wireless broadband deployment?

The data transport market — like the residential broadband market — is incredibly concentrated, dominated almost exclusively by the Baby Bell incumbents. These incumbents, freed by the FCC from price constraint and access regulations, have abused their market power to an obscene extent. The FCC has enabled this abuse, putting the final nail in competition’s coffin.

The communications network consists of many parts. The last mile gets the most attention because that’s where consumers interact with the market. But the other two major segments, the “middle-mile” and “backbone” markets, are just as important. And competition in these markets directly affects competition in the last mile. The Internet backbone or “long-haul” market is generally regarded as moderately competitive, a product of the substantial investment in long-haul fiber-optic networks that occurred in the 1990s.¹⁶⁵ The

¹⁶² According to annual survey data from JD Power, the reported monthly price in broadband increased from \$42.15 in 2003 to \$44.09 in 2007 (data available from: <http://www.jdpower.com/corporate/news/releases/>). Companies continue to report higher or flat ARPU for their broadband services, and, more importantly, higher revenues for their bundled product offerings, which is how they market to their customers. For example, in 2005, the high-speed data ARPU for Comcast was \$43.17, which held nearly flat at \$43.05 in 2008. Over the same period, Charter Communications’ data ARPU went from \$36.79 to \$41.00. For Comcast, their total ARPU was \$73.38 in 2005, increasing to \$100.97 in 2008. See “Cable & Satellite Sector Outlook,” *Credit Suisse*, Dec. 11, 2007, Exhibit 8.

¹⁶³ See “Statement of Chairman Kevin J. Martin” accompanying the 2005 *Wireline Broadband Order*, *supra* note 124.

¹⁶⁴ See *Wireline Broadband Order*, *supra* note 124, para. 50.

¹⁶⁵ While the Internet backbone market seems reasonably competitive in comparison to the middle- and last-mile markets, this does not mean regulators should not be concerned about market power here, too. The industry has experienced increasing consolidation in recent years. Moreover, several recent high-profile peering disputes illustrate the overall importance of this market, and how vulnerable end-users are to a single peer exercising market power.

middle-mile market is a much different story. For much of the nation, the market for middle-mile transport never matured from the old Bell days.

In general, middle-mile facilities are high-capacity dedicated transport lines that carry data between a local Internet point of presence (POP) facility and larger traffic aggregation facilities connecting with the Internet backbone. There is another closely related class of facilities known as “special access lines.” Special access facilities are generally dedicated circuits that connect an end-user facility, such as a building in a business district, to another facility or POP, without routing through a local exchange switch. So, for example, a middle-mile circuit might connect an ISP carrier hotel with a larger private peering exchange facility, while a special access line might connect a broadcast radio station studio to a remotely located transmission tower.¹⁶⁶

Special access and middle-mile facilities are particularly important in the context of last-mile broadband competition, because these are the lines that are used to carry traffic from end-users to the “Internet.” The economics of special access and middle-mile deployment are similar to and just as unfriendly as the economics of the last-mile market. Consequently, even though these lines are used to provision services that generate substantial revenues, there are only limited and very specialized cases of deployment by non-incumbents.

Because this market grew out of the Bell system, it was subject to the dominant carrier regulations stemming from the 1996 Act. In general, special access services are priced according to price-cap regulations and are subject to other Title II rules. But as with the local broadband Internet access market, the FCC has looked for the smallest sign of competition to justify a blind deregulatory agenda in the special access market. The Commission was bombarded with arguments from the RBOCs that advances in business use of technology meant that it was in fact economical for new entrants to deploy their own high-capacity transport lines directly to businesses. The RBOCs argued that this *potential* for competition meant that it was unfair to regulate its special access prices.

The FCC bought these arguments. In 1999, the Commission adopted a framework for granting incumbents substantial regulatory price relief once they could satisfy a specific set of competitive criteria.¹⁶⁷ Under this framework, regulatory price relief is granted in Metropolitan Statistical Areas (MSAs) where competitive fiber collocation is above certain specified levels. Relief is granted in two phases. If granted Phase I pricing flexibility, an incumbent LEC is still required to offer a generally available price-cap constrained tariffed rate, but may offer contract tariffs and volume discounts under one-day notice tariffs. If granted Phase II pricing flexibility, an incumbent is permitted to offer some services completely free of any price caps and is allowed change its rates and terms on one day’s notice.

Since 2001, Phase I relief has been granted in about a third of the nation’s 369 MSAs, and Phase II relief granted in another third. Incumbents have yet to be granted price relief in only three of the nation’s top 100 MSAs.¹⁶⁸ So in much of the country, incumbents are free to charge just about anything they wish for access to these essential communications inputs. For example, a startup wireless ISP in Tempe, Ariz., is completely dependent upon the data transport services offered by Qwest, which are not price-constrained in any way.

It is important to note here that the FCC has used a very specific metric — the presence of a co-locator in a specified proportion of wire centers within an MSA¹⁶⁹ — as a predictor of a sufficient level of competition

¹⁶⁶ The dividing line here is fuzzy, as a special access line can be a middle-mile line used to connect two collocation facilities. As explained above, “special access” takes on special meaning in a regulatory environment, as it refers to a particular type of TDM circuit that incumbents are required to (in some cases) offer as a UNE, or (in some cases) offer pursuant to strict tariffing rules.

¹⁶⁷ Currently special access lines consist of non-fiber-optic time-division-multiplexed (TDM) DS-1 or DS-3 circuits. DS-1 lines transport data symmetrically at 1.5 Mbps, while DS-3 lines transport at 45 Mbps symmetrical. Middle-mile facilities consist of any number of high-capacity lines, including DS-1 and DS-3s, but also packet-switched services such as Asynchronous Transfer Mode (ATM), Frame Relay, Gigabit Ethernet, high-capacity microwave, and other high-capacity OCn-level fiber optic services. See *Access Charge Reform*, CC Docket Nos. 98-157, 96-262, 94-1, CCB/CPD File No. 98-63, Fifth Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 14221 (1999) (*Pricing Flexibility Order*).

¹⁶⁸ U.S. Government Accountability Office, “FCC Needs to Improve Its Ability to Monitor and Determine the Extent of Competition in Dedicated Access Services,” Report to the Chairman, Committee on Government Reform, House of Representatives, GAO-07-08, November 2006 (*GAO Special Access Report*).

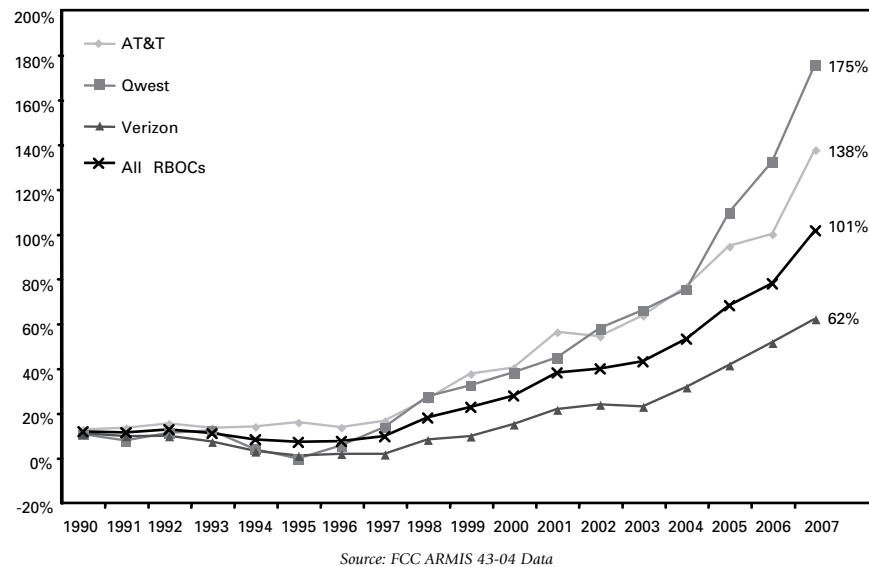
¹⁶⁹ See *Pricing Flexibility Order*, *supra* note 167, paras. 24-25, “For instance, for dedicated transport and special access services,

needed to prevent an incumbent from exploiting its market power. But all available evidence suggests the FCC's predictive judgment here has been a total failure.

To illustrate how incumbents have abused the pricing flexibility granted to them in the special access markets, consider that the authorized return at the time the price cap regime was implemented was 11.25 percent. Before pricing flexibility was implemented, the average rate of return earned on special access was about 30 percent for the RBOCs. Within just a few short years, the average rates have shot up more than 100 percent, with Qwest seeing 175 percent returns (see Figure 29). As obscene as these returns are, they actually *understate* the true level of return earned in areas with pricing flexibility. This is because the data presented here represent all RBOC study areas, including those subject to Phase I flexibility and those that remain under price caps.

Not surprisingly, the Government Accountability Office found that prices are *higher* in MSAs granted total pricing flexibility than in those areas that remain under price constraints. This is perhaps the best illustration that the FCC's assumptions about how to constrain incumbents from exploiting their market power have been completely wrong.¹⁷⁰

Figure 29: Special Access Runaway Rate of Returns
(Special Access Rate of Returns, 1990-2007)



In some areas, the special access rates of return are at such a high level that even the most stalwart monopolist would blush. In one Verizon California study area, the company earned a 700 percent rates of return in 2007 (see Figure 30). In total, 70 percent of the RBOC study areas saw special access rates of return above 100 percent in 2007.

price cap LECs must demonstrate that unaffiliated competitors have collocated in at least 15 percent of the LEC's wire centers within an MSA or collocated in wire centers accounting for 30 percent of the LEC's revenues from these services within an MSA. Higher thresholds apply, however, for channel terminations between an LEC end office and an end user customer. In that case, the LEC must demonstrate that unaffiliated competitors have collocated in 50 percent of the price cap LEC's wire centers within an MSA or collocated in wire centers accounting for 65 percent of the price cap LEC's revenues from this service within an MSA.... Phase II relief for dedicated transport and special access services is warranted when a price cap LEC demonstrates that unaffiliated competitors have collocated in at least 50 percent of the LEC's wire centers within an MSA or collocated in wire centers accounting for 65 percent of the LEC's revenues from these services within an MSA. Again, a higher threshold applies to channel terminations between an LEC end office and an end user customer. In that case, a price cap LEC must show that unaffiliated competitors have collocated in 65 percent of the LEC's wire centers within an MSA or collocated in wire centers accounting for 85 percent of the LEC's revenues from this service within an MSA."

¹⁷⁰ See GAO *Special Access Report*, *supra* note 168, page 27: "Since the FCC first began granting pricing flexibility in 2001, our comparison of prices and revenue across phase I flexibility and phase II flexibility suggests that list prices and revenue are higher on average for circuit components in areas under phase II flexibility (areas where competitive forces are presumed to be greatest) than in areas under phase I flexibility or under price caps."

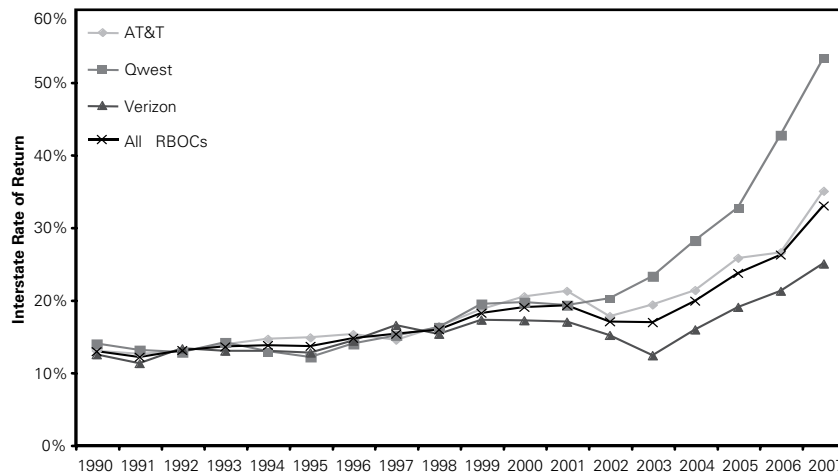
Figure 30: Top 10 Study Areas with Highest Special Access Rate of Returns
(Special Access Rate of Returns, 2007)

Carrier	State	Study Area Name	Rate of Return on Special Access in 2007
Verizon	CA	Contel California	700%
AT&T	AR	Southwestern - Arkansas	586%
Verizon	AZ	Contel Arizona	566%
Verizon	NC	Verizon SO-North Carolina	515%
AT&T	OK	Southwestern - Oklahoma	387%
Qwest	WY	Qwest-Wyoming	362%
AT&T	IL	Illinois Bell	346%
AT&T	MI	Michigan Bell	291%
AT&T	KS	Southwestern - Kansas	275%
Qwest	NM	Qwest-New Mexico	256%

Source: FCC ARMIS 43-04 Data

This explosion in monopoly profits is seen in the wider RBOC interstate access market (which includes special access as well as other FCC-regulated services such as long-distance). Overall interstate rate of returns have doubled since 2003, from about 17 percent to more than 30 percent (see Figure 31). This is quite stunning, given that the price-cap regime, combined with increased competition, was supposed to drive rate of returns well below the 11 percent authorized under the old regulatory regime.

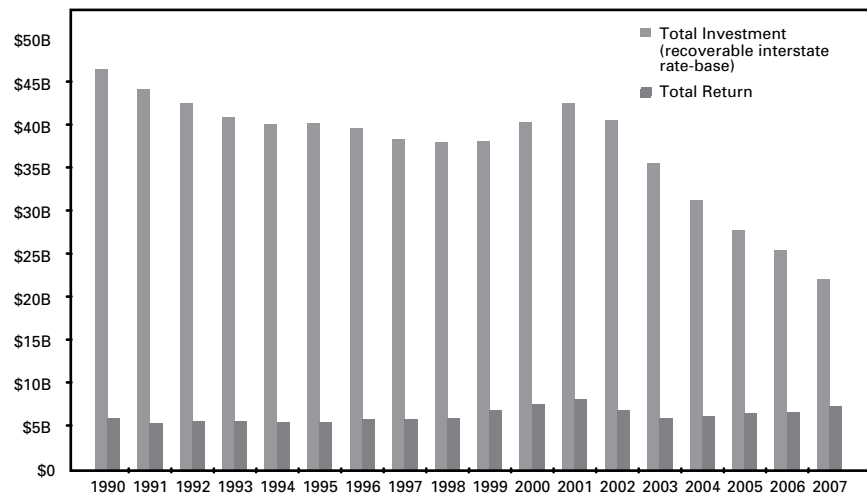
Figure 31: A Broken Regulatory System: Runaway Rate of Returns
(Interstate Rate of Returns, 1990-2007)



Source: FCC ARMIS 43-04 Data

These obscene increases in profits and the transparent flaws in the FCC's regulatory structure might be excusable if they were all occurring in an environment where incumbents were making greater investments in their networks. But they aren't. When interstate pricing flexibility was first granted in 2001, the RBOCs' total recoverable interstate investment stood near \$43 billion (in 2007 dollars). By 2007, RBOC interstate investment had declined by nearly 50 percent (see Figure 32).

Figure 32: Recoverable Interstate Investment and Returns
(In Billions of 2007 Inflation-Adjusted Dollars)



Source: FCC ARMIS 43-04 Data

Given the astronomical returns and the clear failure of the FCC's pricing flexibility regime, it's not surprising to learn that the RBOCs petitioned the Commission to eliminate the reporting requirement that tracks this data. In one of its last acts under Bush administration control, the Commission granted these requests.¹⁷¹ The data will no longer be collected, so the incumbents no longer have to worry about being embarrassed by their monopolistic profits.

The fact that no competitors have entered the market to take advantage of the huge rates of return demonstrates that the barriers to entry in the telecom market are truly insurmountable. If 100 percent rates of return do not produce competitive entry in the special access market, it is unlikely we'll ever see any new competition emerge in the residential market. The incumbents are simply able to use their exclusionary market power to prevent any new facilities-based competitors from competing effectively.

It is important to note that special access lines remain subject to Title II, specifically to Section 201, which states that "all charges... for and in connection with such [interstate] communication service, shall be just and reasonable, and any such charge, practice, classification, or regulation that is unjust or unreasonable is hereby declared to be unlawful."¹⁷² It is hard to fathom how the charges for a service earning a 700 percent rate of return could under any definition be considered "reasonable."

The FCC's Premature Deregulation of the High-Capacity Broadband Market

Since 2006, the Commission, through a series of forbearance decisions,¹⁷³ completely removed all packet-switched and optical transmission facilities from *Computer Inquiry* unbundling obligations, and generally

¹⁷¹ *Petition of Qwest Corporation for Forbearance from Enforcement of the Commission's ARMIS and 492A Reporting Requirements Pursuant to 47 U.S.C. § 160(c)*; *Petition of Verizon for Forbearance Under 47 U.S.C. § 160(c) From Enforcement of Certain of the Commission's Recordkeeping and Reporting Requirements*, WC Docket No. 07-204, WC Docket No. 07-273, Memorandum Opinion and Order, 23 FCC Rcd 18483 (2008) (*ARMIS Forbearance Order*).

¹⁷² 47 U.S.C. 201.

¹⁷³ See "Verizon Telephone Companies' Petition for Forbearance from Title II and *Computer Inquiry* Rules with Respect to their Broadband Services Is Granted by Operation of Law," WC Docket No. 04-440, News Release (rel. March 20, 2006). See also *Petition of the Verizon Telephone Companies for Forbearance*, WC Docket No. 04-440 (filed Dec. 20, 2004) (*Verizon Enterprise Forbearance Petition*). See also *Petition of AT&T Inc. for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Its Broadband Services*, *Petition of BellSouth Corporation for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Its Broadband Services*, WC Docket No. 06-125, Memorandum Opinion and Order, 22 FCC Rcd 18705 (2007) (*AT&T Enterprise Forbearance Order*); See also *Qwest Petition for Forbearance Under 47 U.S.C. § 160(c) from Title II and Computer Inquiry Rules with Respect to Broadband Services*, WC Docket No. 06-125, Memorandum Opinion and Order, 23 FCC Rcd 12260 (2008) (*Qwest Enterprise Forbearance Order*).

removed these services from most Title II regulations.¹⁷⁴ The Commission's actions in the so-called "enterprise" broadband market further illustrate that the agency is operating under no coherent framework for evaluating actual or potential market competition. The enterprise broadband market consists of all the high-capacity dedicated broadband technologies such as Gigabit Ethernet, Frame Relay, OCn fiber optic loops, Asynchronous Transfer Mode service (ATM), LAN services, and other packet-switched services. It does not include the so-called "TDM-based" special access services, which are high-capacity dedicated lines that are traditionally used to carry voice traffic, but are capable of carrying data traffic at rates up to 45 Mbps symmetrical.¹⁷⁵ Basically, the enterprise market includes all broadband services that are not marketed to residential and small-business users, but are critical inputs for other ISPs and end-user businesses that transmit large amounts of data (such as a stock exchange or Web site hosting company).

For example, when establishing the framework for granting regulatory relief in the special access market, the Commission settled on a test that measured potential competition at the MSA geographic level. In the 2003 *Triennial Review Order* when the Commission developed its test for determining when special access facilities would be subject to unbundling, it defined the market at the wire-center level.¹⁷⁶

But in the enterprise broadband forbearance orders, the FCC defined the market at the national level, and then proceeded (based on almost no actual data) to rule that the market was competitive. Thus, if you want to lease an OC-48 fiber optic line in rural Virginia, according to the Commission's logic, you will certainly face a competitive market that is effectively no different than if you leased the same line in New York City.

With these forbearance orders, the last of which came in 2008, the Commission put the final touches on the deregulatory masterpiece it began sculpting in 2001. In just a few short years, the FCC had managed to completely destroy much of what Congress had carefully crafted in the 1996 Act. It had managed to ensure that the residential broadband market would remain at best a duopoly. It had managed to gut all the regulations that would have enabled new entrants to challenge the duopoly, even as it proclaimed that platform competition was right around the corner.

And with its move to completely remove broadband access service from Title II, the Commission also ensured that nondiscrimination — a bedrock of the Communications Act — would no longer apply to the Internet. This move alone is perhaps even more dangerous than dooming consumers to duopoly. This is because it creates the possibility that the Internet — once a completely open platform for commerce, innovation and democracy — could be completely under the control of the giant corporate incumbents that have every incentive to extend their power over the access market into the content market.

¹⁷⁴ In the 2004 *Triennial Review Order on Remand*, the FCC forbore OCn, Ethernet, SONET, ATM, Frame Relay, and other high-capacity lines from dominant carrier regulation. These services were never subject to UNE-P, just dominant carrier tariffing regulations, and *Computer III* CEI and ONA unbundling requirements. In the Enterprise Forbearance Orders, these services remained under all Title-II regulations, but only as they applied to non-dominant carriers. In other words, the tariffing requirements were largely eliminated, but the reasonable interconnection and pricing requirements of sections 201 and 202 still apply, and complaints alleging violations of these requirements may be filed pursuant to Section 208.

¹⁷⁵ As stated above in footnotes 143 and 167, special access services currently only include those non-packet-switched TDM DS-1 and DS-3 circuits. TDM-based services really are engineered to facilitate the transport of voice traffic. If a DS-3 line is going to be used to transport Internet data, the company leasing the line must install equipment to convert a TDM signal to a packet-switched signal that can then be carried over Ethernet. In this case, the company would much rather prefer to lease a high-capacity Ethernet line.

¹⁷⁶ In the *Wireline Broadband Order*, the Commission "analyzed competitive conditions for broadband Internet access services without regard to specific, identified geographic markets, finding that relying on specific geographic markets would force [it] to premise findings on limited and static data that failed to account for all of the forces that influence the future market development." See *Wireline Broadband Order*, *supra* note 124, at para. 50.

CHAPTER 4
**AMERICA'S BROADBAND
PROBLEM: OPENNESS**

OPENNESS: THE FCC'S FAILURE TO PROTECT AND PRESERVE THE OPEN INTERNET

At the turn of the century, broadband was present in about 2 percent of American homes. Today, that figure stands at nearly 60 percent. No other technology even comes close to competing with this pace of adoption — not the telephone, television, the automobile, cable TV, cell phone, or even the computer itself.

Broadband's meteoric rise illustrates the immense value that this technology brings to users. This value is made possible, in large part, because the Internet is an open platform for innovation, speech and commerce. The Internet's openness is responsible for completely eradicating the barriers to entry present in traditional communications markets. Content producers no longer need to negotiate with powerful cable providers, newspaper publishers or broadcasters to get their work out to the masses; the Internet has an unlimited number of "channels." A citizen wishing to express an opinion about a pressing issue no longer needs to write a letter to the editor; they can reach far more readers online. And politicians no longer need to rely on the short-attention-span mainstream media to get out their message; they can use the Internet to speak directly to voters. We are only beginning to see the vast potential of the Internet as a medium for civic engagement.

The Internet's openness is also responsible for fostering unprecedented economic growth. It is a conduit for near "perfect competition" — the holy grail model for free-market economics.¹⁷⁷ Barriers to entry are reduced. Buyers are empowered by almost unlimited information and unlimited choice. Sellers are empowered by the ability to cut out middlemen and interact directly with the customer. And innovators and entrepreneurs have a platform for launching new ideas globally. What makes all this so remarkable is that the explosion in communications and economic activity took root and grew out of an infrastructure controlled in important ways by monopolists that had every incentive to use their market power to control and monetize these innovations.

Nondiscrimination and Content Control

But the remarkable level of competition taking place on the Internet is no historical accident. It is the precise outcome envisioned by the FCC when it first acted 40 years ago to implement safeguards designed to protect the emerging networking industry. These safeguards are based on the principle of "nondiscrimination." Using nondiscrimination as a regulatory tool, the Commission ensured a level playing field for emerging ISPs like AOL and Earthlink, and prevented the monopoly phone company from interfering with any third-party data flowing over its network.

The principle of nondiscrimination is so important that Congress intended for it to apply even in markets with effective competition. This is because the outcome that nondiscrimination produces — openness — is so essential to maintain. Congress recognized that once competition developed in the Internet access markets, certain regulations (such as Section 251 unbundling) would no longer be necessary or productive. So it gave

¹⁷⁷ Perfect competition is an abstract concept in microeconomics, one that really is impossible to attain in the real world. However, the Internet marketplace comes about as close as you can to realizing the concept in practice. The eBay marketplace exhibits most of the features required for perfect competition: perfect information such that consumers know all producers' prices, low barriers to entry and exit, many buyers and many sellers, such that no single entity can influence price, and there are no consumption or production externalities or homogeneous products.

the FCC explicit power to decide when to lift certain regulations. But because Congress was not convinced that competition alone would be enough to preserve the open nature of communications platforms, it put a structure in place that would always require carriers to abide by the principle of nondiscrimination.¹⁷⁸

So even if the FCC didn't bungle the implementation of the 1996 Act, and today's communications marketplace were sufficiently competitive to no longer require unbundling regulations, tariffs, or structural separation, nondiscrimination protections would still be needed to ensure consumer access to open platforms. This is necessary because network operators have strong incentives to exert power and control in adjacent markets.¹⁷⁹ In the case of the Internet, this obviously includes the ISP access and device markets, which were the core focus of the *Computer Inquiries*. But it also includes the applications and content markets.

There is a constant tension between the perspective that the Internet is a common good, as embodied in the 1996 Act, and the desire of the network owners to earn maximum profits from selling Internet access. The network owners' fights against nondiscrimination, their efforts to block competitive ISPs from entering the access market, and their push to exert control over the device, content and applications markets are all motivated by a fear of bandwidth commoditization. Without control over the content and applications flowing across its network — or the devices used to access it — a network owner risks becoming just a "dumb pipe" provider. Further, without the ability to control content, network owners can't monetize the content flowing across the network. That's not to say that simply selling access is a bad business. It remains very lucrative. And treating network traffic anonymously and without discrimination is consistent with the common carrier tradition.

These tensions have been exacerbated by rapid advances in computing power and network technology, which have led to a sharp decline in the cost of bandwidth. Just as home computers are faster, more efficient and much cheaper than they were a few years ago, so too are the components that make up the infrastructure of the Internet. These technological improvements have lowered the network operator's cost to transport a "bit" — the fundamental digital building block of all Internet content. Since the cost of transporting bits has dropped, those providing content over the Internet using bits can do much more. A decade ago, the average Web page was essentially black text on a white screen. Today's Web offers a variety of bit-intensive content such as flash animation, live audio and video streams, HD-quality movies, as well as the ability to conduct a high-quality two-way video telephone call.

The falling cost of transporting bits led to consumers' placing higher value in the network, which in turn increased demand for Internet access. But network operators such as AT&T, Verizon, Comcast and Time Warner Cable have not been able to capture as much of the increased value of the Internet as they would like. Innovators at the edges of the network such as YouTube, Apple and Netflix are responsible for bringing the new products to the Internet that increase the network's overall value. Even though they control Internet access, network operators can't hike prices to capture all of this value without driving away consumers. Thus network operators have a strong incentive to assert control over the content flowing across their infrastructure, and to try to capture "economic rents" from across the value chain of the network. These incentives are amplified when the network owner itself has a stake in the traditional content distribution business — like cable television — that the open Internet threatens to undermine.

¹⁷⁸ In Section 10 of Title I (47 U.S.C. 160) of the 1996 Act, Congress gave the Commission the authority to forbear from applying regulations on telecom carriers if a determination is made that "enforcement of such regulation or provision is not necessary to ensure that the charges, practices, classifications, or regulations by, for, or in connection with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably discriminatory, [or] enforcement of such regulation or provision is not necessary for the protection of consumers." Thus, Congress allowed the discontinuance of regulations so long as they were not needed to ensure a specific desired outcome — *just, reasonable and non-discriminatory treatment*. But the outcome itself remained paramount. Indeed, this is made quite clear in Section 332(c)(1)(A) of the Act (and in Section 10 itself, which refers to this specific passage), which gives the FCC the authority to selectively apply Title II regulations to commercial mobile service (CMRS) carriers, but specifically forbids the FCC from removing CMRS providers from an obligation to adhere to Sections 201, 202 and 208 of the Act.

¹⁷⁹ See Barbara Van Schewick, "Towards an Economic Framework for Network Neutrality Regulation," *Journal on Telecommunications and High Technology Law*, Vol. 5, pp. 329-391 (2007).

These same factors are what drive cable TV providers to vertically integrate. Cable operators pick and choose what channels they will carry on their networks. They can demand payment for carriage from some of the smaller channels, but they are forced to pay for the right to carry the more popular channels. So to capture more of the total market value, cable companies buy a stake in the channels they carry. In some cases, they even own a stake in content production. They want a piece of every part of the chain: the production company that makes a show, the channel that carries the show, and the cable system that delivers the show to the viewer.

From the perspective of a network owner, the same economic logic applies to the Internet. They prefer the cable model: Controlling content, vertically integrating and using market power to crush the threat of competitive entry is the easiest way for network operators to capture value and increase their profit margins. They have a huge incentive to assert this control, and without nondiscrimination protections, they will do it. To expect otherwise is irrational and ignores history.

The FCC Abandons Openness

The FCC's entire history of intervention in communications and information services markets up until 2002 was based upon a deep understanding of network operators' natural incentive to control content. Keeping this incentive in check is what motivated the *Computer II* structural separation rules¹⁸⁰, and it is why to this day the Commission has yet to grant any telecom carrier forbearance from Section 201 (a requirement to provide reasonable access) and Section 202 (a requirement to not unreasonably discriminate in offering that access).¹⁸¹ The Commission's recognition of the importance of nondiscrimination rules in preventing carriers from exercising control over content extends into other areas of law such as interconnection and pole-attachment rights.¹⁸² And concern about control over content is even present in Commission rules that govern cable leased-access regulations and program-access rules.¹⁸³

Given this history, the Commission's series of decisions classifying broadband Internet as a pure "information service" is simply bewildering. The plain language of the 1996 Act makes clear that Congress intended for nondiscrimination to be the bedrock protection that preserved the open nature of *two-way* communications platforms, as opposed to *one-way* broadcast or cable TV platforms. But by declaring broadband Internet to be an information service without a telecommunications service component, the Commission removed America's most important two-way communications technology from the protections designed to keep it an open platform.

¹⁸⁰ See discussion beginning *supra* page 32. In general, structural separation in the Internet context is a regulatory regime in which the owner of the network infrastructure is required to form a structurally separate corporate entity for selling Internet access. This separate entity must purchase the network access from the parent company at the same rates and terms that are made available to other ISPs.

¹⁸¹ See discussion *supra* note 54. While it is true that no carrier has received forbearance from Sections 201 and 202, the Commission's complete removal of broadband Internet access service from Title II accomplished the same outcome. See *Petition of SBC Communications Inc. for Forbearance from the Application of Title II Common Carrier Regulation to IP Platform Services*, WC Docket No. 04-29, Memorandum Opinion and Order, 20 FCC Rcd 9361 (2005), at para. 17, stating, "The Commission has never forbore from applying sections 201 and 202 of the Act. In a 1998 order denying a petition for forbearance from sections 201 and 202 of the Act (among other sections), the Commission described those sections as the cornerstone of the Act. The Commission explained *that even in substantially competitive markets, there remains a risk of unjust or discriminatory treatment of consumers*, and sections 201 and 202 therefore continue to afford important consumer protections. Because the language of section 10(a) essentially mirrors the language of sections 201 and 202, the Commission expressed skepticism that it would ever be appropriate to forbear from applying those sections. Since then, the Commission has never granted a petition for forbearance from sections 201 and 202. If we were to grant such a petition now, we would have to provide a rationale for abandoning our own precedent" (emphasis added, internal footnotes omitted).

¹⁸² See e.g., *AT&T Enterprise Forbearance Order* (*supra* note 151 at paras. 67-68) where the commission stated, "For example, the protections provided by sections 201 and 202(a), coupled with our ability to enforce those provisions in a complaint proceeding pursuant to section 208, provide essential safeguards that ensure that relieving AT&T of tariffing obligations in relation to its specified broadband services will not result in unjust, unreasonable, or unreasonably discriminatory rates, terms, and conditions in connection with those services. ... In particular, many of the obligations that Title II imposes on carriers or LECs generally, including interconnection obligations under section 251(a)(1) and pole attachment obligations under sections 224 and 251(b)(4), *foster the open and interconnected nature of our communications system*, and thus promote competitive market conditions within the meaning of section 10(b)" (emphasis added).

¹⁸³ See e.g., 47 U.S.C. 536, "Regulation of Carriage Agreements" (establishing rules preventing cable operators from unfair treatment of programming vendors); 47 U.S.C. 548, "Development of Competition and Diversity in Video Programming Distribution" (establishing general non-discriminatory program access provision); and 47 U.S.C. 532, "Cable Channels for Commercial Use" (providing conditions for leased access).

Just as the Commission was warned about the anti-competitive dangers of removing open access requirements, it was also strongly cautioned not to abandon nondiscrimination rules. In the *Wireline Broadband* proceeding that began in 2002, the FCC received numerous comments from ISPs, consumer groups and the public warning of the unintended consequences of leaving broadband outside of Title II's openness protections.¹⁸⁴ Even some advocates who urged the Commission to abandon unbundling and line sharing still urged the Commission to preserve minimal openness standards.¹⁸⁵ The fear was that without Title II protections, consumers would not be guaranteed unfettered access to all lawful Internet content and applications; and that the duopoly ISPs would act on their natural impulse to extend their last-mile market power into the adjacent content and applications markets. Furthermore, if the Commission intended to strip away open access rules that provided for competition in the access market, the nondiscrimination principles in Sections 201 and 202 were the last lines of defense for an open marketplace for ideas and commerce on the Internet.

These fears were tied to concerns about how reduced ISP competition in the access market would harm consumers through higher prices and reduced innovation. But the Commission was in somewhat uncharted territory and did not appear to grasp the gravity of the situation. At the time of the 2002 *Wireline Broadband NPRM*, the overwhelming majority of users connected to the Internet via dial-up and were afforded the protections of nondiscrimination in Title II, as well as the benefits of robust ISP competition. Among the few nascent broadband services in use at the time, cable modem service was largely governed by FTC or FCC consent decrees to provide unaffiliated ISP access. And DSL services were provided by ILECs still subject to Title II. Thus, there hadn't yet been efforts by network providers to discriminate against Internet content, both because of existing restrictions and because the market had yet to develop. At this time, network owners repeatedly promised never to engage in anti-competitive activity if they were granted deregulation.

Just because bad outcomes had yet to occur didn't mean they would never occur once the legal protections were eliminated. This possibility was certainly considered by consumer advocates and by Internet content companies, which all urged the Commission not to completely abandon nondiscrimination. In 2002, Amazon.com proposed a compromise "non-impairment" rule, which would have required network operators either not to interfere with consumers' access to all lawful Internet content, or to allow at least three unaffiliated ISPs to offer Internet access service over their facilities under terms no less favorable than those given to the incumbents' own ISP affiliates.¹⁸⁶ But the FCC chose to ignore these pleas for some baseline consumer protections. The predictions of bad behavior were not enough: The Commission wanted proof of *past* bad actions by network operators.

But those bad actions were prohibited by the rules the agency was about to eliminate.¹⁸⁷ Even though the Commission declined to impose non-impairment rules, the FCC still agreed that network owners should not "actively [interfere] with consumer access to any lawful Internet information, products, or services" and that

¹⁸⁴ See e.g., Comments of Arizona Consumer Council, Center for Digital Democracy, Citizen Action of Illinois, Citizens Utility Board of Oregon, Consumer Action, the Consumer Federation of America, Consumers Union, Democratic Process Center, Florida Consumer Action Network, Illinois PIRG, Massachusetts Consumer Coalition, Media Access Project, New Jersey Citizen Action, Texas Consumer Association, Texas Office of Public Utility Counsel, U.S. Action, in the Matter of *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Universal Service Obligations of Broadband Providers*, CC Docket No. 02-33, Notice of Proposed Rulemaking, (2002) (2002 Consumer Groups Comments). See also, e.g., Letter from Gerard J. Waldron, Coalition of Broadband Users and Innovators, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 02-33, at 1-2 (filed Aug. 27, 2003).

¹⁸⁵ See e.g., Comments of AT&T Corp, In the Matter of *IP-Enabled Services*, WC Docket 04-36, Notice of Proposed Rulemaking, at pp. 54-55 (2004) (AT&T 2004 IP Service Comments), Stating, "AT&T emphasizes that it is not seeking the 'open access' leasing of last-mile broadband transmission facilities that the Commission is considering in its cable modem dockets. Rather, the Commission can directly prevent anticompetitive use of broadband transport facilities and foster unimpeded access to IP applications with modest technology neutral conduct regulation that merely prohibits broadband carriers from discriminating against unaffiliated IP applications and content, while otherwise giving these carriers substantial flexibility over the scope and terms of their service offerings." See also Reply Comments of Communications Workers of America in the Matter of *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Universal Service Obligations of Broadband Providers*, CC Docket No. 02-33, Notice of Proposed Rulemaking, at page 5 (2002) (2002 CWA Reply Comments).

¹⁸⁶ See Letter from Paul E. Misener, Amazon.com, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 02-52, at 1-2 (filed December 2, 2002) (Amazon Broadband Non-Impairment Rule Ex Parte).

¹⁸⁷ See *Wireline Broadband Order*, *supra* note 124, at para. 96, "Some commenters request that we impose certain content-related requirements on wireline broadband Internet access service providers that would prohibit them from blocking or otherwise denying access to any lawful Internet content, applications, or services a consumer wishes to access. While we agree that actively interfering with consumer access to any lawful Internet information, products, or services would be inconsistent with the statutory

such behavior “would be inconsistent with the statutory goals of encouraging broadband deployment and preserving and promoting the open and interconnected nature of the public Internet.”¹⁸⁸ In other words, the FCC endorsed the goals of the laws that it was busy eviscerating.

To paper over this obvious contradiction, the FCC sought a thin veneer of justification. So in the summer of 2005, on the heels of the Supreme Court’s decision in the *Brand-X* case¹⁸⁹, a compromise was hashed out by a divided four-member Commission. In this compromise, firm nondiscrimination rules were jettisoned and replaced with the *Internet Policy Statement*.¹⁹⁰ The statement contained four principles designed to preserve the open nature of the Internet in the absence of Title II nondiscrimination rules. Those principles are:¹⁹¹

To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled:

1. to access the lawful Internet content of their choice.
2. to run applications and use services of their choice, subject to the needs of law enforcement.
3. to connect their choice of legal devices that do not harm the network.
4. to competition among network providers, application and service providers, and content providers.

Though the *Internet Policy Statement* was issued in the *Wireline Broadband* proceeding, it does not specify that the four principles are meant only to apply to broadband services provided by common carriers. In his concurring statement, FCC Commissioner Jonathan Adelstein wrote that he was pleased that the *Internet Policy Statement* “will inform the Commission’s future broadband and Internet-related policymaking” and “apply across the range of broadband technologies.”¹⁹²

Policy statements are not uncommon in regulatory agencies, but the absence of firm rules creates a level of uncertainty. Clearly Commissioner Michael Copps, who was the driving force behind the statement, felt it was a strong set of principles that the Commission could use to protect consumers. In his concurrence, Copps stated that the *Internet Policy Statement* “lays out a path forward under which the Commission will protect network neutrality ... a line has been drawn in the sand.”¹⁹³ (Worthy of note: Here we see Commissioner Copps using the term “Network Neutrality.” By 2005, the term “Network Neutrality” or “Net Neutrality” became the preferred term used to capture the Internet content nondiscrimination protections in Title II. Though the vocabulary had evolved, the underlying principle of nondiscrimination had not changed.) Chairman Kevin Martin, who later aggressively enforced the statement in 2008, seemed more circumspect at the time, stating, “Competition has ensured consumers have had these rights to date, and I remain confident that it will continue to do so.”¹⁹⁴

goals of encouraging broadband deployment and preserving and promoting the open and interconnected nature of the public Internet, we do not find sufficient evidence in the record before us that such interference by facilities-based wireline broadband Internet access service providers or others is currently occurring” (internal footnotes omitted).

¹⁸⁸ *Ibid.* at para. 96.

¹⁸⁹ See *supra* note 122.

¹⁹⁰ See *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Docket No. 02-33, Policy Statement, 20 FCC Rcd 14986 (2005) (*Internet Policy Statement*).

¹⁹¹ A footnote to the four principles of the *Policy Statement* stated: “The principles we adopt are subject to reasonable network management.” This footnote would be the subject of much of the current ongoing debate surrounding Network Neutrality.

¹⁹² See “Statement of Commissioner Jonathan S. Adelstein Concurring in FCC 05-150, Approving in FCC 05-153,” in the *Wireline Broadband Order* (*supra* note 124).

¹⁹³ See “Statement of Commissioner Michael J. Copps Concurring,” in the *Wireline Broadband Order* (*supra* note 124).

¹⁹⁴ See “Statement of Chairman Kevin Martin,” in the *Wireline Broadband Order* (*supra* note 124). Martin also released a separate statement to the press when the order was voted, stating, “While policy statements do not establish rules nor are they enforceable documents, today’s statement does reflect core beliefs that each member of this Commission holds regarding how broadband Internet access should function. Cable and telephone companies have led the way in bringing broadband to millions of Americans. The evidence today is that their Internet access consumers have the ability to reach any Internet content. Indeed, cable and telephone companies’ practices already track well the Internet principles we endorse today. I remain confident that the market-

The Early Network Neutrality Debate

The ink on the *Internet Policy Statement* was barely dry before incumbents started testing the FCC's resolve. This was hardly a surprise — indeed, it was a predictable outcome of the sweeping deregulation the FCC had just enacted. Free from the rules that prevented anti-competitive activity and the abuse of market power, network owners began to talk openly about their intentions. Just three months after the Commission adopted the *Wireline Broadband Order*, when asked about his feelings on companies like Google, SBC CEO Ed Whitacre made comments that now live in infamy as “the shot heard round the Web”:

“How do you think they’re going to get to customers? Through a broadband pipe. Cable companies have them. We have them. Now what they would like to do is use my pipes free, but I ain’t going to let them do that because we have spent this capital and we have to have a return on it. So there’s going to have to be some mechanism for these people who use these pipes to pay for the portion they’re using. Why should they be allowed to use my pipes? The Internet can’t be free in that sense, because we and the cable companies have made an investment and for a Google or Yahoo! or Vonage or anybody to expect to use these pipes [for] free is nuts!”¹⁹⁵

This and other proclamations by incumbents¹⁹⁶ of their intent to turn the open Internet into their own private fiefdoms ignited public outrage and elevated the Network Neutrality debates from an insider D.C. policy matter to a bona fide grassroots campaign.¹⁹⁷ This outrage was directed through the Savetheinternet.com coalition, a large and politically diverse group lead by Free Press, with membership ranging from the Christian Coalition to Moveon.org. This campaign threw the old telecom lobby for a loop, as they had expected a compliant Congress to conduct business as usual and squash the Net Neutrality movement in its infancy. This campaign was also unique in that it was one of the first examples of a true online-grassroots campaign, one that harnessed the power of the Internet itself to get its message out and effect change. Even though dotcom companies like Google and Amazon were on the side of the grassroots, this was not a typical D.C. clash of one big industry against another (though the press often lazily portrayed it as a fight between Google and AT&T). It was a new political movement of ordinary Internet users — many of whom had previously been apolitical — against the narrow and well-funded interests of a few giant corporations.

And the grassroots helped turn a highly technical debate into something even non-Internet-using elder statesmen could understand: This was all about freedom, “Internet freedom.” Thus, with this basic principle in mind, the debate on the Hill centered on whether Congress should restore Net Neutrality (putting it into Title I) to compensate for taking broadband services out from under Title II and its nondiscrimination protections.

place will continue to ensure that these principles are maintained. I also am confident, therefore, that regulation is not, nor will be, required.” See “Chairman Kevin J. Martin Comments on Policy Statement,” August 5, 2005. Given that three years later Mr. Martin would vote with the two Democratic Commissioners to sanction Comcast for violating the *Policy Statement*, it’s clear he was wrong about policy statements not being enforceable, and he was wrong that the marketplace would ensure that the principles would be maintained.

¹⁹⁵ When asked about his feelings on companies like Google, MSN and Vonage, Whitacre said, “How do you think they’re going to get to customers? Through a broadband pipe. Cable companies have them. We have them. Now what they would like to do is use my pipes free, but I ain’t going to let them do that because we have spent this capital and we have to have a return on it. So there’s going to have to be some mechanism for these people who use these pipes to pay for the portion they’re using. Why should they be allowed to use my pipes? The Internet can’t be free in that sense, because we and the cable companies have made an investment and for a Google or Yahoo! or Vonage or anybody to expect to use these pipes [for] free is nuts!” See “At SBC, It’s All About ‘Scale and Scope,’” *Business Week*, Nov. 7, 2005. Whitacre’s statement reflects a common theme among opponents of Network Neutrality — that content companies incur no cost in reaching end-users. However, this view reflects a complete misunderstanding of how these markets work. In the Internet world, unlike the long-distance telephone market, end-users have no direct financial relationship with a party in the middle transporting the “call” — as there are potentially dozens of network owners in the middle routing the data to its final destination. Content companies like Google pay extremely large sums of money to telecommunications companies to serve their content “up to the Internet.” Those telecom companies in turn have financial relationships with other carriers to transport data across the country. So when SBC receives traffic originating from Google handed off by a long-haul network provider, they receive this data while also giving the long-haul provider data from SBC customers to carry back out across the Internet. Sometimes this interconnection of traffic is unbalanced and fees are paid, while at other times, the traffic going back and forth is roughly equivalent, and there is no money exchanged. But the point here is that there is a financial structure in place at every point in the network. If SBC is losing money by receiving traffic on its network, then it should revisit its peering and transport agreements.

¹⁹⁶ See e.g., Jonathan Krim, “Executive Wants to Charge for Web Speed: Some Say Small Firms Could Be Shut Out of Market Championed by BellSouth Officer,” *Washington Post*, Dec. 1, 2005.

¹⁹⁷ See Daniel W. Reilly, “The Telecom Slayers,” *Salon.com*, Oct. 2, 2006.

But while the grassroots had a message of freedom, the arguments put forth by opponents of Net Neutrality were either based on empty rhetoric (that was later proven dead wrong, through statements such as, “Network Neutrality is just a solution in search of a problem”), or shaky economic arguments.¹⁹⁸ One of the network owners’ constant refrains in the press and on Capitol Hill was that they needed to violate Net Neutrality in order to earn enough revenues to build out capital-intensive network infrastructure. Companies like AT&T openly contemplated a world of “pay-to-play,” where they would speed up the content of affiliated Web sites for a fee. This proposition fueled the fierce grassroots backlash, with consumer advocates, networking professionals, Internet companies and small businesses all expressing concern that this scheme would create a divided Internet superhighway of “toll roads and dirt roads.”¹⁹⁹ This concern was well placed. The routing of IP data is a zero-sum game: If a router speeds up one set of bits, by definition, all other bits are slowed down.²⁰⁰

But the ISPs’ economic pleading never really made much sense. First, it assumes that there is a substantial potential market for guaranteed accelerated delivery — one so large that these potential additional revenues will be the difference between network buildout and network abandonment. But unless network owners are blocking certain Web sites outright (and thus extracting blackmail revenues), it isn’t clear at all that content providers would be willing to pay for this form of accelerated delivery, when services like local caching are sufficient to deliver low-cost, quality streaming video.²⁰¹ Furthermore, since prioritization is a zero-sum game, the corresponding degradation in non-prioritized content could be substantial enough to devalue the utility of the broadband connection itself. In other words, consumers would be less willing to pay for broadband, and the revenue gains from prioritization arrangements might not be enough to offset the losses stemming from user defection.

Second, the argument that revenue from prioritization is needed to pay for network upgrades is not intellectually consistent. Content providers only have an incentive to pay for prioritization if it makes a substantial difference in the quality of their product as delivered to the end-user. This incentive only becomes real when network congestion is the norm. Under this economic model, a network owner actually has every incentive *not* to upgrade their network — for if they did, they would undermine the entire rationale for prioritization. Thus Net Neutrality actually encourages deployment, because without it, network operators would have substantial incentive to delay upgrades in order to profit from artificial scarcity.

The rhetoric about Net Neutrality discouraging investment was just a general outgrowth of the reflexive belief at that time that *any and all* regulation discourages investment. This is a belief espoused by most industry trade associations and their hired economic experts, but it has little basis in reality. In network industries, regulations have only a minor influence over investment decisions. More important are considerations about future growth potential and fear of competition eroding profits. In fact, fear of potential regulations can actually encourage capital investment and counteract the most important factor discouraging investment — short-term shareholder concerns.²⁰² This mistaken belief about the relationship between regulation and investment is

¹⁹⁸ This rhetoric was pioneered by David McClure, who stated shortly after the 2005 *Wireline Broadband Order*, “Network Neutrality is a solution in search of a problem — a hypothetical issue that cannot occur because of the stated commitments of industry, the Federal Communications Commission and the Congress to prevent any such harm.” See “Network Neutrality and Tiered Broadband Services: A rational examination of the unintended consequences and detrimental effects of Network Neutrality legislation to prevent tiered broadband services,” US Internet Industry Association, February 5, 2006.

¹⁹⁹ Timothy Karr and Craig Aaron, “Saving the Internet: Lessons from the Fight for Net Neutrality,” *Journal of Netroots Ideas*, Summer 2007.

²⁰⁰ This is why the analogies between packet delivery and package delivery are not apt. If the Post Office carries my package via next-day air delivery, it has no impact on the quality of delivery for your package sent via first-class mail. But since routers operate on a “first-in-first-out” basis, prioritizing packet A by definition de-prioritizes packet B. The practical effect of this is greatest when an entire class of packets, such as P2P, is de-prioritized.

²⁰¹ Local content-caching services like those provided by Akamai Technologies are able to deliver content such as streaming video with a high degree of reliability because the content is hosted (“mirrored”) in multiple locations, and end-users are able to pull content from servers that are geographically close to their location. This results in higher quality, as there are fewer network “hops” between the user and the server.

²⁰² Many stock analysts actively frown upon any capital investment. Verizon took a beating from Wall Street when it began deploying fiber-to-the home technology. Wall Street analysts panned this investment strategy while hailing the strategy of companies like Qwest and AT&T, which have had many years of higher capital depreciation than capital expenditures. However, the decision to stick with a copper-to-the-home DSL solution in the face of a rapidly declining access line market now appears to have been short-sighted. In the fourth quarter of 2008, Verizon was the only RBOC with positive in-region consumer revenue growth. As cable companies continue to offer higher and higher advertised download speeds, DSL companies like Qwest are often only able to offer a relatively slow 1.5 or 3 Mbps connection.

not supported by evidence from the past decade — a period that saw the imposition of substantial regulation, followed by a period of equally substantial deregulation. During the years following the implementation of the 1996 Act, ILEC capital expenditures as a percentage of revenues rose dramatically. However, investment declined in the period following the FCC's dismantling of this regulatory regime.²⁰³

So while the impact of Network Neutrality obligations on network investment is likely negligible — or positive — the absence of nondiscrimination protections will have a large impact on investments made in the application and content markets. Currently, the Internet is an open platform, governed by a universally accepted and agreed-upon set of technical standards. This open platform provides online innovators with a high degree of predictability about a major segment of their business. An innovator knows that she can develop a new idea or application, and that it will work on any end-user's Internet-connected device. The innovator does not need to go to every ISP and ask for "permission to innovate."²⁰⁴

But without Network Neutrality, this certainty is destroyed. A particular network provider might already have an exclusive deal with the innovator's competitor — a deal stipulating that the ISP block or degrade all competitive traffic. Or the ISP may treat the innovator's underlying network protocol differently than other ISPs, making it almost impossible to design an application that is guaranteed to work properly. This potential for discriminatory treatment and nonstandard network management could destroy investor confidence in the applications market, stifling growth in the one segment that drives the information economy. The Internet would become balkanized, whereby applications that work on one network would not work on another. The entire premise of a globally interconnected system of communications that is fully interoperable with all content and applications would be undermined.

The congressional debate over Net Neutrality ended in a stalemate in 2006. It was a major defeat for the network operators that had spent hundreds of millions of dollars to push a friendly Congress toward their desired outcome. Their defeat was largely the result of growing grassroots opposition and millions of people contacting Congress. A technical debate over telecommunications law took place in the mainstream media and was mocked on *The Daily Show*. By the time then-Senate Commerce Committee Chairman Ted Stevens of Alaska gave his widely derided "series of tubes" speech, attempts to permanently legislate away Network Neutrality were dead. The elections in November of that year flipped Congress to the Democrats and crystallized the stasis. Neither side had the votes in Congress to permanently end or to re-establish nondiscrimination protections on the Internet, let alone overcome the possibility of a veto from President Bush.

The incumbents themselves, which had first escalated the debate with their "using my pipes for free" rhetoric, also seemed willing to retreat to fight another day. In order to gain FCC approval to merge with AT&T, SBC committed to abide by the *Internet Policy Statement* for two years following the closing of the merger.²⁰⁵ Verizon made the same commitment in order to secure Commission approval for their merger with MCI.²⁰⁶ At the close

²⁰³ See Testimony of Blair Levin, Stifel Nicolaus & Company Inc., Before the United States Senate Committee on the Judiciary, on the matter of Reconsidering Our Communications Laws: Ensuring Competition and Innovation, June 14, 2006 (*2006 Levin Testimony*).

²⁰⁴ See Prepared Statement of Vinton G. Cerf, Vice President and Chief Internet Evangelist Google Inc., before the U.S. Senate Committee on Commerce, Science, and Transportation, on the matter of Network Neutrality, Feb. 7, 2006. "In the zone of governmental noninterference surrounding the Internet, one crucial exception had been the nondiscrimination requirements for the so-called last mile. Developed by the FCC more than a decade before the commercial advent of the Internet, these 'Computer Inquiry' safeguards required that the underlying providers of last-mile network facilities — the incumbent local telephone companies — allow end-users to choose any ISP, and utilize any device, they desired. In turn, ISPs were allowed to purchase retail telecommunications services from the local carriers on nondiscriminatory rates, terms and conditions. The end result was, paradoxically, a regulatory safeguard applied to last-mile facilities that allowed the Internet itself to remain open and 'unregulated' as originally designed. Indeed, it is hard to imagine the innovation and creativity of the commercial Internet in the 1990s ever occurring without those minimal but necessary safeguards already in place. By removing any possibility of ILEC barriers to entry, the FCC paved the way for an explosion in what some have called 'innovation without permission.' A generation of innovators ... [was] able to offer new applications and services to the world, without needing permission from network operators or paying exorbitant carrier rents to ensure that their services were seen online. And we all have benefited enormously from their inventions."

²⁰⁵ See Letter from Thomas F. Hughes, Vice President, Federal Regulatory, SBC, to Marlene H. Dortch, Secretary, FCC, In the Matter of *SBC Communications, Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, WC Docket No. 05-65, Attach. (filed Oct. 31, 2005) (*SBC Oct. 31 Ex Parte Letter*).

²⁰⁶ See Letter from Ann D. Berkowitz, Associate Director, Federal Regulatory, Verizon, to Marlene H. Dortch, Secretary, FCC, In the Matter of *Verizon Communications, Inc. and MCI, Inc. Applications for Approval of Transfer of Control*, WC Docket No. 05-75 (filed Oct. 31, 2005) (*Verizon Oct. 31 Ex Parte Letter*).

of 2006, the newly reconstituted AT&T made a further 24-month commitment to the *Internet Policy Statement* and also agreed to abide by more specific Network Neutrality provisions in order to gain FCC approval for its merger with Bell South.²⁰⁷

The Evolution of the Network Neutrality Debate

By 2007, the fallacies in the economic arguments of Net Neutrality opponents were quite apparent, leading the network operators to change their rhetoric. Now they claimed discrimination was needed in order to manage networks and protect users from imminent network brownouts.²⁰⁸

As the debate evolved, the leading opponents of Net Neutrality were not the phone companies, but the vertically integrated cable companies, whose financial interests in cable programming distribution created a large incentive to discriminate against a specific type of Internet content — online video.

In the 1996 Act, Congress promoted a vision and goal of a broadband marketplace where users could send and receive high-quality video. Though we are still far from realizing that goal, there is a clear demand for online video. YouTube released its first beta version in May 2005. A little more than a year later, the company was serving up 100 million video views per day.²⁰⁹

YouTube's five-minute, low-quality clips increased user comfort with using their Internet connections to watch "television." But with their appetites whetted, consumers wanted more. So programmers like Viacom and Fox began to make entire television episodes available via the Internet. Companies like Vuze, Netflix and Apple pushed the envelope even further by offering "set-top box" devices that pull high-quality video content from the Internet and play it directly on the living room TV set. And innovators like Boxee are now offering software that makes all this Internet video content available from one simple user interface.

In just a matter of months, online video has gone from being a niche application to being one of the most common Web activities. Nearly 80 percent of U.S. Internet users now report viewing online video at least once a month, with the average user consuming six hours per month.²¹⁰ Consumers are increasingly using their broadband connections to watch video content that had been offered exclusively by multichannel video distributors and broadcasters. This presents a potential headache for cable companies, and for the ILECs that are increasing their stake in the video delivery business. Consider Time Warner Cable CEO Glenn Britt's recent statement to investors: "People will choose not to buy subscription video if they can get the same stuff for free. ... I think the cable network business will suffer mightily if this trend continues."²¹¹

²⁰⁷ In addition to agreeing to conduct business in a manner that comports with the *Policy Statement*, AT&T/BellSouth agreed "not to provide or to sell to Internet content, application, or service providers, including those affiliated with AT&T/BellSouth, any service that privileges, degrades or prioritizes any packet transmitted over AT&T/BellSouth's wireline broadband Internet access service based on its source, ownership or destination." This commitment ended on December 29, 2008, two years from the merger completion date (the commitment to the *Policy Statement* continues until May 29, 2008). See Letter from Robert W. Quinn, Senior Vice President, Federal Regulatory, AT&T, In the Matter of AT&T Inc. and BellSouth Corporation Application for Transfer of Control, WC Docket No. 06-74 (filed Dec. 28, 2006) (AT&T Dec. 28 Ex Parte Letter).

²⁰⁸ For example, NCTA stated, "[b]andwidth usage has grown exponentially and will continue to do so. As a consequence, significant additional investments by broadband providers will be needed. If certain business models are outlawed, the ability of broadband providers to make the necessary investments and of customers to have varied service plans that will meet their pocketbooks will be compromised." See "Letter from Kyle McSarrow to the Honorable Joe Barton," April 25, 2006. The general meme of the "exaflood" began in 2007, based on a marketing campaign started by the Discovery Institute, best known for cooking up the anti-evolution "intelligent design" meme. See Bret Swanson, "The Coming Exaflood," *Wall Street Journal*, January 20, 2007. See also Karl Bode, "AT&T Front Group Claims Internet End Is Nigh," *DSLreports.com*, November 20, 2008.

²⁰⁹ See "YouTube Serves Up 100 million Videos a Day Online," *Reuters*, July 16, 2006. By January 2009, this number had risen to nearly 200 million, despite the proliferation of numerous other online video sources. See "YouTube Surpasses 100 Million U.S. Viewers for the First Time," *ComScore*, March 4, 2009.

²¹⁰ *Ibid.* However, these numbers don't fully capture the extent of Internet video consumption, as they only include video Web sites like Hulu and YouTube, and do not include video delivery networks such as those used by Netflix's View Instantly and Apple's Apple TV services.

²¹¹ *Time Warner Cable, Inc. Q4 2008 Earnings Call* (Feb. 4, 2009), available at <http://seekingalpha.com/article/118521-time-warner-cable-inc-q4-2008-earnings-call-transcript?page=8>

With the Internet now a viable platform for video distribution, we have the troubling situation where cable companies are now in control of two major delivery platforms, as well as much of the production of the programming itself. In addition to controlling a substantial percentage of broadband Internet connections, cable companies also own the primary platform for video distribution — a platform that is completely locked down. Independent programmers have little chance of getting their channels carried, and content producers must work with the established horizontally integrated programming studios to get their content out to viewers. In many cases, the cable companies also have a large stake in these cable programming networks and content production studios. There are gatekeepers at every step of the production chain.

But now the Internet is emerging as a platform that threatens to break this entire cable model apart. Independent content producers can reach their audiences directly through the Internet. Production studios can establish their own Internet “channels” and reach a larger audience than if they had to rely on the multichannel platform alone. Much of this content is advertiser-supported, as is cable TV content — but the ads are fewer in number and the viewer who just wants to watch a few specific shows doesn’t need to pay \$100 per month for 500 channels. And distribution platforms like Apple TV allow a viewer to pay per episode and avoid advertising altogether. It is the ultimate à la carte marketplace for video content — a consumer paradise that also frees content producers from relying on the traditional distribution platforms to reach large audiences.

Though there is no sign yet that the proliferation in available online video content is actually leading consumers to “cut the cord” with their cable TV completely, this prospect is obviously troubling to the cable cartel.²¹² Only a small percentage of customers will actually have to drop cable TV before the companies will be forced to offer more attractive programming packages at lower prices. Such competition is great for consumers, but it eats into cable’s healthy profit margins and is a drain on its stock prices. An entire generation of kids is growing up in the Hulu/YouTube world, and it’s hard to imagine them being willing to pay \$100 per month for content they’ve grown accustomed to getting for free and watching whenever they want. So cable companies have a strong incentive to crush or limit online video in its infancy.

Cable’s incentive to weaken the growth of a competitive online video market is especially troubling given that cable companies control more than half of all residential broadband connections. The situation is further complicated by two other factors: the bandwidth intensity of online video and structural engineering weaknesses inherent in the cable broadband architecture. Though most cable modem users are unaware of it, they actually share their broadband connection with hundreds of their neighbors. A typical cable modem system uses one cable “channel” to deliver approximately 38.8 Mbps in downstream bandwidth — which is shared between 100 and 500 subscribers. The bandwidth shared upstream is even less.

To grow their business and differentiate their product from standard DSL (which has maximum speeds of 7.1 Mbps downstream), cable providers have been offering faster services. However, though cable modem subscribers are getting “bigger slices of the pie,” the pie hasn’t actually gotten any bigger. A neighborhood with 200 customers each subscribing to 6 Mbps service from a shared 38.8 Mbps “pipe” has just become a neighborhood with 200 customers each subscribing to 16 Mbps service from the same pipe. In a world where all broadband subscribers do is load Web pages, this level of sharing would not be a problem. But users are increasingly using these faster connections for “always on” applications like streaming video. 15 subscribers watching HDTV streams from Hulu will use all the available cable modem bandwidth for an entire neighborhood.²¹³

²¹² See “Online Video Usage Continues to Grow, Yet Online Video is Having Little Impact on Traditional TV Viewing and Services,” Leichtman Research Group, Feb. 23, 2009. This survey found that “the impact [of online video viewing] on traditional TV viewing and multi-channel video subscriptions has been negligible.” The survey also found that only 3 percent of adults who use the Internet would seriously consider “cutting the cord” to their cable or satellite TV provider. But some cable companies are clearly worried about what current behavior among young users portends for the future. On a recent earnings call, a TWC executive said, “[t]he reality is we are starting to see the beginnings of core cutting where people, typically young people, are saying ‘all I need is broadband. I don’t need video,’ and obviously they are already saying they don’t need wire line phone. So the impact of that potentially over time is to reduce the number of customers.” See Time Warner Cable, Inc. Fourth Quarter 2008 Earnings Call Transcript, *Seeking Alpha*, Feb. 4, 2009.

²¹³ Hulu’s HD streams require 2.5 Mbps of bandwidth. And since Hulu’s service is a true real-time stream (and not a progressive download stream like YouTube), a user cannot build up a buffer — they need a guaranteed 2.5 Mbps to watch the content without jitter.

Fortunately for cable providers, this bandwidth crunch is easily relieved. Cable operators can easily and inexpensively split the number of homes sharing a connection in half (via so-called “node splits”). They can assign some customers to a certain bandwidth “channel” and put other customers on other bandwidth channels. And they can upgrade their systems to DOCSIS 3.0, a new cable modem standard that increases the size of the shared downstream pipe from 38.8 Mbps to 155.2 Mbps. This upgrade provides the most bang for the buck, as the bulk of the costs arise from the new end-user modem, a cost paid for by the customer multiple times over via monthly rental fees. The major issue here isn’t the difficulty of upgrading. The issue is the business model of over-subscription. The more customers share a single node — even if the sharing is causing congestion and reducing the quality of the consumer experience — the more revenue the operator can extract from existing facilities. This may be a rational business practice, but it is deeply problematic for a broadband infrastructure, sacrificing the public good for short-term private gain.

So even though cable’s bandwidth capacity issues are simple to overcome, the industry has every incentive to exaggerate the technical threat posed by online video. The bandwidth scarcity created by oversubscription allows cable operators to justify practices that squelch the rise of online video. Because the four principles of the FCC’s *Internet Policy Statement* are “subject to reasonable network management,” a carrier can get around these consumer protections by building up the perception of a threat and then using network management as an excuse to justify discriminatory practices. This is the situation that gave rise to the first test case of the *Internet Policy Statement*.²¹⁴

The Case Against Comcast

In fall 2007, users of peer-to-peer (P2P) applications based on the BitTorrent software protocol began to notice that these applications were not working properly.²¹⁵ These users had one thing in common: They were all Comcast high-speed Internet subscribers. One of these users — a network expert and Tin Pan Alley-era music fan named Robb Topolski — noticed he couldn’t use the BitTorrent-protocol software Gnutella to share his favorite (public domain) turn-of-the-century music files. Topolski launched his own investigation, posted his findings to user forums at DSLreports.com, and quickly discovered many others who were having similar problems.²¹⁶ Thus, just a few months after an army of industry lobbyists and their friends in Congress had all begun describing Network Neutrality as a “solution in search of a problem,” a big problem reared its ugly head. Independent tests, including one conducted by the Associated Press, confirmed what Topolski and others already knew to be true: Comcast was indeed interfering with all uploads using the BitTorrent protocol.²¹⁷ Comcast was using a technique known as “forged reset packet injection,” which blocks a user’s ability to upload via P2P by sending the user and the host a signal to terminate the connection.²¹⁸

Comcast’s discrimination against P2P applications was particularly troubling, given that P2P is a video distribution platform²¹⁹ that could undermine Comcast’s domination of the video programming market.

²¹⁴ See *Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications; Broadband Industry Practices, Petition of Free Press et al. for Declaratory Ruling that Degrading an Internet Application Violates the FCC’s Internet Policy Statement and Does Not Meet an Exception for “Reasonable Network Management,”* File No. EB-08-IH-1518, WC Docket No. 07-52, Memorandum Opinion and Order, 23 FCC Rcd 13028 (2008) (*Comcast Order*).

²¹⁵ *Ibid.* at para. 6, note 14.

²¹⁶ See Craig Aaron, “Cracking down on Comcast: The FCC’s Proposal to Punish America’s Largest Cable Company for Blocking Internet Traffic Is a Major Victory for Net Neutrality,” *The Guardian*, July 16, 2008.

²¹⁷ Peter Svensson, “Comcast Blocks Some Internet Traffic, AP Testing Shows,” Associated Press, Oct. 19, 2007. See also Seth Schoen, “EFF Tests Agree with AP: Comcast Is Forging Packets to Interfere with User Traffic,” *Electronic Freedom Foundation Blog*, Oct. 19, 2007.

²¹⁸ This interference breaks the P2P application, because in some instances, if users cannot upload (or “seed”), then they are eventually unable to download with the application.

²¹⁹ P2P is increasingly used as a method for the legal distribution of video content; however, it is also used to facilitate the illegal sharing of copyrighted material. Nevertheless, the fact that a protocol is used in some instances for illicit purposes is irrelevant to whether discrimination against that particular protocol constitutes reasonable network management. Further, illicit online markets often presage the development of robust legal online markets, once industries realize the benefits of adopting new business models. For example, the music file-sharing software Napster was used by some to obtain copyrighted works for free. However, once the recording industry “freed” the music by allowing it to be legally downloaded (by the song) from online retailers like iTunes and Amazon.com, the online music sales thrived. The lesson here is that users will find their way to content. If content distributors make content easily available through legitimate outlets, users that might have otherwise committed piracy will instead legally purchase or view the content via an advertising supported portal.

However, Comcast denied that worries about competition motivated their actions. The company claimed its sole purpose in interfering with BitTorrent was to reduce network congestion caused largely by P2P-using “bandwidth hogs.”²²⁰ But if controlling network congestion was the sole motivation behind Comcast’s targeting of P2P networks, then the company chose a very poor method for alleviating congestion. First, Comcast’s methods were not narrowly tailored, as all BitTorrent uploads were affected, regardless of time of day, user location or file size, and thus had no relationship to actual network congestion.²²¹ Second, the company’s technique affected all users of the P2P protocol, whether or not they were heavy users disproportionately contributing to network congestion. And the targeting of BitTorrent ignored other bandwidth-intensive applications, such as streaming video from Comcast’s own online programming service.²²²

Free Press and Public Knowledge brought a formal complaint against Comcast before the FCC in November 2007²²³ and also requested a declaratory ruling that Comcast’s actions violated the sections of the Communications Act that underlie the *Internet Policy Statement*.²²⁴ Comcast’s primary defense was that its network management technique delayed but did not completely block P2P applications, and thus purportedly did not constitute a violation of the *Internet Policy Statement*. The distinction between delaying and blocking is important, because none of the four principles preclude discriminatory treatment outright; they only overtly preclude blocking of content and applications. The *Internet Policy Statement* says, “Consumers are entitled to access the lawful content of their choice” and “run applications and use services of their choice” (emphasis added). Arguably, if a network operator targets a specific application but just delays it, the consumer is still able to use or run the application to access content, even if the application is not designed to function optimally under such nonstandard network management.²²⁵

In the end, by a 3-2 bipartisan vote, the FCC ruled that Comcast was blocking end-users’ ability to run applications and access the lawful content of their choosing — a violation of the first and second principles of the *Internet Policy Statement* — and that this practice did not constitute reasonable network management.²²⁶ Comcast was ordered to cease its illegal network management technique and fully disclose future network management practices. The company proceeded to implement a congestion control system that only targets the heaviest users during times of peak network congestion.

But the fact that Comcast’s anti-competitive and wholly unnecessary actions might have been permissible if they were found to be “delaying” and not “blocking” illustrates the precarious nature of the FCC’s *Internet*

²²⁰ Andy Patrizio, “Comcast Suspected of Limiting BitTorrent Use,” *InternetNews.com*, October 19, 2007.

²²¹ Prior to the AP test, Comcast completely denied interfering with any applications. After the tests, Comcast admitted interfering with BitTorrent uploads, but claimed to do so only in specific geographic locations during times of congestion. However, subsequent tests demonstrated this was yet another falsehood. Faced with this evidence, Comcast admitted using this interfere system regardless of congestion, location or time of day. See *Comcast Order*, para. 9.

²²² Blocking P2P uploads also had the benefit of reducing off-network traffic flows, a potential source of increased transport costs for the cable operator which would then be shifted to customers of other ISPs in the same area (in other words, since Comcast customers could not upload files to be downloaded by others, the downloaders of these files likely pulled content from geographically proximate non-Comcast customers. Depending on Comcast’s transport carriage arrangements, this could have saved them money on transport expenses.

²²³ See Formal Complaint of Free Press and Public Knowledge against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications, File No. EB-08-IH-1518 (Nov. 1, 2007) (*Free Press Complaint*).

²²⁴ See *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services, 1998 Biennial Review—Review of Computer III and ONA Safeguards and Requirements; Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities; Internet Over Cable Declaratory Ruling; Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities; Broadband Industry Practices*, CC Docket Nos. 02-33, 01-337, 95-20, 98-10, GN Docket No. 00-185, CS Docket No. 02-52, WC Docket No. 07-52, Petition for Declaratory Ruling of Free Press, Public Knowledge, Media Access Project, Consumer Federation of America, Consumers Union, Information Society Project at Yale Law School, Professor Charles Nesson, Co-Director of the Berkman Center for Internet & Society, Harvard Law School, Professor Barbara van Schewick, Center for Internet & Society, Stanford Law School (Nov. 1, 2007) (*Free Press Petition*).

²²⁵ The fourth principle states, “Consumers are entitled to competition among network providers, application and service providers, and content providers.” It is possible that a network operator delaying one specific protocol for online video and not others would cause the content providers using the targeted protocol to suffer competitive harm, thus depriving consumers of their right to competition. However, the Commission found Comcast in violation of principles one and two and did not consider whether there was a violation of the fourth principle.

²²⁶ See *Comcast Order*, paras. 43-45.

Policy Statement.²²⁷ Moreover, Comcast appealed the FCC's baseline authority to even adjudicate this decision (despite fully complying with it), and the matter is pending in court.²²⁸ Consumers and innovators need regulatory certainty that network operators will not be permitted to engage in *any* discriminatory behavior, whether that behavior is considered to be outright blocking of content or subtler discriminatory conduct such as delaying an application.

Net Neutrality and the Need for a Fifth Principle

The *Internet Policy Statement's* four principles allow the FCC to prevent network operators from engaging in the most egregious forms of discrimination. The FCC clearly has the authority to prevent a DSL carrier from only allowing HP-branded laptops to connect to their network, for example. Likewise, the Commission would certainly intervene if a broadband provider blocked all access to CNN.com. And if a carrier implemented network management techniques that disabled third-party VoIP applications like Skype, FCC intervention would be fully supported by any reasonable reading of the law. But the four principles alone are not enough to fully protect and preserve the Internet as an open platform for innovation. The *Internet Policy Statement* lacks affirmation of the principle of nondiscrimination for all content, applications and services on the Internet.²²⁹

Perhaps in 2005 the FCC believed the four principles alone could ensure the preservation of the open Internet.²³⁰ During the Internet's early days, the technologies that enabled network discrimination were not very sophisticated. The electronics equipment used to manage the network could not examine packets in real time to make routing decisions on the basis of content, applications or services. But recently, advances in "Deep Packet Inspection" (DPI) equipment have made it possible to monitor packet flow in real time, and to exert discriminatory control to prioritize or degrade certain types of traffic.²³¹ Network operators are increasingly using DPI to monitor and control Internet access services, though the most egregious initial attempts have been abandoned. Comcast's discrimination against BitTorrent was made possible by DPI equipment.²³² Charter Communications struck up a (brief) relationship with an advertising company called NebuAd to use DPI to insert targeted advertising directly into a user's Internet communications.²³³ However, Charter abandoned this idea in the face of congressional and public outrage over gross violations of consumer privacy.²³⁴ Indeed, DPI technologies compound the problems of network discrimination with violations of privacy — creating a virtual wiretap that permits surveillance of all communications to and from end-user computers.

But other network operators continue to explore the possible discriminatory uses of DPI technology, perhaps in more subtle ways. Cox Communications is currently testing a network management system that uses DPI to identify and slow down certain types of traffic — such as P2P.²³⁵ Cox's technique is based on a value judgment. If the DPI router identifies a particular packet of data as "time sensitive," it is routed normally. However, if a particular packet is among the protocols that Cox deems *not* to be time sensitive, it is assigned a lower priority, and ordered to go to the back of the line. Thus, Cox is inserting its own value judgment in place of a user's judgment. This fundamentally breaks the end-to-end nature of the Internet and goes against the principle

²²⁷ In this particular case, Comcast's actions were on their face equivalent to outright blocking, and the outcome of its management technique exerted such a substantial negative impact on the end-user's experience that the semantic debate was largely a distraction. However, recent uses of protocol-discriminating, non-standard network management techniques like those of Cox Communications illustrate that the distinctions between "delay" and "block" are real and may have profound implications on the FCC's ability to protect consumers under the existing four principles.

²²⁸ See *Comcast Corp. v. FCC*, No. 08-1291, D.C. Cir. filed Sept. 4, 2008.

²²⁹ The author wishes to acknowledge and thank M. Chris Riley for his extensive contributions to this section and the section on managed network services.

²³⁰ Indeed, the preamble to each of the four principles is "to encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet."

²³¹ See M. Chris Riley and Ben Scott, "Deep Packet Inspection: The End of the Internet as We Know It?" *Free Press*, March 2009.

²³² See Nate Anderson, "Comcast FCC Filing Shows Gap Between Hype, Bandwidth Reality," *Ars Technica*, Feb. 13, 2008. See also Comcast Corporation, "Description of Current Network Management Practices," p. 8, available at http://downloads.comcast.net/docs/Attachment_A_Current_Practices.pdf.

²³³ See "Charter Hires NebuAd to Make Online Ads More Relevant," *IAB SmartBrief*, May 16, 2008.

²³⁴ See Steven Musil, "Charter Drops Controversial Customer Tracking Plan," *CNet*, June 24, 2008.

²³⁵ See generally Cox Communications, *Congestion Management FAQs*, available at <http://www.cox.com/policy/congestionmanagement/>.

of nondiscrimination that is at the core of the Communications Act. Furthermore, it is yet another example of a network provider using a nonstandard and over-reaching technique to manage network congestion that is largely the result of that provider's own making. By marketing higher and higher "up to" speed offerings without performing the required level of upgrades or allocating more channel space to Internet content, cable companies like Cox are largely responsible for the congestion issues now supposedly being "solved" by violating nondiscrimination principles.

If extended to a network-wide practice, Cox's system would set an alarming precedent in which the ISP, not the marketplace, gets to pick winners and losers on the Internet. This development would throw the entire Internet ecosystem into chaos, as other providers could adopt their own prioritization systems with different value judgments about what protocols are and are not "time sensitive." Thus, Internet applications and services may or may not work properly depending on the network. Such a move would devastate the applications and content markets, as developers would have to make guesses as to how a particular network might treat any given application. This possibility is far from hypothetical — in Canada, Primus Telecommunications has announced a system similar to Cox's using different priority classes and classifications.²³⁶

Nondiscrimination is in jeopardy as a guiding principle of the Internet. Armed with DPI, Internet access providers will develop business models based on discrimination that allow them to increase revenues while reducing investment.²³⁷ Insufficient ISP competition means consumers will have little ability to "vote with their wallets" against this new form of discrimination. And even more competition might not be enough to prevent network operators from testing the boundaries of discrimination, as consumers are often unaware of network management practices.

Policymakers must intervene and take a stand against discrimination. The FCC must recognize that the four principles contained in the *Internet Policy Statement* are not enough to preserve and promote the open and interconnected nature of the public Internet. Adding a fifth principle of nondiscrimination can reverse some of the damage done by past reckless Commission actions, especially the completely misguided decision to remove the Internet from under the nondiscrimination protections of Title II.

How should the FCC design a nondiscrimination principle or rule? Past congressional and FCC action provide some guidance. As a condition for approval of the AT&T-Bell South merger, the FCC required the new company to "maintain a neutral network and neutral routing in its wireline broadband Internet access service," a requirement that would be met if AT&T did not degrade or prioritize any packets on the basis of source, ownership or destination.²³⁸ However, the AT&T/BellSouth condition speaks only to "source, ownership or destination" and does not directly address application or content type. Early congressional attempts — none enacted — went further. Legislation introduced in 2006 in the House of Representatives created a duty to "not block, impair, degrade, discriminate against, or interfere with the ability of any person to utilize their broadband service to ... access, use, send, receive, or offer lawful content, applications, or services over broadband networks, including the Internet."²³⁹ A similar Senate bill required Internet access providers to "enable any content, application, or service made available via the Internet to be offered, provided, or posted on a basis that... is reasonable and nondiscriminatory, including with respect to quality of service, access, speed, and bandwidth."²⁴⁰

In these early FCC and congressional actions, we see the essential components of nondiscrimination rules. These rules must ensure equal treatment for all communications on the Internet regardless of their source, ownership, destination, application or content. No Internet packets should be given priority over others — whether the priority comes in the form of access, latency or bandwidth.

²³⁶ "Primus Introduces New Internet Traffic Shaping System," *Digital Home*, March 18, 2009.

²³⁷ See e.g. "Cloudshield Subscriber Services Manager," Cloudshield Technologies, 2009, available at http://www.cloudshield.com/applications/cs_ssm.asp ("By shaping traffic at the subscriber-level, bandwidth is made available for new revenue generating services. Rate limiting traffic allows network infrastructure build-out to be deferred, thereby reducing capital expenditures").

²³⁸ *Supra* note 207 at "Net Neutrality condition #2."

²³⁹ H.R. 5273, 109th Cong. (2006).

²⁴⁰ S. 215, 110th Cong. (2007).

First, nondiscrimination rules must prohibit Internet access providers from blocking, discriminating against or otherwise degrading any lawful content, applications or services. Under the guise of managing congestion, many providers have blocked or degraded high-bandwidth uses of the Internet, including P2P applications. But nondiscrimination rules must go further than prohibiting blocking; they must prevent degrading and other forms of discriminatory treatment, such as setting selective bandwidth caps on disfavored applications or services. Slowing, capping or selectively charging for the use of P2P or other high-bandwidth applications and services cripples innovation on the Internet and must not be allowed.

Second, nondiscrimination rules must prohibit network operators from selling or offering any capacity to prioritize some Internet packets over others, whether to a third party or to an affiliate. Selective prioritization is harmful for two separate reasons. Prioritizing some uses of the Internet increases the cost of entry into the market for new applications and services, because developers must either pay for prioritization or compete against established applications and services that have favorable arrangements with certain ISPs. Worse, as discussed above, prioritization is a zero-sum game. If some packets are sped up, by definition, others are slowed down. Ultimately, if enough applications and services are accelerated, every other use of the Internet will be forced to share the leftover bandwidth; the only usable Internet will be the prioritized Internet. Every application provider would be forced to pay for special prioritization to reach consumers — and the Internet would look like cable TV rather than the open platform it is today. Nondiscrimination rules must prevent the creation of two separate lanes of traffic for Internet packets, particularly when access to the “fast lane” is available only to the network owner’s affiliated content or to the highest bidders.

Finally, nondiscrimination rules must prohibit Internet access providers from charging additional fees to allow specific types of Internet content, applications or services to be used. As with prioritization of Internet packets, charging special fees for certain uses of the Internet — for example, selling two subscription levels, where a “basic” level does not allow P2P communications but a “premium” level does — raises the costs of entry, increases costs for consumers, and turns the Internet into a form of pay-for-play media like cable TV. To avoid limiting innovation and consumer choice, nondiscrimination rules must prohibit any discriminatory fees for specific content, applications or services.

Enshrining nondiscrimination into the *Internet Policy Statement* and codifying these principles into rules for all technologies delivering Internet access — including wireless technologies — should be a top priority for the FCC. It should also be a top priority for Congress. Though the Commission has the clear authority to directly deal with this issue, it would be a cleaner process if Congress were to put Network Neutrality explicitly back into the law. This would give the Commission a mandate to proceed, and would ward off the eventual legal process that will follow Commission action.

The notion that discrimination is needed to encourage investment has been completely discredited. Carriers have generally come to realize that Ed Whitacre’s pay-to-play model is unworkable, and that in the long run, they are better off selling the product consumers want: the open Internet. Of course, the network operators will continue to preach the evils of a neutral network, but they too will benefit from the regulatory certainty of having this issue settled once and for all.

Dealing with Managed Services

Cable and telephone companies make billions selling “broadband Internet access” using a variety of physical conduits — coaxial cable, twisted copper pair, fiber optic cables, electrical wiring and spectrum. But these physical conduits are capable of delivering services other than Internet access — such as video programming, which can generate considerable revenues. Consequently, network owners are very concerned about nondiscriminatory regulation on one set of services like Internet access spilling over into other services that have never been subject to nondiscriminatory treatment.

This issue is relatively straightforward in the context of coaxial cable modem and television services. Cable TV services are one-way communications services that use radio frequency technology to transmit programming. Programming for every channel is sent to every home through the coaxial cable, whether or not the TV is turned on. Users then “tune” their televisions to a particular channel to receive the programming. Conversely,

cable modem service segregates a particular channel or set of channels and devotes them to two-way communications using the TCP/IP protocol. This is a clear dividing line for regulatory purposes. Cable TV services are clearly “cable communications” subject to Title VI of the 1996 Act, while cable modem services are “information services.”²⁴¹

However, traditional common carriers like Verizon and AT&T are beginning to deploy subscription television services using Internet Protocol technology. Obviously, if the carrier is selling monthly television service, they are going to want to ensure that service is delivered with the highest possible quality to compete with cable and satellite. Being able to earn revenues from “triple play” service offered over a single pipe is a big factor driving network investment decisions. Undermining this ability by requiring Net Neutrality would appear to be contrary to the goals of Section 706 of the 1996 Act.

Fortunately, technology and network design have already solved this potential conundrum. So-called “IPTV” services like those of AT&T’s U-Verse use IP protocols for their TV service but do not connect with the public Internet. This is by design, as no single network operator could ensure their TV content would receive the required level of quality across all parts of the Internet. IPTV providers instead host programming content on servers located entirely within their network. Users “flipping the dial” are served up a requested channel using IP, but that IP request never reaches the wider public Internet. Thus, it is clearly a Title VI cable service, and is regulated as such.²⁴²

But while it is easy to draw lines between pure public Internet services and pay-TV services, new services might come along and blur this line. The future possibilities for non-Internet broadband services range broadly, from direct connections between rural hospitals and urban medical research facilities to allow for rapid remote diagnosis and consultation, to high-performance video games. These so-called managed services can share last-mile connections and other infrastructure elements with the Internet. If this market develops in a fair and consumer-friendly fashion that does not restrict the continued growth of the Internet, these services will clearly bring benefits that far exceed any harms resulting from their receiving favorable (i.e., discriminatory) treatment.

An essential part of managed services is that they do not connect to the Internet. These services do not receive content from, or send content to, the Internet at any point in the middle of the network (although a single user’s computer could connect both to a managed service and to the Internet). This distinction is essential to allow for prioritization where it is truly necessary, yet avoid the anti-consumer harms posed by prioritization of Internet traffic. Managed services should be permitted to replace other forms of communication such as traditional RF cable television or the telephone (through VoIP), and managed services can create new forms of direct, high-performance communication between two parties established in advance. However, if managed services are allowed to directly replicate all of the functionality of the Internet, their impact will be a reduction in consumer choice, innovation and competition.

Thus the FCC has to confront the issue of managed services directly and close any loopholes. The first and foremost objective of managed services policy should be to ensure that the development of managed services does not squash the Internet. Because both will share a common architecture, service providers may have strong incentives to allocate a disproportionate share of capacity to managed services, as these allow the service provider to offer a value-added service above and beyond pure transit. Allowing some capacity to be used by managed services can increase efficient use of the broadband network and provide additional incentive for providers to expand capacity and coverage. But providing insufficient bandwidth to the Internet would reduce consumer choice, innovation and competition, offsetting other gains. Therefore, the FCC and Congress should require ISPs to allocate *enough* capacity to maintain a robust Internet access service.

But the concept of what bandwidth or relative allocation of bandwidth is sufficient to maintain robust Internet access is elusive. Given the history of the Internet, what might be considered robust Internet access now may not

²⁴¹ 47 U.S.C. 522(6) defines “cable service” as “the one-way transmission to subscribers of video programming, or other programming service; and subscriber interaction, if any, which is required for the selection or use of such video programming or other programming service.”

²⁴² The Network Neutrality conditions in the AT&T-Bell South merger conditions specifically exempted AT&T’s IPTV services.

be sufficient in five years. Creating an arbitrary fixed number, or even a sequence of evolving numbers, could easily result in overestimates or underestimates of growth. The best measurements must be contemporary, and should compare U.S. Internet capacity to capacities available in other countries or to capacities of other services.

The FCC or Congress could use two separate mechanisms to protect robust Internet access. The first method is the creation of a rule directly requiring the allocation of sufficient capacity to allow for robust Internet access. The rule could include evolving standards for the concept of sufficient capacity (as measured by individual average actual Internet bandwidth, or by some combination of maximum bandwidth and oversubscription or “contention” ratio), or it could leave the concept undefined. A complaint process to resolve cases where an individual or an application developer identifies a service provider engaging in excessive restriction could accompany this rule.

Second, or in addition, the FCC could tie the bandwidth of managed services to Internet services, to ensure that capacity is added to both at a comparable rate. In practice, this would mean that no single managed service would be able to be offered at higher bandwidth than any consumer Internet access service offered by the same provider in the same area. In other words, the Internet should be able to compete with any individual managed service. Collectively, the sum of all space allocated for managed services should not be substantially more than the capacity allocated for broadband Internet services, to ensure a comparable growth rate between the Internet and managed services. Such a rule would ensure that Internet access capacity grows at a healthy rate, and that the Internet remains a locus of innovation.

In addition to protecting robust access to the Internet, managed services policy should create a competitive and fair environment for both ISPs and for independent developers of managed services. Without rules in place to promote competition, exclusive arrangements and tying practices will develop that promote incumbents and their affiliates to the detriment of new entrants — the very problems that currently plague the cable TV market. The Internet access market is already heavily concentrated, and major ISPs are in a position to strike exclusive deals with a few vendors of managed services and exclude others.

Fortunately, there are off-the-shelf policy solutions to stave off these dangers and to develop consumer-friendly managed services. One approach is to adopt a system derived from Title II of the Communications Act. Specifically, agreements between managed services operators and network operators should be on reasonable and nondiscriminatory rates, terms and conditions. At a minimum, negotiations between managed services providers and ISPs must not be anti-competitive, unfair or deceptive. Frameworks such as these are necessary safeguards to allow for the operation of discriminatory and prioritized communications over the same broadband systems that carry the Internet, while avoiding the problems that have developed in comparable markets for cable programming and wireless communications.

Getting Back to Basics: Preserving the Open Internet Should Be a Top Priority

The Internet is a common good that will continue to play a critical role in America’s economic and social prosperity. But no one single person, government or corporation owns the Internet. Much of the Internet’s early development was carried out using public funds, and much of its private development was and continues to be funded by consumers who participate in markets with little meaningful competition. Private companies like AT&T and Comcast build and deploy infrastructure that provide end-users with access to this common good, and they make substantial profits doing so. But consumers don’t hand over money to companies like Comcast because they value the connection itself; they are willing to pay \$50 per month for the things that connection enables them to do. It’s the applications, services and content that give the connection value. ISPs provide *access* to the Internet, and when they engage in behavior such as blocking, they alter the fundamental nature of how the Internet is expected to work.

This threat is why all four of the FCC’s *Internet Policy Statement* principles contain the phrase “promote the open and interconnected nature of the public Internet.” But the current protections are tenuous. The four principles do not affirmatively preclude discrimination. This omission leaves the door wide open to carriers looking to implement discriminatory practices in the name of reasonable network management. This omission allows carriers to use the myth of looming broadband brownouts and capacity crunches to stifle the use of the very applications that are driving innovation and progress on the Internet. The lack of firm

nondiscrimination rules creates market uncertainty and sends a signal to carriers that it might one day be permissible to profit from artificial scarcity.

The Internet was born in an environment where innovation and ingenuity were set free. This environment was made possible because the FCC was proactive in ensuring that owners of critical communications facilities behaved properly and stayed out of the way. Discrimination was not an option, and that was never a point of controversy. It is frustrating that there is even a debate over Network Neutrality, because neutrality is the very lifeblood of the network; it is what made the Internet into a service that companies like AT&T and Comcast could get rich selling. The only reason the fight over Network Neutrality exists is because the FCC left consumers without the basic protections guaranteed in the Communications Act that have been part of the Internet since its inception.

As the Obama administration begins to chart its own course on broadband policy, the first stop must be restoring the basic nondiscriminatory protections that were so recklessly thrown aside. The new FCC needs first to preserve the Internet before it can move forward with a national broadband strategy promoting the Internet.

CHAPTER 5
**AMERICA'S BROADBAND
PROBLEM: ACCESS**

ACCESS: THE FCC'S FLAWED UNIVERSAL SERVICE POLICY

Communications technologies hold a unique place in American social policy. Unlike with other services such as housing or food, America has a policy structure that not only subsidizes communications services for low-income populations, but also subsidizes the costs of telecommunications for *all* Americans living in rural areas. This is a legacy of the American social contract that utility services like telephones and electricity would be universally available and reasonably affordable, regardless of where you live.²⁴³

As technology advances, the commitment to universal service remains more important than ever. Communications technologies like broadband have the potential to erase the distances between rural and urban communities. They have the power to breathe economic life back into areas that have suffered from decades of manufacturing industry decline and urban flight. And they have the power to be the great information and opportunity equalizer for low-income Americans.

But our universal service policies have not evolved along with technology. We're still throwing billions of dollars away each year supporting a legacy technology supplied by companies that have become wholly dependent upon subsidies. Meanwhile, the digital divide between rural and urban America grows wider.

This failure to modernize our universal service policies is not the fault of the law. It is the fault of the Federal Communications Commission. When Congress established the current universal service regime under the 1996 Act, it directed the FCC to treat universal service as an "evolving level of telecommunications services" that it should periodically update to "account [for] advances in telecommunications and information technologies and services."²⁴⁴

But instead of being good stewards of our nation's universal service policies, the FCC has stood by while the system has been overtaken by waste and inefficiency. The Commission and the Federal-State Joint Board that oversees the Universal Service Fund (USF) have largely become captives of the rural companies that thrive off its subsidies. Consequently, the fund has nearly doubled in size since 2001, largely as a result of subsidizing wireless companies. This waste threatens our underlying commitment to universal service, right at the time when it is needed to bring the benefits of broadband to rural America.

There is no shortage of calls to reform the USF. The problem is that most of those calling for change are self-interested actors that simply want to tilt the subsidies away from their competitors and into their own pockets. Any time an idea is floated that might reduce the level of pork for the pigs at the trough, an army of lobbyists pushes scare tactics warning of the complete destruction of rural America. Despite radical changes in the communications marketplace, and despite the Act's directive for the FCC to promote an efficient and evolving universal service system, politics have saddled us with the status quo.

²⁴³ However, while rural electrification was an explicit federal priority dating back to the Rural Electrification Act of 1936, universal telephone service grew out of a bargain between the government and AT&T for allowing Ma Bell to run a legal private monopoly. It wasn't really until 1996 that the mechanisms for achieving the goal of universal communications access became an explicit part of the law.

²⁴⁴ 47 U.S.C. 254(c)(1).

Getting robust next-generation broadband services into the home of every American, rich or poor, urban or rural, will require a radical change in thinking. Achieving the goals of the Communications Act will require the complete abandonment of outdated technologies and regulatory structures. We must completely upend the status quo and confront some difficult and politically challenging choices.

Achieving the goal of universal broadband can happen in a relatively short period of time without an added burden on consumers whose monthly bills support the fund. But these goals cannot be reached by tinkering around the edges or by small, incremental changes. We need a leap forward in policy. In this chapter, we discuss how we arrived at our current problem and propose a path forward.

Universal Service Policy at a Crossroads

Though the debate surrounding the USF is often contentious and seemingly intractable, we must not lose sight of a salient fact: The USF is responsible for delivering essential communications services to low-income households, rural areas, schools, libraries and rural health clinics — services that would likely not exist or be prohibitively expensive absent support from the fund.

The goal of universal service is a cornerstone of our nation's communications policy dating back to the 1930s. Though the communications landscape has undergone a series of radical changes since then, the importance of achieving universal service has not. The challenge facing policymakers is determining the mechanisms and policies best suited to achieve this goal in the most efficient and equitable manner possible.

There is little doubt that the USF is in trouble, facing a potential fiscal crisis of falling receipts and expanding expenses for essential but not technologically advanced services. But while the present predicament poses a serious threat, it also offers an opportunity to modernize the fund and close the digital divide.

In 1996, when the current universal service regime was created, few fully grasped how the phenomenon of convergence would radically transform the underpinnings of all telecommunications. But some in Congress did see change on the horizon and had the foresight to establish in the law the principle that as communications technologies evolve, so must universal service.

At the time, Internet access was an application that used telephony as an infrastructure. Today, telephony is one of many applications supported by broadband infrastructure. Yet tens of millions of Americans cannot purchase a broadband connection at any price, and millions more are only offered third-rate broadband service at exorbitant prices. The staggering rural-urban digital divide and the lack of affordable broadband offerings are the exact outcome that Congress intended to prevent. This disparity has real-world economic and social consequences for millions of American families and businesses.

Broadband is the essential communications infrastructure of the 21st century. In our interconnected, digital world, it makes no sense to support 19th-century technology. The principal goal of the USF should be to support the deployment of, and consumer access to, next-generation, future-proof, high-speed Internet infrastructure. But reaching that goal requires the complete upending of the status quo and direct confrontation with difficult and politically challenging choices.

The development and administration of universal service policy in the United States is an interest-group-driven, politically charged process. It is also path dependent, limited by past decisions even though those past circumstances may no longer be relevant. The USF as currently administered inefficiently supports redundant legacy technologies and enables private companies to become wholly dependent on the continuance of the old model. This mix of disparate interests, entrenched business models, outdated legislative directives, artificial policy distinctions, and billions in annual funds makes it extremely difficult for legislators and regulators to enact even modest incremental changes, much less sweeping reform.

But it is imperative that policymakers act to change this broken model. The fact that the digital divide persists in the face of a \$4.6 billion annual fund to support rural telephony is a glaring testimony to the failures of the current universal service model and the need for modernization. However, when reforming the USF,

policymakers must also recognize that these billions are collected mostly from urban consumers who only realize indirect benefits. These consumers' money should be spent in the most efficient manner possible.

To maximize the benefits of universal service policies for all Americans, the size of the USF must be disciplined through careful oversight and accountability, market incentives, and strategic investment in infrastructure. Since the implementation of the 1996 Act, we've learned that support for redundant infrastructures, which is intended to promote competition, may in some cases actually harm consumers. Viewed through this lens, the appropriate role for the USF is to support a single infrastructure, while using open access policy to promote competition. This approach will ultimately benefit consumers in rural areas by lowering service prices and enticing more customers to subscribe. All consumers will benefit in turn by lowering the amount of support that is necessary to build and maintain the critical broadband infrastructure.

Congress and the FCC must maintain the remarkable and progressive commitment to universal service that is the foundation of U.S. communications policy. Transitioning the USF to broadband is an essential step on the path to reforming the system by maximizing the return on public investment and regaining America's position as a global leader in technology and communications.

Defining Universal Service: History and Rationale

The current federal universal service program traces its roots to AT&T's nationwide monopoly on telephony services. As the first patents held by the Bell Company began to expire at the turn of the 20th century, many local telephone markets began to see new entrants and competition. Some rural areas that the Bell monopoly had previously refused to serve got their first exposure to telephony using crude systems set up and operated by community cooperatives.²⁴⁵ Though prices dropped as a result of this new competition, the nation's telecommunications system was in disarray. The Bell companies refused to interconnect with many of their competitors (and vice versa), creating a system whereby customers had to be on the same network as those they wished to call. AT&T (the parent company of local Bell exchanges) began dramatically expanding its national reach (at the local and long-distance levels) by building new exchanges and acquiring smaller independent local companies. It is in this context that the concept of "universal service" arose. In 1907, AT&T President Theodore Vail used the term to describe his company's business plan to establish a single telephone system that served all customers.²⁴⁶

This aggressive move resulted in the 1913 Kingsbury Commitment between the Justice Department and AT&T. This agreement required that AT&T sell its stake in Western Electric, cease acquisition of independent exchanges, and interconnect its long distance network with other local exchanges. However, by 1921, many in Congress had begun to view telephony as a natural monopoly, and with the passage of the Willis-Graham Act, moved toward granting AT&T monopoly status. Three years after passage of this act, the Interstate Commerce Commission approved AT&T's acquisition of 223 of the 234 remaining independent exchange companies.²⁴⁷ Though Willis-Graham went a long way toward establishing Vail's vision of "universal service," this legislation bore no resemblance to modern universal service policy and practice. For example, though artificially high business rates are currently levied as a method for cross-subsidizing residential service, the Willis-Graham Act specifically prohibited this practice.

1934 to 1996: Monopolies and Cross-Subsidies

The Communications Act of 1934 contains the first example of federal universal telecommunications service policy. Though universal telephony service is not mentioned specifically, the 1934 Act did create and direct the Commission "to make available, so far as possible, to all the people of the United States a rapid, efficient ...

²⁴⁵ Some of these systems were just multi-party lines operating on barbed wire. However, after the markets opened to competition, rural areas exceeded urban areas in telephone penetration, a trend that continued until the Great Depression. This suggests that although economies of density are important in network industries, rural users highly valued the time saved by the telephone. For a detailed history of the early telephone industry, see Claude S. Fischer, *America Calling: A Social History of the Telephone to 1940* (University of California Press, 1994).

²⁴⁶ Milton Mueller, "Universal Service in Telephone History: A Reconstruction," 17, *Telecommunications Policy*, 352-356, 1993.

²⁴⁷ Mark Lloyd, "Whatever Happened to Antitrust?" Center for American Progress, April 5, 2006.

wire and radio communication service with adequate facilities at reasonable charges.”²⁴⁸ But the newly created Commission initially did little to enforce this vision, just intervening to regulate the rates AT&T charged in certain markets. It was not until the 1950s that the FCC began to allocate an arbitrarily high amount of AT&T’s costs to the “interstate” jurisdiction, effectively creating a system whereby overpriced long-distance service was used to subsidize underpriced local service (at rates set by the Commission).²⁴⁹

But this cross-subsidy,²⁵⁰ along with advances in microwave technology, opened the door to the demise of the “natural monopoly” view of AT&T’s system. By the mid-1970s, MCI had gained regulatory approval (albeit begrudgingly) to compete with AT&T in certain segments of the long-distance market. Also around this time, the Justice Department filed its antitrust suit against AT&T, seeking to break up its half-century-old protected monopoly.²⁵¹ AT&T’s response to these legal and competitive pressures was to modernize and formalize the definition of “universal service.”

Put simply, AT&T’s view was that any threat to its monopoly status (and the implicit system of cross-subsidies), would destroy its ability to provide service in all areas of the country, to any consumer that requested it, at prices comparable to those charged in other areas of the country. AT&T argued that competition would cause the nation’s telephone penetration level, which at that time was around 91 percent, to fall dramatically. Though AT&T lost the battle (and was broken up in 1984), this notion of universal service was permanently ingrained in the regulatory paradigm.

The 1982 consent decree between AT&T and the Justice Department to break up the company established competitive markets in long-distance and special access services, but maintained monopolies in local residential services. AT&T became a long-distance company, spinning off its local exchanges into seven independent Regional Bell Operating Companies (RBOCs), each with protected regulated monopoly status. The separation of the local and long-distance markets, and the presence of long-distance competition, meant that the old system of implicit subsidies (where AT&T just “balanced the books” with high long-distance charges) was no longer viable. A new subsidy had to be created to maintain a “universal service” system of generally low-cost local rates.²⁵²

To address this issue, the FCC established a system of “access charges” paid by long-distance carriers to the local exchange companies that originated and terminated calls. These access charges artificially elevated the cost of long distance and allowed local companies to remain solvent even though local rates were set in many cases below cost by the Commission.

Any system of cross-subsidies designed to offset the cost of providing universal service is problematic from an efficiency standpoint, even under a monopoly regime like the old AT&T. This type of pricing artificially inflates demand for some services, while depressing it for others. For example, to facilitate universal service, the old AT&T would levy 100 percent markups on business lines, even though the costs to provide business and residential service were essentially identical.²⁵³ The system of cross-subsidies (via long-distance access charges and geographic rate averaging) was sustainable in the local monopoly environment because captive customers had no other

²⁴⁸ The Communications Act of 1934, as enacted. 47 USC § 151.

²⁴⁹ This shifting of cost burden to the interstate jurisdiction began in the 1950s, but was not explicitly intended as a method of increasing local subscribership. It was not until 1971, with the implementation of the “Ozark Plan” that the Commission explicitly stated that this was the goal of their rate plan. See “Prescription of Procedures for Separating and Allocating Plant Investment, Operating Expenses, Taxes and Reserves Between the Intrastate and the Interstate Operations of Telephone Companies,” Report and Order, 16 F.C.C.2d 317, 1969.

²⁵⁰ The term “cross-subsidy” used here is informal, and generally means that some set of services are priced below their long-run incremental cost, offset by some other service priced above cost. This is not necessarily the same thing as the more rigorous economic definition put forth by Faulhaber. See Faulhaber, “Cross-Subsidization: Pricing in Public Enterprises,” *American Economic Review*, 65, 966-977, 1975.

²⁵¹ See *United States v. American Tel. & Tel. Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff’d sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

²⁵² Rates were actually below cost in some areas, while above cost in others.

²⁵³ This process, though weakened by competition post-1996, persists somewhat today.

options. But if competition were allowed at the local level, the entire system would collapse. This was the precise burden that Congress faced as it sought to “deregulate” the telecommunications sector in the mid-1990s.

At the time, Congress believed that changing technologies would end the need to view local telephony as a natural monopoly. Congress wanted to open up local markets to competition, giving new “facilities-based” providers (i.e., those who would extend services to residents and businesses using their own infrastructure), and “non-facilities-based” providers (i.e., those leasing capacity from the local incumbent at wholesale rates) the right to compete with the incumbents. Non-facilities providers were given access rights because Congress recognized that rollout of completely new networks would be too costly, and that temporary wholesale access would help get new competitors off the ground.

But if local markets were open to competition, it would be impossible for the incumbents (or new entrants) to provide below-cost service in certain high-cost areas. Under full competition, local access rates would undergo a natural rebalancing, where, on average, rural rates would rise as urban rates drop.²⁵⁴ No one in Congress was willing to “deregulate” to such a degree. So to keep local rates low, Congress created an explicit subsidy system known as the “Universal Service Fund.”

Universal Service and the Telecommunications Act of 1996

A principal goal of the 1996 Act was to foster the creation of competitive markets in all sectors of the telecommunications industry. The Act was envisioned as a way to transition to this vision without shocking the industry or allowing the previously protected local monopolies to abuse their market power. The Act allowed new competitors at the local level (the so-called competitive local exchange carriers, or CLECs), but the incumbent carriers, or ILECs, were temporarily barred from participation in markets other than local telephony service. Once an ILEC’s local market was deemed sufficiently competitive (by a state board), the company was then free to enter other markets, such as long-distance service.

As indicated above, maintaining universal service in a competitive market was an inherently difficult problem for Congress to solve as it overhauled the 1934 Act. But this was made even more complex by two arbitrary distinctions left over from the AT&T monopoly era — distinctions that remain to this day.

The first distinction arises in the different regulatory treatment of Bell company ILECs and rural ILECs. Most rural ILECs (as measured by size of customer base, not geography) are subject to rate-of-return regulation, while most “non-rural” ILECs are subject to price-cap regulation.²⁵⁵ This distinction creates problems for universal service, as rate-of-return carriers have little incentive to hold down costs or to innovate. In addition, there are different methodologies used to calculate the level of support for rural and non-rural carriers (rural carriers are inefficiently reimbursed for historical costs, while non-rural carriers receive support based on

²⁵⁴ This is a result of the economies of density involved in deploying telecommunications infrastructure, an industry with high fixed costs and low marginal costs. Deploying to rural areas is often far more expensive on a per-line basis than deploying in urban areas. However, the full result of rate rebalancing is not quite so clear. Remember that long-distance rates are held artificially high even in the presence of competition by the imposition of access charges (this is the case in rural areas served by “rural” carriers, a regulatory distinction explained below), but due to access charge reform, such fees are closer to being cost-based in areas served by non-rural carriers. Thus, it is very likely that a rural customer who makes a significant amount of long-distance calls would fare better under full-rate rebalancing.

²⁵⁵ Under rate-of-return regulation, carriers report their historical cost, and service prices are set such that the carrier earns a pre-defined return on that investment (currently, this stands at 11.25 percent). In the cases of carriers receiving universal service support, the subsidies are set at a level that allows the carrier to earn its rate of return. Under price-cap regulation, the regulator sets the price, and the carrier is free to earn any rate of return, which encourages the carrier to be more efficient. This is why price-cap regulation is a form of “incentive regulation” because, in theory, carriers that operate at maximum efficiency can earn short-term returns far higher than what would be allowed under rate-of-return regulation. When the regulator reviews the price caps, these increased efficiencies are supposed to be accounted for and the prices adjusted downward over time. Thus, this regulatory structure is supposed to mimic behavior that would be expected in a competitive market, and can act as a transitional regime until actual market competition forms. However, the system also has risks for the carrier. Since there is no guaranteed rate of return, it is possible that external factors such as competition could act to keep returns below what the carrier would have earned under the old system. A price-cap carrier may petition the FCC to raise the price caps if they can demonstrate that the authorized price would produce earnings that are so low as to be confiscatory. Price-cap carriers used to be required to return to their customers earnings above specified levels, but the FCC eliminated this requirement in 1997. See *Price Cap Performance Review for Local Exchange Carriers*, Fourth Report and Order in CC Docket No. 94-1 and Second Report and Order in CC Docket No. 96-262, 12 FCC Rcd 16642 (1997).

forward-looking costs). Because of this, the per-line USF support distributed to rural ILECs is much more generous than that provided to the RBOCs.

The second distinction stems from how federal and state regulators have historically divided up the costs of the “local loop” between intrastate (state) and interstate (federal) jurisdictions.²⁵⁶ For the purposes of universal service cost recovery, 25 percent of the loop’s costs are (somewhat arbitrarily) allocated to the interstate jurisdiction, with the remainder falling under the intrastate jurisdiction. On the federal side, the FCC generally allows the service provider to recoup the interstate portion of its costs through access charges levied on long-distance carriers, and by imposition of monthly subscriber-line charges on consumers. The intrastate portion of costs is recovered through intrastate access charges, fees on caller ID and call waiting, and monthly rates for basic local service (and in the case of high-cost carriers, via other USF programs). While the majority of these charges are above-cost (and thus are implicit “taxes”), the flat-rate subscriber charges are often listed on a consumer’s bill as a “regulatory recovery fee.”

This artificial separation of costs is problematic, as it bears no actual resemblance to how an individual loop is used. Furthermore, new-generation telephony that is carried partly or fully over the Internet has allowed some carriers to disguise where a call originates — a quasi-legal practice that has created new arbitrage opportunities that frustrate collection of universal service revenues. Congress could have jettisoned these regulatory artifacts and created a universal service mechanism that better reflected marketplace realities. However, the entrenched interests of certain players, as well as the path-dependent nature of telecom regulatory policy resulted in Congress’ paradoxical attempt to make big changes while not changing too much at all.

Competition and Universal Service: Congress Moves to Explicit Subsidies

Section 254 of the 1996 Act established the current universal service system. In this section, Congress outlined seven principles of universal service, some containing elements of the post-1984 notion of universal service, and some embodying new goals.²⁵⁷ These are:

- 1) **QUALITY AND RATES.** Congress directed that “quality services... be available at just, reasonable and affordable rates.”
- 2) **ACCESS TO ADVANCED SERVICES.** Congress established the principle that “access to advanced telecommunications and information services should be provided in all regions of the Nation.” This is important, because this principle embodies not just traditional telephony, but “advanced” services such as high-speed Internet.
- 3) **ACCESS IN RURAL AND HIGH-COST AREAS.** This principle embodies the decades-old practice of providing service in rural and other high-cost areas that is “reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable” to rates charged in urban areas. This principle also maintains the notion that “low-income consumers” should also have access to these services, effectively embracing the FCC’s practice of subsidizing poor customers, which began in the mid-1980s.
- 4) **EQUITABLE AND NONDISCRIMINATORY CONTRIBUTIONS.** This principle makes it explicit that universal service will be paid for by “all providers of telecommunications services” in an “equitable and nondiscriminatory” manner. The language is important, because — under the current interpretation of the law — “telecommunications services” does not include companies that just provide information services, such as ISPs.
- 5) **SPECIFIC AND PREDICTABLE SUPPORT MECHANISMS.** This principle simply embodies the notion that whatever mechanism for support the Federal-State Joint Board on Universal Service chooses, it should not inhibit any business’ ability to plan fiscally for the future.

²⁵⁶ The local loop is the portion of the public switched telephone network (PSTN) that runs from the central switching office to the customer’s premises. This portion of the network is generally regarded as the “bottleneck” of the system, due to its natural monopoly features. The local loop is sometimes referred to as the “last mile.”

²⁵⁷ 47 U.S.C. 254, established by P.L. 104-104, § 254 (b).

- 6) **ACCESS TO ADVANCED TELECOMMUNICATIONS SERVICES FOR SCHOOLS, HEALTH CARE AND LIBRARIES.** This principle was completely new in universal service policy. No longer would universal service just be a program that kept local rates commensurate across the country, but it would also subsidize telecommunications for very specific public service entities — schools (elementary and secondary — not colleges), public libraries, and health care facilities.
- 7) **ADDITIONAL PRINCIPLES.** The Federal-State Joint Board was given the freedom to determine other principles that were “necessary and appropriate for the protection of the public interest.” When adopting the Joint Board’s initial recommendations, the FCC affirmed that the principle of “competitive neutrality” should apply. This principle was defined as meaning “universal service support mechanisms and rules neither unfairly advantage nor disadvantage one provider over another, and neither unfairly favor nor disfavor one technology over another.”²⁵⁸

Section 254 goes on to fully define certain terms and provides guidance for schools, libraries and health care providers. However, Congress left the implementation details to the Joint Board and the Commission. The first and third principles above precluded any move toward fully rebalancing rates and set the stage for the creation of subsidies to support high-cost providers. Although most commentators agree that Congress wanted to move to a system of *explicit* subsidies, nowhere in the Act is this intent made clear.²⁵⁹

Implementing the 1996 Act

The 1996 Act was signed into law on Feb. 8, 1996. Fifteen months later, the FCC released its final implementation rules for Section 254, adopting virtually all of the recommendations offered by the Joint Board six months earlier.²⁶⁰ The Commission created four programs to implement the Act’s vision of universal service.

- **HIGH COST FUND.** This program ensures that all consumers have access to and pay rates for telecommunications services that are reasonably comparable to those in urban areas. The High Cost Fund is composed of seven separate funds designed to cover the various loop, switching, upgrade, and access-charge offset costs (see below). The High Cost Fund received approximately 62 percent of all USF disbursements in 2007, up from 43 percent in 1999.
- **LOW INCOME FUND.** This program provides discounts that make basic local telephone service affordable for more than 7 million low-income consumers. It consists of three components: Lifeline, Link Up and Toll Limitation Service. Lifeline support reduces eligible consumers’ monthly charges for basic telephone service. Link Up support reduces the cost of initiating new telephone service. Toll Limitation Service support allows eligible consumers to subscribe to toll-blocking or toll-control at no cost. The Low Income Fund received approximately 12 percent of all USF disbursements in 2007.
- **RURAL HEALTH CARE.** This program provides reduced rates to rural health care providers for telecommunications and Internet services, bringing their costs in line with their urban counterparts. The Rural Health Care fund received approximately 0.5 percent of all USF disbursements in 2007.
- **SCHOOLS AND LIBRARIES.** This program (also known as E-rate) provides affordable telecommunications services and Internet access to schools and libraries. This support goes to service providers that give discounts on eligible services to eligible schools, school districts and libraries. The Schools and Libraries Fund received approximately 26 percent of all USF disbursements in 2007, down from 43 percent in 1999, due in part to the fact that the total size of this program is capped at \$2.25 billion annually. Though very successful in achieving its stated aim, the fund has been plagued with accusations of waste, fraud and abuse.²⁶¹

²⁵⁸ *In the Matter of Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, *Report and Order*, 12 FCC Rcd 8776 (1997) (*First Universal Service Order*).

²⁵⁹ Congressional intent for explicit subsidies is mentioned in the conference report. See H.R. Conf. Rep. No. 104-458, 1996.

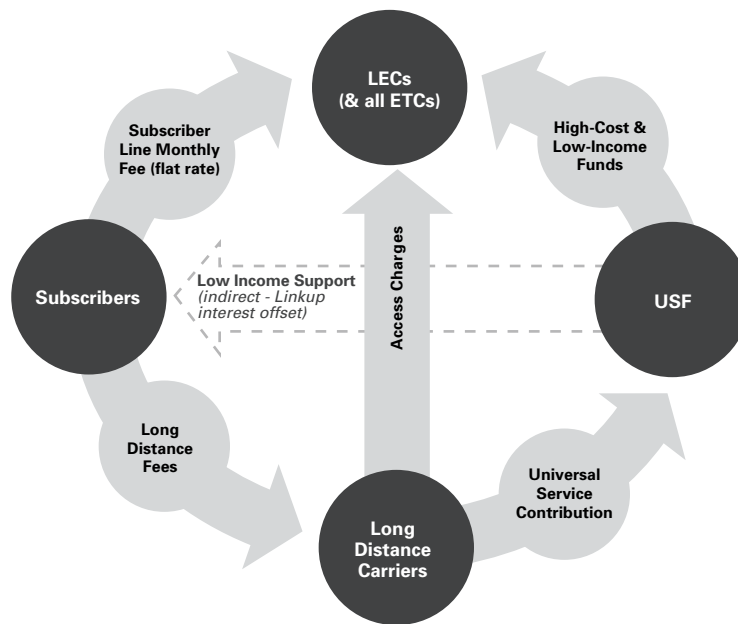
²⁶⁰ See *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, *Recommended Decision*, Nov. 8, 1996.

²⁶¹ Randy Dotinga, “Fraud Charges Cloud Plan for ‘Wired’ Classrooms,” *Christian Science Monitor*, June 17, 2004.

Figure 32 illustrates the current universal service support model. First, there is the so-called “three-legged-stool” support structure for carriers operating in high-cost areas. These Incumbent Local Exchange Carriers and other Eligible Telecommunications Carriers (ETCs, which include wireless and other non-incumbent competitors) receive High Cost Fund support, collect monthly subscriber line charges from their residential and business subscribers, and impose access charges on long-distance or other carriers that terminate traffic on the LEC’s network.

Users supported by the Lifeline and Link Up funds receive indirect support from the USF, as these subsidies flow to LECs, which then offer the low-income subscriber a reduced monthly rate. And all users support the fund via an assessment on their interstate exchange services. Technically, this is an assessment on the total interstate revenues of all telecommunications companies, but it is passed down to subscribers in the form of a below-the-line charge on monthly bills. Determining whether a call is “interstate” has become increasingly difficult in today’s era of number portability and widespread cell phone use. Thus the FCC allows wireless carriers either to submit traffic studies, or to use a “safe harbor” assumption that 37.1 percent of their minutes consist of interstate calls.

Figure 33: The Current USF Support Model



The USF has nearly doubled in size over the past decade, and much of this increase is due to growth in the High Cost Fund (see Figure 34). The amount of the USF allocated to the Rural Health Care and Low Income programs has increased only modestly since inception, and these two funds account for just over one-tenth of the total fund. The Schools and Libraries program does receive a substantial amount of money, but its annual allocation is capped at \$2.25 billion, which means that it accounts for a declining proportion of the total USF (see Figure 35).

Figure 34: USF Disbursements by Program
1999-2007

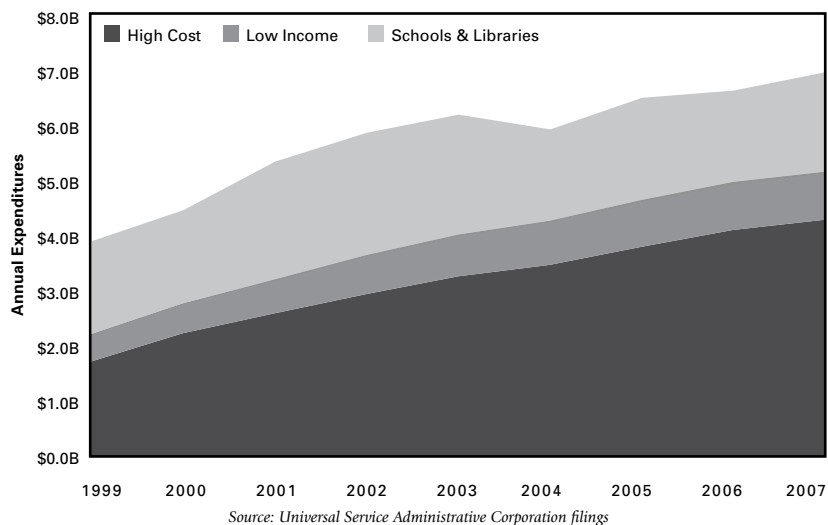
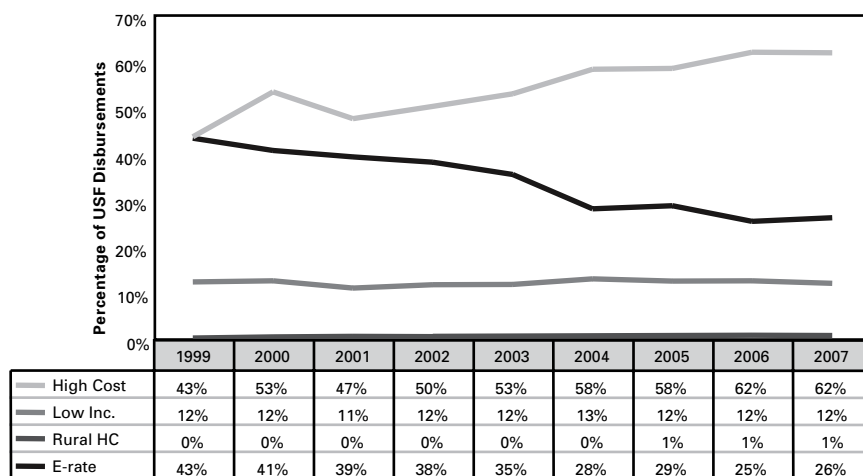


Figure 35: Percentage of USF by Program
1999-2007



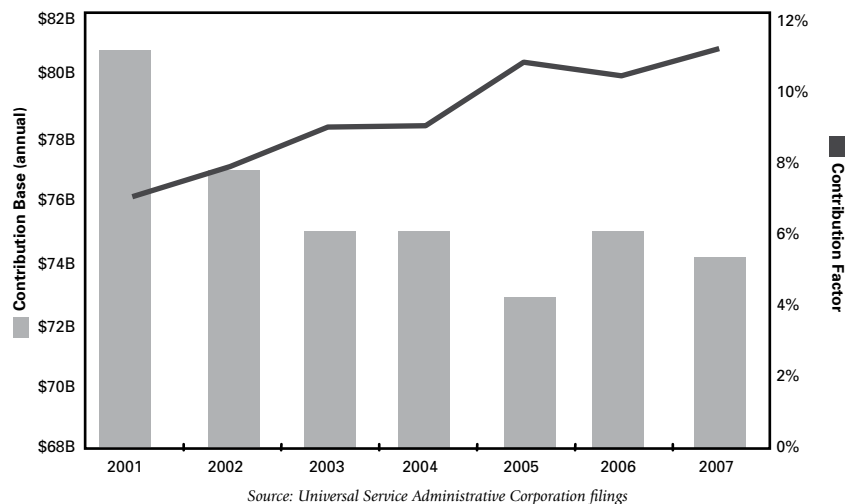
Current Status of Universal Service and Impetus for Reform

The calls for USF reform center around the growth in the overall fund and the apparent shrinking of the contribution base. The majority of universal support funds come from carriers that are operating in the most competitive sectors of the market (wireline long-distance service and wireless telephony). Though contributions to the fund are made in a predictable and nondiscriminatory manner (as per the Act), the way in which the contribution burden is distributed among the different sectors of the industry (and, in turn, paid by consumers) raises equity concerns. Furthermore, taxing services that consumers are most likely to drop is problematic from an economic efficiency standpoint.

Currently, the amount telecom carriers pay into the USF is determined by a “contribution factor” assessed on their total interstate and international revenues. Each quarter, the Universal Service Administrative Corporation (USAC) calculates this contribution factor based on the expected needs of the fund and the expected revenues of contributors. Since 2001 (after the collection methodology was retooled following a court decision that limited

the total pool of funds), the contribution factor has grown while the base of contributions has dropped (see figure 36).²⁶²

Figure 36: USF Contribution Base vs. Contribution Factor
2001-2007



These trends are likely due to several factors. First, the total size of USF disbursements increased from \$1.7 billion in 1999 to \$4.3 billion for 2006.²⁶³ Second, the available pool of funds (contribution base) has decreased as consumers move away from wireline long-distance and paging services toward e-mail, wireless long distance, and Internet telephony ("Voice over Internet Protocol," or VoIP). Third, there has been an increase in "phantom traffic," calls whose location of origin cannot be identified, and thus cannot be adequately assessed as interstate or intrastate traffic. Fourth, while wireless/cellular use has increased over this time period, wireless companies do not contribute in the same manner as traditional long-distance exchange carriers. These companies use the FCC-created "safe harbor," which allows them to arbitrarily allocate 37.1 percent of their revenues to the interstate jurisdiction, regardless of the actual amount of interstate calls conducted. This is in contrast to long-distance companies, which contribute based on their actual amount of interstate-traffic-related revenues.

The current problems with USF can principally be attributed to two design aspects of the system — the continued reliance on *implicit* rather than explicit subsidies, and the fact that most of the burden of universal service contributions is placed on services that consumers are most likely to abandon for new technologies or use less of when prices are high. Reforming the program in a manner that addresses these concerns, focusing on both economic efficiency and distributional concerns, should be a priority. But political realities may make this an unrealistic constraint. Politicians favor implicit subsidies over explicit "taxes" for obvious reasons.

Universal Service and Broadband

The phenomenon of convergence is shifting the old paradigms of telecommunications policy, creating practical pressures on the old regulatory structure. Whereas just 20 years ago it seemed that the titles of the 1934 Communications Act were quite appropriate in their separation of technologies into "bins" (i.e., Title II for telephony, Title III for broadcasting and Title IV for cable), the digital age has eroded these once-sensible boundaries. Advanced telecommunications and information services — in particular, broadband Internet

²⁶² The FCC initially based contributions for the schools and libraries and rural health care programs on interstate, international and *intrastate* end-user telecommunications revenues, while contributions for high-cost and low-income support mechanisms were based on interstate and international end-user telecommunications revenues. However, this method was contested in court, and the intrastate portion was ruled invalid by the United States Court of Appeals for the Fifth Circuit. The Commission then established a single contribution base for all universal service support mechanisms based on interstate and international revenues. See *Federal State Joint Board on Universal Service, Access Charge Reform*, CC Docket No. 96-45, Sixteenth Order on Reconsideration and Eighth Report and Order, 15 FCC Rcd 1679 (1999) (*Fifth Circuit Remand Order*).

²⁶³ The 2006 estimate can be found at <http://www.universalservice.org/about/universal-service/fund-facts.aspx>

technologies — are driving this movement toward regulatory obsolescence. The Internet makes it possible for telephony, television and data services to be delivered via twisted copper pair lines (of the traditional telephone), coaxial cable (of traditional cable television), and broadcast airwaves.

Congress anticipated the proliferation and importance of advanced services when it crafted the 1996 Act. The legislation was built to provide the FCC with flexibility in its ability to encourage growth and adoption of these technologies. This is made clear in Section 254, which states: “Universal service is an evolving level of telecommunications services that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services.”²⁶⁴

While the 1996 Act recognized the immediate importance of broadband for schools, libraries and rural health care centers, it clearly took a wait-and-see attitude as to whether broadband should also receive high-cost and low-income universal service support.²⁶⁵ Congress established arguably vague criteria governing how the Joint Board and the Commission should determine if advanced services like broadband qualify for universal service support. Section 254(c), states:

Universal service is an evolving level of telecommunications services that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services. The Joint Board in recommending, and the Commission in establishing, the definition of the services that are supported by Federal universal service support mechanisms shall consider the extent to which such telecommunications services-

- a) are essential to education, public health, or public safety;
- b) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers;
- c) are being deployed in public telecommunications networks by telecommunications carriers; and
- d) are consistent with the public interest, convenience, and necessity.

The language of a “substantial majority of residential customers” certainly seems to apply to broadband, as more than 55 percent of residential households currently subscribe to broadband services.²⁶⁶ Yet it should be noted that broadband-capable networks are already supported by universal service funds. Many of the local exchange carriers in rural and non-rural high-cost areas have built converged networks that carry both voice and broadband data, which more efficient when investing in network upgrades. The fixed costs incurred constructing and maintaining these networks are currently offset by universal service funds.

Leaping Forward: A New Approach to Universal Service

The problems with the current universal service system are numerous and daunting, but they are not insurmountable. Policymakers must take advantage of the window of opportunity created both by the consensus that USF reform is long overdue and by the recent appropriation of more than \$7 billion in

²⁶⁴ § 254 (c)(1)

²⁶⁵ Though Congress did not at the time choose to explicitly mandate general universal service for advanced information services, it did create two new programs that specifically support advanced services for schools, libraries and rural health care centers. Of course, nowhere in this section of Act is “broadband” mentioned, but the FCC, acting on the recommendations of the Joint Board, interpreted § 254 (h)(2)(A) as including “high-speed services” of greater than 1.544 Mbps, at the time the speed of a T-1 connection. Thus, these two programs explicitly provide subsidies for broadband services, albeit in a narrowly targeted manner. The Schools and Libraries program had by 2001 brought broadband service to nearly 90 percent of schools and 95 percent of libraries. This program is viewed by many of its congressional supporters as critical, as it is often the only method of broadband access offered to some rural populations. Furthermore, there is a clear need for efforts in this area, as a recent Organization for Economic Co-operation and Development (OECD) study demonstrated that the United States has the fourth-highest level in the OECD of 15-year-old students who have never had access to a computer. See “Are Students Ready for a Technology-Rich World?” OECD, January 2006.

²⁶⁶ See e.g., John Horrigan, “Home Broadband Adoption 2008,” Pew Internet and American Life Project, July 2008.

broadband stimulus funds in the American Recovery and Reinvestment Act.²⁶⁷ Congress and the FCC should avoid trying to balance the interests of the various industry factions and instead focus on developing a policy framework that is guided by the principle of serving the public interest and maximizing the availability, affordability and adoption of communications technology in all regions of the nation.

But we must also recognize that the billions of USF dollars are collected for the most part from urban consumers, who only realize indirect benefits from the fund. Their money must be spent in the most efficient manner possible, and the gains in added rural subscribers should not come at the expense of losses in urban ones. There is no reason to allow the USF to grow any larger than its current level. It is possible to achieve the goals of the 1996 Act without saddling consumers with an even greater financial burden.

Thus, a USF reform policy should begin with the assumption that the High Cost Fund will be fixed at 2008 levels (approximately \$4.6 billion).²⁶⁸ Capping high-cost funding is not as politically unpopular as it was just a few years ago, given the Commission's slow clamping down on the largest sources of growth.²⁶⁹

The High Cost Fund

Because of its steady growth, the High Cost Fund is the primary subject of most USF reform proposals. The High Cost Fund itself is further divided into seven separate programs, the first five of which mostly benefit rural rate of return carriers (or the competitive carriers operating in their service territories, or "study areas")²⁷⁰, and the last two benefiting the larger non-rural price-cap carriers (or the competitive carriers operating in their study areas).²⁷¹

²⁶⁷ American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009).

²⁶⁸ All data herein are based on the Universal Service Administrative Corporation's Second Quarter 2008 Filing Appendices, available at <http://www.universalservice.org/about/governance/fcc-filings/2008/quarter-2.aspx>.

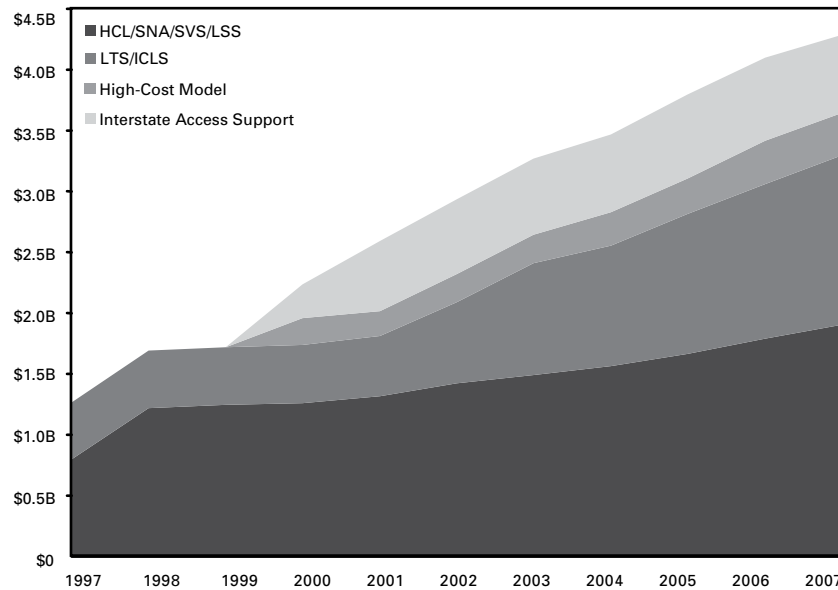
²⁶⁹ In 2008, the Commission acted on the Joint Board's recommendation to cap at the state-level the funds that are distributed to CLECs. For 2008, this support is projected to account for approximately \$1.52 billion of the \$4.62 billion spent on the High Cost Fund, or one-third of the entire program. Though this cap is only temporary, and only applies to one-third of the total monies in the High Cost Fund, growth in the funds apportioned to incumbents has been largely stable since 2003, according to the Joint Board. Furthermore, the High Cost Loop program is subject to an annual index cap and the Interstate Access Support program has an annual target. Together, these two programs account for \$1.52 billion of the total \$3.1 billion in projected 2008 support for incumbent carriers. There is no indication that this Commission or Congress is willing to let the High Cost Fund grow larger than the current level, which is nearly 170 percent higher than the 1999 level. See *In the Matter of High-Cost Universal Service Support; Federal-State Joint Board on Universal Service*, WC Docket No. 05-337, CC Docket No. 96-45, Recommended Decision, 22 FCC Rcd 8998 (Fed. State Jt. Bd. 2007) (2007 Recommended Decision). See also *In the Matter of High-Cost Universal Service Support; Federal-State Joint Board on Universal Service*, WC Docket No. 05-337, CC Docket No. 96-45, Order, FCC 08-122, (released May 1, 2008).

²⁷⁰ A study area is an artificial boundary that represents a given incumbent's service footprint within a particular state. They range from very small geographic areas to the size of entire states, depending on the carrier. There are nearly 1,900 study areas.

²⁷¹ These are the seven High-Cost Fund programs: 1) *High-Cost Loop (HCL)*. This program supports the so-called last-mile infrastructure in areas served by "rural" telephone companies, where the cost of providing service exceeds 115 percent of the national average per-line cost. Monies from this fund are available to all rural incumbents, be they price-cap or rate-of-return regulated, and funds are also available to Competitive Eligible Communications Carriers (CETCs) serving in a rural carrier's territory (though a CETC's per-line subsidy is based on the ILEC's per-line cost, not their own; this practice and its associated problems are discussed in detail in the next section). The HCL program comprises approximately 33 percent of the High Cost Fund (\$1.4 billion of the total \$4.3 billion in High Cost Fund program support distributed to carriers in 2007), and is subject to an annual index cap. 2) *Safety Net Additive (SNA)*. This program is a sub-component of the High-Cost Loop program that provides additional support to carriers that make substantial infrastructure investments that are above the HCL cap. The program is intended to create incentives for network investment, but is subject to a trigger that is tied to increased demand on the carrier's local network. Like HCL, it is available to rural carriers and the CETCs operating in those areas. In 2007, SNA accounted for \$31 million, or less than 1 percent of the total High Cost Fund. 3) *Safety Valve Support (SVS)*. Like SNA, this program is a sub-component of the HCL program and provides additional support (above the HCL cap) to carriers that purchase local exchanges and make "substantial post-transaction investments to enhance network infrastructure." In 2007, just \$1.5 million in SVS funds were distributed to carriers in five states. 4) *Interstate Common Line Support (ICLS)*. Support from this program offsets declining interstate access charges, permitting each rate-of-return carrier to recover its common line revenue requirement. In 2007, ICLS accounted for one-third of the High-Cost Fund, or nearly \$1.4 billion. 5) *Local Switching Support (LSS)*. Carriers with less than 50,000 lines receive support from this program to recoup the high fixed costs incurred from deploying switching services. This program accounted for just under \$500 million in 2007, or about 10 percent of the High-Cost Fund. 6) *High-Cost Model (HCM)*. This program for non-rural carriers is designed to keep the cost for telephone service comparable in all areas of a particular state. Support is determined by comparing the statewide average cost per line to the national average cost per line. If the statewide average cost per line exceeds two standard deviations of the national average cost per line, the state qualifies for HCM support. This program has been the subject of much controversy and litigation, with non-rural carriers claiming the HCMs' statewide averaging model penalizes carriers in states that have very high-cost rural areas, but where the statewide average does not exceed the national benchmark. The HCM current accounts for about 8 percent of the total High Cost Fund. 7) *Interstate Access Support (IAS)*. This program supports companies

The massive increases seen in the High Cost Fund are largely due to growth in support for rural carriers. The HCL program accounts for nearly 29 percent of the \$1.7 billion in fund growth since 2001, while increases in the ICLS program account for more than half of the total High Cost Fund growth since 2001 (see Figure 37).²⁷²

Figure 37: High Cost Fund Disbursements
1999-2007



Source: Universal Service Administrative Corporation filings

As mentioned, the old cross-subsidy method of universal service was unsustainable in a competitive market. This is because new market entrants can “cherry-pick” low-cost customers — those living in areas cheaper to serve. This in turn lowers the total pool of funds available to an ILEC for subsidizing the high-cost, universal service-qualifying customers.

The Commission’s implementation of Section 254 of the Act attempts to deal with the potential cherry-picking problem with the creation of the High Cost Fund. ILECs are usually the recipient of subsidies from the High Cost Fund, as they are usually the “carrier of last resort.”²⁷³ However, these funds are available to any carrier that is willing to serve all customers (within a defined area) and that is also designated as an ETC by a state regulatory agency.²⁷⁴ ETCs can include both wireless providers and CLECs, which can ultimately compete head-to-head with the ILECs for low-cost customers. Therefore, the high-cost subsidy is portable.²⁷⁵ ETCs other than the incumbent are referred to as competitive eligible telecommunications carriers, or “CETCs.”

operating in price-cap carrier study areas (mostly non-rural carrier areas) and is designed to offset FCC-mandated reductions in interstate access charges. Support is capped at \$650 million annually and is targeted to certain “density zones.” This fund bears no relation to actual costs and was due to be revised or phased out in 2005, something the FCC has failed to do. IAS accounts for about 15 percent of the total High Cost Fund.

²⁷² Increases in ICLS actually account for 83 percent of High Cost Fund growth since 2001. When the decline in Long-Term Support (LTS) is considered, the combined increase in ICLS as well as the decrease in LTS account for 53 percent of High Cost Fund growth since 2001. This figure is based on both ICLS and LTS, given that LTS was phased out and replaced by ICLS.

²⁷³ “Carrier of last resort” (or COLR) is a regulatory distinction granted to certain telecommunications providers that agree to provide service at affordable rates to any customer requesting it, and also to advertise the availability of these services. In exchange for assuming COLR status, the carrier is allowed to earn a “reasonable rate of return” on its overall investment, something not guaranteed to new entrants or long-distance providers.

²⁷⁴ See 47 U.S.C. 214(e) for a full explanation of this designation.

²⁷⁵ A subsidy is considered “portable” if it is paid to any firm that provides services. The need for portable subsidies stems from the fact that in some areas, the retail service price is held (by regulators) below actual costs. If a new market entrant were only as efficient as the incumbent, then competition would not be possible. The portable subsidy covers the deficit between cost and price, though the subsidy is currently based on the incumbent’s, not the competitor’s, cost — a very problematic distinction that will be discussed further.

This attempt to encourage competition in local markets comes with a trade-off. An increase in competition translates into the need for increased funds to subsidize the competitive carriers and reimburse the ILEC for its revenue loss. This is because as the ILEC's customer base shrinks in the face of competition, it must recover its fixed costs from fewer lines. This increases the ILEC's overall per-line cost. In turn, this translates into a higher per-line subsidy, which is also available to the competitors — because *their subsidy is based on the incumbent's costs*, not their own costs (another design flaw of the USF system). Further exacerbating the problem is the fact that a single customer can subscribe to both wireline and wireless service, each from a carrier receiving the high-cost subsidy.

Not surprisingly, both the amount of funds going to CETCs and the total size of the program have increased significantly since the fund's inception. The share of the High Cost Fund going to CETCs was just 1 percent in 2001, but had skyrocketed to 27 percent by 2007 (see Figure 38). This represents an increase from just \$17 million in 2001 up to \$1.13 billion in 2007.

Figure 38: High-Cost Support: ILECs vs. CETCs
1999-2007

	High-Cost Support, 1999-2007 (millions)								
	1999	2000	2001	2002	2003	2004	2005	2006	2007
ILECs	\$1,717.4	\$2,233.3	\$2,574.7	\$2,888.9	\$3,135.6	\$3,152.6	\$3,168.6	\$3,116.4	\$3,153.6
CETCs	\$0.5	\$1.5	\$16.9	\$46.1	\$129.6	\$315.8	\$627.7	\$979.9	\$1,137.0
Total	\$1,718.0	\$2,234.8	\$2,591.6	\$2,935.0	\$3,265.2	\$3,468.4	\$3,796.2	\$4,096.3	\$4,290.6
	ILEC vs. CETC: Share of High-Cost Support, 1999-2007								
	1999	2000	2001	2002	2003	2004	2005	2006	2007
ILECs	100.0%	99.9%	99.3%	98.4%	96.0%	90.9%	83.5%	76.1%	73.5%
CETCs	0.0%	0.1%	0.7%	1.6%	4.0%	9.1%	16.5%	23.9%	26.5%
	ILEC vs. CETC: Percent Change in High-Cost Support From Prior Year, 2000-2007								
	2000	2001	2002	2003	2004	2005	2006	2007	
ILECs	30.0%	15.3%	12.2%	8.5%	0.5%	0.5%	-1.6%	1.2%	
CETCs	179.9%	1033.9%	171.9%	181.3%	143.6%	98.8%	56.1%	16.0%	

Source: Universal Service Administrative Corporation filings

The Current Distribution of High Cost Funds

Given a fixed amount of available funding and the desire to see the High Cost Fund restructured to facilitate universal access to next-generation broadband networks, we must look at how funds are currently distributed to assess how best to reallocate resources.

The High Cost Fund is divided into seven separate programs, distinctions drawn primarily for the purposes of distinguishing between the fiscal demands of rural and non-rural incumbent carriers.²⁷⁶ Funds are apportioned at the “study area” level, an artificial boundary that represents a given incumbent's service footprint within a particular state. Carriers operating in “rural” study areas account for all of the monies apportioned to the High Cost Loop (HCL), Safety Net Additive (SNA), Safety Valve Support (SVS), and Local Switching Support (LSS) programs, and 83 percent of the Interstate Common Line Support (ICLS) program funding. The two remaining programs, Interstate Access Support (IAS) and High Cost Model (HCM), support carriers operating in “non-rural” study areas (though approximately 25 percent of IAS support goes to carriers in rural study areas). Figure 39 summarizes the distribution of High Cost Fund monies between programs and study areas. Competitive

²⁷⁶ The Act defines “rural telephone company” as “a local exchange carrier operating entity to the extent such entity: Provides common carrier service to any local exchange carrier study area that does not include either any incorporated place of 10,000 inhabitants or more, or any part thereof, based on the most recently available population statistics of the Bureau of the Census; or any territory, incorporated or unincorporated, included in an urbanized area, as defined by the Bureau of the Census as of August 10, 1993; Provides telephone exchange service, including exchange access, to fewer than 50,000 access lines; Provides telephone exchange service to any local exchange carrier study area with fewer than 100,000 access lines; or has less than 15 percent of its access lines in communities of more than 50,000 on the date of enactment of the Telecommunications Act of 1996.” See 47 U.S.C. § 153(37).

carriers receive \$1.5 billion in annual support, accounting for a third of the total High-Cost Fund. Nearly 60 percent of this support comes from the IAS and ICLS funds.²⁷⁷

Figure 39: High Cost Fund Support by Program and Study Area Type
(Projected 2008)

High Cost Program	Carriers in Rural Study Areas		Carriers in Non-Rural Study Areas		All Carriers	
	Annual Cost (est. 2008)	% of HCF	Annual Cost (est. 2008)	% of HCF	Annual Cost (est. 2008)	% of HCF
High Cost Loop (HCL)	\$1,477,563,492	32%	\$0	0%	\$1,477,563,492	32%
Safety Net Additive (SNA)	\$42,759,408	1%	\$0	0%	\$42,759,408	1%
Safety Valve Support (SVS)	\$1,021,668	0.02%	\$0	0%	\$1,021,668	0.02%
Local Switching Support (LSS)	\$475,096,980	10%	\$0	0%	\$475,096,980	10%
Interstate Common Line Support (ICLS)	\$1,323,918,276	29%	\$266,197,320	6%	\$1,590,115,596	34%
Interstate Access Support (IAS)	\$174,629,880	4%	\$511,944,624	11%	\$686,574,504	15%
High Cost Model Support (HCM)	\$0	0%	\$348,559,066	8%	\$348,559,066	8%
All High Cost Fund Support (HCF)	\$3,494,989,704	76%	\$1,126,701,017	24%	\$4,621,690,721	100%

Source: Free Press analysis based on USAC Second Quarter 2008 filing appendices

There are a total of 1,855 unique study areas participating in the High Cost Fund, with 1,798 receiving some amount of support in 2008. Approximately 150 million lines receive some type of HCF support, with nearly 100 million of these lines belonging to non-rural carriers receiving Interstate Access Support.

Overall, the average monthly cost per High Cost Fund-supported line is just \$2.58. For those lines in non-rural study areas, the support is less than a dollar per month per line, while it is above \$12 per month per line in rural carrier study areas. In total, rural carrier study areas account for just 16 percent of all supported lines, but 76 percent of High Cost Fund support.

Though the Interstate Common Line Support program receives the most funding of the seven HCF programs, the High Cost Loop program is the costliest on a per-line basis. However, half of all HCL-supported lines receive less than \$7 support per month per line. In total, half of all lines receive less than 31 cents per month in High Cost Fund support, while 95 percent of all High Cost Fund-supported lines receive less than \$12 support per month per line (see Figure 40).

²⁷⁷ As discussed above, High Cost Fund support is available on a portable basis to any carrier designated by a state or the FCC to be an Eligible Telecommunications Carrier (ETC). CETC support is based on the incumbents per-line cost. This is problematic for numerous reasons, most importantly because it inflates the size of needed support in a manner completely divorced from cost. A prime example is the support CETCs receive from the IAS and ICLS programs. These two programs are designed to offset revenue losses from the reduction in interstate access charges, while also maintaining low subscriber line charges. This is a sensible subsidy, but only if the subsidized carrier levies tariff-based access charges and only if it is not permitted to recover from the customer via increases in subscriber line charges the “lost” revenues resulting from a reduction in access charges. However, most CETCs are not subject to caps on subscriber line charges, and thus can recover any losses from access charge reduction from the end user. Furthermore, the FCC has determined that wireless carriers cannot impose tariff-based access charges, noting that many already operate in a bill and keep manner. Thus, the need for competitive carriers to receive any support from IAS or ICLS is questionable at best. In addition, wireless CETCs also receive Local Switching Support, or LSS, which is based on the relatively high per-line switching costs incurred by small rural LECs. But wireless networks are not designed in a similar manner, and these carriers arguably have no demonstrated need for LSS support, certainly not at the same level as rural ILECs.

Figure 40: Per Line Monthly High Cost Fund Support by Program
(Projected 2008)

All Study Areas						
High Cost Program	Annual Cost (est. 2008)	Supported Lines*	Average Monthly Per Supported Line Cost+	Median Monthly Per Supported Line Cost+	95th Percentile Monthly Per Supported Line Cost+	99th Percentile Monthly Per Supported Line Cost+
High Cost Loop (HCL)	\$1,477,563,492	10,840,029	\$11.36	\$6.93	\$36.35	\$75.34
Safety Net Additive (SNA)	\$42,759,408	2,435,303	\$1.46	\$1.22	\$3.88	\$5.05
Safety Valve Support (SVS)	\$1,021,668	155,627	\$0.55	\$0.63	\$1.88	\$3.51
Local Switching Support (LSS)	\$475,096,980	10,669,574	\$3.71	\$2.58	\$9.14	\$18.32
Interstate Common Line Support (ICLS)	\$1,590,115,596	17,182,963	\$7.71	\$6.10	\$17.90	\$34.75
Interstate Access Support (IAS)	\$686,574,504	119,721,063	\$0.48	\$0.20	\$1.62	\$3.99
High Cost Model Support#	\$348,559,066	11,840,589	\$2.45	\$1.17	\$6.40	\$6.51
All High Cost Fund Support	\$4,621,690,721	149,423,648	\$2.58	\$0.31	\$11.49	\$34.52

* Supported Lines are those reported for study areas that received non-zero funding from each respective program. USAC reports some study areas with lines that receive zero funding for each respective program.

USAC reports High Cost Model Support by Study Area, but does not list the total number of supported loops. For this table, the number of HCM supported lines is the maximum total lines reported for a given study area receiving non-zero HCM support.

+ Weighted based on number of loops in each study area, reported for each program. For the monthly per line support values for the entire High Cost Fund, the maximum lines reported for each study area are used.

Source: Free Press analysis based on USAC Second Quarter 2008 Filing Appendices

For non-rural study areas, the per line monthly support is quite low, with half of all lines receiving less than 17 cents per month and 95 percent of all lines receiving \$5.15 or less in per line support per month. For rural study areas, half of all supported lines receive less than \$5 per line per month in HCF support. However, there are some relatively expensive rural study areas that bring up the average cost. In total, 95 percent of rural study area lines receive less than \$44 per month in per line support (see Figure 41).

Figure 41: Per Line Monthly High Cost Fund Support By Program and Study Area Type
(Projected 2008)

RURAL STUDY AREAS						
High Cost Program (Carriers Operating in Rural Study Areas)	Annual Cost (est. 2008)	Supported Lines*	Average Monthly Per Supported Line Cost+	Median Monthly Per Supported Line Cost+	95th Percentile Monthly Per Supported Line Cost+	99th Percentile Monthly Per Supported Line Cost+
High Cost Loop (HCL)	\$1,477,563,492	10,840,029	\$11.36	\$6.93	\$36.35	\$75.34
Safety Net Additive (SNA)	\$42,759,408	2,435,303	\$1.46	\$1.22	\$3.88	\$5.05
Safety Valve Support (SVS)	\$1,021,668	155,627	\$0.55	\$0.63	\$1.88	\$3.51
Local Switching Support (LSS)	\$475,096,980	10,669,574	\$3.71	\$2.58	\$9.14	\$18.32
Interstate Common Line Support (ICLS)	\$1,323,918,276	13,312,135	\$8.29	\$6.52	\$20.01	\$38.51
Interstate Access Support (IAS)	\$174,629,880	9,774,769	\$1.49	\$0.98	\$4.52	\$9.27
High Cost Model Support#	\$0	0	\$0.00	\$0.00	\$0.00	\$0.00
All High Cost Fund Support for Rural Only Study Areas	\$3,494,989,704	23,800,599	\$12.24	\$4.85	\$43.75	\$99.72

NON-RURAL STUDY AREAS						
High Cost Program (Carriers Operating in Non-Rural Study Areas)	Annual Cost (est. 2008)	Supported Lines*	Average Monthly Per Supported Line Cost+	Median Monthly Per Supported Line Cost+	95th Percentile Monthly Per Supported Line Cost+	99th Percentile Monthly Per Supported Line Cost+
High Cost Loop (HCL)	\$0	0	\$0.00	\$0.00	\$0.00	\$0.00
Safety Net Additive (SNA)	\$0	0	\$0.00	\$0.00	\$0.00	\$0.00
Safety Valve Support (SVS)	\$0	0	\$0.00	\$0.00	\$0.00	\$0.00
Local Switching Support (LSS)	\$0	0	\$0.00	\$0.00	\$0.00	\$0.00
Interstate Common Line Support (ICLS)	\$266,197,320	3,870,828	\$5.73	\$6.10	\$6.32	\$6.89
Interstate Access Support (IAS)	\$511,944,624	109,360,919	\$0.39	\$0.19	\$1.40	\$2.62
High Cost Model Support#	\$348,559,066	11,724,175	\$2.48	\$1.17	\$6.40	\$6.51
All High Cost Fund Support for Non-Rural Only Study Areas	\$1,126,701,017	126,215,134	\$0.74	\$0.17	\$5.15	\$7.04

* Supported Lines are those reported for study areas that received non-zero funding from each respective program. USAC reports some study areas with lines that receive zero funding for each respective program.

USAC reports High Cost Model Support by Study Area, but does not list the total number of supported loops. For this table, the number of HCM supported lines is the maximum total lines reported for a given study area receiving non-zero HCM support.

^ 172 of the 1,801 study areas that receive non-zero support have some lines supported by IAS classified as rural, and some as non-rural. 171 of these are served by Competitive carriers, accounting for 99.33% of all lines in these 172 Study Areas.

+ Weighted based on number of loops in each study area, reported for each program. For the monthly per line support values for the entire High Cost Fund, the maximum lines reported for each study area are used.

The per line monthly support data in Figures 40 and 41 seem to indicate that a substantial amount of lines that are supported by the USF receive relatively small amounts of per line support. This calls into question the need for such support given the Act's requirement for "reasonably comparable" rates. It doesn't seem that unreasonable for rates in rural areas to be a few dollars higher than in urban areas (and in fact, many state regulators keep rural rates *below* rates in urban areas). Furthermore, many of these supported lines are either located in markets with telephony service offered by multiple non-USF supported companies (such as VoIP over cable or non-USF-supported mobile wireless carriers), or they are USF-supported lines offered by carriers whose rates are not regulated in any fashion (such as wireless CETCs).

Thus it is possible that some USF-supported carriers are receiving small amounts of per-line support without any reduction in consumer prices. It is also possible that incumbent carriers are receiving USF support that enables them to hold their retail rates below cost in the face of competition from other unregulated technologies that offer a higher level of service (such as VoIP offered by cable companies or fixed terrestrial wireless companies). In the case of ILECs, their rates are often set at a fixed level by state authorities.²⁷⁸ However, as discussed below, more than a dozen states have almost completely deregulated retail rates charged by ILECs. Furthermore, the majority of incumbent USF funds are distributed to price-cap regulated carriers, which arguably under the price-cap incentive-regulation scheme have the ability to operate profitably without USF support.²⁷⁹

Given the nature of the converged marketplace that has emerged since the 1996 Act, and the essential nature of broadband infrastructure (which supports essential applications such as telephony and e-mail), it is worth investigating what portion of the fund goes toward telephony lines that require relatively minor amounts of per-line monthly support. Such funding could be diverted toward rural broadband infrastructure without significantly affecting telephony subscribers and maintaining the principles of reasonably comparable rates and competitive neutrality.

It turns out that a *substantial* amount of the HCF is used to offer marginal per line support. Half of the \$4.6 billion High Cost Fund goes to supporting lines that require less than \$15 per month in per line support. A full 70 percent of the fund goes to supporting lines that require less than \$30 per month in per line support (see Figure 42). Stated another way, 94 percent of all HCF lines receive less than \$10 per month in support, while only 1.3 percent of all HCF lines receive more than \$30 per month in support. In total, \$1.9 billion annually goes to support lines requiring less than \$10 per month each, while \$3.3 billion annually goes to support lines requiring less than \$30 per month each in funding. If we accept that broadband should be a universally supported service, and if the fund must be held at the current level, then the logical conclusion is that the funds going to lines with only marginal support needs would be better utilized for funding broadband infrastructure in unserved areas.

To put this data into perspective, consider that the average per-month cost of local exchange service is approximately \$36.²⁸⁰ Contrast that with the average per-month cost of cable broadband Internet of \$41,²⁸¹ and the cost of unlimited-calling, full-featured VoIP service at \$25 per month.²⁸² Also consider that cable modem service is available to approximately 95 percent of all U.S. households, including many in USF-supported areas. Thus, for a total cost of \$66, a consumer who lives in a USF-supported study area that is also served by a cable

²⁷⁸ The FCC also regulates rates in the case of the Subscriber Line Charge (SLC).

²⁷⁹ The Joint Board and the Commission rejected this notion when first establishing the High Cost Fund in 1996. See *1996 Recommended Decision*, paragraph 158; *1996 Universal Service Order*, paragraph 145. The Commission did so noting that "price cap regulation is an important tool for smoothing the transition to competition and that its use should not foreclose price cap companies from receiving universal service support." It seems that now 12 years later, in a marketplace of convergence with many price-cap carriers offering non-rate regulated services (broadband and/or television) and some price-cap carriers relieved by states from rate regulation, now may be the time to revisit this decision.

²⁸⁰ See "Trends in Telephone Service," Industry Analysis and Technology Division Wireline Competition Bureau, FCC, February 2007, Table 3-2. In 2005, the average monthly household expenditure for local exchange service was \$36, with long distance wireline service accounting for an additional \$8, though this survey counted bundled wireline local and long distance service as purely local. Wireless service accounted for an average of \$53 in monthly expenditures per household.

²⁸¹ See John B. Horrigan, "Home Broadband Adoption 2006," Pew Internet & American Life Project, May 28, 2006.

²⁸² Vonage's Residential Premium Unlimited VoIP plan offers the following for \$24.99 a month: Unlimited local and long distance in the United States, Canada, and Puerto Rico; free calls to landline phones in Italy, France, Spain, the UK and Ireland; plus 25 additional calling features like call waiting, voicemail and caller ID.

modem provider could pay \$66 per month for unlimited broadband Internet access *and* unlimited local and long-distance calling; or, that same consumer could pay \$36 for local exchange service, subsidized by USF. Now assume the per-line USF support is \$30 per month (and 70 percent of supported lines receive less than this amount). In that case, if USF funds were not available, the cost of local-calling-only telephone service would be *equal* to the cost of high-speed broadband plus unlimited local-and-long-distance VoIP services.

Figure 42: Per Line Monthly High Cost Fund Support by Cost - All Carriers
(Projected 2008)

ALL CARRIERS				
Amount of High Cost Support Per Line is...	Number of Lines	Percent of All Supported Lines*	Total Annual High Cost Support	Percent of High Cost Fund
Less than \$10 Per Month	140,480,041	94.0%	\$1,851,907,533	40.1%
Less than \$20 Per Month	145,481,992	97.4%	\$2,678,263,068	57.9%
Less than \$30 Per Month	147,526,129	98.7%	\$3,275,332,660	70.9%
Less than \$40 Per Month	148,195,881	99.2%	\$3,549,867,485	76.8%
Less than \$50 Per Month	148,659,840	99.5%	\$3,797,848,493	82.2%
Less than \$60 Per Month	148,893,982	99.6%	\$3,952,949,669	85.5%
Less than \$75 Per Month	149,099,449	99.8%	\$4,118,967,737	89.1%
Less than \$100 Per Month	149,227,811	99.9%	\$4,252,282,001	92.0%
Less than \$500 Per Month	149,419,859	100.0%	\$4,565,940,761	98.8%
Less than \$1000 Per Month	149,420,550	100.0%	\$4,571,440,145	98.9%
Less than \$1433 Per Month	149,423,648	100.0%	\$4,621,690,721	100.0%
* Supported Lines are the maximum reported for study areas that received non-zero funding. There are 149,423,648 lines that received some type of high-cost funding.				

Source: Free Press analysis based on USAC Second Quarter 2008 Filing Appendices

This example illustrates exactly why the continued focus on telephony in a broadband era runs counter to the modernization principles of universal service as embodied in the 1996 Act, and counter to the principle of competitive neutrality adopted by the FCC in 1996. The continued support of lines that require less than \$20 per month in per line support (97 percent of all HCF-supported lines) arguably sends the wrong economic signals to the market, impeding the transition into the broadband era. Also consider the fact that 26 percent of all high-cost funding goes to support competitive carrier lines needing less than \$20 per month of per-line support based not on their own per-line costs, but on the ILEC's costs.²⁸³ Because there is no evidence to suggest these (mostly wireless) carriers would raise their prices or discontinue service without this support, as much as a billion dollars is wasted that could instead be used to build broadband in rural areas.

Moreover, the subscribers to the vast majority of these lines do not benefit from rate regulation. This last point is important, as the continued need for USF support should be tied in some manner both to actual costs *and* a tangible consumer benefit in the form of lower retail costs. In the case of non-rate-regulated carriers, it is not at all clear that this consumer benefit exists. There is no evidence that without support, rates would increase.

Questioning the need for USF support to maintain "reasonably comparable" rates is certainly justified for those carriers whose rates are not regulated and whose own costs are likely far lower than the subsidy received. But the data seem to indicate that the need for continued high-cost funding to keep non-rural carriers' rates "reasonably comparable" is also questionable. Non-rural carrier lines requiring less than \$10 per month in per-line support account for nearly 100 percent of all non-rural supported lines, and nearly 100 percent of the \$1.13 billion in high cost funding going to non-rural carriers (see Figure 43).

²⁸³ In total, \$797 million goes to supporting CETC lines that receive less than \$10 per month in support, and \$1.2 billion for lines receiving less than \$20. This accounts for 98 percent of all competitive carrier lines.

Figure 43: Per Line Monthly High Cost Fund Support By Cost and Study Area Type
(Projected 2008)

CARRIERS OPERATING IN RURAL STUDY AREAS						
Amount of High Cost Support Per Line is...	Number of Lines	Percent of All Supported Lines*	Percent of All Supported Rural SA Lines	Total Annual High Cost Support	Percent of High Cost Fund	Percent of All Rural SAS's Share of High Cost Fund
Less than \$10 Per Month	15,584,230	10.4%	65.5%	\$563,663,232	12.2%	16.1%
Less than \$20 Per Month	19,123,572	12.8%	80.3%	\$1,181,434,656	25.6%	33.8%
Less than \$30 Per Month	21,384,629	14.3%	89.8%	\$1,850,241,984	40.0%	52.9%
Less than \$40 Per Month	22,394,598	15.0%	94.1%	\$2,272,717,632	49.2%	65.0%
Less than \$50 Per Month	22,971,304	15.4%	96.5%	\$2,581,050,228	55.8%	73.9%
Less than \$60 Per Month	23,206,815	15.5%	97.5%	\$2,737,086,528	59.2%	78.3%
Less than \$75 Per Month	23,415,457	15.7%	98.4%	\$2,905,751,796	62.9%	83.1%
Less than \$100 Per Month	23,603,208	15.8%	99.2%	\$3,107,320,956	67.2%	88.9%
Less than \$500 Per Month	23,795,928	15.9%	100.0%	\$3,424,639,944	74.1%	98.0%
Less than \$1000 Per Month	23,796,619	15.9%	100.0%	\$3,430,139,328	74.2%	98.1%
Less than \$1433 Per Month	23,800,599	15.9%	100.0%	\$3,494,989,704	75.6%	100.0%
CARRIERS OPERATING IN NON-RURAL STUDY AREAS						
Amount of High Cost Support Per Line is...	Number of Lines	Percent of All Supported Lines*	Percent of All Supported Non-Rural SA Lines	Total Annual High Cost Support	Percent of High Cost Fund	Percent of All Non-Rural SAS's Share of High Cost Fund
Less than \$1 Per Month	105,397,072	70.5%	83.5%	\$279,337,987	6.0%	24.8%
Less than \$5 Per Month	119,700,529	80.1%	94.8%	\$625,255,977	13.5%	55.5%
Less than \$10 Per Month	126,205,575	84.5%	100.0%	\$1,124,833,040	24.3%	99.8%
Less than \$15 Per Month	126,210,574	84.5%	100.0%	\$1,125,546,490	24.4%	99.9%
Less than \$20 Per Month	126,210,574	84.5%	100.0%	\$1,125,546,490	24.4%	99.9%
Less than \$25 Per Month	126,215,134	84.5%	100.0%	\$1,126,701,017	24.4%	100.0%
* Supported Lines are the maximum reported for study areas that received non-zero funding. There are 149,423,648 lines that received some type of high-cost funding. 23,800,599 of these are lines in Rural Study Areas. 126,215,134 of these are lines in Non-Rural Study Areas.						

Source: Free Press analysis based on USAC Second Quarter 2008 Filing Appendices

Figure 43 shows that the monthly per line cost burden is much higher for carriers operating in rural study areas compared to those operating in non-rural study areas. But even here the relative support burden is still quite small for the vast majority of lines. More than 65 percent of the lines in rural study areas receive less than \$10 per month in per-line high cost support. More than 80 percent of the lines in rural study areas receive less than \$20 per month in per-line high cost support, accounting for one-third of all funding going to carriers in rural study areas. The data in Figure 42 also indicates where the focus of the High Cost Fund could be directed: toward lines with monthly per-line support needs above \$20, or the 4.7 million lines in rural study areas that arguably meet a more reasonable definition of “high cost.”

If policymakers are serious about implementing a USF reform plan that is truly modernizing, then funds will have to be shifted and short-term sacrifices will have to be made to achieve long-term benefits. However, we should make it clear that consumer rates for basic telephone service should not increase — indeed, because of convergence (and the additional revenue-earning potential of the network), we’d fully expect telephone rates to be *declining* precipitously.²⁸⁴ This is why it is so important for the rate regulatory accounting models also to be reformed to account for convergence. If this is done (as discussed below), we believe that regulated telephone rates will not need to be adjusted upward, even as support for marginal-need lines is phased out.

Meaningful USF reform requires upsetting the status quo, leading to short-term discomfort all around. We recognize that the utility consumers derive from broadband services is far greater than that derived from telephony, and that given the choice between slightly higher telephony rates or new broadband service in unserved areas, most consumers would choose the latter. Though millions of Americans currently benefit from subsidized telephony, those subsidies are paid by millions more who reap very small indirect benefits from the

²⁸⁴ Indeed, in urban and suburban areas where there is more competition, ILECs are bleeding access line losses, and in some cases, finally seem to be lowering rates in response to this (though often these lower rates are packaged in introductory offers for bundled service packages).

fund. A shifting of funds toward broadband would greatly increase the direct benefits to those receiving the new services, and it would also vastly improve the indirect benefits to those paying for the bulk of the subsidy.

The path of universal service policy has reached a fork in the road, where there are difficult choices to be made. In the long run, the greatest level of social and consumer benefits can only be achieved by transitioning away from telephony support and increasing support for broadband infrastructure deployment.

Modernizing the High Cost Fund for Broadband

To figure out what the architecture of a modernized High Cost Fund should look like, we first must answer some key questions to define the scope of the problem and the funding needs:

- How many U.S. homes have no access to broadband service?
- What quality level constitutes a reasonably comparable and potentially future-proof definition of broadband service?
- How much will it cost to deploy this service to all unserved areas?
- What will be the expected level of ongoing support needed to ensure that infrastructure can be maintained?

While there is no definitive inventory of U.S. premises that lack the ability to subscribe to broadband service, there are a few data points that allow us to formulate a reasonable estimate of the true number of unserved households. First, the National Cable and Telecommunications Association (NCTA) estimates that 99 percent of U.S. households are passed by cable television service.²⁸⁵ FCC Form 477 data indicates that 96 percent of homes where cable service is available have access to cable modem service.²⁸⁶ From this, we conclude that as many as 95 percent of all U.S. homes can purchase cable modem broadband service, though this figure is likely somewhat lower, perhaps 92 percent (based on estimates from NCTA). Thus, approximately 9 million of the nearly 118 million U.S. households cannot subscribe to cable modem broadband.²⁸⁷

It's possible some of these homes that lack cable modem access can purchase DSL service. Form 477 data indicates that 79 percent of ILEC lines are DSL-capable. But Form 477 provides no estimate of how the cable modem and DSL availability figures overlap. So while there may be DSL service available in areas without cable modem service (and vice versa), a reasonable estimate is that there are between 7 million and 9 million unserved homes.²⁸⁸

To answer the question as to what constitutes a minimal level of service quality to merit the definition of "broadband," we will rely on the statutory guidance laid out in Section 706 of the 1996 Act. The Act defined the term "advanced telecommunications capability" as "high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."²⁸⁹ Currently, the best available compression technology requires

²⁸⁵ *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, MB Docket No. 05-255, Twelfth Annual Report, 21 FCC Rcd 2503 (2006), para. 30.

²⁸⁶ *High-Speed Services for Internet Access: Status as of December 31, 2006*, Industry Analysis and Technology Division, Wireline Competition Bureau, Table 14.

²⁸⁷ The figure for the total number of U.S. households varies depending on the particular U.S. Census Bureau source used. The October 2007 Current Population Survey puts the total number of U.S. households at 117,840,000. The 2006 American Community Survey found an estimated 111,617,402 U.S. households, while the 2005 ACS found an estimated 111,090,617 U.S. households. Thus, it is unclear if the 2007 CPS number is accurate, as it seems high based on the 2005 and 2006 data.

²⁸⁸ We are explicitly excluding satellite broadband from this estimate, as the high latency and slow speed (particularly on the upload side) of this service render it arguably substandard for the purposes of facilitating VoIP service. We also exclude fixed wireless service, which constitutes a very small percentage of all U.S. broadband lines (0.75 percent of all residential advanced service lines). And we specifically exclude mobile wireless broadband service, as the carrier's deployment of 3G capable services has been almost exclusively limited to urban and suburban areas. Furthermore, 3G speeds are still slow enough (especially on the upload side) to arguably not meet a reasonable definition of true broadband.

²⁸⁹ See § 706(c) of the 1996 Act.

approximately 5 Mbps (5 million bits per second) in bandwidth to transmit high-quality, high-definition video content.²⁹⁰ So the minimum level of broadband service quality for future USF support will be defined as 5Mbps symmetrical, with latencies no lower than what's needed to enable real-time VoIP calls of superior quality. However, while a 5 Mbps symmetrical definition is adequate for 2008, it may not be enough for the world in 2018. Thus, service quality must also be capable of scaling much higher than 5 Mbps in the future with minimal additional cost.

Finally, we must estimate the initial and ongoing costs of providing quality broadband service to the 7 million to 9 million households that will be served under the reformed HCF. This is no easy task, as estimates depend completely on the particulars of each service area, as well as the type of technology used. While the High Cost Fund should support any broadband technology that meets the minimum standards of Section 706, for the purposes of estimation we will choose fiber-optic-to-the-home (FTTH) technology. First, FTTH currently is the only consumer technology deployed that is capable of offering dedicated symmetrical bandwidths approaching (or exceeding) 100 Mbps — a bandwidth that is arguably “future-proof.” Second, for the purposes of cost-estimations, it's prudent to be conservative and possibly to overestimate deployment costs. As a wireline technology, FTTH is likely to have initial deployment costs that exceed fixed wireless or 4G mobile wireless. FTTH is also likely to have higher initial costs than copper-based solutions like VDSL, but lower ongoing and maintenance costs.

Using FTTH as the proxy technology for cost estimates, we suggest that the 7 million to 9 million unserved homes can be connected at an average cost ranging between \$2,000 and \$5,000 per home.²⁹¹ Thus, the total funding needed to serve all currently unserved homes could be as little as \$14 billion or as much as \$45 billion, with the likely cost falling somewhere between \$25 and \$30 billion. We further assume the ongoing maintenance and operation (M&O) costs to be approximately 10 percent of the initial capital costs, or between \$17 and \$42 per month per home, with the likely M&O cost falling around \$30 per month per home.²⁹² All or a portion of this cost will be offset by user subscription fees, meaning for some study areas, the M&O needs from the High Cost Fund will be minimal or non-existent. Thus, the move to a modernized USF under our model will require approximately \$30 billion for infrastructure deployment and a substantially smaller amount for ongoing M&O costs not recouped by end-user charges. This price tag may be even lower, given the \$7 billion allocated for broadband deployment and adoption in the American Recovery and Reinvestment Act.

The question is then, how do we pay for this? Where will the \$30 billion come from? Based on the analysis presented above, new broadband construction could be immediately funded via a redirection of the telephony funds that provide only “marginal” monthly support. This can be accomplished without “rate-shocking” the customers of these lines by recognizing that the owners of many of these lines are already receiving far more in subsidies than they actually require to earn a reasonable profit. Many of these marginal support lines already are equipped for delivery of DSL, and some are also delivering IPTV services. Yet the revenues earned from

²⁹⁰ The MPEG-4 codec, version h.264 (used notably by IP video service provider Apple) transmits HD video with an approximate average bit rate of 4.5Mbps. DBS providers also use MPEG-4 with a similar bit rate. The older MPEG-2 codec still in use by cable operators requires between 12 and 20 Mbps. In general, the more “action” or motion in the video, the higher the bit rate needed to maintain a constant level of quality.

²⁹¹ This estimate is arrived at by synthesizing several sources and then making a good-faith guess. A 2001 study estimated an average cost of \$1,000 to wire every U.S. home with fiber (see “Broadband: Bringing Home the Bits,” U.S. Computer Science and Telecommunications Board, November 2001). The Fiber to The Home Council now puts this at \$800 per home (see www.ftthcouncil.org/UserFiles/File/ftthprimer_feb.pdf). Telecom consultant John Widhausen Jr. puts the figure at \$1,000 per home (see net.educause.edu/ir/library/pdf/EPO0801.pdf). These estimates included the 21 percent of U.S. homes that are rural, as well as the 79 percent that are urban and suburban. The latter is where the country's largest provider of FTTH service, Verizon, has focused its deployment efforts. According to Verizon, their FTTH deployment costs continue to decline. In 2006, it cost Verizon \$850 per home to deploy FTTH, down from \$1,400 in 2004. By 2010, Verizon expects the FTTH deployment costs to decline to \$700 per home (see <http://newscenter.verizon.com/kit/nxtcomm/Product-sheet-FiOS-1Q07.pdf>). The costs per home will be higher in rural areas because of the lower densities. A recent estimate by a rural Vermont FTTH company put the cost per rural home for FTTH at \$2,900 (\$1,100 to pass each rural home and \$1,800 for the actual “hook up” of the home; see “Rural FTTP ‘Perfectly Economical,’ Says Muni Fiber Veteran,” *Telephony Online*, April 29, 2008). Of course, some rural homes are more “rural” than others, while some unserved homes lie in urbanized clusters inside rural areas. It is possible that some of the most extreme rural homes will not see FTTH, instead being served by a high-capacity wireless solution such as LTE. Considering all of these factors, we feel that a cost estimate range of \$2,000-\$5,000 per unserved home is a reasonable and conservative value.

²⁹² This is a very rough estimate based on various financial details of other publicly funded FTTH deployments. See, for example, Uptown Services LLC, “Network Planning Study” (2002).

these unregulated services are not factored in when determining subsidies. This broken regulatory support structure must be modernized. We suggest a system that considers the total future cost of a line, as well as the potential revenue that line can earn. If the resulting difference is below a certain threshold, USF support is warranted. But we suspect that many currently supported lines would not require subsidies once all revenue opportunities are taken into consideration.

If the FCC adopts this new regulatory support determination model (which we call the “total cost/potential revenue model”), it could begin to phase out support for some lines, and redirect those funds to construct broadband networks in unserved areas. This phase-out process could take five years, after which there would be approximately \$3 billion in annual funds for a new “Broadband Deployment High Cost Fund.” Also, after the five-year phase-out period, there would be approximately \$1.6 billion in annual funds available to provide ongoing support in the “very high-cost” areas that would still require monthly subsidies.

The construction phase of the Broadband Deployment High Cost Fund would run 10 years. During this time, approximately \$25 billion in total funds would be reallocated from the old telephony fund to the new broadband deployment fund. This amount is roughly equal to the estimated cost to deploy next-generation broadband service to the 7 million to 9 million unserved homes. With perhaps as much as \$5 billion of the American Recovery and Reinvestment Act funds being used to bring broadband to unserved areas, this \$25 billion in the new Broadband Deployment High Cost Fund could close the gap in unserved areas altogether by the end of the 10-year transition period.

The phasing out of support will of course lead some carriers to raise end-user rates. Those carriers not subject to rate regulation (such as most wireless carriers) are already free to set rates at any level, and can freely incorporate any losses in funding into their retail charges. However, since many of these carriers already receive subsidies beyond their needs, they might simply absorb these losses and maintain rates at current levels. Similarly, the incumbents operating in the more than a dozen states with no intrastate rate regulation are already free to set rates at any level. Because these states’ decisions to end rate regulation were based on the conclusion that markets are competitive, these carriers are also unlikely to hike end-user rates.

For rate-regulated carriers (either price cap or rate of return), there will have to be changes made, too. We suggest that as a part of the USF modernization and transition reform, the old accounting and regulatory structure be set aside and replaced with a system that recognizes the total cost and revenue-earning potential of the infrastructure. In such a regulatory system, the need for future ongoing support would be reduced, as the streams of unregulated and regulated revenues more than offset the forward-looking infrastructure costs.

However, if the rate regulatory and support structure is not modernized, a phase-out plan would require some adjustment of rate schedules. For price-cap incumbent carriers, either the FCC or state regulators may consider adjusting the price caps upward proportionally to the per line phase-out amounts. However, to reiterate, these carriers already have incentives under price-cap regulations to keep costs down to earn a healthy return absent USF support. Also, considering that the average monthly per-line HCF support for incumbent price cap carriers is just \$2.16 per line (see Figure 41), there may not be a need for regulators to make any adjustments to price caps for the majority of these supported lines. For rate-of-return carriers, the FCC or state regulators will need to adjust retail rates.

Distributing the Broadband Deployment High Cost Fund

Once a high cost fund for broadband deployment is established, the next issue is how to distribute the money. It is inefficient to fund multiple infrastructures in high-cost areas, but consumers in these areas must be able to enjoy the benefits of competition. Thus any infrastructure supported by the new Broadband Deployment High Cost Fund must be operated under open access obligations. This should not be controversial: It’s unreasonable to expend taxpayer resources to establish monopolies. Open access is the best policy tool for creating competition in markets with high fixed costs that cannot support multiple facilities-based competitors. Open access for rural broadband is vital to ensuring that citizens in unserved areas enjoy the same benefits available in more competitive markets.

Open access policy in the context of universal service is well established globally. For example, the Organization for Economic Cooperation and Development (OECD) recently recommended to member states that “governments providing money to fund broadband rollouts should avoid creating new monopolies,” further advising that any publicly funded broadband infrastructure “should be open access, meaning that access to that network is provided on non-discriminatory terms to other market participants.”²⁹³ In addition to mandatory open access obligations, all projects supported by the Broadband Deployment High Cost Fund must adhere to the FCC’s *Broadband Policy Statement* ²⁹⁴ and also agree not to discriminate against any type of Internet content based on its source or destination.²⁹⁵ These fundamental consumer protections are needed to ensure that consumers have access to the same “open” Internet that is available to consumers in all free nations of the world.

Currently, broadband rates are not regulated in any fashion. However, in the selection process for granting funds (described below), we suggest that funds be awarded to those carriers willing to offer services at rates reasonably comparable to those available in urban areas. If ongoing USF support is needed to achieve this outcome, that would be considered in the awarding of funds. This structure will maintain adherence to the language of Section 254(b)(3) of the 1996 Act.

A key question is how best to determine who receives the subsidy to construct and operate the broadband infrastructure as a common carrier. We suggest that the best method for awarding support would be via a Request for Proposal (RFP) process, not a reverse auction. RFPs allow the funding entity to weigh alternative proposals on more dimensions than just cost (such as a FTTH proposal that also includes Wi-Fi zones). RFPs are superior to reverse auctions, avoiding pitfalls such as collusion, setting reserve prices, and other difficult aspects of auction design. We feel that RFPs are especially better than the reverse auction process proposed by the FCC in 2008, which seems to have a bias toward incumbent carriers. The concept underlying reverse auctions — only supporting a single infrastructure — is correct and should be pursued. But in the various reverse auction proposals presented to the FCC over the past several years, with their emphasis on per-line ongoing support and lack of an explicit discussion of open access, are major shortcomings that perpetuate many of the broken features of the current USF.

To ensure competitive neutrality, the Commission should not use the current incumbent study areas as the market boundaries for the RFP process. Census geographies such as Blocks, Block Groups or Tracts are a more appropriate geographic designation for service areas. These Census geographies are small in size, but not so small as to raise transaction costs in program design and implementation. The use of Census geographies will also enable better targeting of support, as the FCC’s Form 477 data collection efforts have now transitioned to a Census-based system.²⁹⁶

Each carrier supported by the new Broadband Deployment High Cost Fund should be required to offer a basic VoIP (or other comparable technology) local service package to those who request it, separate from broadband or video service, and at a cost in line with a statewide average price for telephone services. This is similar to the

²⁹³ <http://www.oecd.org/dataoecd/32/58/40629032.pdf>. The National Telecommunications Cooperative Association also made it explicit in its April 2008 FCC comments that USF broadband funding should come with Title II obligations. “However, given that broadband should be included in the future definition of universal service... it is appropriate to reclassify and regulate broadband/high-speed Internet access service under Title II of the Act.” See Comments of National Telecommunications Cooperative Association *In the Matter of High-Cost Universal Service Support and the Federal-State Joint Board on Universal Service*, WC Docket No. 05-337, CC Docket No. 96-45, Notices of Proposed Rulemakings (NPRMs), 23 FCC Rcd 1467 (2008) (*Identical Support Rule NPRM*), 23 FCC Rcd 1495 (2008) (*Reverse Auctions NPRM*), and 23 FCC Rcd 1531 (2008) (*Federal-State Joint Board NPRM*), Comments submitted April 17, 2008, (*April 2008 NTCA Comments*).

²⁹⁴ See *Internet Policy Statement*, *supra* note 190.

²⁹⁵ Specifically, this principle was detailed in the AT&T-Bell South Merger Conditions, which stated: “This commitment shall be satisfied by AT&T/BellSouth’s agreement not to provide or to sell to Internet content, application, or service providers, including those affiliated with AT&T/BellSouth, any service that privileges, degrades or prioritizes any packet transmitted over AT&T/BellSouth’s wireline broadband Internet access service based on its source, ownership or destination.” See *AT&T Dec. 28 Ex Parte Letter*, *supra* note 207.

²⁹⁶ *In the Matter of Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, Report and Order, 23 FCC Rcd 9691(2008) (*2008 Form 477 Data Order*).

current “carrier of last resort” requirements. The key here is ensuring that those consumers who do not want (or cannot afford) broadband are not harmed by fund modernization.

Finally, the issue of high-cost data transport services must be addressed. There is little point in constructing next-generation, last-mile networks if the transport facilities that carry data back and forth to the Internet backbone are so overpriced that they erase all of the cost-savings made possible by the modernized local infrastructure. So the FCC must ensure that these transport facilities are “reasonably” priced. In the limited cases where transport subsidies are warranted, these costs can be supported by the fund.²⁹⁷

The transition proposal described herein would be conducted under a 10-year timeframe. In the tenth year, the FCC should undertake a complete forward-looking assessment of the continued need of the program. Ideally, the fund would be phased out, with monies used just to upgrade infrastructure to provide the best quality service, or to provide ongoing support to the “very high-cost” areas. We would recommend at this stage that if the goal of universal availability of affordable next-generation broadband infrastructure has been met, then the fund should be phased down to a \$1.5 billion or lower annual level.

The Role of Mobile Wireless Telephony

The Commission should focus its USF modernization efforts on funding broadband infrastructure, making no preference for fixed or mobile technologies, so long as the minimum level of service is met. But there is a strong argument that consumers value “mobility” in addition to basic connectivity, and that this functionality should be supported by the USF. There is certainly no question that American consumers look at mobile voice services as an integral part of their lives, but the question remains if the USF is the appropriate vehicle (from a legal and practical standpoint) to fund mobile service *explicitly*.

In its 2008 *Recommended Decision*, the Federal-State Joint Board specifically that the FCC establish a \$1 billion annual “mobility fund” to support construction of infrastructure for voice-grade mobile wireless service. But there are several problems with the Joint Board’s proposal. First, there was no adequate definition of “mobility” in the Joint Board’s decision. This is problematic because without an explicit understanding of the meaning of “mobility,” it remains unclear how to define “unserved” areas (e.g., there are “drop zones” in many areas that are considered “served” already — should the USF be used to fund the construction of a tower in front of those homes that get spotty service)?

Second, there is no strong evidence that mobile wireless carriers would not maintain or deploy service in current high-cost areas if they didn’t get a subsidy. It is possible that some carriers may choose to deploy simply to have a nationwide footprint (certainly along highway corridors in rural areas). Third, mobile rates are not regulated, and carriers are not subsidized based on their own costs. It’s not clear that USF-supported mobile carriers would raise rates or abandon service areas without subsidies. Fourth, it is clear from the plain language of the 1996 Act that Congress did not intend to fund duplicate infrastructures for complementary services, instead envisioning the use of portable subsidies to fund substitutable services. Currently, though perhaps 10 percent of households are mobile-only, the vast majority of mobile customers maintain their subscriptions either to landline telephones or VoIP services.

Finally, the mobility fund envisioned by the Joint Board is for the construction of *new* mobile telephony infrastructure in unserved areas. Because of the lack of an adequate definition of mobility, it is hard for us to assess the scale of such a fund. The only guidance is the statement that grants could be prioritized based on “the number of residents of each state who cannot receive a strong and reliable wireless signal at their residence.”²⁹⁸

²⁹⁷ Special access reform can play a role here, but only marginally. Many high-capacity transport lines are not DS-1 or DS-3 TDM circuits, and thus (thanks to the FCC’s misguided *Enterprise Broadband Forbearance* orders) fall outside of Title II dominant carrier regulations. It is therefore imperative that the Commission uses its remaining authority under Sections 201 and 202.

²⁹⁸ *Recommended Decision*, paragraph 17.

But recent FCC data shows that just 0.2 percent of the total U.S. population lives in Census Blocks where mobile voice service is not available from any provider.²⁹⁹ In other words, approximately 250,000 households are located on blocks where mobile voice service isn't available. According to the same data, approximately 99.3 percent of the U.S. population living in rural counties, or 60.6 million people, have one or more different operators offering mobile telephone service in the Census blocks within the rural counties in which they live. Furthermore, according to an industry-funded study, 98 percent of the customers living in study areas served by a subsidized wireless carrier also have service available from one or more unsubsidized wireless carriers.³⁰⁰

The USF is probably not the best vehicle to achieve universal mobility. Other options like D-Block spectrum (e.g., "Frontline")³⁰¹ or AWS-3 spectrum (e.g., "M2Z")³⁰² proposals may be better suited for achieving the goals of universal mobility. Finally, if technologies such as Wi-Max, Wi-Fi or Long-Term-Evolution ("LTE")³⁰³ can achieve the basic benchmark speeds and latencies set by the new Broadband Deployment High Cost Fund, then they certainly should qualify for support. In fact, when soliciting and awarding funds, the FCC could make the ability to deliver mobility a considered factor under the RFP process.

The FCC Must Not Place USF Contribution Burdens on Residential Broadband Connections

Policymakers should refrain from making broadband services subject to USF contributions for the foreseeable future, even if broadband services are the main recipient of USF funding. This may seem counterintuitive or unfair, but it is based on the fundamental need to further the goals of universal service.

It is important that policymakers recognize that broadband service is currently what economists call an "elastic" service, meaning that a 1 percent increase in price will result in a greater than 1 percent decrease in subscribership. (Contrast this with telephony, which is an "inelastic" service.) Because broadband is a developing market, any USF assessment, no matter how small, would likely result in a net decrease in total broadband subscribership nationwide.

Lifeline/Link Up for Broadband: What Is the Likely Impact?

Broadband is no longer a luxury — it is a technology that is vital for any individual to effectively participate in today's world. Yet less than one-quarter of low-income households have broadband, while broadband is in the homes of two-thirds of the rest of the population. Also troubling is that broadband adoption appears to have stalled in low-income homes. This digital divide has long-term social and economic costs.

The reasons that some low-income homes have yet to adopt broadband are just as complex as the reasons for non-adoption in the rest of the population. Obviously, price matters, but the lack of exposure to this technology means that low-income consumers don't yet place a high value on broadband — unlike the high value they do place on services like cable TV and cell phones.

Therefore, policies should be focused not only on lowering the cost of broadband services for low-income consumers (including equipment costs), but also on programs that provide practical training to novice users. Extending the Lifeline/Link Up program to broadband can play a role in bridging the digital divide by lowering equipment and monthly subscription costs for low-income households. But we should not expect

²⁹⁹ *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, Twelfth Report, WT Docket No. 07-71, FCC 08-28, paragraph 5 (released Feb. 4, 2008) (*Twelfth Report*).

³⁰⁰ Nicholas Vantzelfde, "The Availability of Unsubscribed Wireless and Wireline Competition in Areas Receiving Universal Service Funds," Criterion Economics, (June 13, 2007).

³⁰¹ *In the Matter of Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, WT Docket No. 06-150; *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, Second Further Notice of Proposed Rulemaking, (released May 21, 2008).

³⁰² *In the Matter of Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band*, WT 07-195, Notice of Proposed Rulemaking, (released November 14, 2007).

³⁰³ LTE is the so-called "4G" successor to today's 3G mobile data communications standards. LTE will be able to transmit data at significantly higher speeds than today's 3G connections, provided there is ample backhaul transport capacity.

such a subsidy alone to be enough to close the digital divide. And we should also learn the lessons from the shortcomings on the current low-income telephone program.

Of the nearly 27 million low-income homes eligible to participate in the Lifeline program, more than 17 million — or nearly 65 percent of low-income homes — do not participate, yet still have a phone in the home (a phone in the home included landlines, mobile phones and VoIP phones). The overall take-rate of the program is about 25 percent (see Figure 44). In total, home phone adoption among low-income households is just above 90 percent, while those households not considered low-income have a telephone adoption rate of just under 99 percent.

Figure 44: Current Participation in the Lifeline Program

	Low-Income Households (Households With Income Below \$25,000)	Low-Income Households With Telephone in Home	Low-Income Households Without Telephone in Home	Lifeline Households	Lifeline Eligible Households NOT Participating	Lifeline Eligible Households NOT Participating BUT Have a Telephone in Home
Households	26,924,193	24,323,013	2,601,180	6,937,516	19,986,677	17,385,497
Percent of Low-Income Homes	100%	90.3%	9.7%	25.8%	74.2%	64.6%
NOTE: For this Table, Low Income Households are defined as Households with Incomes Below \$25,000. This is approximately equal to 135 percent of the Federal Poverty Guideline						

Source: 2007 Current Population Survey; FCC

Thus, for home telephony, we have a situation where a substantial proportion of low-income homes that could participate in the subsidy program do not, yet they still purchase phone service. This suggests a few things that have been confirmed by other research: First, the awareness of the program remains suboptimal. Second, the low-income population — like the rest of the population — has very strong demand for telephone service, demand that is not very sensitive to price.³⁰⁴ Third, low-income households are increasingly solely reliant on mobile phones for telephone service, and the limited availability of mobility Lifeline carriers is reducing overall participation in the program. Fourth, low-income households have a strong preference for the flexibility of pre-paid mobile plans.

For broadband, the situation is likely very different, with the low-income population having weak demand for broadband service, and being much more price-sensitive. As of October 2007, there were approximately 6.3 million low-income homes subscribing to broadband, or fewer than 24 percent of the low-income population. This compares to 64 percent of non-low-income homes that had broadband. There were an additional 2.1 million low-income homes connected to the Internet via dial-up technology, or 8 percent of low-income homes (see Figure 45). This suggests that even among low-income homes, dial-up access is not viewed as a substitute for broadband.

Figure 45: Adoption of Internet by Low-Income Households

	Low-Income Households (Households With Income Below \$25,000)	Low Income Households With Dial-Up Internet in Home	Low Income Households With Broadband Internet in Home	Low Income Households Without Internet in Home	Low Income Households Without Broadband in Home
Households	26,924,193	2,181,134	6,355,487	18,387,572	20,568,706
Percent of Low-Income Homes	100%	8.1%	23.6%	68.3%	76.4%
NOTE: For this Table, Low Income Households are defined as Households with Incomes Below \$25,000. This is approximately equal to 135% of the Federal Poverty Guideline. Estimates for Households with Dial-up and Broadband are based on Oct. 2007 CPS, extrapolated to account for population not reporting income.					

Source: 2007 Current Population Survey

³⁰⁴ However, there is evidence of increased telephone penetration in states with higher levels of subsidies, suggesting that either the very low-income population is more price-sensitive, or that these states have more successful program awareness campaigns.

So what is the likely response to a low-income broadband subsidy, and will the take-rate be lower or higher than the current Lifeline subsidy for telephone service? Also, how large should the subsidy be to encourage the highest level of participation at the lowest cost?

To answer the latter question, we must start with an estimate of the current effective subsidy level for Lifeline telephone service. The average total monthly Lifeline support in 2007 was \$11.23, while the average monthly basic local residential telephone rate was \$24.80.³⁰⁵ Thus, the effective Lifeline subsidy is approximately 45 percent. The current average monthly cost of broadband service is approximately \$35. Thus, a 45 percent subsidy would be \$15.75. We will base our estimates on a \$15 monthly use subsidy, as we feel that a higher subsidy will not produce appreciably higher levels of participation, but will only increase the overall size of the program.

Based on current data, the take-rates for a broadband Lifeline subsidy can be expected to be below that of the telephone subsidy. First, it is unlikely that the program would fully subsidize the cost of a broadband Internet access device, reducing potential program participation. Second, the overall demand for broadband among low-income households, and the perceived value of broadband, is not as strong as it is for basic telephone connectivity. Third, the various factors that keep participation low in the telephone Lifeline program (awareness, transient nature of the population, perceived costs of qualifying, etc.) would also affect a broadband subsidy program. Fourth, we expect interest in participating in the broadband program would be low among low-income elderly households, decreasing overall participation. Fifth, it is unlikely that all ETCs will be required to offer broadband Lifeline service, reducing the availability of the program.

Participation by qualifying households would thus likely be less than 15 percent. Participation among households that currently have no Internet service will be very low, maybe 10 percent of such homes. Participation by households that currently have dial-up or broadband service can be expected to be somewhat higher, though still quite low.³⁰⁶

Though we understand the desire by some to target the subsidies only to those low-income homes that would not otherwise subscribe to broadband (and exclude those that currently do or that would subscribe without a subsidy from participating in the program), we feel the administrative complexity of administering such a program would be great. Further, recent data suggest that while adoption of broadband is increasing overall, it is decreasing among low-income households. This suggests that the low-income households with broadband may be highly susceptible to income effects from the current recession, and a Lifeline subsidy may help keep them on the network.

Based on the above assumptions, we estimate that there would be approximately 3.9 million homes participating in the program. We also estimate that nearly 2 million would participate in the first year in a broadband Link Up program that would subsidize the purchase of an Internet access device, up to \$150 (see below for further discussion). It is then likely that Link Up participation would decline in subsequent years to less than one million homes.

Thus, if there were no constraints on the overall program cost, we would expect the annual budget for the combined Lifeline/Link Up for Broadband program to be just under \$1 billion. This level of funding would lead to a significant increase in the percentage of broadband adopting low-income households, from 24 percent to 32 percent (see Figure 46).

³⁰⁵ This includes the Subscriber Line Charge as well as other taxes and fees — charges that are exempt under Lifeline, but which should be included for purposes of calculating the effective subsidy.

³⁰⁶ A reasonable estimate of participation by current dial-up subscribing low-income homes would be 20 percent. A reasonable estimate of participation by current broadband subscribing low-income homes would be 25 percent.

Figure 46: Potential Cost and Impact of a Broadband Lifeline Program

Program/Year	FISCALLY UNCONSTRAINED FUND			FISCALLY CONSTRAINED FUND - \$500 MILLION ANNUAL		
	Estimated Participation (Households)	Per Household Annual Subsidy	Total Subsidy	Estimated Participation (Households)	Per Household Annual Subsidy	Total Subsidy
Lifeline For Broadband Program	3,863,856	\$180	\$695,494,040	1,960,784	\$180	\$352,941,176
Linkup For Broadband Program - Year 1	2,000,000	\$150	\$300,000,000	980,392	\$150	\$147,058,824
Lifeline For Broadband Program - Subsequent Years				2,298,851	\$180	\$413,793,103
Linkup For Broadband Program - Subsequent Years	1,000,000	\$150	\$150,000,000	574,713	\$150	\$86,206,897
Total Program Cost - Year 1		\$995,494,040			\$500,000,000	
Total Program Cost - Subsequent Years		\$845,494,040			\$500,000,000	
Percent of Low Income Homes with Broadband Before Program		24%			24%	
Percent of Low Income Homes with Broadband After Program		32%			29%	

Source: Free Press analysis

This level of funding would also lead to a substantial increase in the overall size of the USF, which is unwise under the existing support structure. Until wholesale USF reform occurs, a pilot Lifeline Broadband program should be established, with funding levels at or below \$500 million per year.

We also model the likely impact of a \$500 million annual fund, based on the above-mentioned constraints of a \$15 per month access subsidy and a one-time \$150 per household subsidy for an Internet access device.³⁰⁷ The results indicate that a \$500 million annual fund would increase the low-income broadband household penetration rate from 24 percent to 29 percent (see Figure 46). It may not sound very impressive, but it would make a substantial difference in the lives of the more than 2 million households that would be supported by the program.

Subsidies alone may only play a small role in closing the digital divide. Policymakers should therefore work to support programs — particularly those at a community level — that work to improve digital literacy and increase exposure to emerging technologies. Efforts targeting low-income families with children should be a top priority. But the most effective policies may be those that increase marketplace competition, which in turn would lead to lower prices and greater adoption among all populations.

Ending the Stalemate at the Commission

Broadband is the dominant communications service of the 21st century. America's place atop the global economy for the remainder of this century requires a comprehensive policy commitment to closing our digital divide. Congress and the Commission must move expeditiously to enact reforms that make open access broadband networks the centerpiece of universal service policy.

Ultimately, enacting USF reform under the constraints of the 1996 Act is a challenging endeavor that need not be. The FCC's willingness to move forward with bold reform may be tempered by the perceived inflexibility of the law. Congress has the ability and the duty to step in and remedy this problem. But the need for congressional

³⁰⁷ We also assume that participation in the Link Up for Broadband program is proportional to the assumed participation under the fiscally unconstrained program.

action does not preclude the FCC from acting, and should not be an excuse for enacting only moderate changes to the fund.

There are no easy solutions to correcting the problems of the Universal Service Fund. But policymakers must act judiciously, boldly and in a manner that adheres to the Act's commitment to ensuring universal, affordable access to the most important technologies of the era. Legislation or regulatory policies that try to please all constituencies by simply adding broadband to the already broken support structure won't solve the underlying problems and are doomed to fail. Congress and the FCC need to implement bold changes, even if this means angering the well-connected rural carrier industry. This is simply not a situation well-suited to compromise.

CHAPTER 6
**TOWARD A NATIONAL
BROADBAND POLICY:
SOLVING AMERICA'S
BROADBAND PROBLEM**

NEW ADMINISTRATION, NEW POLICY

At noon on January 20, 2009, Barack Obama became the 44th president of the United States. One minute later, his administration was already delivering on his promise of change. Visitors to Whitehouse.gov were greeted with a completely overhauled interface, designed to facilitate the new administration's priorities of "communication, transparency and participation."³⁰⁸ It was an appropriate first action by a president who reached the highest office in the land in large part due to his campaign's successful use of the Internet.

And this historic day for the country was also an historic day for the Internet. More people watched coverage of the day's events online than watched on television.³⁰⁹ But though millions of Americans used the Internet to take part in this historic campaign and its culmination, millions more were unable to participate in this digital revolution. Twenty-five million rural Americans couldn't follow the campaign online and were thus unable to seek out detailed information on the policy positions of Obama or his opponent. The 50 million low-income Americans on the wrong side of the digital divide were unable to use the Internet as a platform for voicing their priorities for the new administration. Half of all Americans over the age of 55 were offline. Two-thirds of all African-Americans lacked the basic connectivity needed to track the historic events on the Web. And millions more Americans fortunate enough to have broadband were unable even to stream low-quality video of the inauguration because their connections were too slow. The consequences and costs for those disconnected or stuck using yesterday's technology grow exponentially as the Internet becomes more deeply intertwined in the fabric of American life.³¹⁰

The blame for the failure to bring the benefits of the Internet to all Americans falls squarely on the shoulders of the Federal Communications Commission. With the 1996 Telecommunications Act, Congress gave the FCC a blueprint for achieving universal access, openness and competition. But the FCC quickly abandoned this path. It chose to follow the wishes of the industries it regulates rather than the deliberative judgment of our elected representatives. It declared "mission accomplished" on the goal of competition before the mission had even begun. It dismantled the basic legal framework responsible for creating the open Internet and left nothing in its place but thin assurances that what once was would always be. And as the digital divide grew wider, the FCC sat idle.

America's broadband failures are the result of policy failures. They are the predictable outcome of a regulatory agency that always places private interests above the public interest. Over the past decade, while other countries developed and properly implemented national broadband policies, America's policy was just to cross our fingers and hope for the best. Hope that new platforms would emerge and compete with the duopoly phone and cable providers. Hope that providers wouldn't abuse their market power to raise barriers to entry for new competitors.

These hopes were based on the belief that the invisible hand would work its magic if the agency got out of the way. But our broadband policies have actually stifled, not freed, the forces of the free market. What our regulators forgot was that market forces do not work properly when markets are highly concentrated. They failed to grasp the basic idea that failed markets just won't fix themselves without any intervention. They watched as America fell further and further behind the rest of the world. They ignored history.

It is time to try a new approach. It is time for real change.

³⁰⁸ "Change has Come to Whitehouse.gov," *The White House Blog*, Jan. 20, 2009.

³⁰⁹ Lisa de Moraes, "With the Right Math, Inauguration is Second to None," *Washington Post*, Jan. 22, 2009.

³¹⁰ See Rahul Tongia and Ernest J. Wilson, III, "Turning Metcalfe on His Head: The Multiple Costs of Network Exclusion," Paper presented at the Telecommunications Policy Research Conference, September 2007.

Policies For Success: Developing a National Broadband Plan

Recognizing the need for a new direction, early this year Congress directed the FCC to develop a national broadband plan.³¹¹ This plan has been described as “the most important public policy initiative affecting broadband since the landmark Telecommunications Act of 1996.”³¹² Congress specifically ordered the Commission to submit plans for achieving universal deployment, affordability and maximum utilization of infrastructure. This will be no easy task.

Policymaking is a process. It begins with identifying problems, formulating solutions, and then taking action. But the process does not end there. The final step involves evaluating the policies put in place to determine if they are effective. A large part of the policy formulation process involves predictions of outcomes, so it is quite reasonable to constantly ask if those predictions were correct. As FCC Commissioner Michael Copps stated in 2005: “We have to be always open to new facts and always follow up on the real-world consequences of our actions. ... We need to put as much or more effort and resources into monitoring the consequences of our actions as we do in bringing them forward for a vote.”³¹³

But the FCC’s legacy since 1996 has been to never look back. In proceeding after proceeding — be they mergers or forbearances, implementation of the 1996 Act or responses to court remands — the Commission has made predictions about the development of marketplace competition and the likely industry behaviors that would result from its actions. Yet none of these predictions has ever been evaluated to see if they were correct.

The Commission has not only refused to look back, it has taken steps to compound the errors in its predictive judgment. In numerous cases, the FCC has justified its deregulatory actions based on a specific level of existing competition, but then proceeded to make decisions that undermine that competition. The Commission has a track record of simply stitching together what limited evidence is available to justify tearing down consumer protections, while predicting nothing but consumer benefits. But there is enough evidence to suggest that this blind deregulatory approach has been nothing but an utter and complete failure.

So the new FCC needs to begin its development of the national broadband plan by taking a deep and honest look at every Commission action in this area since 1996. The commissioners should start with this question: Were our assumptions about market outcomes correct? If the answer is no, then those actions should be revisited. In many cases, the Commission made decisions it was formally committed to reviewing and revising after a period of years — and the agency simply failed to do so.

We offer a variety of recommendations for how the Commission and the Congress should proceed based on the analysis presented in this book:

- The FCC should begin its inquiry into a national broadband plan by reviewing every major regulatory decision since the 1996 Act to determine whether or not its predictions for market competition and deployment have come true. If not, those decisions should be revisited and revised with a new set of assumptions and expectations. Congress should aid this process with a series of oversight hearings.

³¹¹ See 47 U.S.C. 1305(k). “The national broadband plan ... shall seek to ensure that all people of the United States have access to broadband capability and shall establish benchmarks for meeting that goal. The plan shall also include ... an analysis of the most effective and efficient mechanisms for ensuring broadband access by all people of the United States ... a detailed strategy for achieving affordability of such service and maximum utilization of broadband infrastructure and service by the public ... an evaluation of the status of deployment of broadband service ... and a plan for use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, worker training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes.”

³¹² See Statement of Commissioner Robert M. McDowell, In the Matter of *A National Broadband Plan for Our Future*, GN Docket No. 09-51, FCC 09-31 (2008).

³¹³ See Statement of Commissioner Michael J. Copps, In the Matter of *SBC Communications, Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, WC Docket No. 05-65, Memorandum Opinion and Order, 20 FCC Rcd 18290 (2005).

- The FCC should conduct a rule-making to establish nondiscrimination protections, or Network Neutrality, for consumers on the Internet. This can be done by expanding and codifying the *Internet Policy Statement* into permanent Network Neutrality rules. Congress should concurrently pass a law to place these nondiscrimination protections in the Communications Act.
- The FCC should implement rule-makings to transition the Universal Service Fund programs from supporting telephone service to supporting broadband. This shift — which could be conducted over a 10 year period — would build a fiber-optic network throughout rural America, reform the fund's administration to reduce waste, fraud and abuse, and gradually reduce the size of the fund to less than a third of its current size. Congress should support these changes through oversight and legislation to provide a clear path for FCC action.
- The FCC should develop a set of common standards for competition analysis. The Commission's decisions on competition policy have been plagued by inconsistencies, false assumptions, and incorrect projections. Once a standard has been set, a review should be conducted of rulings made using an incorrect competition analysis — and those decisions should be reversed.
- The FCC should reverse the foundational mistake of its broadband policy framework by reclassifying broadband as a telecommunications service. This will rationalize broadband policy and give the Commission the tools required to promote competition through the reinstatement of network-sharing rules if a competition analysis indicates this is needed.
- The FCC should make an honest assessment of broadband deployment in its congressionally mandated annual review (Section 706 reports) on the state of the market. A clear finding that advanced broadband networks are not being deployed to all Americans in a timely fashion will trigger expansive authority to establish more rigorous competition policy.
- The FCC should conduct a thorough review of its policies governing competition and pricing in the "special access" and "middle-mile" or "enterprise" markets — the broadband lines that connect cell phone towers and local area networks to the Internet. Deregulation in this area has produced monopolistic practices that have resulted in higher prices for consumers and stunted the deployment of competitive networks.
- The FCC should explore opportunities to open more of the public airwaves to unlicensed use as well as build on earlier decisions to promote shared spectrum for both low-power urban uses and high-power uses in rural areas. Congress should instruct the FCC and the NTIA to conduct a thorough review of commercial and government spectrum holdings to identify bands that could be opened.

Policymakers should structure the national broadband plan around the key areas of openness, access and competition. To achieve the goal of universal, affordable access and maximum adoption of the Internet in American homes, we will need to address all of these areas. We will need to use a combination of market incentives and regulatory oversight to trigger investment in higher-quality networks; to promote competition between ISPs; to make public investments in infrastructure in places otherwise left unserved; and to keep open the market for online content, applications and services that drives innovation.

Getting the Act Back on Track: Protecting the Internet as an Open Platform for Innovation

Jettisoning all of the legal nondiscrimination protections governing the Internet and reversing course on one of the most successful communications policy frameworks in history — all in the name of deregulation — would make no sense *even* in a market subject to perfect competition. The fact that the FCC did this in a duopoly market is the height of irresponsibility and shows a reckless disregard for the public interest. In formulating a new national broadband strategy, the Commission must do everything in its power to protect the open Internet of content, applications and services, regardless of marketplace conditions or technology. Network Neutrality and nondiscrimination should be the cornerstone of America's broadband policy. It is the Commission's

fundamental duty to protect an open market for speech and commerce on the Internet for consumers, citizens and businesses alike.

To do this, the Commission should begin by immediately affirming that the 2005 *Internet Policy Statement* applies to all Internet Protocol technology platforms — including wireless. It should then issue a declaratory ruling adding a fifth principle of nondiscrimination to the *Internet Policy Statement*. The record in the 2007 *Broadband Industry Practices NOI*, which includes the debate surrounding the Comcast-BitTorrent case, provides the FCC with a sufficient basis to move directly to add the fifth principle.³¹⁴ In this declaratory ruling, the Commission should simultaneously open a Notice of Proposed Rulemaking to codify the *Policy Statement* into formal rules.

The *Policy Statement* already protects consumers' right to use any computing device of their choosing with their broadband connection. If the *Policy Statement* does apply to all broadband platforms — as both Commissioners Michael Copps and Jonathan Adelstein indicate it does — then every 3G mobile broadband provider is currently violating the third principle that guarantees all consumers the right to attach any device of their choosing to the network. This is an unacceptable restriction of consumer freedom and consumer choice. In declaring the *Policy Statement* to be technology-neutral, the Commission must forcefully remind the mobile industry that the "Carterphone" device-freedom rules apply to the wireless broadband platform.³¹⁵ The walled garden of the mobile telephony world should not be permitted to cripple the potential of mobile wireless broadband. All devices, applications and services that do not harm the network should be permitted access. Allowing for the physical differences between wired and wireless platforms, the rules must be guided by a common set of principles that respect the fact that however people get access to the Internet, they should be guarded by the same consumer protections.

The Commission should also take action to prevent providers from using the "reasonable network management" exception as a get-out-of-jail-free card. Carriers are constantly in the press bemoaning the burdens of increasing amounts of Internet traffic and using this to justify their questionable if not illegal network management practices. However, the carriers never offer any data to support their draconian actions, nor do they offer any financial data to support their increasing flirtation with anti-growth pricing practices such as Time Warner Cable's recent efforts to impose limitation-pricing or "metering."³¹⁶ The Commission therefore should begin research into network traffic and data management practices and costs. The dearth of information about what is happening on the Internet cripples the FCC's efforts to effectively encourage the continual growth of this important economic sector.

Ultimately, the Commission has the responsibility to ensure that market power in network ownership doesn't distort the market for Internet content. This is the successful legacy of the *Computer Inquiries* that the Commission must uphold. Protecting the open Internet is a key element of achieving the goals of the 1996 Act. Preserving the Internet as an open platform will maximize innovation in the content market and increase the likelihood that the next "killer app" will attract more Americans to subscribe to broadband. Indeed, this virtuous cycle of greater demand for advanced applications leading to greater uptake of broadband, leading again to greater demand for advanced applications, seems to be completely missing in the Commission's current policy framework.

This space at the "edge" of the network architecture has been a remarkable engine of economic growth in the past decade. This is also the space where network technologies meet democratic discourse and open cultural expression. Because of the open marketplace at the edge of the network, an open sphere for public speech has developed that rivals the printing press as the most important development in modern communications. Policies aimed at the application layer should recognize its centrality to the economic and democratic health

³¹⁴ See *Broadband Industry Practices*, WC Docket No. 07-52, Notice of Inquiry, 22 FCC Rcd 7894 (2007) (*Broadband Industry Practices NOI*).

³¹⁵ Before this landmark decision, users were forced to rent phones from AT&T, even though there was no technical reason for this requirement. Once it was eliminated, the consumer electronics market for telephones, cordless telephones and integrated answering machines exploded. See *Hush-A-Phone Corp. v. United States*, 238 F.2d 266, 269 (D.C. Cir. 1956); *Use of the Carterfone Device in Message Toll Telephone Service*, 13 FCC 2d 420 (1968).

³¹⁶ For a discussion of the shortsightedness of this pricing approach, see S. Derek Turner, "Free Press Policy Brief: Blocking or Metering: A False Choice," *Free Press*, August 2008.

of the nation. In the absence of any other meaningful reform to communications law, the absolute necessity of protecting the existing market for speech and commerce online should be paramount. Without a strong policy protecting the open Internet, all of the Commission's other concerns such as promoting universal access and competition are meaningless.

Getting the Act Back on Track: Achieving Universal Service

When the current universal service regime was created in 1996, the Internet was an application that rode on top of the telephone infrastructure. Today, it's the opposite. Telephony is just one of many applications riding on top of broadband infrastructure. With this convergence comes the opportunity to ensure universal affordable broadband access. The Commission must use the national broadband plan to take advantage of this opportunity and end the stalemate in the debate over reforming the Universal Service Fund. It was with great fanfare that the American Reinvestment and Recovery Act put a one-time injection of nearly \$7 billion into broadband infrastructure grants. Yet little is said about the nearly \$5 billion per year we pour into rural telephone networks with little obvious result to justify that massive investment.

The public and their elected representatives clearly support the goals of universal service. Everyone benefits when rural and low-income consumers have access to affordable high-quality communications services. But the majority of Americans who pay into the fund without receiving any direct benefits deserve a universal service system that is fair, efficient and modernized. Consumers in the 21st-century marketplace should not be forced to subsidize a 20th-century technology. Thus, the national broadband plan must embrace a bold and transformative shift in USF policy. Done properly, the Commission can ensure universal access to affordable broadband while also substantially reducing the size of the USF over the long term.

The path to universal broadband and ending the over-reliance on subsidies begins with recognizing how convergence has changed the business of telecommunications. Before broadband, carriers were only able to earn perhaps \$20 per customer each month selling phone service. In today's converged world, a carrier can earn more than \$100 on that same line by offering phone, TV and Internet services. Unfortunately, our current regulatory structure does not account for this potential — ignoring that many carriers may be able to operate profitably without ongoing subsidies. Instead, it tries to clumsily separate out regulated from unregulated costs and revenues, resulting in overpayments and anti-competitive subsidies.

As an alternative to this broken process, the FCC should base ongoing support on total revenue-earning potential and forward-looking infrastructure costs, calculated for each carrier on a granular, disaggregated basis. This modernized regulatory structure will reduce the need for ongoing support, as many carriers will be able to recoup network costs and earn healthy profits from "triple-play" services. For some carriers, the upfront cost for deploying broadband into currently unserved areas is just too high. In these instances, the USF should be used to pay these upfront costs, and then to provide only ongoing support where it is truly needed.

We suggest the FCC, as a part of the national broadband plan, implement a 10-year transition, where the new "total cost/potential revenue" support model is phased in, and the resulting cost-savings are used to fund the buildout of open access broadband infrastructure into unserved areas. We estimate that after this transition, the total size of the "High-Cost Fund" could be reduced by two-thirds, to less than \$1.5 billion per year.

But getting universal service policy right isn't the only thing the Commission needs to do to ensure universal service. For rural carriers, the viability of the self-supporting triple-play business model depends on getting fair rates and terms for transport and special access services, as well as getting fair access to video programming. Many of the reforms for the special access and enterprise markets suggested above will benefit rural carriers. However, it may be that some rural carriers will require ongoing subsidies for backhaul transport services. Before the Commission commits to such a subsidy, it should first explore funding the upfront deployment costs of transport or adopting innovative policies like using white spaces for rural backhaul. However, if ongoing subsidies are warranted, the FCC must absolutely ensure that these transport expenses are cost-based. Ratepayer subsidies should not be used to further enrich monopolists in another market.

Finally, the Commission should explore extending the Lifeline/Linkup low-income program to broadband. It should also start an “e-rate@home” pilot project, to ensure American students receive the benefits of broadband both in school and at home. However, closing this aspect of the digital divide will require the application of a broad mix of policies that lie outside of the Commission’s jurisdiction and will require action from Congress and other agencies.

Getting the Act Back on Track: Developing a Meaningful Competition Standard

Even though the 1996 Act has been put through the wringer by the courts and the FCC, it is still the governing document for our nation’s communications policies. Moreover, its goals and guiding principles are as relevant and important today as they were more than a decade ago. Achieving the vision of competition espoused in the 1996 Act should be the top priority for President Obama’s FCC.

The stated purpose of the 1996 Act is “to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.”³¹⁷ The Commission has been singularly focused on the “reduce regulation” aspect of the Act to the detriment of the “promote competition” directive. The result has been higher prices and lower-quality services for American consumers.

The FCC must begin the development of a national broadband plan by focusing on the issue of competition. It must do so with the pro-competitive framework of the 1996 Act as a guide. This process should start with an empirically focused evaluation of past predictions about the development and impact of competition. This evaluation should look to establish which analyses of market power were successful, and which types were widely off the mark. Through this evaluation, the FCC should be able to develop and build a new empirical standard for evaluating competition and the potential impacts of deregulation.

The Commission’s new standard for assessing competition and market power should be targeted at the appropriate and competitively relevant geographic market boundary. This is the first order of business in developing all of the components of the broader national broadband plan. Without having a relatively common unit of analysis to evaluate past policies and predict the outcome of new ones, it will be impossible to develop a coherent framework for change with standards that are empirically verifiable and evolving to meet the needs of the public and the market over time.

The Commission’s approach in the past has been too scattershot and incoherent. In its “enterprise broadband”³¹⁸ forbearance orders, the FCC considered the market to be national, while the Commission’s special access *Pricing Flexibility* rubric considers market competition at the Metropolitan Statistical Area-level. And the impairment standard developed in the *Triennial Review* for determining when high-capacity transport lines no longer are subject to “unbundling” looks at the market from a wire-center level.³¹⁹ Given that in all three of these cases the underlying technology at issue is essentially the same — high-capacity dedicated broadband transmission lines — the rationale for choosing wildly different market boundaries makes little sense.

Broadband deployment is a hyper-local phenomenon. A premise is either served or unserved. And a premise that is served may have one available provider, or it may have a dozen. But the existence of adequate competition at one location does not ensure adequate competition at a similar location 20 miles away. If the Commission chooses a large market boundary, it will always overstate competitive market conditions. This overstatement in turn will lead to overly optimistic forecasts about the emergence of future competition.

³¹⁷ 104 P.L. 104.

³¹⁸ The enterprise broadband market consists of all the high-capacity dedicated broadband technologies such as Gigabit Ethernet, Frame Relay, OCn fiber optic loops, Asynchronous Transfer Mode service (ATM), LAN services and other packet-switched services. It does not include the so-called TDM-based “special access” services, which are high-capacity dedicated lines that are traditionally used to carry voice traffic but are capable of carrying data traffic at rates up to 45 Mbps symmetrically. The enterprise market includes all broadband services that are not marketed to residential and small-business users but are critical inputs for other ISPs and end-user businesses that transmit large amounts of data (such as a stock exchange).

³¹⁹ See *supra* note 102.

If the Commission wishes to conduct meaningful market power evaluations, then it must focus on very narrow geographic market boundaries. Clearly the FCC's national approach in the enterprise broadband markets is flawed. Just because there are multiple providers of Gigabit Ethernet services in Manhattan does not mean the market for such services is competitive in Manhattan, Kansas. Similarly, the MSA boundary also leads to flawed results, as these markets often lump in dense city centers with distant rural exurbs. For example, the Atlanta MSA includes downtown Fulton County, home to giant enterprise customers such as CNN, Cox Communications, AT&T Mobility and Delta Airlines. But this MSA also includes the rural areas of Heard County, an area 70 miles away from downtown Atlanta. It makes little sense to assume that the market for high-capacity data transport services is as competitive in rural Heard County as it is in the area surrounding the skyscrapers of Atlanta.

Instead, the Commission must develop an evaluative framework that operates at a very granular level. For the enterprise and special access markets, this should be the wire-center level (i.e., the local neighborhood level). However, the wire-center level is too telco-centric for meaningful evaluation of competition in the residential broadband market. A better approach here would be to look at the level of competition at the Census Block level — small geographic units that typically include areas with approximately 1,500 inhabitants.

With the appropriate market boundaries defined, the FCC should then proceed to test past assumptions about competition and deregulation. Did past regulatory relief lead to “substantial and sustained” price increases?³²⁰ How was market entry shaped by these decisions? Were barriers to entry increased or decreased? What other marketplace conditions such as consumer price sensitivity affected market pricing? If some markets remained under regulation, how did competition, deployment and pricing differ among deregulated and regulated markets?

By conducting this *ex post* analysis, the Commission will be able to exercise better predictive judgment. It will also lead to the identification of markets that lack effective competition and require further FCC attention. We believe this exercise will lead to the conclusion that many of the actions taken by the Commission in the past decade were too broad and should be scaled back.

Specifically, the FCC should reverse all of the enterprise broadband forbearance orders and apply a more narrow market analysis. This will allow the RBOCs and other price-cap carriers that were granted nationwide relief from dominant carrier regulations to maintain that regulatory relief in the truly competitive markets, but it will allow for the proper monopoly-constraining regulations in the markets with little or no enterprise competition.

Similarly, the Commission should also re-evaluate the markets where price-cap carriers were given special access pricing flexibility relief. We suspect that an honest market power evaluation will lead the Commission to conclude that none of these markets should have been granted MSA-wide regulatory relief. Using a wire-center-level analysis (i.e., neighborhood-level analysis) the Commission will be able to determine those specific locations where relief is warranted, and those areas where carriers have abused their market power in the absence of pricing constraints.

Getting the Act Back on Track: Properly Classifying Broadband

The FCC got it wrong when it classified broadband Internet access as a pure “information service” in 2002.³²¹ By doing so, the FCC clearly flaunted the will of Congress and exceeded its authority. The new Commission

³²⁰ See *supra* page 53.

³²¹ The enterprise and special access broadband markets remain classified as telecommunications services, and thus the Commission retains clear authority under Title II to promote meaningful competition through Sections 201, 202, and 203-style non-discriminatory economic regulation, or through Section 251 interconnection and unbundling regulation. The residential broadband access market is another story. The Commission's actions in the *Cable Modem Declaratory Ruling*, the *Wireline Broadband Order*, and the *Wireless Broadband Order* to remove these services completely from the reach of Title II greatly hamstrings the new FCC's efforts to promote competition and protect consumers. See *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, WT Docket No. 07-53, Declaratory Ruling, 22 FCC Rcd 5190 (2007) (*Wireless Broadband Order*). In this declaratory ruling, the Commission classified wireless broadband Internet access as an information service that uses telecommunications as a transport component, but as a part of a functionally integrated offering that does not constitute “telecommunications service” under Section 3 of the Act. The Commission also declared Broadband Over Powerline to be an information service. See *Power Line Council's Petition for Declaratory Ruling Regarding the Classification of Broadband over Power Line Internet Access Service as an Information Service*, WC Docket No. 06-10, Memorandum Opinion and Order, 21 FCC Rcd 13281 (2006) (*BPL Order*).

must right this wrong by accurately redefining broadband as an information service with a telecommunications service transport component. This declaration will restore logical consistency to the Commission's prior actions dating all the way back to the original *Computer Inquiry*.³²² It will harmonize the Commission's ongoing broadband policymaking activities with the directives of Section 706 of the 1996 Act, which instructs the FCC to encourage the universal deployment of "broadband telecommunications" (emphasis added).³²³

Reversing the most fundamental mistake of the past 10 years of telecommunications will generate vigorous political opposition from the incumbents that have so richly benefited from it. But as a purely legal matter, properly classifying broadband should not be a heavy lift for the Commission. The record is there to support the change; and the agency has the tools to bring it about. Once the definitional change is made, the practical business of applying new regulations can proceed carefully on a market-by-market basis. That analysis should begin by recognizing the differences between broadband markets in the huge population centers on the coasts versus the small- and mid-size markets in the bulk of the country. The economics are different; the existing infrastructure is different; and the needs of these communities are varied.

With all broadband services classified appropriately back under Title II of the Communications Act, the FCC can then proceed to determine if any economic or access regulations are needed in specific geographic markets. This could lead cable modem or DSL providers in some areas to be subject to certain open access regulations — including line sharing³²⁴ — or could lead to no Commission intervention, other than obliging carriers to offer reasonable and nondiscriminatory pricing to wholesalers. The Commission is well within its authority under Section 10 of the Act to forbear from applying any Title II regulations (other than Sections 201 and 202) that it feels are unnecessary to promote the public interest.³²⁵ The Commission must not hesitate to use all the tools made available by the law to promote competition.

Getting the Act Back on Track: Using Section 706 to Promote Competition

Section 706 of the 1996 Act directs the Commission to "determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion." The Act specifically defines the term advanced telecommunications capability "as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology." If the Commission determines this deployment is not reasonable and timely, it is to "take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market."

The Commission has issued five Section 706 reports, all stating that the deployment of *advanced telecommunications capability* was being deployed to *all* Americans in a reasonable and timely fashion.³²⁶ However, each of these reports ignored the statutory language of the Act and the intent of Congress by focusing

³²² See discussion beginning *supra* page 22.

³²³ See *supra* note 46.

³²⁴ We strongly recommend that the Commission revisit the decision made in the *Triennial Review* ending line sharing. The court in *USTA I* never declared the practice itself to be an overreach of Commission authority under the Act, only the Commission's specific impairment analysis. With a new hyper-local geographic approach to market power analysis, line sharing will certainly be a justifiable policy under Section 251 authority.

³²⁵ See *supra* note 178. Also, in the *Cable Modem Declaratory Ruling* (*supra* note 115), the Commission acknowledged that it could on its own motion waive other requirements such as *Computer II*. The 9th Circuit in the *Portland* case also ruled that the Commission could use Section 10 to waive Title II requirements on cable modem services. See *Portland*, 216 F.3d at 879.

³²⁶ *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Report, 14 FCC Rcd 2398 (1999) (*First 706 Report*); CC Docket No. 98-146, Second Report, 15 FCC Rcd 20913 (2000) (*Second 706 Report*); CC Docket No. 98-146, Report, 17 FCC Rcd 2844 (2002) (*Third 706 Report*); *Availability of Advanced Telecommunications Capability in the United States*, GN Docket No. 04-54, Fourth Report to Congress, 19 FCC Rcd 20540 (2004) (*Fourth 706 Report*); GN Docket No. 07-45, Fifth Report to Congress, 23 FCC Rcd 9615 (2008) (*Fifth Report*). It's worth noting that the last Section 706 report issued under Chairman Powell (*Fourth Report*) is a glossy brochure, departing from the normal legal format of the other reports.

on the deployment of *non-dial-up* Internet services, and not *advanced telecommunications* services.³²⁷ A proper analysis of deployment based upon the actual language of Section 706 could only reasonably conclude that deployment of advanced telecommunications capability to all Americans is neither reasonable nor timely.

Changes to the law made under the Broadband Data Improvement Act now require that Section 706 reports be issued annually, as opposed to periodically. As a part of its formulation of a national broadband strategy, the Commission should rule that the Section 706 test is not being met. This declaration will confer upon the FCC broad authority to promote competition in the broadband market, without having to reclassify broadband Internet access service.³²⁸

The Commission's focus for the national broadband plan should be on promoting competition where it is lacking, by any means necessary. This means promoting both inter-modal and intra-modal platform competition — that is, competition between different technologies, and competition within certain technologies from the incumbent provider and wholesale providers. Reclassifying broadband as an information service with a telecommunications service transmission component will enable the FCC to surgically apply regulatory competition tools such as open access policies. Similarly, the FCC's Title I ancillary authority and authority under Section 706 empowers the Commission to impose such pro-competitive rules even without regulatory reclassification. The Commission should also consider other mechanisms to promote competition, such as cable modem ISP leased access pursuant to Section 612 of the Act. Though the FCC ruled in 1999 that this section did not apply to ISP services, we believe that the explosion in online video and the emergence of the Internet as a horizontal video distribution platform warrant a rethinking of this decision.

The Commission's national broadband plan must end the long practice of sweeping reality under the rug. There is now so little competition in American broadband markets that network operators have no incentive to build high-capacity lines throughout the country. Consequently, most U.S. consumers are stuck using the same slow and expensive broadband connections, while users in other countries enjoy connections that are far faster and cheaper than those deployed here. There are some encouraging signs in some markets of fiber and DOCSIS 3.0 deployments. But these markets are few and far between, and these incremental developments may be too little, too late.

The Commission's national broadband plan needs to be aggressive in its pursuit of market competition. At the same time, it has to be practical. The 1996 Act was written for a monopoly world. Perhaps not all of its provisions are appropriate for today's duopoly world. In some cases, the benefits of fostering intra-modal competition may not be worth the costs (mostly in terms of the inevitable litigious push back from industry). However, the Commission should not abdicate its responsibility under the law to promote intra-modal competition in the local markets where new entrants are "impaired" under the standard of Section 251 of the 1996 Act.³²⁹ Some markets may warrant heavy regulatory intervention, while others will not. But this is an empirical question, not a question of political feasibility. Now is not the time to make artificial declarations that some ideas are off the table and narrowly focus on particular proposals.

Getting the Act Back on Track: Promoting Platform Competition

The "faith-based" broadband policy of the past eight years relied heavily on the prediction that a third-platform competitive alternative would eventually appear to tame the anti-competitive instincts of the phone

³²⁷ We use the term "non-dial-up Internet access" to mean any "always-on" means of connecting to the Internet that does not involve the use of a "dial-up" modem (a form of connection that involves the use of a telephone line and a modem, in which the user creates a link with an ISP via a "handshake," and which has a maximum symmetrical connection speed of 56 kbps); or does not involve the use of BRI ISDN technology (Basic Rate Interface Integrated Services Digital Network), which is also conducted over traditional copper telephone networks, with two 64 kbps channels, capable of carrying voice or data packets over the public switched telephone network (PSTN). In general, non-dial-up technologies include traditional wireline (T1, T3, DS-1, DS-3, OC-n, Ethernet), DSL, cable modem, fiber-to-the-home, third generation wireless (3G), Wi-Fi, Wi-Max, satellite (in some cases), and broadband over powerline (BPL).

³²⁸ Even as it declared cable modem and wireline broadband to be pure information services, the Commission also implied that these services are governed by Section 706. See e.g. *Cable Modem Declaratory Ruling*, *supra* note 115, at 70, stating, "Most cable modem service fits within our definition of advanced telecommunications capability because it affords the user the ability to send and receive information at speeds higher than 200 kbps."

³²⁹ See *supra* note 81.

and cable duopoly. It's clear that this hope has yet to be realized. Currently, mobile wireless has the most potential. Yet horizontal integration in this market, increasing consolidation, and the fact that consumers don't see mobile as a substitute for fixed broadband services make it highly unlikely that this platform will be the market savior.³³⁰ Third-party, last-mile deployment of fixed wireline services (i.e., "overbuilding") like cable modem or fiber optics is an uneconomical prospect in almost all markets. Residential CLEC copper-based facilities competition simply does not exist; and where incumbents are deploying fiber, they are often simultaneously removing the existing copper wire, eliminating this as a possible future competitive platform.³³¹ Satellite is a niche solution for remote rural areas; it is not a serious platform alternative to the much faster cable modem and fiber-optic wireline services. And broadband over powerline, which never had more than 5,000 customers, may soon fade away and be a historical footnote.³³²

Thus, the only viable new competitive platform alternative is fixed wireless. Yet we've not seen widespread deployment of residential fixed Wi-Fi or Wi-Max services. Clearwire, a joint venture between Sprint, Google, Comcast and other companies, has promised to deploy fixed and mobile Wi-Max services capable of delivering 6 to 10 Mbps downstream to half of the U.S. population by 2010.³³³ However, the company has slowed down the pace of its deployment, and its future viability as a legitimate competitor to the telco-cable juggernaut is uncertain.³³⁴ One challenge facing the company, and, indeed, facing any company wishing to get into the ISP business, is the cost of data transport, or "backhaul."³³⁵ "It's what I call the elephant in the room that nobody talks about," said Clearwire CTO John Saw. "The backhaul is probably the highest cost of deploying the network."³³⁶

If the Commission is going to make inter-modal competition a centerpiece of its national broadband plan, then it is going to have to be aggressive about helping new providers build viable businesses. New entrants can put up wireless antennas, but they have to be able to carry traffic back-and-forth to the Internet. In many cases, the only available transport option is high-capacity lines offered by the local incumbent phone company. First and foremost, this means the Commission must take a close look at the special access, middle-mile and enterprise transport markets. As discussed above, the Commission's past deregulatory actions in these markets have been disastrous for competition. Special access rates of return are above 700 percent in some markets, and there is little data to suggest competition is any more effective in the enterprise market. This is akin to a small businessman trying to open a grocery store, and the only supplier of beef, dairy, poultry and produce for this new grocery store is Safeway. In such a world, it would be hard to imagine Safeway doing anything to help out the little guy. Recent technology advances have enabled carriers to use microwave technologies to transport backhaul data. These advances are important, because not having to buy expensive transport services from the local monopoly phone company, and not having

³³⁰ See e.g. *Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC For Consent to Transfer Control of Licenses*, WT Docket No. 08-95, Memorandum Opinion and Order, 23 FCC Rcd 17444 (2008) (*Verizon-Alltel Merger Order*). See also e.g. *In the matter of Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corporation, et al.*, WT Docket No. 04-70, Memorandum Opinion and Order, 19 FCC Rcd 21522 (2004) (*Cingular-AT&T Wireless Acquisition Order*).

³³¹ For example, in 2006, Verizon issued one FCC-mandated copper retirement notice. In the first quarter of 2008, it issued 98 such notices. See Kelly M. Teal, "Copper Retirement Notices Stack Up - CLECs Ask FCC for Formal Review," *XChange Magazine*, June 29, 2007.

³³² See e.g. Jennifer Buske, "Manassas Preserves Broadband Program — Funds to Continue While Service Is Studied," *Washington Post*, April 16, 2009.

³³³ Current Clearwire service only offers up to 2 Mbps downstream, 256 kbps upstream. However, the company has claimed its 4G Wi-Max product will be able to burst up to 10 Mbps in fixed settings, and up to 6 Mbps in mobile settings. See e.g. "Clearwire Shows Off Mobile Wi-Max In San Fran," *DSL Reports*, Sept. 11, 2008. See also Ray Le Maistre, "Sprint, Clearwire Create \$14.5B WiMax Giant," *Light Reading*, May 7, 2008.

³³⁴ See Amy Thompson, "Clearwire Funding Gap May Put Backers' Plans on Hold," *Bloomberg*, Feb. 11, 2009.

³³⁵ To understand the importance of the "backhaul" (or "enterprise" or "middle-mile" or "special access") markets, think of starting an ISP business as opening a bar. When you open your bar, you incur considerable startup costs, from leasing the commercial space, to buying shelving, signs, freezers and other equipment. But you still need a "supply chain" of liquor and beer. Fortunately, if you are opening a bar, you have many suppliers to choose from for any given product. But if you are starting an ISP, you can build your "store" (i.e., your local network running to your customers' homes), but you still need a supplier of the "product" that you are going to sell to the public (i.e., bandwidth connected to the Internet backbone). For the startup ISP, there is often just one single supplier of the "product" — the local monopoly phone company — and in most cases, it is completely unrestrained by regulations in what they can charge. So it's like wanting to open a bar, but the only place you could open it was right next to a competing bar owned by the only company that manufactures and supplies liquor.

³³⁶ Dan Jones, "Clearwire's Backhaul Bet," *Unstrung*, May 16, 2008.

to lay fiber optic cables for transport can bring considerable cost savings. However, these high-frequency transmissions require licensed spectrum and are point-to-point and thus subject to geographic constraints and environmental interference. In the cases where unlicensed spectrum is used for backhaul (such as the 5.8 GHz band), the potential for interference limits the reliability of these links. The Commission should promote the availability of spectrum for high-capacity backhaul but also recognize its limitations.

Ultimately, turning the dream of platform competition into a reality will require aggressive FCC action to lower barriers to entry for new technologies. This will require the Commission tackling the problem on multiple fronts. The FCC first should reverse all of the enterprise broadband forbearance orders and apply a narrower market analysis. It should also revisit and re-engineer its special access pricing flexibility regime and impose some pricing discipline in this monopoly market.

The Commission must expand the availability of unlicensed spectrum to encourage deployment by small-business ISPs. The greatest success of recent broadband policies is Wi-Fi operating on unlicensed spectrum. The Commission's recent move to expand the availability of unlicensed spectrum by opening up the unassigned television channels (also known as "white spaces") for wireless broadband is a great step forward.³³⁷ But the new FCC must ensure that this effort is seen through to the end and not derailed by the self-serving actions of incumbent providers or broadcasters.

The Commission will also need to continue its innovative hybrid "license-lite" approach adopted in the 3.65 GHz spectrum orders.³³⁸ And it will need to explore innovative alternatives to auctions for licensed spectrum, such as revenue-sharing models, to ensure that new entrants are able to effectively compete with today's mobile giants. Any new spectrum policy would benefit from opening new bands for licensed commercial use or opportunistic sharing. In particular, the NTIA should perform a thorough analysis of government spectrum holdings to determine if any of those frequencies can be made available for broadband deployment.³³⁹

No single policy will bring the appropriate level of competition needed to make our broadband market all that it should be. It will require many different initiatives aimed at different levels of the broadband market to accomplish the goals as set forth in Section 706. To deliver consumers the types of 100 Mbps connections that are commonplace in Japan, the U.S. market will need vigorous, multi-modal competition — that is, competition between delivery platforms (e.g., DSL, cable and wireless) as well as competition within delivery platforms. The United States cannot and should not bet its digital future on one form of competition.

Not all of these changes will be supported by the incumbent industries. But it is essential that the FCC recognize that the short-term financial interests of dominant firms must not be permitted to overshadow the larger national interest in charting a successful path for our digital future.

Conclusion

Congress provided the FCC with a blueprint for competition, deployment, innovation and consumer protection in 1996. But over the past several years, the Commission has shown nothing but contempt for the public interest. It has shown an indifference to the plight of those on the wrong side of the digital divide and

³³⁷ See *Unlicensed Operation in the TV Broadcast Bands, Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, ET Docket Nos. 04-186, 02-380, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807 (2008) (*Whitespaces Order*).

³³⁸ In the 3.65 GHz band, the Commission established a "licensing-lite" or non-exclusive licensing approach for Wi-Max providers. This process essentially consists of users registering with the Commission for non-exclusive use of the spectrum. See *Wireless Operations in the 3650-3700 MHz Band; Rules for Wireless Broadband Services in the 3650-3700 MHz Band*, ET Docket No. 04-151, Report and Order and Memorandum Opinion and Order, 20 FCC Rcd 6502 (2005) (*3.65GHz Order*); also *Wireless Operations in the 3650-3700 MHz Band; Rules for Wireless Broadband Services in the 3650-3700 MHz Band*, ET Docket No. 04-151 Memorandum Opinion and Order, 22 FCC Rcd 10421 (2007) (*3.65GHz Order on Reconsideration*).

³³⁹ Sen. John Kerry (D-Mass.), along with Sens. Olympia Snowe (R-Maine), Bill Nelson (D-Fla.) and Roger Wicker (R-Miss.) recently introduced legislation that would make this happen. See "Radio Spectrum Inventory Act," S.649, 111th Congress (2009). See also J.H. Snider, "The Art of Spectrum Lobbying: America's \$480 Billion Spectrum Giveaway, How it Happened, and How to Prevent it From Recurring," New America Foundation (2007).

has completely abdicated its responsibility to protect consumers from the abuses of market power. The FCC has ignored the mountains of evidence that our broadband markets are concentrated, anti-competitive, and fundamentally broken. At every turn, the Commission has overreached — removing important consumer protections and leaving nothing in their place.

This record of abject failure must end now. The new FCC must use the opportunity of the national broadband plan to signal a new direction. No mistake is so catastrophic that it cannot be undone. We must look to salvage those policies that have yielded some benefit and reverse the rest. We must look to innovative and creative ideas to offer up new choices and alternatives.

The status quo is unacceptable. If we watch and wait, trusting that today's artificially constrained marketplace will magically solve the broadband problem, we will see America slip further behind the rest of the world and widen the digital divide. The data and evidence of our broadband problems are clear and irrefutable. We continue to have large gaps in broadband service across the nation. Worse still, the networks we do have are slower, more expensive, and less competitive than the global leaders in broadband performance.

The optimistic predictions about mobile wireless broadband do not appear to hold any real promise of a viable "third pipe." Indeed, competition in the special access and enterprise markets is even worse than in the residential duopoly broadband market. Meanwhile, network operators are following the demands of quarterly returns — investing in networks where costs are lowest and profits highest and leaving the rest of the market behind. Incumbents are also busy hatching plans to dismantle the open, neutral marketplace for commercial applications and political speech to squeeze out higher revenues. And carriers have only offered self-interested solutions to our universal service problems — none of which will help bring rural and low-income Americans robust next-generation broadband services.

So the task falls before the new Commission to solve these problems. This is no easy feat, as the actions of the past decade have left an indelible scar on our communications market. But instead of working around the edges, the new Commission must aggressively tackle the work of formulating a national broadband plan. This plan should be a broad platform of initiatives that addresses the complexity of the issues and maximizes the potential for both near- and long-term success. The plan should focus on enhancing both inter- and intra-modal competition. And the plan should make protecting competition and speech in the content and applications markets a top priority.

The national broadband plan should be designed around aspirations to particular social and economic outcomes, not the business models of the incumbent telecommunications carriers. The first goal should be the universal deployment of robust next-generation broadband services. The second goal should be the creation of a competitive marketplace that delivers affordable broadband. And the third goal should be enhancing the openness, speed, coverage and reliability of next-generation communications networks.

The vision for our national broadband plan must be bold, comprehensive and ambitious. The FCC needs to change course and turn away from the conventional political wisdom of complacent incrementalism and embrace a policy agenda that finally turns the promise of the Communications Act into a reality for all Americans.